

**Rudall, Rose and Carte:
The development of the flute in
~~London~~, 1821-1939**

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Abstract

From their establishment in the 1820s Rudall & Rose dominated the large and lucrative market for flutes, at first with instruments of the highest quality but of little technological innovation. In the 1840s they were advised and later joined in partnership by Richard Carte, whose business acumen guided the firm to an association with Theobald Boehm that led to the successful commercial exploitation first of Boehm's 1832 model flute and later of his final, cylindrical model of 1847. Carte's skill at understanding the market led him to develop models of flutes that would permit a player to benefit from many of the acoustical advantages of the Boehm flute without learning a new fingering system, and his understanding of his instrument led him to develop first his 1851 and later his 1867 patent flutes, which it may be argued were mechanically superior to the standard Boehm and which enjoyed considerable success well into the twentieth century. Rudall, Rose & Carte, later Rudall, Carte & Company, continued to be innovative flute makers, producing the first gold flutes, the first platinum flutes and the first flutes in Monel metal, as well as flutes to the individual designs of a number of flute players. This thesis examines the social and business trends and the market pressures that inform the flute manufacturing business in the nineteenth century, with detailed technical discussion and illustration of the firm's instruments. The firm's parallel activities in publishing, retailing, military instrument manufacture and concert promotion (under the management of Carte's son, Richard D'Oyly Carte) are considered as contributing to their success.

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Abbreviations

Bate:	Bate Collection, Oxford.
BL:	British Library.
DCM:	Dayton C. Miller Collection, Library of Congress, Washington.
DNB:	<i>Dictionary of National Biography</i> . Oxford University Press, 1917.
EUCHMI:	Edinburgh University Collection of Historical Musical Instruments.
Horniman:	Horniman Museum, London.
NLI:	Waterhouse, William. <i>The New Langwill Index: A Dictionary of Musical Wind-Instrument Makers and Inventors</i> . London: Tony Bingham, 1993.
NPG:	National Portrait Gallery.
PRO:	Public Record Office.
RCM:	Royal College of Music Collection, London.
R&R:	Rudall & Rose.
RC&Co.:	Rudall, Carte & Co.
RR&C:	Rudall, Rose & Carte.

Introduction

Rudall & Rose enjoyed a rapid success on their entry into the flute market. They began in business in the early 1820s producing instruments of the highest quality and remained at the top of the market, later as Rudall, Rose & Carte and finally as Rudall, Carte & Co., for a century and a half, during which period they supplied flutes to virtually every player of note in Britain and to many players overseas. The firm's longevity is proof of the quality of its instruments and particularly of the business acumen of its proprietors. In their early days they supplied standard eight-keyed flutes that were conservative rather than innovative, but of a quality and in a quantity that, as will be seen, may have driven some of their competitors out of business.

The standard pre-Boehm flute, the basis of Rudall & Rose's early success, had a conical body and a cylindrical headjoint. This flute had six unequally-spaced fingerholes of unequal sizes and, typically, eight keys, six of which were closed-standing and two of which, on the footjoint, were open-standing. (An instrument of this description is here referred to as an 'old flute'.) Theobald Boehm's 1832 flute (developed in Munich and made by Rudall & Rose in the 1840s) was similarly conical with a cylindrical headjoint, but had a complex system of open-standing keys covering equally-spaced holes of mostly equal sizes. The later Boehm flute, the 1847 instrument (the British patent for which was held by Rudall & Rose) had a cylindrical body with a conical headjoint blown at the narrow end, and equally-spaced, equal-sized holes covered by a system of open-standing keys.

Richard Carte influenced the firm of Rudall & Rose to produce, in addition to the standard eight-keyed flute, Boehm's 1832 conical system flutes, followed by Boehm's cylindrical 1847 model. After Carte joined the firm as a partner in the early 1850s, they produced a number of brilliant and innovative designs: Carte's 'Old System' flute, which applied simple-system fingerings and closed-standing keys to a flute made otherwise to Boehm's principles of equally-spaced, equally sized holes; Carte's 1851 Patent, a flute made entirely to Boehm's principles but employing an open-standing fingering system that is arguably easier for the player to manage than Boehm's fingering; Carte's 1867 Patent, an updating of the 1851 which remained in professional use until as late as the 1980s; a number of variations of existing systems by Richard Shepherd Rockstro; the Radcliff Model flute; and some flutes designed by individuals such as James Mathews and Christopher Welch and made to their special

order. In the 1850s Rudall, Rose & Carte bought the substantial business of Thomas Key, military musical instrument maker, and used this firm as the basis for their own profitable business of supplying a wide range of woodwind, brass and percussion instruments to the army and navy, and later to the flute bands of Ireland. In addition the firm published books, music for the flute and for other instruments and, for a period of some eighty years from the 1850s, the *Musical Directory*. Under the management of Richard Carte's son, Richard D'Oyly Carte, the firm acted as an opera, concert and choir agency until D'Oyly Carte set up a firm on his own account.

This study is based on information gathered from the stock records of Rudall, Carte & Co., on other primary sources not previously examined, on contemporary treatises, monographs, essays, letters and advertisements, on the many surviving instruments and in some measure on oral history in the form of the reminiscences of some former Rudall Carte employees.

To date no comprehensive study of the flutes of Rudall Carte and their predecessors has been published. This present work describes the development of firm's instruments, the advantages and disadvantages of each, the musical necessities behind each development and the market pressures on the firm to redesign their instruments.

Sources

Manuscript sources. Much of the information available on Rudall, Carte and Co. derives from the firm's surviving manuscript stock records, which cover the period from 1869 to the Second World War. The company's records from before 1869 and from the period after the war have disappeared. These stock records permit a detailed study of Rudall Carte's activities over a period of some seventy years. They list instruments by serial number and in most cases give the date the instrument was completed, a description of the instrument including the material and the pitch, the name of the man who made it, the cost price, the selling price, the date it was sold and the name and location of the purchaser. The first page of Volume I of the stock records is reproduced as Plate 1. From these records can be made assessments of the firm's total output of instruments, of the numbers of each model of instrument made, of the number of instruments made to high and to low pitch (and to the places where flutes of different pitches were sold) and of the number of employees engaged

Date when made or subd.	Description	Stock value	Maker	Number	Selling price	Date sold	Buyer
	Gold Flutes (Carter's) large holes	33	Collins	M. Y. C.	105	Nov. 30-1869	J. E. Lee
	Do do silver keys small holes	78	Do	C. A. C.	63	Apr. 27-1869	F. A. Roberts - Ill.
	Do do small holes (keys from)	14	Do	J. E.	105	Aug. 27-1869	Ed. de Mass.
June 29/69	Silver do 1867 Pat. large holes D. H. H.	13	Collins	C. R. C.	31	July 27-1869	R. S. Rockstro
Dec 27/68	Do do Boehm fing. medium holes	12	Collins	C. W. C.	29	Jan. 12-70	W. Bradford
Jan 1/69	Do do do - large do.	12	Collins	C. S. M.	29	Oct 12-1869	W. A. Brown - Ill.
Jan 9/69	Do do do.	12	Crusland	C. S. S.	29	July 12-1869	Marshall, Ill.
Sept 29/68	Do do do colored G.	12	Collins	C. M. C.	29	Dec. 15-70	W. A. Brown - Ill.
Aug 7/69	Do do do	12	Crusland	C. J. R.	29	8-9-71	W. A. Brown - Ill.
Oct 11/68	Do do do	12	Holland	C. U. J.	29	10-12-71	W. A. Brown - Ill.
Mar 23/69	Do do Old fing. large holes	12	Crusland	C. J. W.	29	Sept. 14-1869	J. A. Smith - Ill.
3-4-1868	Do do Carter's - good holes ornamental	13	Collins	M. U. H.	29	19-11-70	M. C. Claus
Mar 3/69	Do do do - large S. H.	12	Collins	C. C. W.	30	July 20-1869	W. A. Brown - Ill.
June 12/69	Do do do - large S. H.	10	Collins	C. C. M.	20	Oct 22-11-71	W. A. Brown - Ill.
	Do do do	10	Crusland	C. C. T.	20	Oct. 27-1869	W. A. Brown - Ill.
	Do do do	9	Holland	C. J. W.	20	23-2-71	W. A. Brown - Ill.
	Do do do	8	(French)	M. J. H.	14	Sept. 10-1869	W. A. Brown - Ill.
	Do do Boehm fing. notes in keys	7	(French)	C. P. A.	14	23-11-71	W. A. Brown - Ill.
	Do do closed G. ring action	7	Whitaker	C. C. D.	20	Oct 29-1869	E. De Sang.
	Do do covered keys in G	6	Collins	C. J. E.	12	1-2-71	W. A. Brown - Ill.
	Do do 1867 fing. Briccardi C	10	Collins	J. L. S. D.	12	12 Dec. 70	W. A. Brown - Ill.
	Do do altered C rings	9	Do	C. S. S.	3	1-1-71	W. A. Brown - Ill.
	Do do Carter's fing. in keys & C	10	Do	C. J. W.	20	Sept. 17-1869	W. A. Brown - Ill.
	Do do 1867 Patent large holes	13	Crusland	C. C. S.	29	July 20-1869	W. A. Brown - Ill.
	Do do 1867 Patent	13	Holland	C. C. C.	29	Aug 24-1869	W. A. Brown - Ill.
	Do do 1867 Patent	13	Holland	C. L. A.	29	Aug 27-1869	W. A. Brown - Ill.
	Do do Carter's fing. in keys & C	13	Crusland	C. C. R.	34	Aug 27-1869	W. A. Brown - Ill.
	Do do 1867 Patent	13	Crusland	C. C. T.	29	July 16-1869	W. A. Brown - Ill.
	Do do 1867 Patent	13	Crusland	C. L. T.	29	July 9-1869	W. A. Brown - Ill.
	Do do 1867 Patent	89	J. Collins	C. L. D.	170	July 21-1869	W. A. Brown - Ill.

in the making of flutes. The records show that virtually every leading player in Britain played one of Rudall Carte's flutes, and they therefore provide valuable information on the instruments these players used. It is possible to see which, if any, professional players continued to play on old-system flutes after 1869. As Rudall Carte listed, for example, some ten different basic types of flutes in their 1872 price list and were known to make other instruments to special order, their output of instruments must reflect market demand and can therefore be seen as an accurate reflection of nineteenth-century flute-playing trends. The records provide statistics on how many of each type of flute were sold in any given period. From these records trends in overseas sales are apparent, and the effect on the business of the loss of sales abroad can be estimated. Descriptions of surviving instruments in the records provide clear evidence of the pitch employed in British orchestras.

A further manuscript record survives in the form of a notebook apparently kept by Richard Carte's son Henry, the manager of the firm on his father's retirement. This notebook contains manufacturing notes, lists of subscribers to the firm's publications, lists of European instrument makers the firm approached with offers of employment (in some cases successfully), notes on the firm's letterhead in Richard Shepherd Rockstro's hand offering advice on the correct tuning of his model of flute, notes relating to costings of instruments and jottings of an administrative nature.

The voluminous correspondence and personal notes of Dayton C. Miller, whose astonishing collection of flutes and material relating to the flute is housed at the Library of Congress in Washington, has provided invaluable information. Miller communicated with many of the leading figures connected with the flute, and from the 1890s he maintained a considerable correspondence with Montague George, the proprietor of Rudall Carte.

Printed sources. Published nineteenth- and early twentieth-century sources of information on flute makers cannot be relied upon fully; their authors often had either a product to sell or a quarrel to settle, and in some cases Brobdingnagian egos interfered with rational discussion of their subject. William Nelson James's *A Word or Two on the Flute* (1826) and his *The Flutist's Magazine* (1827), substantial works intended to satisfy the large number of amateur flute players in Britain, provide a gossipy, opinionated and, it has to be said, rather unreliable view of the flute world in the decade before inventors began to transform the instrument. James's works offended

some people, including Charles Nicholson, the leading British player of his day, who published a robust attack of James (“*A Word or Two*” to Mr. W.N. James, 1829). A monograph by William Annand (*A Few Words on the Flute*, 1843) updated James’s gossip. Cornelius Ward’s monograph (*The Flute Explained*, 1844) describes his newly-invented flute and offers his view on the inventions of Captain J.C.G. Gordon and Theobald Boehm. Monographs by Richard Carte (*Sketch of the successive improvements made in the flute*, 1851) and by his competitor, John Clinton (*A treatise upon the mechanism and general principles of the flute*, 1851 and *A few practical hints to flute players*, 1855) provide some insight into the flute market and into the workings of Rudall & Rose. Thomas Clotworthy Skeffington (*The flute in its transition state*, 1861) provides some background on the confusion felt by flute players during a period of great change in the instrument. Theobald Boehm’s 1847 *Essay on the Construction of Flutes*, eventually published by Rudall Carte in 1882, describes the evolution of his design and includes an introduction by W.S. Broadwood as well as extracts from letters to do with flute making from Boehm to Broadwood. Boehm’s later work, first published in 1871 and translated into English in 1908 by Dayton C. Miller as *The Flute and Flute-Playing*, is the principal source of information on Boehm’s design and includes useful annotations by the translator.

The works by James, Nicholson, Ward, Annand, Boehm, Carte, Clinton and Skeffington are of interest in showing the state of the market in flutes in the decades around the middle of the nineteenth century, and in showing the controversies surrounding the introduction of new flutes. The very existence of these works demonstrates the popularity of the flute and the passion of its players. There are few similar works relating to other wind instruments. The monographs by Ward, Clinton and Carte are explanations of these men’s inventions and may in a sense be considered examples of sales literature. Boehm’s 1847 work is the exception in studiously avoiding any attempt at salesmanship.

The earliest of these writers, William Nelson James, a flute teacher who grandly, and falsely, described himself a maker as well, wrote at a time just before the invention of new instruments when the standard flute was the simple eight-keyed instrument. James was opinionated to the point of folly, and as a result of his writings he found himself in conflict with two of the leading players of his day, Jean-Louis Tulou and Charles Nicholson. Tulou had taken exception to James’s

advertisement claiming that he considered James's flutes superior to Monzani's and had written to *The Harmonicon* in 1829 effectively calling James a liar.¹

Quarrels and clashes of egos came no greater than between Charles Nicholson and James, teacher and, for a time, student. Nicholson's "*A Word or Two*" to Mr. W.N. James (1829) was provoked by critical passages in James's *A Word or Two on the Flute* (1827) in which James attacked Nicholson's use of double tonguing ('His execution of rapid staccato passages is uniformly double tongued, which I have endeavoured to shew elsewhere is an erroneous principle.'). His cadenzas ('His cadences are often thrice as long as the original subject; and though they are by themselves extremely beautiful, as capriccios, yet it is not the purest taste which can always stoop to use them.') and particularly his compositions ('The compositions of Mr. Nicholson are very numerous. I shall take no notice of the greater part of them, as it would have been better for his fame had they never been written.')

Nicholson's response could not have been more scathing: amongst other things he complained that James had absconded without paying his bills; he sneered at James's request for a letter from him to act as a 'passport into any society'; he made sport with James's conflict with Tulou; he derided James's unwillingness to perform in public; he was scornful, at some length, of James's attempts at composition; and he even made fun of James's appearance ('It is curious to observe with how much accuracy some men, like Richard of Shakspearean fame, can "descant on their own deformity." Mr. J. seems to be one of this singularly gifted fraternity,—an evidence of which appears at page 9 of his Magazine, No. 18, just published, where the portraiture of himself, it must be acknowledged, is executed to admiration.')

It is safe to apply the words 'fool' and 'charlatan' to James, who after being denounced in print by Tulou, the leading player in France, now contrived to be denounced in print by Nicholson, the leading player in Britain. No love whatever was lost between Nicholson and James. Nicholson's "*A Word or Two*" to Mr. W.N. James is astonishing. One paragraph alone is required to establish the tone of this piece:

In this way, from a spiteful and malignant feeling originating in the canker of disappointed expectation, Mr. NICHOLSON appears to have been the fated

¹ A fuller account of James's conflict with Tulou is given in Stephen Preston's introduction to the reprint of James's *A Word or Two*.

² James. *A Word or Two on the Flute* pp. 158-161.

³ No copy of the illustration referred to has been found.

target at which this gentleman, in the plenitude of his wisdom, has been graciously pleased, for the gratification of his own personal spleen, to direct the frequent vollies [*sic*] of his pop-gun artillery. But, although this critical fusilcer [*sic*] has proved so deplorable a marksman, that the whole of his laudable endeavours, all his excellent and praiseworthy exertions to write Mr. NICHOLSON down an ignoramus, have proved utterly and marvellously abortive; still the peculiar merit of having manfully and perseveringly made the attempt, must not be denied to him. It is true that his vituperations have been as innocuous as the sting of the gnat upon the hide of the elephant; but, nevertheless, that consideration shall not prevent the gentleman's consistency from being shewn up; nor shall it deter the writer from exposing all his humbug and self-conceit to that derision which it so well deserves, even though the exposure, like the elegant farrago of his own beautiful simile, should be reflected on "pillars of crystal in the sunshine."⁴

James chose to respond to Nicholson in his *The Flutist's Magazine* (1827), quoting Nicholson's attack in full, numbering the paragraphs and attempting, in some cases lamely, to answer each point in turn. James's language was breathtaking. He called Nicholson 'vain-glorious, empty, and illiterate', he said his mind was 'literally choked up and poisoned with the most insufferable vanity and conceit' and he insisted that Nicholson must have employed someone to write his piece for him, one whose language, he claimed, is 'just, and only just, above that of a prize-fighter'. In response to Nicholson's contemptuous remarks on the letter James sent him asking for a reference, James made the astonishing claim that such a reference would have done him no good anyway. In response to Nicholson's attack on James's comments on the design of flutes, James had the effrontery to claim of Nicholson that 'he knows no more than the child, who broke the head of his drum to see from whence the sound proceeded'. It should perhaps be of little surprise to read that Nicholson and James arranged a duel.⁵ According to William Annand the two men were arrested and bound over to keep the peace.⁶

James's tirade would have been surprising enough directed at anyone else, but for the producer of a magazine intended to be sold to amateur flute players to attack so revered a figure as Nicholson was the purest folly. Nicholson was a truly popular figure; when he died, young and with his family not provided for, the great and the good of musical London arranged a benefit concert attended by over a thousand

⁴ Nicholson. "A Word or Two" to Mr. W.N. James.

⁵ Fitzgibbon, in his *Story of the Flute*, p. 209 refers to the encounter as a duel, possibly inflating William Annand's description of the event as a 'hostile meeting'.

⁶ Annand. *A Few Words on the Flute* p. 16.

people that raised the huge sum of £692 after expenses.⁷ No record can be found of a similar event being promoted on behalf of James.

As to James's charlatanry, a flute exists stamped with his name and the words 'Maker to the King', a remarkable example of the use of just four words to tell two lies.⁸ James was not a maker, and he was most certainly not the maker to royalty. Just to make sure there was no doubt as to which king he was referring to, James even stamped the British royal coat of arms on the instrument. The flute is in fact a standard factory-made one, possibly made by Potter, stamped by the maker with a figure 3 to indicate that it is a 'third flute' and over stamped by James with his own mark.⁹ The 3 in James's address is not in the same style as the one used by the maker. The stamp is pictured in Figure 1.

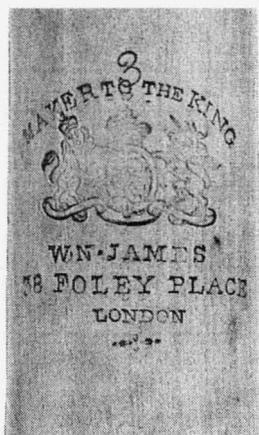


Figure 1: The stamp on a flute of W.N. James on which he mendaciously refers to himself as 'Maker to the King'. Note that the 3, indicating a third flute, which was probably stamped by the person who actually made the flute, is not in the same style as the 3 in the address. It is most likely that this was a factory-made flute over stamped by James.

Copies of James's *The Flutist's Magazine* are rare. The work may have been considered of so ephemeral a nature that few subscribers bothered to have the issues bound. It is possible, too, that some of James's subscribers considered him something of a fool. In one surviving bound copy of the first series of the work someone has added in ink next to one of James's particularly imprudent statements,

⁷ *The Musical World* 31 March 1837, 7 July 1837 and 14 July 1837.

⁸ Private collection, England.

⁹ There is some confusion surrounding the pitch designation of flutes. Today, flutes are held to be in C as they are non-transposing. In the old nomenclature, a standard, non-transposing flute was held to be in D as that was the note produced by covering the six fingerholes. A 'third flute' was so called because its six-finger note was F.

‘Oh! Mr. Professor James—fie!’ Copies of the second series, from which James’s response to Nicholson was extracted, are even rarer.¹⁰

In spite of his evidently strange personality, James does provide some useful, if gossipy, background to the careers of a number of flute players of his day. He speaks highly of George Rudall and of the instruments of Rudall & Rose¹¹ and he is glowing in his praise for the playing of the young Richard Carte (‘...very much shall we be mistaken, if he does not prove one of the greatest players that England has ever produced.’¹²)

A review of James’s *Flutist’s Magazine* sums up the man and his work:

If we might suggest one improvement, it would be the omission of all reference to the private animosities and intrigues of professional players. These things are in all cases most uninteresting to the general reader, and when music should be the atmosphere around us, we become almost disgusted to find the harsh and gross indications of human frailty extending even to the sanctuary.¹³

Little can be discovered of William Annand beyond his own description of himself as a teacher of the flute. His name has been found nowhere other than on this work. It is possible that Annand was a pseudonym. His pamphlet continues the gossip of James (but without the scandals) and provides a conservative view of the flute world in 1843. Annand remained a devotee of the eight-keyed flute as made by Thomas Prowse, the maker of Nicholson’s flutes, and was, it would seem, puzzled by the need for a newly-available improved flute, presumably the conical Boehm, which he mistakenly referred to as a French invention.¹⁴ Annand insisted that all but two of the London professional flute players used flutes by Prowse. It is possible that he was referring to George Rudall and Richard Carte in this sentence: ‘Among London professors I only know two who do not use Mr. Prowse’s instruments, one gentleman is, or has been, a Flute-maker,—the other is the pupil of a manufacturer formerly of note.’¹⁵ Annand appears to be the source of the uncorroborated story that Nicholson and James arranged a duel:

¹⁰ One copy survives in DCM.

¹¹ James. *A Word or Two on the Flute* p. 98.

¹² James. *The Flutist’s Magazine* (1827) p. 78.

¹³ *Athenaeum* 19 August 1829 p. 516. This passage is quoted by Eagle (*A Constant Passion* p. 6) who offers no explanation for his claim that the public really did want animosities and intrigues.

¹⁴ Annand. *A Few Words on the Flute* p. 43.

¹⁵ *Ibid.* p. 44.

[Mr. James] had a violent quarrel with Mr. Nicholson, which had proceeded so far that arrangements were made for a hostile meeting; fortunately this never took place, or the lion might have perished by the puncture of an asp. In short, both parties were taken into custody, and bound over to keep the peace.¹⁶

Annand was generally respectful of his betters, in which group he did not apparently include James, about whom he could find little good to say. He provides interesting descriptions of the leading players of his day, and his descriptions of the characters of amateur players of other instruments are nothing less than delicious.

Cornelius Ward was a craftsman of extraordinary virtuosity who had produced the exquisitely-crafted flutes sold by Drouet, as well as Count Rebsomen's brilliant one-handed flute.¹⁷ Ward's own instrument was a beautifully-made but highly eccentric (and commercially unsuccessful) improved flute of his own design. Ward offers trenchant views on the old flute in his *The Flute Explained*: 'The instrument is, in fact, a bungling compromise between tone, tune and the ordinary dimensions of the human hand,' he writes.¹⁸ Ward provides a useful view of his relationship with Boehm and with Captain J.C.G. Gordon, whose work on the flute Boehm was falsely accused of having plagiarised. Ward, who claimed to have made one of Gordon's flutes, sided with Gordon against Boehm as the originator of Boehm's design. Some years later, however, John Finn remarked tartly that 'Mr. Ward knew a great deal about the defects of the old flute after Boehm in 1832 had invented the new one.'¹⁹ It is possible that Ward was the originator of the libel against Boehm that was so vociferously repeated by Richard Shepherd Rockstro and so comprehensively disproved by Christopher Welch a generation or two later. It cannot be established what Ward had against Boehm, but it must be stated that it is as likely that Ward as well as Boehm stole Gordon's ideas, if indeed either of them did. It is in fact remarkable that Boehm alone should have been accused of plagiarising Gordon's work but not Ward himself.

Ward was a clever man, a perceptive writer and arguably the best craftsman of the flute makers of his day, but he did not make what people wanted to buy. It is said that he died in a workhouse.²⁰

¹⁶ Annand. *A Few Words on the Flute* p. 16.

¹⁷ Rockstro. *The Flute* §531 and Ward. *The Flute Explained* p. 10.

¹⁸ Ward. *The Flute Explained* p. 9.

¹⁹ Finn, John: 'Theobald Boehm: a Sketch'. *Musical Opinion and Music Trade Review*, June 1900, p. 617.

²⁰ NLI.

Clinton, like James, is quite unreliable. He was at first a loud champion of the Boehm flute, then an equally loud opponent when, it seems, Boehm chose Rudall & Rose rather than Clinton to produce his 1847 flute. Clinton's convoluted explanation of his change of mind will be considered in detail, as will his decision in 1861, conveniently after the expiration of the patent on the 1847 Boehm flute, to produce a cylindrical, fully vented metal flute similar in almost every respect to the very flute of Boehm's which he had spent so much time and energy denouncing. Clinton rarely failed to describe himself as professor of flute at the Royal Academy of Music. The Academy's records show that he may in fact have had very few students: Raphael Coles, admitted in 1845 and Daniel Godfrey, later known as a bandmaster, admitted in 1847, were both shown as having been his students; Samuel Percival, admitted 1840 and Benjamin Wells, admitted 1841 may have been students at the Academy during Clinton's time, but the records do not show who their flute teacher was, and the next flute player listed was John Radcliff, admitted in 1858, who studied with Benjamin Wells.²¹

Richard Carte's Boehm tutor (1845) and his *Sketch* (1851), by contrast, will be seen to be measured, sensible and free of much of the partisan sniping of other authors.²² Carte's work will be examined in detail in Chapters 4 and 6.

Thomas Clotworthy Skeffington was a clergyman and an amateur flute player of aristocratic background; his mother was Viscountess Massereene in her own right and his father Viscount Ferrard. His elder brother inherited both titles. Skeffington's 1862 work *The flute in its transition state* is difficult to take seriously when he writes:

It is unquestionably a modern instrument, its infancy was passed in ignorance and barbarism. The Egyptians had no diatonic scale, and Francis the First no Flute concertos. For all practical ends I date its era from about fifty years back, and I have no hesitation in saying that it was then as bad as bad could be; and that now, it is as good as any musician could desire, indeed as perfect as from its intractable nature it will ever become.²³

In spite of such foolishness, Skeffington does make the valid points that there were many well-bred and wealthy flute players in his day, that there was a reluctance to learn new systems, and that many players were put off by the many and frequent improvements. He makes the very important point that successive changes in the

²¹ Royal Academy of Music. *Register of entrants, 1837-1873*.

²² Carte. *Sketch on the Successive Improvements in the Flute and A Complete Course of Instruction for the Boehm Flute*.

²³ Skeffington. *The flute in its transition state* (1862), p.5. Powell (*The Flute* p. 285) quotes part of this passage but misattributes it to W.N. James.

flute involved re-learning the instrument, providing a powerful commercial brake on the inventiveness of any flute maker hoping to produce an improved instrument. Skeffington contrasts this position with that of makers of keyboard instruments whose improvements did not necessarily force a change of technique on the player.

Nineteenth-century journals have proved to be a rich source of information. *The Musical World* seems to have been the journal of choice in which flute enthusiasts could pursue their battles. In addition, instrument makers' advertisements in this publication, in *Musical Examiner* and in *The Times*, as well as concert announcements in these and other journals have been consulted. The lengthy correspondence battle between pro- and anti-Boehm factions (principally between Clinton and Prowse) in *The Musical World* in 1843 was reproduced by Welch, but the 1845 conflict involving Clinton and Carte, including a most revealing letter from Card, has not been readily available. Both sets of correspondence are quoted in Chapter 4.

Rudall, Rose & Carte's annual *Musical Directory*, published from 1853, is valuable in describing all musical activities and in listing musicians, publishers and instrument makers. Rudall, Rose & Carte themselves took lengthy advertisements in most issues of their own publication. These advertisements often included price lists.

The principal published Victorian and Edwardian sources of information on the firm are the books by Richard Shepherd Rockstro (*The Flute*, 1890, with a second edition published in 1928), Christopher Welch (*History of the Boehm Flute*, 1883 and 1892, with a third, expanded edition published in 1896) and to a lesser extent H. Macauley Fitzgibbon (*The Flute*, 1914, with a second edition published in 1928).

For Rockstro, Welch and Fitzgibbon it would have been a given that Rudall Carte were great makers who would have been known to their readers; indeed both Rockstro's and Welch's books were published by Rudall Carte. Although both Rockstro and Welch would have known George Rudall, John Mitchell Rose and Richard Carte and can therefore provide direct contemporary accounts of their work, it must be said that the personalities and prejudices of both authors shine through their books, and both therefore present difficulties for the reader. Rockstro's deep prejudice against Boehm and his dismissal of the work of some other men, notably Siccama and Clinton, have caused many readers to doubt much of what he says (he describes Siccama as 'an amateur player of very moderate capabilities' who 'conceived the unfortunate idea that he was destined to be the inventor of a new

flute that should eclipse everything that had been made or imagined²⁴ and gleefully quotes someone asking Clinton if his ‘Equisonant’ flute meant it was equally bad all over, then claimed that it had ‘not even that negative merit, for it was unequally bad’²⁵). However, with critical reading, and if Rockstro’s obtrusive opinions are ignored, his book is in large measure an accurate history of the instrument written from the position of a professional player, teacher and designer of flutes who was familiar with most of the leading players and makers of the middle and end of the nineteenth century. Rockstro describes in detail many of the instruments produced by Rudall Carte, although he makes not even a single mention of John Radcliff, a successful player who devised a flute that was made and sold in considerable numbers by Rudall Carte. It has not been possible to ascertain the reasons for Rockstro’s ignoring this man and his instrument, but professional rivalry or personal antipathy cannot be ruled out. For all Rockstro’s eccentricities and for all the complaints that can be levelled against him it must be noted that every English-language book on the flute written since Rockstro’s borrows heavily from his work.

Rockstro’s attack on Boehm’s integrity (he accused Boehm of stealing his ideas from Captain Gordon) provoked Welch to produce a third edition of his *History of the Boehm Flute* in which, to defend Boehm, he included a long, detailed, passionate and scornful denunciation of Rockstro. If Rockstro could find little good to say about Boehm, Welch had no difficulty in finding anything bad to say about Rockstro, and as much as Rockstro’s book is marred by his attack on Boehm, so Welch’s book is marred by his utter contempt for and his relentless attacks upon Rockstro. The fact that Welch was right in the debate over Boehm has led to a popular view that he was generally more reliable than Rockstro, yet Welch’s book is, if anything, even more riddled with prejudice than Rockstro’s, and when it comes to sarcasm Welch is the master and Rockstro a mere beginner:

...Mr. Rockstro follows the example of Sir John Falstaff, and leaves the living to discharge himself upon the dead. Indeed, he far outdoes Sir John; for when the doughty knight immortalised himself by his unparalleled exploit of killing a corpse, he was satisfied with inflicting on his prostrate foe a single stab. Not so Mr. Rockstro. He slashes, hews, and hacks away till his arm aches. Then we breathe more freely, for the fight seems to be over. But no; he is only pausing to take breath; he soon returns to renew the combat, and so the battle rages for round after round. At last he gets the corpus of his battered antagonist on the dissecting table, and having flayed it, proceeds to illustrate the old adage that “beauty is but skin deep” by pointing out how

²⁴ Rockstro. *The Flute* §646.

²⁵ Ibid. §676.

utterly unlovely he is (save in one small region, the left little finger) from the crown of his head to the sole of his foot.²⁶

Welch, a gentleman amateur of independent means,²⁷ wrote with a similar degree of scorn for anything he did not like, which seems to have included most flutes of the time before his. His dismissal of early flutes, while amusing, does little to make the reader feel he was an impartial historian. For example, he writes of cylindrical flutes of the renaissance:

When the player was in want of an accidental he had recourse to an expedient from which we should naturally imagine every member of the celestial quartett [*sic*] party would recoil with horror; he proceeded to murder the note above the semitone required by smothering, choking and suffocating it till it yielded an expiring murmur, or dying groan, which did duty for the sound required.²⁸

He was no more tolerant of the flute of Quantz and of Quantz's enharmonic fingerings. He writes:

The votaries of Perfection were commanded by the great Quantz to prostrate themselves before their fetish, and to go through the solemn farce of fingering, where it was possible, the buzzing apologies for semitones which were as yet unprovided with holes, in such a way as to make us believe in enharmonic differences; thus the muffled wail which went by the name of B flat was to be fingered differently from the stifled moan called A sharp; the strangled C sharp known as B sharp, from the asphyxiated D flat styled C natural.²⁹

Welch does not give the impression of having been a particularly agreeable man; the first sentence of the preface to his *Six Lectures* provides this blunt warning:

Should this book fall into the hands of one who looks upon reading as a pastime, or wishes to get information quickly and without trouble, the author hopes that, having read this sentence, he will put the volume down.³⁰

It must be reported that Welch's contemporaries, too, may have found him difficult. A letter printed in the *Oxford Magazine* of 4 February 1916, the year after Welch's death, includes this account from an old friend from his Oxford days, Sir Thomas Jackson:

Welch was not without his eccentricities. Like many men who have no regular occupation, he was the slave of habit and a martyr to punctuality...He

²⁶ Welch. *History of the Boehm Flute* p. 177.

²⁷ Welch left some £30,000 on his death in 1915, the equivalent today of over one million pounds (www.eh.net).

²⁸ Welch. *History of the Boehm Flute* p. 219.

²⁹ Ibid. p. 228-9. Welch probably meant to write in the last sentence 'C natural known as B sharp' and 'D flat styled C sharp.'

³⁰ Welch. *Six Lectures* p. v.

had fixed ideas on many subjects, from which nothing could move him, even when he knew little about them.³¹

While it cannot be doubted that Welch's book has value as a record of one who was personally acquainted with many of the leading flute players, makers and inventors of the nineteenth century, and while it certainly provides many hours of entertaining reading, it cannot be said that its author is a fully reliable witness.

Fitzgibbon's *The Story of the Flute* (1890), while pleasant enough, offers little new information. Much of his history of the flute is derived from Rockstro, and some sections appear to have been plagiarised. A copy of his book in the Glasgow University library includes a handwritten note from Henry George Farmer complaining that:

Much of the material in Chapter VI [on the military fife] is taken from my 'Memoirs of the Royal Artillery Band' (1904), although Fitzgibbon did not have the courtesy to say so. On page 77, the 'curious regulations' are borrowed from the above work, with typographical & other errors intact, clearly proving the source of this information. He also used my 'Rise and Development of Military Music' (1912).³²

Fitzgibbon may not have had much original to say, but he was familiar with some of the main characters connected with the flute in the nineteenth century. Examples of Fitzgibbon's correspondence with Richard Carte survive in the Dayton C. Miller Collection³³, and his columns entitled 'A Flute Player's Gossip' in *Musical Opinion* in the 1920s suggest, at the very least, a connection with people who knew some of the characters under discussion in this work. His correspondence with Walter Stewart Broadwood is of particular interest; Broadwood, he tells us, was a flute student of Dorus in Paris at the same time as Paul Taffanel, and he heard performances by, amongst others, Drouet, Ciardi, Briccialdi, Svendsen and his good friend Boehm.³⁴ However, Fitzgibbon copied much of the work of other authors and may perhaps be accused of perpetuating errors.

Principal secondary sources of information on Rudall Carte of the past few decades are general works on the history and development of the flute. Philip Bate, while generally reliable, was neither a flute player nor a maker and sometimes misunderstood the significance of some of Carte's design modifications.³⁵ His book

³¹ Quoted in *Wadham Gazette* Vol. 4 p. 399.

³² The author is grateful to Prof. Mike MacMahon for pointing out this note.

³³ DCM correspondence files.

³⁴ A proof copy of this article in is Fitzgibbon's scrapbook.

³⁵ Bate. *The Flute*.

(*The Flute*, 1969, second edition 1979) is, of course, a general work on the flute rather than a work specifically about the developments of Rudall Carte, but he, like Rockstro, Welch and Fitzgibbon, knew and admired the firm's instruments. However, Bate does not describe all the firm's flutes. He provides a limited description of the design work of Rockstro, drawn mainly from Rockstro's own book but not from existing instruments, some of which he may not have seen. He provides a description of Carte's 1867 Patent flute (a most important instrument) but gives little information on its advantages or disadvantages over the standard Boehm.

Nancy Toff (*The Development of the Modern Flute*, 1979) covers much the same area as Bate, with some amplification of the development of the Boehm instrument. Her work is based largely on her observation of the instruments in the Dayton C. Miller Collection in Washington, DC. Toff describes Rockstro's developments as described in his book, but without the benefit of access to some of his earlier attempts and without fully discussing the musical advantages of his later inventions. Toff notes the flutes with eight different fingering systems listed in Rudall Carte's catalogue of 1895, which, with options of materials and extra keys she notes reveals 118 possible varieties of flutes. She suggests that the effect of such variety was ultimately a negative one in musical terms, a suggestion that will be questioned in this study.³⁶ It is, in fact, Rudall Carte's willingness to supply almost any type of flute that makes this firm's stock records so valuable; if there was a demand for a flute, they sold it, and if they sold few of a certain model it was quite simply because there was little demand for it.

Tula Giannini's work (*Great Flute Makers of France*, 1993), while not directly related to the firm under discussion in this study, is valuable as a history of two closely-related families of flute makers. She has had access to documents relating to Godfroy and Lot, who were, at least in terms of quality, the principal rivals to Rudall, Rose & Carte. It was to this firm that Boehm passed the French rights of his 1847 flute at the same time as he passed the British rights to Rudall & Rose. Giannini gives an excellent account, supported by Paris Conservatoire records, of the Conservatoire tests of the early Boehm flute in 1839. She has been fortunate in that many documents relating to her subjects have survived.

David Eagle's dissertation (*A constant passion and a constant pursuit*, 1977) describes the fashion for flute playing that developed in England in the first half of

³⁶ Toff. *The Development of the Modern Flute* p. 124.

the nineteenth century, with reference to periodicals and works of fiction. Eagle describes the social circumstances that led to the huge market for flutes and flute music in England. Eagle's work sets the development of the flute in the context of a lively and passionate market.

Susan Berdahl's dissertation (*The First Hundred Years of the Boehm Flute in the United States*, 1986) is an encyclopaedic work on flute making in the United States that has some bearing on the business of Rudall Carte. Berdahl shows how the American flute making industry developed, how this affected sales of Rudall Carte's instruments in America and how the imposition of import duties effectively priced Rudall Carte out of the American market. She describes the various pitch standards in use in America and deals in detail with the various materials used in flute manufacture, providing a comprehensive account of the change in fashion from wooden to metal flutes. The bulk of her dissertation, a section running to some 500 pages, is a biographical dictionary of American makers of the Boehm flute. Berdahl includes a comprehensive list and descriptions of American patents relating to the flute.

An attempt at classification of key systems by Jerry Voorhees (*The classification of flute fingering systems of the nineteenth and twentieth centuries*, 1980), although too generalised for the accurate description of the various Rudall Carte instruments, provides a useful starting point. Voorhees's diagrams of flute mechanism set the standard for clarity. Voorhees's second book (*The Development of Woodwind Fingering Systems in the Nineteenth and Twentieth Centuries*, 2003) is a valuable expansion of his earlier work.

William Waterhouse has produced in the *New Langwill Index* (1993) an authoritative guide to wind instrument makers. His entry on Rudall & Rose and their successors provides an account of their dates, addresses and serial numbers that will be amplified in this study.

Ardal Powell's recent work (*The Flute*, 2002), as will be seen, is marred by inaccuracies in his discussion of many aspects of the development of the flute in the second quarter of the nineteenth century. Powell's claim that modern flutes are not superior to earlier types but merely different from them is challenged by substantial evidence that many nineteenth-century players themselves considered the new flutes an improvement on the old.³⁷ There would, indeed, have been no reason for them to

³⁷ Powell. *The Flute* p.5.

take up new flutes otherwise, nor would there have been cause for so many makers to produce new designs.

Improvement

This issue of improvement is central to the work of Rudall, Rose & Carte. The firm clearly understood the most basic principle of business: discover what customers want, and sell it to them. A firm that does this successfully will thrive; a firm that does not will fail. As Rudall, Rose & Carte thrived for a century and a half whereas their competitors disappeared, it is clear beyond doubt that they understood the principle. As their customers were the leading players in Britain a study of the firm's output will show which types of flutes nineteenth-century flute players considered superior.

It is worth considering why a nineteenth-century player might have changed to an improved flute. A professional player in 1847, perhaps at the height of a career that began before 1820 when flutes were very different indeed, may have changed to a Boehm or other improved flute for a number of reasons: the old flute might have been inadequate for the music he was by then expected to play, or he appreciated a new flute with a quite different sound to the one he had been using all his life, or, more likely, the new flute simply made it easier for him to make the sort of sound he had been trying to make all along.³⁸ It was in fact probably the case that to a mid-nineteenth century player the Boehm flute did not sound radically different from the old flute; it was the fact that it was easier to play in all keys that made the new instrument so attractive. If the new Boehm flute attracted complaints from traditionalists, it is worth noting that even in the 1830s, before the Boehm flute began to be popular in Britain, there were those who thought the flute was no longer as it had been. George Hogarth, for example, in an essay on the flute published in 1836, complained that the instrument had been transformed, and not, perhaps, in a manner entirely to his liking:

Since the beginning of the present century, the flute has received so many improvements—its powers have been so much enlarged and its character so materially altered,—that it has almost become a new instrument... Its capacities are no doubt greatly enlarged; but it no longer possesses the attributes of “the soft complaining flute.” No youthful lover would think of

³⁸ In the absence of evidence to the contrary it is assumed that all professional flute players in the middle of the nineteenth century were male.

stealing under his mistress's window, with a flute of Monzani's or Nicholson's in his hand, to breathe his sighs in her ear.³⁹

Those effects possible on the old flute but not on the new, such as the glides and finger vibrato made famous by Nicholson, were apparently not missed.⁴⁰ Indeed, as early as the 1820s, at the height of Nicholson's fame, a critic wrote,

...we beg most earnestly to lift up our voice against the use of the glide (or quarter tones); we trust that this ornament (!!!) will be discontinued till music is different from what it now is...we pray that this *howl* may quickly be consigned "to the tomb of all the Capulets."⁴¹

It will be shown that the modern flute (the 1847 Boehm or its variants, and to a lesser extent modern flutes by competitors such as Ward, Clinton, Siccama and Pratten) was adopted in Britain with quite astonishing speed, so that by 1869 it is difficult to find a single well-known professional flute player who continued to use the old flute. Rudall Carte's stock records show only a tiny number of sales of eight-keyed flutes after 1869, yet there is no doubt that they would have sold more if there had been a market for them. Even from the 1850s amongst non-Boehm players few persisted with the old flute but rather used improved old-fingering flutes such as those of Carte, Siccama, Pratten and Clinton. The old flute was abandoned very quickly. By the 1850s, in fact, the disagreements were not so much between supporters of the old flute and supporters of the new, but rather between supporters of competing designs of new flute.

³⁹ George Hogarth. 'The Flute'. *The Musical World* 18 November 1836.

⁴⁰ Clinton, in his *A School, or Practical Instruction Book for the Boehm Flute with the Open or Shut G# Key*, Op. 88. London [1846 according to the British Library catalogue] includes a page of fingerings for glides and vibrations for the ring-keyed conical Boehm flute of 1832, yet makes no further mention of these techniques in his later works. The techniques are difficult or impossible on the Equisonant flute later designed by Clinton himself.

⁴¹ 'Essay on the Capabilities of the Flute' by G.N. in *The Flutist's Magazine*, vol. 1 p. 92.

1. Flute makers and the market

A review in *The Athenaeum* in 1829 claimed ‘We take it for granted that one man out of ten plays the flute.’¹ This may not have been an exaggeration. There was, in nineteenth-century London, a vast market for flutes, for flute music, for flute lessons and for concerts including flute players. Flute players exhibited a passion for their instrument that does not seem to have been shared by players of other instruments; there was no oboists’ magazine, clarinetists’ magazine or bassoonists’ magazine as there was James’s *The Flutist’s Magazine*, and teachers of the oboe, clarinet and bassoon did not advertise in the daily press as did teachers of the flute.² Flute players were prepared to spend large sums of money on their instruments; while most clarinets and oboes of the period were made of cheaper materials such as boxwood and brass, flutes were commonly made of expensive tropical hardwoods or ivory with keys of silver or even gold, and some were lavishly decorated. Flutes were expensive, it would seem, because flute players were prepared to pay more than other instrumentalists. Monzani and Hill’s price list of the 1820s shows a flute with eight silver keys at £12 but an oboe with eight silver keys at just £4. 14s. Flute players, then as now, occasionally considered their instruments to be articles of jewellery in a way players of other wind instruments did not, and it would seem that many flute players were rather well-to-do.

Rudall & Rose appear to have had an immediate impact on the flute market; by 1826, just a few years after the firm was founded, W.N. James, himself a purveyor of flutes, wrote:

If I may be allowed to speak at all of the ingenuity displayed by our countrymen in the manufacture of this instrument, I would mention the amazing improvements which Messrs. Rudall and Rose of London have effected. They have now brought the flute to such a degree of perfection as could scarcely be contemplated so short a time as thirty years ago. Mr. Rudall is himself an exquisite player on the instrument; and his ideas regarding the mechanism of it are truly philosophical. The execution of the mechanical part of these flutes is quite perfect; and the correct intonation of almost every note is a beauty which will recommend them to the notice of every amateur

¹ *The Athenaeum* 19 August 1829 p. 516 (review of W.N. James’s *The Flutist’s Magazine*), also quoted in Eagle *A Constant Passion* (1977) p. 6.

² In the second quarter of the nineteenth century in *The Times* alone advertisements were published for twelve flute teachers (James, Sedlatzek, Lindsay, Galbreath, Braham, Fentum, W. Monzani, Hodgkinson, De Folly, Richardson and one anonymous teacher) and six flute makers (Drouet, Pearson, Hill late Monzani, Prowse, Wylde and Rudall & Rose).

of science and taste. I frequently met with flutes, by these makers, on the Continent; and every master of the instrument, with whom I had a conversation upon the subject, pronounced them to be unrivalled with regard to the quality of their tone and correctness of intonation.³

Rudall & Rose's success can be gauged by the number of flutes they produced. Serial numbers on surviving instruments dated by the addresses stamped on the instruments show they produced some 3500 eight-keyed flutes in the fifteen years before 1838, and some 5000 by 1847. In addition, they produced about 250 conical Boehm flutes in the four years to 1847.

Determining the output of a firm by the serial numbers on its instruments is admittedly problematical; there is no certainty that the firm numbered sequentially or that their numbering began with 1, and it may have been in the interests of a maker to boast of an inflated output. In the case of Rudall & Rose two pieces of evidence suggest that they did number sequentially: first, their successor firm's surviving records dating from 1869 show that at that date the numbers were indeed sequential and appear to carry on the sequence from the early days; and second, there are sufficient surviving instruments to suggest their claimed output is not a fiction.⁴ It is less clear, however, that they started numbering with 1; the lowest serial number identified on an eight-keyed flute is 387, on an instrument marked with the address 7 Tavistock Street, George Rudall's private address in 1823.⁵ Some instruments are marked Rudall & Rose but have no serial number or address; these may have been made before the firm began applying numbers, or they may be fakes. The figures quoted are based on the earliest surviving numbered instruments and on the earliest identified instruments produced after the firm's relocation to new addresses: 15, Piazza, Covent Garden in about 1825; 1, Tavistock Street in 1838; and 38, Southampton Street in 1847. Conical Boehm flutes made by Rudall & Rose from 1843 (of much greater complexity and cost than the eight-keyed flute) were numbered separately, starting from 1.⁶ In the absence of any Rudall & Rose eight-keyed flute with a serial number lower than 387 it is possible to surmise that they began their sequence with a number in three figures, which may or may not have taken into account any flutes they produced before they started numbering them.

³ James, *A Word or Two on the Flute* p. 98-99.

⁴ Surviving eight-keyed flutes by Rudall & Rose are estimated to run into the hundreds.

⁵ Private collection, Germany.

⁶ A conical Boehm flute by Rudall & Rose stamped 1 was recently offered for sale, and number 5 is in a private collection.

What is undeniable, however, is that this firm produced flutes in very large numbers, probably many more than their principal competitors.

In addition to flutes sold by specialist makers and general musical instrument suppliers it was not uncommon for flute teachers to have instruments made to their specification, or at the least stamped with their names, to sell to their students. Drouet, for example, had flutes of exquisite quality produced in his name, apparently by Cornelius Ward.⁷ Flutes have been seen stamped with the names of Charles Nicholson, Thomas Lindsay, W.N. James and, of greater interest to this study, George Rudall.

From the 1820s the makers at the top end of the flute market (those supplying rich amateurs) in addition to Rudall & Rose were Monzani & Hill and Clementi & Co., with Potter, Milhouse, Astor and others supplying less expensive flutes. Monzani & Hill produced some 3250 flutes in the twenty-seven years before 1837, with just 200 between 1830 and 1837,⁸ suggesting a possibility that Rudall & Rose put them out of business. Clementi & Co.'s supplier, Thomas Prowse, continued the manufacture of Nicholson's model flutes after Clementi's business ended.⁹ Charles Nicholson wrote:

On my first arrival in London, the flutes manufactured by Monzani (patronised and recommended by Mr. Saust, and in general use by amateurs at that period), Milhouse (patronised and recommended by Mr. Ashe) and those of Potter, were then the most in repute, and certainly great credit will ever attach to the first named, for the neatness and excellent workmanship of his flutes. These however, as well as those of Milhouse, had to me many objections. The bore being very large, and without a metal tube, the upper notes were produced with great difficulty, and the lower ones did not possess that brilliancy of tone for which I have been an advocate. For this reason, I at that time preferred those of Potter.

I cannot be charged with not giving Monzani's flutes a fair trial; for at the early period of my professional career, I had one of his most expensive instruments presented to me, and was so much pleased with its appearance, &c., that I played upon it for upwards of twelve months; after which I again resumed my Potter, and subsequently one of Astor's, the favourite maker for my father, who devoted much time and pains in the successful improvement of the instrument by enlarging the holes, &c.¹⁰

⁷ Rockstro. *The Flute* §531. Rockstro knew Ward well. Ward would have been a very young man at the time he made Drouet's flutes. See also Ward *The Flute Explained* p. 22.

⁸ Kreitzer, Amy. 'Serial Numbers and Hallmarks on Flutes from the Workshop of Monzani & Hill.' *Galpin Society Journal XLVIII* (1995) p. 168.

⁹ In an advertisement in *The Times*, 29 September 1834 Prowse announced that after making Nicholson flutes for Clementi & Co. he would henceforth supply them under his own name. The advertisement stated, 'N.B. Mr. Nicholson will attend daily.'

¹⁰ Nicholson. *A School for the Flute* (1836).

Nicholson's flutes were made to his design, and to the highest standards of workmanship, by Prowse for Clementi & Co., and were marketed as 'C. Nicholson's Improved', the name Nicholson being used effectively as a brand name. Clementi's advertisement claimed:

Mr. Nicholson's favorite [*sic*] old Flute is too well known in all the Public Concert-Rooms in London and other parts of the Kingdom to require eulogium; and, as they have had his Instrument as a model (an exclusive advantage which no other Manufacturer has previous possessed), they have been enabled to provide such Improvements, in regard to the Bore, &c. as have given to their Flutes a character of such decided superiority, as to render them worthy of the warmest Professional recommendation.¹¹

The advertisement gives a price of up to 10 guineas for an eight-keyed flute with silver keys and ferrules and double springs, a sum affordable only by players of considerable means. No authoritative production figures are available, but another advertisement suggests a figure of 1000 instruments produced in the space of three years.¹² These flutes were characterised by large fingerholes and a very large embouchure, which were not universally accepted. Lindsay, for example, complained:

...it has latterly become much the fashion to perforate the holes of the flute to a very large size...the difficulty of playing correctly in tune...has been much increased, and several notes require altered fingerings...¹³

Nicholson rejected this charge, although his approach to adjusting the intonation would perhaps not be considered acceptable today:

...it has been said that flutes of this description are more difficult to play in tune; this I positively deny, as playing in tune depends solely on the mouth-hole, and not on the holes of the second and third joints...¹⁴

It is certainly true that a player today attempting to perform on a Nicholson flute will find it a struggle; the instruments can be played in tune, but only with difficulty, involving much embouchure adjustment of many notes.¹⁵ So many Nicholson flutes have survived to suggest that an output of a few hundred instruments a year is not unlikely, and Prowse advertised these instruments heavily, and, as will be seen, in a bizarre manner.

¹¹ Undated advertisement found separated from its volume.

¹² Advertisement for Clementi & Co.'s Nicholson's Improved Flutes bound with Nicholson's *Preceptive Lessons*, 1821. The advertisement may be of later date, from the time of binding, not the time of publication.

¹³ Lindsay. *Elements of Flute Playing* (1827) p. 2.

¹⁴ Nicholson. *A School for the Flute* (1836).

¹⁵ The British specialist in performance on early flutes, Rachel Brown, describes playing on the Nicholson flute as 'challenging'. (Personal communication, 2003.)

Monzani & Hill produced instruments also made to the highest standards of craftsmanship, and at even higher prices than the Nicholson flutes, although they did offer cheaper instruments with brass keys.¹⁶ Monzani & Hill's flutes commonly have hallmarked silver keys, allowing the comparison of dates and serial numbers carried out by Amy Kreitzer.¹⁷ A Monzani & Hill pricelist, undated but probably from the late 1820s, gives prices of 10 to 14 guineas for flutes with six to ten keys (the last including an extension to low B), with an extra 1 guinea for double springs and an extra 5 guineas for a body in ivory instead of wood. A wooden eight-keyed flute with silver keys and ferrules and double springs, the equivalent of the Nicholson flute previously mentioned, would have cost 13 guineas. Monzani & Hill's target market clearly consisted of wealthy gentlemen amateurs and their flutes reflect this: they are beautiful objects, often lavishly decorated, but they cannot be said to have been excellent musical instruments. Nicholson was probably being honest in his assessment of these flutes, even if he did have an obvious commercial interest in claiming they were not to his liking.

At the bottom end of the market flutes were available for very low prices indeed. An advertisement on the back of some sheet music published by D'Almaine & Co.¹⁸ offers flutes in boxwood with one brass key at a price of just 4 shillings, rising to £9. 9s for a flute in cocuswood or ebony with eight silver keys. By comparison, the same price list shows the most expensive oboe to be £3. 3s, the most expensive clarinet £5. 10s and the most expensive bassoon £6. 10s.

Rudall & Rose price lists and advertising leaflets from before 1851 have not been found, suggesting the firm did not rely upon advertising as a marketing tool.¹⁹ The only early indication of Rudall & Rose's prices comes in an advertisement dated 1836 in the *Jersey Argus*, which claims:

The admirers of a good flute will have an opportunity of purchasing Roudall's [*sic*] and Co's celebrated Flute with case for £6-16-0 sold by them for 17 guineas. Manufactured by Wylde, late with Roudall [*sic*] and Rose.²⁰

¹⁶ Clementi & Co. also supplied cheaper flutes, but not to Nicholson's design.

¹⁷ Kreitzer, Amy. 'Serial Numbers and Hallmarks on Flutes from the Workshop of Monzani & Hill.' *Galpin Society Journal XLVIII* (1995).

¹⁸ 'Manufacturers to Her Majesty's Army & Navy'. Undated, but after 1837.

¹⁹ A document described as a trade card in the John Johnson Collection at the Bodleian Library (Trade Card 23 (20)) is in fact cut out of a larger document. It has not been possible to identify this document, but the possibility exists that it was a price list or advertising leaflet.

²⁰ Reproduced in manuscript notes by Lyndesay Langwill currently in the possession of Mr. William Waterhouse.

Even allowing for a salesman's exaggeration (17 guineas may have been the price of Rudall & Rose's more lavish instruments, but their standard instruments would probably have cost about the same as Monzani's) it would seem that Rudall & Rose's flutes were expensive. The earliest surviving Rudall & Rose price list is published in the back of Richard Carte's 1851 *Sketch*, but this shows the prices of eight-keyed flutes reduced after the introduction of the Boehm, 1851 Patent and 'Old System' instruments.²¹ In that price list the cost of an eight-keyed flute similar to the Monzani or Nicholson flutes above had dropped to 10 guineas.²² From the earliest days of Rudall & Rose's business it would seem they intended to compete only at the very top of the market. No 'cheap model' flute marked Rudall & Rose seems to have been made. The 1851 price list does offer cheap model flutes, but these do not seem to have been marked Rudall & Rose. It is possible, given the fact that the surviving records show Wylde later supplied eight-keyed flutes to the firm, that the cheaper flutes offered in 1851 were in fact stamped with Wylde's name. Many instruments stamped 'Wylde from Rudall & Rose' have survived, some of which are cheaper instruments with German silver (i.e. nickel silver) keys. These may have been sold by Rudall & Rose themselves. It would seem that Rudall & Rose were aware of the value of their name and exercised a degree of brand management; rather than cheapen their own name by applying it to lesser instruments they kept themselves at one remove from flutes made by Wylde and maintained these cheaper flutes quite separate from their own production. Rudall & Rose's own instruments were made to the same high standards of craftsmanship as those of Monzani & Hill, but were arguably better musical instruments, too; many players today use Rudall & Rose flutes and many makers copy them, but Monzani & Hill flutes are not popular.²³

Setting up a business

In the nineteenth century there seems to have been little room in the market for the individual musician-craftsman. The most commonly-found flutes of the period, by Rudall & Rose, Monzani & Hill, Clementi & Co., Milhouse, Potter, Metzler, Astor, Key and some others, all seem to have been produced in workshops employing numbers of craftsmen. This should not be surprising; a maker is best employed

²¹ See Appendix 1.

²² The price list states: 'Having a large and choice stock of well-seasoned wood prepared for the Ordinary flute before the introduction of the new Flutes, Rudall & Rose are now enabled to reduce the prices of this class of instruments...'

²³ No maker today is known to be producing copies of a Monzani & Hill or a Nicholson flute.

making, not selling. A one-person business cannot be as efficient as a larger one; in a one-person business the worker with the skill to do the most demanding tasks would also have to do the unskilled ones and would have to take time off from work to deal with the customers. Moreover, a business that sells only flutes is unlikely to be as successful as one selling many other items, and it would be sensible for a businessperson to stock items other than flutes to sell to any customer who entered the premises. Most instrument vendors offered a full range of instruments, some of which they may have made themselves and others which they may have bought in. Clementi & Co., for example, bought some of their flutes in from Prowse, who stamped the instruments with his name and the names of Clementi and Nicholson, and, of course, Clementi & Co. sold many other types of musical instrument and published sheet music as well.

Such was the size of the market for flutes that counterfeiting became a common practice. According to Lindsay:

...it is notorious that nine-tenths of those instruments which are daily exhibited in the Sale-shop windows, are made by needy workmen, without credit, who have neither capital to carry into the market to purchase a stock of materials, a good model to work from, nor yet character as tradesmen at stake. The consequence is, that a single log of wood is often purchased on one day, is sawn into lengths the next, and subsequently turned, bored, mounted with what is called silver, and otherwise metamorphosed, in the course of the same week, into an apparently elegant Flute,—but without tone, without intonation, “sans everything,” in short, but external appearance to recommend it. This Flute, “with all its faults and imperfections on its head,” is then sold to the Pawnbroker or Salesman, for whatever price it will fetch, and immediately offered to the public as an instrument of the very first order,—an article of undoubted vertù!

The reader is assured that this is no fancied or imaginary case, but one of frequent occurrence, and it is only quoted as a caution to the inexperienced. Very few of these workmen play the Flute themselves, and, what is still less credible, many of them do not even blow it: how then, we ask, is it to be supposed their instruments can be in tune?

Worse, he says, is that these ‘needy workmen’ were not above passing their work off as that of others.

But incapacity is not the whole “head and front of their offending,” for these sort of gentry often go a step further, and having no reputation of their own, they make free to borrow that of various respectable and established makers, by stamping their names upon the trash vamped up in the manner we have described, and so doubly impose upon the unwary. In this way, the names of Messrs. CLEMENTI and Co., Messrs. MONZANI and Co., Mr. NICHOLSON, and Mr. POTTER, have been successively used by the unprincipled and designing, sometimes either omitting, adding, or altering; a

single letter in the orthography of the name, so as to evade the operation of the Law, in the event of the fraud being detected. Indeed to such an extent have these nefarious practices been carried on, with reference to the last mentioned individual, in particular, that they must of necessity have subjected him to much mortification and loss: there is scarcely in town a shop window of the description alluded to, which has not an abundance of “Potter’s Flutes” exposed for sale, not one in six of which are legitimate, but known amongst the flute-making trade by the unequivocal denomination of “bastard Potters”.

As to Drouet’s flutes, Lindsay warns:

... The same system has been followed in regard to Mr. DROUET’S manufacture, and the comparatively inconsiderable number of Flutes, which his short sojourn in this country enabled him to finish, has, even on a moderate computation, been thus surreptitiously increased five-fold, for notwithstanding all the “*fine toned Flutes by Drouet*” which are ticketed up in every street, scarcely a *genuine* DROUET Flute is now to be met with.²⁴

It is the case that instruments survive bearing the names ‘Drouett’ for Drouet and ‘Manzoni’ or ‘Manzani’ for Monzani, and there are instruments bearing the exact names of well-known makers that are clear fakes. Rudall & Rose, indeed, were so concerned about counterfeiting that they took to supplying with their flutes certificates of authenticity signed by George Rudall and John Mitchell Rose. Prowse, maker of Clementi’s Nicholson Model flutes and later supplier of these instruments under his own name, advertised that each flute was supplied with a certificate of authenticity signed by Nicholson himself.²⁵ No such certificate signed by Nicholson is known to have survived, although many of Rudall & Rose’s certificates exist, having been pasted into the lids of their flute cases.

The fact that those people described by Lindsay as ‘needy workmen’ found it necessary to counterfeit other makers’ flutes illustrates the difficulty an individual maker would have had in selling his work. It is entirely possible that a working man could have had enough skill to produce a flute on his own, but gaining access to the market would not have been easy, especially for a man whose apprenticeship would probably have begun at the age of twelve and who was unlikely to have had anything beyond the most basic education. The best such a working man could hope for was to be employed by someone who did have access to the market, or else to be

²⁴ Lindsay. *Elements of Flute Playing* (1827), p. 2.

²⁵ The certificate is referred to at the bottom of an advertisement for Prowse’s flutes printed on the back of Edward I. Loder’s song *The Outlaw*, published by Prowse around 1840, according to the British Library catalogue.

counterfeiter and sell his work to shops owned by others with a similar lack of scruples.

The equipment required to set up making flutes was not extensive, or indeed expensive. A pole lathe could have been made in a few hours at very little expense. A turner would have been expected to own his own turning tools. The only specialist tooling required would have been a set of reamers. It cannot be established how expensive reamers might have been, but they are listed, without prices, in Holtzapffel & Deyerlein's 1824 catalogue as 'bits and broaches for flutes', suggesting that while these may not have been stock items, they may well have been items the firm supplied frequently.²⁶ Holtzapffel & Deyerlein, suppliers of tools for all trades and now most famous for some lavish and expensive ornamental turning lathes made for gentleman amateur turners, were not the only tool and machine merchants in London, but their central position (their retail premises were in Cockspur Street and then in Charing Cross and their manufacturing facility in Long Acre, Covent Garden, not far from Rudall & Rose's premises), plus the fact that Jean-Jacques Holtzapffel's brother Jean-Daniel was himself a maker of musical instruments including flutes²⁷ suggest that Holtzapffel & Deyerlein may have had a particular sympathy with the work of instrument makers. It is known from the few surviving Holtzapffel & Deyerlein day ledgers that the musical instrument maker Thomas Key, whose premises were also in Charing Cross and whose business was later taken over by Rudall, Rose & Carte, purchased tooling and materials from Holtzapffel & Deyerlein in 1819. Holtzapffel & Deyerlein's other customers included Milhouse, the wind instrument maker of 337 Oxford Street and Willis, then at 3 Angel Court, Strand, the maker who supplied George Rudall's early flutes. The possibility exists that Holtzapffel & Deyerlein supplied some of Rudall & Rose's equipment; a Mr. Rose is shown to have had some dealings with Holtzapffel & Deyerlein in 1822.²⁸ Holtzapffel & Deyerlein supplied wood and ivory as well as tools and machines.

There is evidence that nineteenth-century London flute makers used rudimentary equipment. As late as 1850 Henry Mayhew reported that while most turners used fully-rotating lathes operated by a treadle and a flywheel or in larger concerns powered by steam, the London flute makers continued to use the pole

²⁶ Holtzapffel & Deyerlein Catalogue 1824.

²⁷ NLI.

²⁸ Holtzapffel & Deyerlein Day Ledgers 1815, 1816 and 1819 for Key, 1811 and 1812 for Milhouse, 1819 for Willis and 1822 for Rose.

lathe.²⁹ A pole lathe is a simple machine: the work is supported at either end on iron or steel points and a cord is wrapped around the work, attached at the bottom to a pedal hinged to the floor and at the top to a springy pole. The turner steps on the pedal causing the work to rotate towards him and makes a cut with the tool. When the pedal reaches the limit of its travel the turner withdraws his tool and takes his weight off the pedal, allowing the pole to spring back, rotating the work in the opposite direction. When the pole has sprung back fully, the turner repeats the process. For all its cheapness such a machine has the obvious disadvantages of requiring at least twice as much time to turn a piece of work as on a fully-rotating lathe, as well as requiring considerable physical effort on the part of the turner. Indeed, while it is possible for an amateur to learn to turn to a good standard on a fully-rotating lathe, the operation of a pole lathe for long periods requires skill and experience not easily acquired.

Further evidence for the simplicity of London flute makers' equipment comes from a letter of 1928 by F.G. Rendall to Dayton C. Miller regarding the firm of flute makers Alexander Liddle.³⁰ Rendall reported a conversation with Liddle's former employee George Howarth in which Howarth recalled that almost all the turning was done on pole lathes. Yet more evidence comes from former employees of Rudall Carte, who recall a pole lathe at the firm's Berners Street workshops as late as the 1950s.³¹ These employees have reported workshop equipment of the most basic kind, and workshop photographs published in Rudall Carte's 1913 catalogue show that even at that date their equipment would have been considered old-fashioned.³² A flute maker could, in fact, operate successfully with rudimentary equipment requiring a minimum of capital investment; men and materials would have been the main expense.

Employees, employers and access to the market.

George Rudall, as will be seen, had access to the market of wealthy gentlemen that would have given him an advantage not simply over his rivals but over any employee who considered setting up on his own. It was the lack of access to the market more

²⁹ Mayhew, Henry. Letter LXVII (29 August 1850) in *The Morning Chronicle Survey of Labour and the Poor*. ed. Peter Razell (Caliban Books, 1982).

³⁰ DCM correspondence files.

³¹ Conversations with Albert Cooper, Charles Morley, Brian Clover, Harry Secley, John Wicks and Roger Charters between 1978 and 2005.

³² See Appendix 2.

than the difficulty of raising capital that would have prevented many employed flute makers from going their own way, if indeed it would have occurred to them to try. There were in fact very few former Rudall & Rose workers who did set up on their own account. Henry Wylde (not to be confused with Dr. Henry Wylde, the composer and conductor), who claimed to have worked for Rudall & Rose, is the only one who managed to do so successfully, but even he operated mostly as a wholesale maker supplying other firms, including Rudall, Rose & Carte themselves. Two other makers, Camp and Whitaker, also claimed to have worked for Rudall & Rose.³³ So few instruments marked with the names of Camp or Whitaker have survived that even if their claims of a former association with Rudall & Rose were true they cannot be said to have made any impression in the market. A label in the bottom of a case holding a flute marked Card³⁴ says 'H. Whitaker, Flute Maker, from Messrs. Rudall & Rose' and has a line reading 'Alterations and repairs reasonably executed', suggesting that Whitaker was a repairer, not the maker of the flute.³⁵ Even if he had been the maker, the fact that he was employed by Card who actually did the selling provides some evidence of the difficulty an employee would have had in gaining his own access to the market.

Evidence suggests that the type of workers who would have been employed by a firm such as Rudall & Rose would probably not have been musicians and probably not have been sufficiently educated to set up on their own. Even for one who did set up on his own, Henry Wylde, had success within limits. Wylde found it necessary constantly to refer to the fact that he had worked at Rudall & Rose (although no evidence can be found to show how long he worked for them or in what capacity); many of his flutes are stamped 'Wylde from Rudall & Rose' and in his advertisements, such as one in *The Times* in 1841, he found it important to mention his previous employers:

THE FLUTE—H. WYLDE, Flute Manufacturer, late with Rudall and Co., begs to call the attention of amateurs and professors of this instrument to the improvements recently made by him. The instruments are made and tuned under the immediate inspection of Mr. W. Monzani, late principal flute performer at the Italian opera house. Instruction in the styles of Nicholson,

³³ NLI.

³⁴ William Card, a successful flute player who was a member of the orchestra of the Philharmonic Society and other orchestras, also had a music business in the Quadrant, Regent Street. The flute referred to is in a private collection in Germany.

³⁵ Toff. *The Development of the Modern Flute* p. 105 credits Whitaker with making Card's flutes, but a letter from Geoffrey Rendall to Dayton C. Miller dated May 1928 claims 'I believe from the general appearance that Cornelius Ward made them.'

Drouet and other celebrated players, on the most moderate terms, at Wylde's musical instrument manufactory, 25 Villiers-street, Strand.³⁶

The Monzani referred to is Willoughby, the son of the more famous Tebaldo Monzani. Another advertisement from a few months later, this time calling the instruments Monzani's flutes, continues to trade on Rudall's name, strangely, given the reputation of Monzani's own father:

MONZANI'S FLUTES—W. MONZANI, late principal flute at the Italian Opera House begs to call the attention of amateurs and professors of the instrument to the improvements made by him. They are calculated for either large or small hole positions of fingering. Lessons to the style of Drouet, Nicholson, Toulu [*sic*] &c on the most moderate terms at Wylde's, late Rudall & Co., musical instrument manufactory, 25 Villiers-street, Strand. Wylde is the only manufacturer authorized by W. Monzani to use his name, the instruments being made under Mr. Monzani's immediate inspection.³⁷

Wylde was a good maker, yet he does not seem to have succeeded in gaining much direct access to the market. Although there exist some fine instruments stamped with his name and presumably sold by him directly to the player, many more instruments apparently made by him have been found stamped with the names of others, including Blackman, Fentum and Pask, in some cases marked with Wylde's name under the keys, and in other cases identifiable by the style of workmanship. Wylde's association with Monzani has not previously been noted, and no flute from this association has been recorded. The existence of the association, however, makes it clear that Wylde, for all his skill as a maker, needed someone else to help him sell his flutes. Wylde remained in business until about 1880 but does not appear to have managed to achieve much success in his own right. By the 1870s he was selling 8-keyed flutes to Rudall, Rose & Carte for £3. 4s to be sold by them for £11. 11s; £2. 10s to be sold at £7. 7s; and £1. 5s to be sold at £4. 4s, huge mark-ups for Rudall, Rose & Carte in every case, demonstrating that the ability to achieve high prices was not available to all.³⁸

It would seem that Wylde was the only employee of Rudall & Rose or their successor firms to set up successfully on his own account as a maker, rather than as a repairer, until as recently as the late 1950s when Albert Cooper left Rudall Carte. The names of Rudall, Rose & Carte's employees from 1869 are listed in the company's stock records. Not one can be shown to have set up on his own. Conversations with

³⁶ *The Times* 12 February 1841.

³⁷ *Ibid.* 14 May 1841.

³⁸ Rudall Carte Stock Records, Vol. 1 p. 9, referring to transactions in 1869 and 1870.

former employees of the firm have shown that they generally had the most limited education, most leaving school at the age of fourteen or, in the case of their older colleagues, twelve. In the nineteenth century it is possible that some of the employees of Rudall & Rose were not even literate. It is difficult to imagine how such a worker could begin to have access to the sort of gentleman who might buy one of his flutes. The reluctance, or inability, of the firm's employees to become self-employed continued into the twentieth century; of the flute makers employed by Rudall Carte when the firm ceased making high-quality flutes in the 1960s, one group was employed under the name Flutemakers Guild, a firm wholly owned by a firm of silversmiths, Padgett and Braham, and another were set up in workshops in their own homes by the management of Rudall Carte to supply instruments to be sold under Rudall Carte's name. Both groups, it should be noted, were employed or directed by others. One employee of Flutemakers Guild and before them Rudall Carte, the late Ewen McDougall, did leave that firm in the 1980s to set up on his own; he and Albert Cooper remain the only former Rudall Carte employees to have become fully self-employed and to have sold flutes in any number under their own names. Of the former Rudall Carte employees known to the author, only three, Ewen McDougall, Angus Harris and Roger Charters, could claim to have had anything beyond the most basic flute-playing ability.³⁹

Three father-and-son relationships within Rudall Carte have been identified: Collins, Coulson and Hinde. The elder Collins and the elder Coulson were working for Rudall. Rose & Carte in 1869. Of these, John Coulson is listed in the 1881 census as a flute maker aged 46, suggesting his career at Rudall & Rose could have begun in the late 1840s. He is known to have still been working at the time of the 1901 census. His son John D. Coulson is listed in the 1881 census as a flute maker aged 21. Another son, William, is listed as a cornet maker aged 17. Thomas Hinde, who became foreman of Rudall Carte and taught the late Charles Morley, was born about 1869. His son, Leonard, born about 1895, eventually succeeded his father as foreman and continued to work for Rudall Carte until the 1950s. Even in such families where more than one generation worked in the same trade there seems to have been no attempt at self-employment.

³⁹ This information was taken from conversations over the space of some years with Albert Cooper, Charles Morley, Harry Seeley, Brian Clover, Angus Harris, Ewen McDougall, Roger Charters, John Wicks, John Miller, Norman Maloney and Ken Spacey, 1978 to 2005.

Further evidence exists to show that some of Rudall Carte's employees worked for the firm for very long periods indeed. Dayton C. Miller records on one of his index cards that the 'Principal flute-maker Ounstead' was with the firm for 64 years. Edwin Ounsted (Miller misspelled his name) is listed in the 1901 census as a musical instrument maker, aged 75. The last instrument listed in the Rudall Carte stock records as having been made by Ounsted is a flute made in 1909, when he would have been 83 years old.⁴⁰ If Ounsted had begun his apprenticeship at what was then Rudall & Rose at the usual age of twelve he could have begun working for the firm as early as 1838, in which case he could in fact have been with them for some 70 years. It is likely that Ounsted would have known and could possibly have been trained by John Mitchell Rose. Fred Handke, who was still working for Rudall Carte as recently as 1960, is first mentioned in the company records in 1907, by which time he would already have served some years of his training.⁴¹ As a measure of the continuity of workers in the firm it is worth recording that Handke, who was known to all the surviving Rudall Carte workers, must have overlapped with Ounsted.

In London the men who actually made the flutes, regardless of their level of skill, needed to be directed and their products needed to be marketed for them by men who had access to the sort of gentleman who would buy their work. (Cornelius Ward may have been an exception to this rule.) Good craftsmen may not have been difficult to find, but it took men such as George Rudall, John Mitchell Rose and especially Richard Carte to run a successful business.

⁴⁰ Rudall Carte stock records, Vol. 3 p. 19.

⁴¹ *Ibid.*, Vol. 3 p. 129.

2: George Rudall and John Mitchell Rose

George Rudall and John Mitchell Rose appear to have come from such different backgrounds that their partnership was a most unlikely one. Rudall was from the landed gentry of Devon; Rose was the son of a Scottish cabinetmaker. Between them they managed the design, manufacture and marketing of their instruments with a skill that brought them immediate success.

George Rudall

George Rudall was born in 1781 in Crediton, Devon into a well-to-do family; his father was a solicitor and his uncle was the vicar of Crediton. Little can be established of Rudall's early life. According to Rockstro he received a commission in the South Devon Militia with which he travelled to Liverpool where he met the two Nicholsons, father and son, and had flute lessons with the father.¹ Rockstro says Rudall came to London in 1820 or shortly before and set up as a teacher of the flute, at first at 5, Clement's Inn, where he is listed in the rate book of 1820.² Perhaps unusually for a professional musician Rudall is described in legal documents as a gentleman³ and was one of a tiny percentage of the population to have the vote; the Poll Book for Westminster, which shows that Rudall was in fact living in London as early as 1818, also describes him as a gentleman.⁴ The 1818 Poll Book records that Rudall voted for an unsuccessful candidate, Major John Cartwright (1740-1824), a radical political reformer who advocated annual parliaments and universal suffrage.⁵

In London in 1806 Rudall married Louisa Dunbar,⁶ sister of Sir William Rowe Dunbar of Mochrum, 6th Baronet, who had Liverpool connections. The couple produced a child, Louisa Maria Rudall, born in Liverpool in 1810.⁷ Rudall's connections with persons of high standing continued throughout his life, it would seem; in his will dated 20 October 1871 he mentioned Sir William Dunbar of Mochrum, 7th Baronet, his wife's nephew, who was MP for Wigtown Burghs, a

¹ Rockstro. *The Flute* §877.

² The rate book for 1820 lists his property as having a rateable value of £12.

³ An indenture dated 1821 in the Westminster Archives (Reference 1643) assigns some property to Rudall and two others. His will, dated 1871, similarly describes him as a gentleman.

⁴ Westminster Poll Book, 1818.

⁵ DNB.

⁶ St. Pancras Old Church, 1 September 1806.

⁷ Louisa Dunbar Rudall, christened 30 September 1810 at St. George, Castle Street, Liverpool. A notice of her death in Crediton was published in *The Gentleman's Magazine*, October 1831.

Junior Lord of the Treasury in Palmerston's second administration, Keeper of the Prince of Wales's Privy Seal and holder of other offices.⁸ Rudall had sufficient influence in his later life to have recommended some students for admission to the Royal Academy of Music.⁹

Rudall is said to have disliked performing in public, but, according to Rockstro, 'as a drawing room player he was immensely popular'.¹⁰ The editor of *The Musical World* recognised Rudall's reticence; he described a letter from 'Philo-Flauto' praising Rudall's playing:

We will not do Mr. Rudall the injustice to quote the passage, in which the letter-writer attempts to exalt the playing of that gentleman, at the expence [*sic*] of the "unmeaning chromatic nonsense" and "vulgar noise of Nicholson." Mr. Rudall would hardly thank us for so bringing him before the public.¹¹

W.N. James said of Rudall that '...although he began rather late in life to study the instrument seriously as a profession, he is now one of the finest private players which England has at any time produced'.¹² Rockstro, who knew Rudall and held him in high esteem, wrote warmly of his ability to charm with his music but was less enthusiastic about his technical ability: 'His expression was absolutely enchanting, and his execution, as far as it went, perfect'.¹³ Evidence of Rudall's appearance at parties is given in *Notes and Queries* in 1856, where a contributor, Alfred Roffe, describes the effect Rudall's playing had upon Samuel Taylor Coleridge:

A gentleman well known in the musical world, Mr. George Rudall, has recently told me the following anecdote. Many years ago, at a musical party at the house of Mr. Skey, Highgate, Mr. Rudall met Mr. Coleridge. Mr. Rudall having performed upon the flute, he was addressed by Mr. Coleridge; who told him that "he felt there was a poetry in his playing, and that he was convinced that he could set to music a stanza which he (Mr. Coleridge) would give him." Accordingly, he immediately wrote the ensuing, and presented it to Mr. Rudall; saying, that the next time he should have the pleasure of meeting him, he would give him a second stanza: —

⁸ Burke's Peerage and Baronetage, 105th edition.

⁹ Royal Academy of Music entrance register, 1837-1873 (MS) records that Rudall recommended the young John Radcliff for admission in 1858.

¹⁰ Rockstro. *The Flute* §877.

¹¹ *The Musical World* 9 December 1836 p. 199.

¹² James. *A Word or Two* p. 177.

¹³ Rockstro. *The Flute* §877.

“A sunny shaft did I behold,
 From sky to earth it slanted;
 And poiz’d therein, a bird so bold,
 Sweet bird, thou wert enchanted:
 He sank, he rose, he twinkled, he twirl’d,
 Within that shaft of sunny mist;
 And thus he sang, Adieu, adieu;
 Love’s dreams prove seldom true:
 Sweet month of May, I must away;
 Away! Away! to-day! to-day.”¹⁴

This stanza, as far as Mr. Rudall knows, never has found its way into print; and. I therefore requested him to let me offer it to “N. & Q.” A second meeting never took place, and Mr. Rudall has also to regret having *lent* and *lost* the poet’s autograph.¹⁵

Leaving aside the possibility that Rudall’s playing provoked Coleridge to compose what may well be his worst poem, it does appear that Rudall had access to parties of people of high rank, not simply as a musician (who might not have been permitted to socialise with the guests) but as a guest himself.¹⁶ This may well have provided a platform for his firm’s great success. How better to sell a product intended for rich gentlemen than to attend parties full of rich gentlemen?

In a letter from Rudall to John Sainsbury dated 1823, sent from 7 Tavistock Street, Rudall declined an invitation to submit his biography to Sainsbury’s

Biographical and Historical Dictionary of Musicians:

Mr Rudall feels much obliged by the honor [*sic*] of Mr Sainsbury’s letter - and regrets exceedingly, that the career of his life - as regards the profession - would form very little interesting matter for “the new Biographical Dictionary of Musicians”. The Instrument which Mr Rudall professes (the flute, of which, he was very fond at an early period of his life) he studied as an accomplishment but, circumstances induced him to apply it professionally. Mr Rudall has not, yet, sent any composition to the press, but, his leisure moments are occupied in preparing a work which he intends, at some future day, to publish.¹⁷

Rudall appears to have been a well-respected teacher of the flute. Other teachers advertised they had been his student; one Mr. Braham advertised in *The*

¹⁴ Coleridge used similar lines in a song from his play *Zapolya*, written in 1815 (Act II, Scene 1).

¹⁵ *Notes and Queries* Vol. 2 2nd S. (45), 8 November 1856, p. 369.

¹⁶ Coleridge and Rudall may well have known one another before this party; Coleridge came from Ottery St. Mary, about 25 miles from Rudall’s home in Crediton.

¹⁷ Glasgow University Library, GB 0247 MS Euing R.d.87/170.

Plate 2



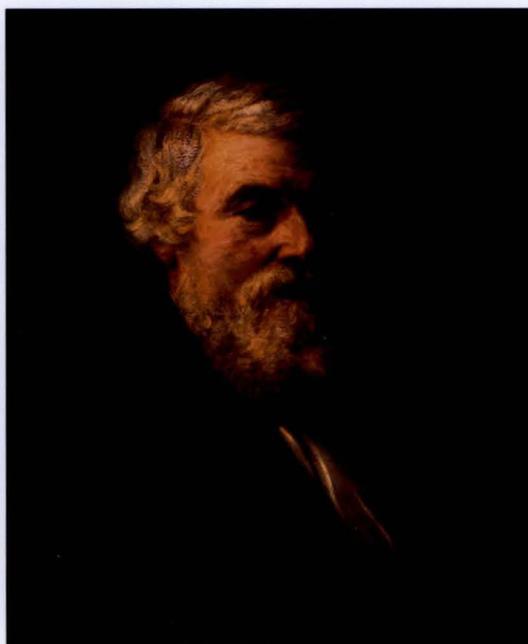
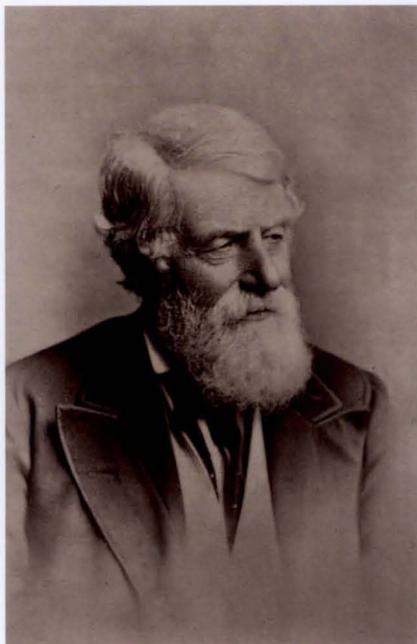
Above: George Rudall (left). Portrait bust by Patrick MacDowell. 1842. Richard Carte (right) Portrait bust by A.L. Vago, ca. 1855. (Private collection.)



Left: Photograph of the bust of Rudall from Goldberg *Porträts und Biographien* (DCM).

Below left: Photograph of Richard Carte, ca. 1880 (DCM).

Below right: Oil portrait of Richard Carte by his daughter Viola Carte, 1877. (Private collection.)



Times in 1829 and 1836 that he had been a student of Rudall, and another anonymous teacher used Rudall's name in an advertisement in 1828.¹⁸

Rudall appears to have had time for pursuits other than playing the flute; he was a member of the Phrenological Association in 1840¹⁹ and was a subscriber to Frank Healey's 1866 collection of 200 chess problems.²⁰ He appears to have lived modestly; in the 1841 census he is listed as a resident of a house in London Street near Fitzroy Square, which he shared with his sister, Mary Ann. Nine others lived at the same address, including a carpenter, a clerk and an architect. At the time of his death in 1871 he lived with a nephew, Francis Rudall, at 52, Warren Street. His will, dated 20 October 1871, gives as executors Robert Romley Cheyne, surgeon, of Nottingham Place, Marylebone, and Francis Rudall, telephone engineer, also of 52 Warren Street. The will is for effects under £5000. No obituary of Rudall was published in *The Times*, or indeed in his own firm's *Musical Directory*.

Only one image of Rudall has been located: a portrait bust executed in 1842 by Patrick MacDowell, recently acquired by a private collector (Plate 2). *The Times* reported a visit to MacDowell's studio in 1844, the year the bust was exhibited at the Royal Academy:

MR. MAC DOWELL'S STUDIO.—We have been favoured with a view of the works of this eminent sculptor, at his studio in Margaret-street, previously to their having been removed to the gallery of the exhibition of Royal Academy, where they are now, and where the public, as soon as the exhibition opens, will have an opportunity of forming their own notion of their merits... There [was] in the studio an excellent bust of Mr. Rudall, the well known flutist, and gentleman of great reputation in musical society, which is a good portrait and very animated...²¹

A photograph in the Goldberg portraits of MacDowell's bust of Rudall was for many years the only available image of the man (Plate 2).²²

John Mitchell Rose

John Mitchell Rose left so little documentary trace of his existence that it has proved difficult to offer anything beyond the sketchiest outline of his life. According to his death certificate he was aged 72 at the time of his death in 1866, giving a birth year of 1793 or 1794. No record of his birth has been located; registration of births was not then compulsory in Scotland. However, the 1851 census for his address, 25,

¹⁸ *The Times* 4 April 1828, 4 February 1829 and 13 April 1836.

¹⁹ <http://pages.britishlibrary.net/phrenology3/phrens.html>, accessed 25 June 2003.

²⁰ <http://www.algonet.se/~ath/healey-2.pdf>, accessed 25 June 2003.

²¹ *The Times* 13 April 1844.

²² Goldberg. *Porträts und Biographien*.

Rochester Square, Camden Town, gives his age as 52, suggesting a birth in 1799, and the 1861 census for the same address gives his age as 60, suggesting a birth in 1801. Of these three possible years for his birth the age given on his death certificate would, of course, have been communicated to the registrar by someone else who may have been mistaken; at the 1851 census the head of his household was his elderly mother who may have given the information to the census taker; and only in the 1861 census, by which time he was the head of the household, might he have given the information himself. However, the 1801 date would seem unlikely if the Oxford flute stamped J^N ROSE is actually by him as it is furnished with silver ferrules bearing a hallmark for 1816, at which time Rose would only have been fifteen years old.²³ (The possibility will be considered in Chapter 3 that this flute is not in fact by John Mitchell Rose.) Rockstro, the principal source of information on Rose's origins, describes Rose merely as 'a young flute-maker of Edinburgh'²⁴ without specifically saying he was Scottish. However, the censuses of 1851 and 1861 give his place of birth as Scotland, and the 1851 census says his eighty-three-year-old mother, a widow and annuitant, was also born in Scotland. No information has been located on the source of Rose's mother's annuity. Two surviving flutes marked JM ROSE are stamped with large thistles, suggesting some pride in the maker's origins. There is no known portrait of John Mitchell Rose.

Rose married Elizabeth Wright in south London in 1825²⁵ and produced a daughter around 1827.²⁶ Nothing can be found about his first wife's origins and no record has been found of his daughter's birth. Elizabeth Rose died of consumption on 12 October 1838. Her death was recorded in the Kentish Town sub-district of St. Pancras. A notice in *The Times* announced her death, 'after a severe and lingering illness, in her 38th year, Elizabeth, wife of Mr. J.M. Rose, of the firm Rudall and Rose'.²⁷ Rose married a second time in 1841 to Sarah Rudall, a cousin of George Rudall.²⁸ Rose was described on the marriage certificate as a widower 'of full age' and the son of a cabinet maker also named John. Sarah Rudall, a spinster well into her forties, was the daughter of the late Reverend John Rudall, brother of George Rudall's father. The bride was the sister of Edward Rudall, the minister officiating at

²³ Bate Collection 142.

²⁴ Rockstro. *The Flute* §877.

²⁵ 1 January 1825, St. Mary, Newington.

²⁶ Elizabeth M. Rose, age given as 24 in the 1851 census.

²⁷ *The Times* 16 October 1838.

²⁸ 13 March 1841, Parish Church, Crediton.

the wedding.²⁹ The two witnesses were Robert Rudall and Anna Rudall. Rose, in fact, was the only person listed on the certificate not named Rudall. Sarah Rose, as she became, died between 1861 and 1866. Her death certificate has not been traced.

Rose died in 1866 in Wolverhampton at the home of his daughter and son-in-law. No monument to Rose was erected although he was buried in an expensive brick-lined grave at the highest part of the cemetery, surrounded by lavish monuments to the leading citizens of Wolverhampton.³⁰ A notice of his death was placed in *The Times*³¹ and in a Wolverhampton newspaper.³² His will gives his final address as 17, Burton Road, Brixton and names three executors: George Thomas Rose, pianoforte manufacturer of 33, Great Pulteney Street, London (the address of John Broadwood), Francis Frederick Feltoe, wine merchant of Conduit Street, and Rose's son-in-law, Bernard Peard Walker of Wolverhampton. Feltoe ran an advertisement in *The Times* on 11 December 1866 inviting any person with a claim on Rose's estate to send particulars to Feltoe at his premises at 26, Conduit Street. This was presumably a standard announcement to clear any of Rose's outstanding debts.

Surprisingly, Rose's death was not mentioned in the *Musical Directory*, published annually by his own firm of Rudall, Rose & Carte, although the death in 1867 of Thomas Prowse, maker of Nicholson's flutes and at one time Rudall & Rose's great rival, was noted in the 1868 edition.³³ Rose's will did not mention his partners. The possibility exists that Rose's relationship with his partners had failed. Rose's name was dropped, without explanation, from the name of the firm in 1872.

Two patents were granted to Rose. The first, in the name of George Rudall and John Mitchell Rose, is for a tuning slide headjoint on which rotating the crown lengthens the tuning slide and moves the stopper to the correct position in relation to the extension.³⁴ The second patent, in the name of John Mitchell Rose of the firm of Rudall & Rose 'being partly a communication from a foreigner residing abroad' is for the 1847 cylindrical flute of Boehm.³⁵ These patents will be considered in Chapters 3 and 6.

It has not been possible to prove a family connection between John Mitchell Rose and the Broadwood Roses. George Thomas Rose and his brother Frederick

²⁹ The author is grateful to Mr. Richard Rudall for genealogical information on his ancestors.

³⁰ Merridale Cemetery, Jeffcock Road, Wolverhampton.

³¹ *The Times* 21 July 1866.

³² *The Wolverhampton Chronicle* 25 July 1866.

³³ *Musical Directory* 1868, p. xv.

³⁴ Patent 6338 (1832).

³⁵ Patent 11,853 (1847).

Rose were directors of the Broadwood firm. Frederick Rose was the father of Algernon Rose, author of *Talks With Bandsmen*, in which some mention is made of wind instrument manufacturing in London in the nineteenth century. The father of George Thomas and Frederick, Daniel Giles Rose, had also worked for Broadwood and had been close enough to the founder to have been a witness to John Broadwood's will.³⁶ Daniel Giles Rose was born in 1790 and christened at St. Olave, Southwark. There is an obvious similarity between cabinet making, John Mitchell Rose's father's occupation, and piano making, and the possibility exists that the father was connected with the piano making trade either in London at Broadwood's or in Edinburgh. It has not been possible to establish a Scottish connection for any of the Roses who worked for John Broadwood, who was himself a Scot, although Arnold Myers states that most of the employees of Broadwood's were Scots.³⁷ Rockstro, who gives as much biographical information on John Mitchell Rose as has been published, states that Rose had served an apprenticeship with the organ manufacturers, Wood & Co., of Edinburgh³⁸ and, by the time of his meeting George Rudall in about 1821, was in business on his own account. It has not been possible to establish a link between John Mitchell Rose and Alexander Rose, a contemporary who was a leading member of the Edinburgh Geological Society but who had trained originally as a turner in wood and ivory.³⁹ The two men may have been related, but it would seem unusual for two members of the same family to have set up in competition with one another. The possibility exists, however, that John Mitchell Rose developed an interest in making flutes while working for Wood & Co. and called upon Alexander Rose to teach him how to turn wood, or even to turn the flutes for him. Confusion exists regarding the identity of one John Rose, hardwood and ivory turner of Shakespeare Square, Edinburgh.⁴⁰ It has not been possible to show whether or not this was in fact John Mitchell Rose. The possibility cannot be discounted, however, as the Edinburgh Post Office Directory, which lists John Rose of Shakespeare Square before 1825 and not after, could have been up to a year out of date by the time it was printed, in which case this John Rose, if he was indeed John Mitchell Rose, could have moved to London by 1 January 1825, the date of his first

³⁶ Wainwright. *Broadwood by Appointment*.

³⁷ Rose: *Talks with Bandsmen*. Introduction by Arnold Myers, p. 2.

³⁸ Rockstro. *The Flute* §877.

³⁹ Rose, Mary Tweedie Stodart. *Alexander Rose*. Also http://www.edinburghgeolsoc.org/z_32_07.html, accessed November 2003.

⁴⁰ Edinburgh Post-office Directory 1821-22 and 1825. (Rose, John, turner, 16 Shakespeare Square).

marriage. If this is the case, however, Rose must have made the early Rudall & Rose flutes in Edinburgh. Another possibility is that these were two different men and John Mitchell Rose used his middle name or initial to differentiate himself from his namesake.

Further confusion exists regarding John Mitchell Rose's training if he learned his trade in a firm that made organs or pianos. A distinction is made between turners of soft woods and turners of hard woods (as opposed to hardwoods). The former produced turned parts for cabinetmakers and joiners; the latter worked in hard, generally tropical woods such as would be used in wind instrument making, as well as in ivory. The techniques and tools were different, and the two were considered almost as separate trades.⁴¹ A firm of piano makers, if they employed their own turners to produce legs and other pieces of turnery, would have required softwood turners. It is in any case unlikely that any other than a very large firm would have employed their own turners; it would make better commercial sense for a smaller firm to buy in turned parts from specialists. For an organ builder the only components that would be made of a hard wood or ivory would be the stop knobs. It would seem unlikely that a firm of organ builders would have had sufficient work turning these knobs to employ their own hard wood and ivory turner, and much more likely that they would have bought in the knobs from a specialist turner such as, for example, Alexander Rose.⁴² In these circumstances it is difficult to explain how John Mitchell Rose, as an employee of a firm of Wood & Co, organ builders and dealers in musical instruments,⁴³ could have developed the skills he needed to become a flute maker, and if he managed to learn how to turn hard woods and ivory, it is as difficult to explain how in a firm of organ builders he could have learned the metalworking skills he would have needed to produce flute keys. It is possible that Rose had a connection with a bagpipe maker, but no evidence has been found to support this explanation. Three flutes purported to be by John Mitchell Rose have survived and will be considered in Chapter 3.

Rockstro, who referred to Rose as 'my esteemed friend'⁴⁴ and may well have gathered his information from Rose himself claimed that Rose was able to make a

⁴¹ Holtzapffel Volume 4 includes detailed descriptions of the tools and techniques of both disciplines.

⁴² *Musical Directory* 1881 includes an advertisement for the firm of Thomas Harrison and Son, established 1830, 'Ivory and Wood Turners and Small Work Makers to the Organ Trade'.

⁴³ See Cranmer. *Concert Life and the Music Trade in Edinburgh*.

⁴⁴ Rockstro. *The Flute* §327.

flute from beginning to end with his own hands.⁴⁵ A small piece of evidence exists to show that Rose could indeed sit at the bench himself and make an instrument: a list prepared in 1939 by Rudall Carte & Co. for Dayton C. Miller offering him some antique flutes includes a Rudall & Rose ‘Conical Ring Boehm Flute, Silver mechanism, made personally by J. MITCHELL ROSE for Mr. Evan Howell, 1848’.⁴⁶ No explanation for the provenance is given. Miller did not buy the instrument and its present whereabouts are unknown. Rose, of course, would not on his own have been able to produce the total output of Rudall & Rose.

Rockstro maintains that Rudall travelled to Edinburgh to meet Rose after hearing of his existence from one James McWhirter.⁴⁷ It has not been possible to verify Rockstro’s account or to identify McWhirter, but given Rudall’s marriage to a member of the family of a Scottish baronet it would seem that Rudall had reason to visit Edinburgh in any case. The circumstances of Rose’s business in Edinburgh are not known, but he must have considered it to his advantage to enter into partnership with Rudall in London rather than continue on his own in Edinburgh. The benefits of such a partnership would have included a much larger market, Rudall’s access to this market and Rudall’s apparent wealth, part of which he was evidently prepared to invest in the new partnership.

No letters to or from Rose have been located. He published nothing, and apart from brief mentions by Rockstro and Welch, neither of whom offers much information, it has proved difficult to find much information on his character, his training or his relationship with his partners. There is no oral memory of Rose amongst surviving employees of Rudall Carte although these men would all have known one long-standing employee, Fred Handke, whose career with the firm began in the early part of the twentieth century when some of the older men in the workshops might have remembered Rose.⁴⁸ Not even Dayton C. Miller, who kept careful notes of his conversations with Montague George, managing director of Rudall Carte for the first decades of the twentieth century, made any mention of

⁴⁵ Rockstro. *The Flute* §877.

⁴⁶ DCM Correspondence: RC & Co. to DCM 20 October 1939.

⁴⁷ Rockstro. *The Flute* §877.

⁴⁸ In 1995 the author interviewed the late Charles Morley, who was apprenticed at Rudall Carte in 1927, and on many occasions between 1978 and 2003 interviewed Albert Cooper, who was apprenticed at the firm some ten years later, amongst other younger former employees.

Rose, although Montague George would have joined the firm before the turn of the century and would certainly have known workers who knew Rose.⁴⁹

It is a matter of some surprise that Rose is so little mentioned as he, or at the very least his name, would have been known to most flute players in London. No letter or manuscript of Rose's has been found beyond a number of examples of his signature: one on each of his marriage certificates, one on his registration of a hallmark at Goldsmiths' Hall⁵⁰ and many on the certificates of authenticity pasted into the cases of Rudall & Rose's flutes. The possibility was considered that Rose was in fact illiterate beyond the ability to sign his name, which might explain the lack of correspondence or of any published works. A consultant graphologist, Ruth Rostron, was asked to examine Rose's signature, at first on the narrow subject of Rose's standard of literacy and on the subject of his possible level of education. She reported that '...Rose wrote in a conventional but stylish hand. It shows no signs of hesitancy and the R is beautifully executed. The sweep of the second stroke of the R can be accomplished smoothly only by a practised writer.' She concluded, 'In my opinion it is most unlikely that he would have been illiterate.'⁵¹ The possibility of social awkwardness on the part of Rose is suggested by his second marriage certificate on which the person filling in the certificate noted Rose's rank or profession as 'Musical Instrument Maker', but was apparently required to change the word 'Maker' to 'Manufacturer'.

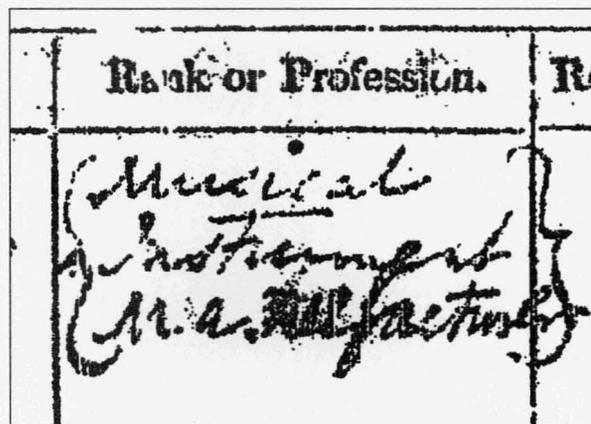


Figure 1: Detail from John Mitchell Rose's certificate of marriage to Sarah Rudall.

⁴⁹ Miller made notes on index cards of his conversations during his visits to Europe. The notes are kept in the Miller Collection in Washington.

⁵⁰ Goldsmiths' Company Mark Book 6, entered 24 February 1857: John M. Rose, small worker. No object stamped with Rose's hallmark has been recorded.

⁵¹ Letter to the author from Ruth Rostron MA (Oxon) MBIG (Dip), 16 May 2004.

To Rose, or possibly to his bride and her family who appear to have been clergymen and landed gentry, there was an important distinction to be made between a maker, one who gets his hands dirty, and a manufacturer, the employer of men who get their hands dirty. On this point Ruth Rostron is of the opinion that based on his signature, 'Social recognition was as important to him as recognition for his achievements at work. He coveted approval as well as respect, and it mattered to him what other people thought of him. He was therefore socially self-conscious, and would have tried to conduct himself properly in accordance with the conventions of his day.'⁵²

Rose's house at 25, Rochester Square, London NW1 9SA, is still standing and was visited in the course of this study. The house appears, at first glance, to be an imposing one, but closer inspection shows it to be small and somewhat pretentious. It does not give the impression of having been the dwelling of a man of substance (it is certainly not a house suited to entertaining), and its modest nature would suggest that Rose's takings from his business did not make him a rich man. The house was not particularly convenient for Rose's place of work as Camden Road to Charing Cross is a distance of some three miles. It is unlikely that Rose was owner-occupier of 25, Rochester Square; an advertisement in *The Times* of 1886, twenty years after Rose's death, announces the sale at auction of numbers 15 to 28 Rochester Square, 'Held for long terms at low ground-rents, and let to excellent tenants of old standing', with the rental income for number 25 given as £50 per annum.⁵³ The current occupant of 25, Rochester Square expressed surprise that the house could have accommodated five people (Rose, his mother, his wife, his daughter and a servant were the occupants according to the 1851 census), yet the census 1901 reported no fewer than thirteen occupants.

A similarity can be noted between Rose's house and the engraving of 'The Laurels', the home of the fictional Charles Pooter '...a suburban villa with a stucco-column portico, resembling a four-post bedstead.'⁵⁴

⁵² Letter to the author from Ruth Rostron, 21 June 2004.

⁵³ *The Times* 10 November 1886.

⁵⁴ Grossmith, George and Weedon. *The Diary of a Nobody*. London: Penguin Books, 1975, p. 198. (Engraving p. 20)

The firm of Rudall & Rose

The precise date of Rudall's partnership with John Mitchell Rose cannot be established. Rockstro suggests about 1821, but this date conflicts with the date given for Willis at Clement's Inn, when Willis was still producing flutes for Rudall.⁵⁵ Rudall & Rose first appear in Pigott's *Directory* in 1823 when their address is given as 7, Tavistock Street, Covent Garden⁵⁶, which seems to have been Rudall's home address, and again in Pigott's in 1825 when their address is given as Covent Garden Piazza, East (they were at 15 Piazza, which would indeed have been on the east side). Pigott's *Directory* could have been one year out of date by the time it was published, so it is possible that Rudall & Rose were established as early as 1822. Their names do not appear in the Rate Books for St. Paul's, Covent Garden, nor is there any mention of them in the leases for the Bedford Estates.⁵⁷ A contemporary map shows number 14 Piazza (the Theatre Royal, Covent Garden) and number 16 Piazza (the Bedford Coffee House), but not number 15. Lease plans for these years show the coffee house and the theatre side-by-side.⁵⁸ The precise location of Rudall & Rose's premises is undocumented. They may have been in a passageway between the coffee house and the Bedford Hotel, or they may have been in rooms actually in the coffee house. No link has been established between George Rudall and John Ruddell, the proprietor of the Bedford Coffee House and Hotel from 1827, despite the similarity of their names, nor has it been possible to discover whether Rudall & Rose's premises in Covent Garden were the workshops or simply a retail outlet. An engraving of the east side of the Piazza looking north, dated 1792,⁵⁹ is an elegant view along the portico walk showing the door to the Theatre Royal Covent Garden, near which Rudall & Rose would have been. A later engraving shows the north façade of the newly-erected Covent Garden Market in the Piazza, otherwise unchanged from 1792, with the portico walk in the background above which is a sign reading Bedford, presumably referring to the hotel and coffee house.⁶⁰ It is not possible to make out any of the premises in the portico walk, but Rudall & Rose must have been in that location at the time the engraving was produced. The building

⁵⁵ NLI.

⁵⁶ *Pigott's Directory*, 1823-4.

⁵⁷ The Bedford Estate records are in the London Metropolitan Archives.

⁵⁸ London Metropolitan Archives C/BER/CG/L 192/8 and 9.

⁵⁹ Malton. *Picturesque Tour*, 1792.

⁶⁰ Shepherd and Elmes. *Metropolitan Improvements*, 1827-1830.

of a large fruit and vegetable market outside their door may have made Rudall & Rose's location perhaps less attractive than it had once been.

An early mention in print of the existence of the business of Rudall & Rose was in 1824, when this announcement was placed in *The Times*:

LOST, on Saturday night, between 8 and 9 o'clock, an 8-keyed GERMAN FLUTE, by Rudale [*sic*] and Rose. When lost was in a yellow silk handkerchief: between Charing-cross and the Swan, at Clapham. Whoever will bring the same to 27, New-street, Covent-garden, shall receive TWO GUINEAS REWARD.⁶¹

It would seem from the misspelling of Rudall's name that this was a genuine case of a lost instrument and not a more subtle method of advertising a new business, and the reward of two guineas suggests the instrument was very valuable indeed.

Even in the absence of company records it is possible to assess the nature of Rudall & Rose's business. The firm's output of some 3500 flutes in the fifteen years to 1838 when they moved to 1, Tavistock Street, an average of some 230 per year, almost certainly starting with fewer and increasing over that period, suggests a rather large operation. If the firm's output grew to over 300 per year by 1838, about one every working day, it is possible to estimate the number of workers they employed. Today, an eight-keyed flute of high quality produced with modern technology, with a division of labour between woodworkers and metalworkers, would, from the author's experience as a flute maker, require some 30 man-hours to produce. In the 1830s a turner using a pole lathe would have required at least twice as long to turn a piece of work as he would have needed on a fully-rotating lathe; on a pole lathe a cut can be made only on a downstroke and the turner must wait for the work to wind back again before taking another cut.⁶² The physical effort required in working on a pole lathe is such that output must be slower than on a fully-rotating lathe, and even if Rudall & Rose had gone to the expense of supplying their turners with treadle-operated fully-rotating lathes the turners' output would have been much lower than with modern powered lathes.⁶³ It would appear that in its early days the firm principally, if not exclusively, used pole lathes. A pole lathe is known to have been in

⁶¹ *The Times* 15 March 1824.

⁶² Pole lathes are described and illustrated by Moxon (*Mechanick Exercises*, 1703) Plumier (*L'Art de Tourner*, 1701 and 1749) Diderot (*Encyclopédie*, ca. 1770) Bergeron (*Manuel du Tourneur*, 1816) and Holtzapffel (*Turning and Mechanical Manipulation*, 1843-1884).

⁶³ A letter from Geoffrey Rendall to Dayton C. Miller dated 22 February 1928 states that the instrument-making firm of Liddle used pole lathes almost entirely as late as 1879. (DCM correspondence files.)

occasional use in the workshops of Rudall, Carte & Co. as late as the 1950s⁶⁴ and a 1913 catalogue of the firm includes photographs of the workshops with a number of apparently early nineteenth-century pole lathes visible in addition to some treadle-operated fully-rotating lathes.⁶⁵ These photographs are reproduced in Appendix 2. It is likely that the pole lathes had been used in the workshops in the early days. The treadle lathes in the photographs are of late nineteenth-century design.⁶⁶

With the technology available in the 1830s it would not be unreasonable to suggest that a high-quality eight-keyed flute would require up to 60 man-hours to produce, or roughly one working week (assuming a six-day week). Simple arithmetic suggests that Rudall & Rose would have needed at least six men to achieve their average output of about one flute per day, plus someone to manage those workers (someone, of course, would have to deal with purchasing materials, maintaining stock, maintaining equipment, keeping the books and all the other tasks necessary to keep a business running), plus, perhaps, someone to deal with customers and run the retail side of the business. In addition, someone would have to be available to maintain the flutes that had already been sold; if by the time the firm had sold 3000 flutes as few as one in ten were returned every year for one day's repair each, that would account for a full-time job for another worker. New workers would have to be trained, and a successful business would have to allow some leeway for absent employees. It is possible, then, that Rudall & Rose employed ten men, and maybe more. These men would have required at least two separate rooms; it would have been unwise for the metalworkers, who needed flame, to be in the same room as the turners, who produced highly-flammable dust and woodchips. Additionally, the firm would have needed a room to store wood, and this room must have been large enough to store enough wood for up to the next ten years while it was seasoning. Rudall & Rose's business was clearly one of some considerable size.

John Mitchell Rose's position in this operation may not have involved spending much of his time actually making flutes. The success of the business suggests that his skills lay not simply as a craftsman but as a manager. Given that George Rudall was a flute player and not, apparently, a craftsman, given that he was apparently a man of some means and given that the firm of Rudall & Rose achieved

⁶⁴ This has been established in personal conversations with Albert Cooper, Brian Clover and Roger Charters, former employees of Rudall, Carte & Co.

⁶⁵ Rudall, Carte & Co. catalogue, 1913.

⁶⁶ Personal communication from Michael Wright, curator of mechanical engineering at the Science Museum, London.

a position at the top of the market as quickly as they did, it is possible to surmise that Rudall put up a substantial amount as the firm's output appears to have been large from its earliest days, suggesting a large initial investment in personnel, premises, equipment and materials plus the support of the business until some sales were achieved. George Rudall and John Mitchell Rose must have had great faith in their abilities to enter into business in this way. A less risky method of producing flutes would have been to buy them in from an established maker and stamp their own names on them. The decision to produce flutes themselves suggests they felt they could make better flutes than were generally available, and that they felt there was a market for these better flutes.

Rudall & Rose's approach seems to have been to offer their customers almost any type of flute they wanted. They produced eight-keyed flutes with small, medium or large holes (many examples of each have survived) in cocuswood (the most common), ebony or boxwood, or even in ivory. The keys were invariably silver, and they offered flutes with ferrules usually in silver but occasionally in ivory. Most of their flutes have leather-covered semi-spherical pads to all but the two bottom open-standing keys, which are usually fitted with the pewter plugs common on English flutes. A few of their flutes were made with an extension to low B⁶⁷, and some were made with an extension to low B flat.⁶⁸ The craftsmanship demonstrated on these extensions is remarkable. A number of larger B flat flutes were made.⁶⁹ Highly-decorated flutes were also available. Some early Rudall & Rose flutes were supplied with floral decorations on the silver ferrules,⁷⁰ a number were made with lavish silver-gilt keys and ferrules with acanthus leaf decorations⁷¹, and one surviving instrument has silver-gilt acanthus keys and ferrules on an ivory body entirely carved with more acanthus leaves.⁷² These instruments are described in detail in Chapter 3. No record has survived of the cost of these instruments, but it is clear they must have been very expensive indeed. The firm's success, though, was based not on simply decoration but on producing instruments that not only looked beautiful

⁶⁷ Serial number 3312, author's collection.

⁶⁸ Serial number 2305, formerly in the author's collection.

⁶⁹ B flat referred to the pitch of the six-finger note (which is D on a standard flute). The B flat flute therefore transposes down to A flat. Bate 1036 is an example.

⁷⁰ An early flute without a serial number, in a private collection in Germany. Serial number 387, in the same collection, is similar.

⁷¹ Serial number 2350, in a private collection in Germany.

⁷² Private collection, USA.

(Monzani & Hill's flutes were certainly that) but also played well. As early as 1826 W.N. James reported:

...I would mention the amazing improvements which Messrs. Rudall and Rose of London have effected. They have now brought the flute to such a degree of perfection as could scarcely be contemplated so short a time as thirty years ago. Mr. Rudall is himself an exquisite player on the instrument; and his ideas regarding the mechanism of it are truly philosophical. The execution of the mechanical part of these flutes is quite perfect; and the correct intonation of every note is a beauty which will recommend them to the notice of every amateur of science and taste. I frequently met with flutes, by these makers, on the Continent; and every master of the instrument, with whom I had a conversation upon the subject, pronounced them to be unrivalled with regard to the quality of their tone and correctness of intonation.⁷³

Rudall & Rose's large output could not have been produced in such a way as to require every flute to be tuned and voiced individually. It would have been Rose's skill in directing his workers and in developing consistent methods of production that formed the basis of the firm's success. Consistency is important; it is commercially unacceptable to have a customer complain that his new flute is not as good as his friend's, and it is a commercial inconvenience to have to spend much time with each customer while he tries one flute after another. It is in fact commercially advantageous to develop methods of manufacture that reduce the amount of skill required to produce an instrument, thereby increasing output and consistency, and this has a further advantage in not allowing any employee to develop wide enough skills to set up in competition. On earlier flutes there is evidence that the undercutting of the holes to adjust the tuning was done with a knife, by hand, by someone with enough playing ability to tell when the flute was right. Hand undercutting is rarely regular. An irregular hole cannot be accurately reproduced either by another maker or indeed by the original maker; tuning a flute like this requires musical skill as well as craftsmanship. In an operation of the size of Rudall & Rose's this would have led to inconsistency unless all the final tuning was done by one skilled person, and this would have been undesirable as too much reliance would have been placed on the abilities of one man who could well have become ill or left the firm. A better plan was to devise a means of undercutting the holes that required craftsmanship but no musical ability. Undercutting tools, known

⁷³ James. *A Word or Two* p. 98-99.

as fraises, were available in the early nineteenth century (Figure 2).⁷⁴ These are conical cutters that are inserted into a fingerhole through the bore and are picked up by a threaded rod inserted through the top of the fingerhole. The fraise is rotated and pulled, so undercutting the hole. Careful instruction of the craftsmen in undercutting the holes would produce consistent results.

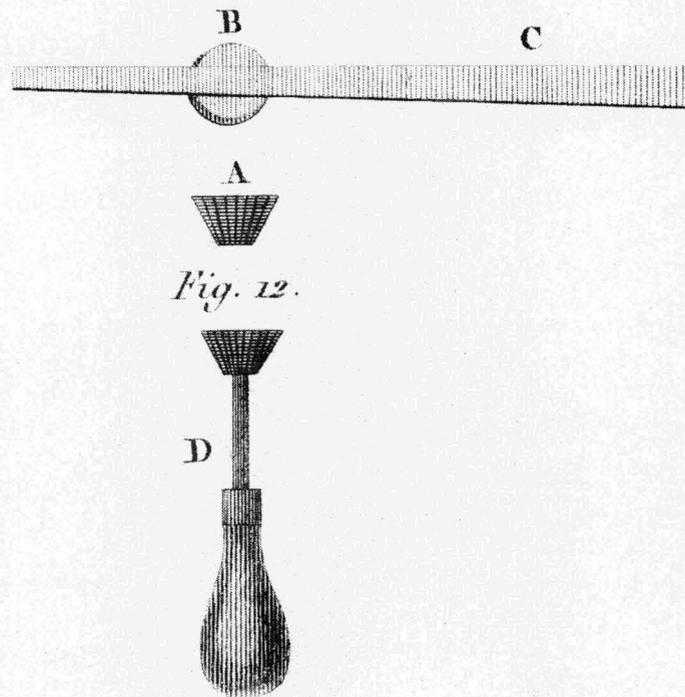


Figure 2: Undercutting tool (fraise), detail from Plate XI of Bergeron's *Manuel du Tourneur*, 1816. The fraise A, threaded in the centre, is inserted into the flute using the tool BC and is picked up on the threaded handle D. Rotating the tool undercuts the hole in a regular and repeatable manner.

It is possible to determine by looking in the bore of a flute with an endoscope the degree of hand work involved in undercutting the holes. If the undercutting is regular (and it usually is on a Rudall & Rose flute) then it is clear that a fraise was used. The success of Rudall & Rose's business was based in part on their ability to de-skill as many operations as possible and to ensure that every operation was carried out to the highest standard, and their success shows that their management skills were considerable.

⁷⁴ Bergeron in *Manuel du Tourneur* describes and illustrates these tools. See also Wright 'Bergeron on Flute-Making'.

In the absence of documentary evidence it is still possible to estimate Rudall & Rose's profitability. If the firm sold 300 flutes a year at prices equal to those of Monzani & Hill, say at an average of about £13 each, they would have been turning over about £4000 a year. If they had ten employees and paid each one as much as £100 a year (almost certainly an overestimate); if their material costs were as high as 10 per cent; and if their rent and other expenses were as high as £500 a year (again, almost certainly an overestimate), then they might have had an annual profit of some £2000, a not inconsiderable sum.

3: The old flute: Rudall & Rose and their competitors

During the 1820s many improvements were made in the quality of the flute, but not this was not a time of innovation. The changes made to the design of the flute were comparatively trivial, given that they would require little if any re-learning on the part of the player; hole sizes were increased and tuning was improved as far as it could be, but no changes to the basic design were made. By the end of the 1820s the flute remained an instrument with unequally-sized, unevenly-spaced holes on which it was difficult to play well in tune and with an even scale in all keys. The old eight-keyed flute may well have been improved as much as it could ever have been, and Rudall & Rose had positioned themselves at the top of the market and were producing instruments of the very highest quality. The next decades were to be a time of great innovation.

Flutes by John Mitchell Rose. Three flutes purportedly by Rose have survived:

1. Bate Collection 142. (Plate 3b) Ebony. Silver ferrules bearing Edinburgh hallmarks for the year 1816 with the maker's mark GF (George Fenwick).¹ Six silver keys, not hallmarked. Tenon on the headjoint, socket on the left hand joint. No tuning slide. Three sections: headjoint, left-hand joint and one-piece right-hand joint and footjoint. Headjoint bore 18.8mm. Marked on each section:

J^N ROSE/EDIN^R.

2. Edinburgh University Collection 3533. (Plate 3c) Ebony. Ivory ferrules and ivory screw-adjusting stopper and crown. Eight silver keys, not hallmarked. Tenon on the headjoint, socket on the left-hand joint. No tuning slide. Three sections: headjoint, left-hand joint and one-piece right-hand joint and footjoint. Headjoint bore 19.6mm. Marked on each section:

[Thistle]/J.M. ROSE/EDINBURGH

¹ Email from Mary Grotrian, Edinburgh Goldsmiths' Hall, 3 December 2003.

Plate 3



a



b



c



d



e



f

a: Monzani. b: Rose (Bate). c: Rose (EUCHMI). d: Rose (Private collection).
e: Stamp on Rose flute (Bate). f: Stamp on Rose flute (Private collection).

3. Private collection, Germany. (Plate 3d) Ebony. Silver ferrules bearing Edinburgh hallmarks for the year 1818 (maker's mark not visible). Eight silver keys, not hallmarked. Tenon on the headjoint, socket on the left-hand joint. Tuning slide. Four sections: headjoint, Tuning slide, left-hand joint and one-piece right-hand joint and footjoint. Marked with the number 1 on the headjoint. Headjoint bore 19.6 to 19/7mm. Marked on each section:

[Thistle]/J.M. ROSE/EDINBURGH

There is little doubt that the three flutes could date from the years to 1820, yet although the three flutes have some similarities they exhibit enough differences to raise questions as to their attribution. The Oxford flute, if it is by John Mitchell Rose, includes the sole example of Rose marking or signing anything without using his full middle name or at the least the initial M.² It is difficult to explain why Rose should have used two quite different stamps in an apparently short career working on his own. The J^N ROSE stamp is shown in Plate 3e and the J.M. ROSE stamp with the thistle in Plate 3f.

The question of authenticity of these instruments must be addressed. While it may be difficult to fake a complete instrument, it is not difficult to fake a stamp and apply it to an unmarked flute, and it is not impossible to remove the mark from an antique flute and stamp a new name in its place. The Oxford flute would have been acquired by Philip Bate many years before there was much interest in flutes of this sort and is therefore unlikely to have a faked stamp. The other two flutes were acquired by the Edinburgh University collection and by the private collector within a year of one another, both from the same dealer, now deceased. No other flutes marked with Rose's name have been noted. The possibility that these flutes were somehow faked has been examined and ruled out; the Edinburgh flute had been sold at Sotheby's in New York on 14 June 1983 as part of a large collection of flutes once belonging to C.M. Champion, and the privately-owned flute was sold at Bonham's in London on 15 December 1994. There are enough similarities between the Edinburgh and the privately-owned flutes to suggest they could have been produced by the same

² Rose used his middle name or initial on both his marriage certificates, on both patents bearing his name, on his application for a hallmark at the London Assay Office and on countless labels of authenticity pasted into the cases of Rudall & Rose flutes.

maker. Bore diagrams of these two flutes show similarities and can be held to have been produced by the same reamers, and the keys are of similar design. The Oxford flute, however, has a markedly different bore and keys of a quite different design.

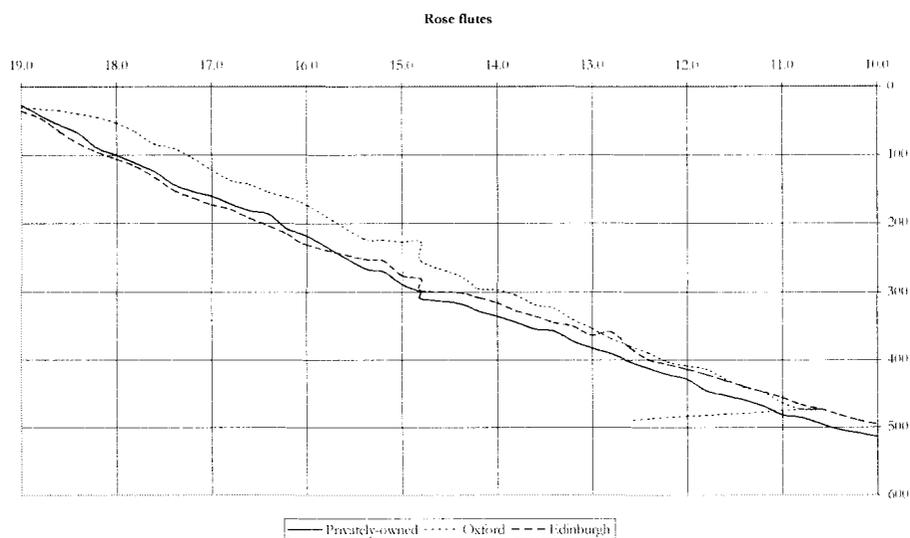


Figure 1: Bore diagrams (X=diameter; Y=length) of three flutes purportedly by John Mitchell Rose.³ It can be seen that the bores of the two flutes stamped JM Rose (Privately-owned and Edinburgh) are similar whereas the flute stamped Jⁿ. Rose (Oxford) differs markedly from the others.

There are similarities between the silver ferrules on the Oxford flute and the privately-owned one (both have silver ferrules with Edinburgh hallmarks, although the maker's mark is not visible on the privately-owned flute), yet the differences in the shape of the keys, and of course the differences in the name stamps, suggest a strong possibility of different makers. The ferrules on both flutes are similar to those on some Monzani instruments, and it is not unlikely that the silversmith who made them was shown a Monzani instrument to use as a model. Plate 1a shows an ivory Monzani flute side-by-side with the three Rose flutes.⁴ The similarities are readily apparent in turnery, in detailing on the ferrules and in the design of the keys between the Monzani and the J.M. Rose flutes. The possibility cannot be ruled out that the Oxford flute was made by, or at least sold by, John Rose, the turner of Shakespeare Square, Edinburgh, and not by John Mitchell Rose. This would explain both the different name stamped on the flute and the differences in design of the keys, and could conveniently explain the date letter which, if the flute was made by John Mitchell Rose and if his birth date of 1801 is accepted, would have made him just fifteen years old at the time. (It is accepted that if the 1801 birth date is correct then

³ The measurements of the Oxford flute are taken from drawings by Mr. Charles Wells published by the Bate Collection. The measurements of the Edinburgh flute were taken by Mr. Terry McGee.

⁴ Edinburgh University Collection 31.

the 1818 date for the privately-owned flute is only slightly less problematic as Rose would still have been just seventeen years old.) The balance of the evidence (different name stamp, different bore, different design of keys) suggests that John Mitchell Rose did not in fact make the Oxford flute.

All three flutes resemble those of Monzani in the design of the joint between the head and upper body sections, which unusually on Monzani's flutes have the tenon on the head and the socket on the upper body section, and in the one-piece construction of the right-hand joint and the footjoint.⁵ It would have been understandable for a young flute maker to base his work on that of a leading maker of his day, but the possibility exists that the flutes, or possibly parts of the flutes, were bought in either from Monzani themselves, from one of their former employees or from one of Monzani's suppliers. The privately-owned flute has an 1818 hallmark date letter but an illegible maker's mark. Rose himself did not register a mark at Edinburgh Goldsmiths' Hall. There are no hallmarks on the keys on the two Rose flutes with hallmarked silver ferrules, in apparent contravention of the rules which in such a case would require all silver parts of an object to be hallmarked. The Oxford flute also has a Monzani-style headjoint, but unlike the other two has square keys. Both flutes marked JM ROSE have larger bores than most flutes of the period; the Edinburgh flute has an average headjoint bore of 19.7mm compared to the more common London size of 19.0mm, and has a bore at the top of the body section of 19.0mm, compared to the common size of just over 18.0mm. It has not been possible to find a Rudall & Rose flute with a bore as large as those on the surviving flutes marked with Rose's name alone, or indeed to find a Rudall & Rose flute with a Monzani-type headjoint apart from those with extra keys at the top of the body requiring such a design.

While the Oxford flute cannot be said with any certainty to have been made by John Mitchell Rose, there is no reason to doubt that he was responsible for the other two flutes.

Flutes by George Rudall (Willis Fecit)

Rudall's first flutes were made for him by John Willis.⁶ Surviving examples of these flutes are rare; one is in the Bate Collection,⁷ one is in the Royal College of Music

⁵ An example of a Monzani flute is shown in Plate 3a (FUCHMI 31).

⁶ NLI.

Collection⁸ and a small number survive in other collections. The flutes stamped with Rudall's name include, unusually for instruments made for a teacher, the name of the maker ('Willis Fecit') on the footjoint. A flute with these markings (Plate 4a⁹) is made of cocuswood with (originally) seven silver keys set in silver-lined blocks with reinforcing pins through the blocks, a method of construction suggesting a much better than average standard of workmanship and a higher than average price. An eighth key, a long F, has been added later in an externally-applied silver saddle, suggesting the instrument was sufficiently valued by its owner to warrant the extra expense. From a musical standpoint this is not an unusual instrument of the period, but it is made to a higher standard than most. It has the small holes common in flutes of the early 1820s, and is comparable in craftsmanship to flutes by Monzani, but arguably musically superior. It is not known how many such flutes were made by Willis for Rudall. Willis appears not to have worked exclusively for Rudall, and he continued his business after Rudall set up in partnership with Rose.

Eight-keyed flutes by Rudall & Rose.

Rudall & Rose's early flutes appear not to have been numbered. The lowest number found on a Rudall & Rose flute is 387(Plate 4b¹⁰). This flute bears enough resemblance to an unnumbered Rudall & Rose flute (Plate 4c¹¹) to suggest that the two instruments were produced at about the same time, possibly one just before the firm started numbering their instruments. Both instruments are marked with the address 7, Tavistock Street, identified as George Rudall's home address. The flute numbered 387 is not in good condition. It is unlikely that the metal-covered tuning slide is original (tuning slides often split) and it cannot be a certainty that the flute originally had an ivory headjoint. These flutes are similar in turnery, in the design of keys and particularly in the design of the ferrules. Both flutes, indeed, are similar in some respects to the J.M. Rose flutes; the key design suggests the same workman made both, with the similarities between the footjoint key design of the Edinburgh flute and these two Rudall & Rose flutes particularly striking. These flutes all have flat key cups, not the saltspoon cups that would later become common. Rudall & Rose's flutes were clearly intended to compete on quality, not price. There is nothing

⁷ Bate 1025.

⁸ RCM 326 FL/40.

⁹ In the possession of Mr. Tony Bingham.

¹⁰ Private collection, Germany.

¹¹ Private collection, Germany.

cheap about these instruments; the craftsmanship is of the highest order and the decoration of the ferrules shows that these were intended for players who wanted instrument that looked beautiful as well as played well.

Of Rudall & Rose's more expensive instruments number 2350¹² provides evidence of the firm's target market. This instrument has silver-gilt keys and ferrules decorated with an acanthus leaf pattern. It is illustrated in Plate 4d with details on Plate 4e and Plate 4f. No indication of the price of this flute has been established, but it is clear that this was a very expensive instrument indeed. At least one other similar flute has been seen, and one particularly lavish example has similar silver-gilt acanthus leaf keys on a body made of ivory, carved on every visible surface.¹³ Other flutes, such as number 4062, Plate 5c, had engine-decorated ferrules.¹⁴

For those players who wanted to show off size rather than mere than decoration Rudall & Rose would produce a flute down to low B, beautifully crafted but of little musical value (Plate 5a¹⁵), or down to low B flat, just as beautifully crafted and of even less musical value (Plate 5b¹⁶).

Rudall & Rose's Patent Headjoint.

Rudall & Rose's flutes might have been of the highest quality and were occasionally lavishly decorated but with one exception cannot be said to have been in any way innovative. The firm's sole pre-Boehm innovation was their Patent Headjoint of 1832.¹⁷ On this extraordinary piece of engineering turning the crown both lengthens the tuning slide and moves the headjoint's stopper to the correct position as determined by the maker. Plate 5c illustrates the patent headjoint attached to Rudall & Rose number 3312, from the author's collection. The headjoint is made of wood lined with metal, in the manner of most headjoints of this period. In addition a second sliding tube within the lining tube is attached to a threaded disc through which passes a threaded brass shaft which is in turn attached to the crown. The shaft is threaded in two sections, the larger part of which has a fast-acting screw to move the tuning slide, with a smaller, fine thread on the end to move the stopper. These two sections must be precisely co-axial or else the mechanism will tend to bind. The

¹² Private collection, Germany.

¹³ Private collection, USA.

¹⁴ Collection of Prof. John Thow, USA.

¹⁵ Author's collection.

¹⁶ Private collection, Germany.

¹⁷ Patent 6338, 'Certain Improvements on or in the Construction of Flutes', dated 1832, in the names of George Rudall and John Mitchell Rose.

Plate 4



a: Rudall (Willis Fecit). b: Rudall & Rose 387. c: Unnumbered Rudall & Rose (detail).
Rudall & Rose 2350. e, f: Rudall & Rose 2350 (detail).

fast action of the larger part of the shaft is achieved by means of a four-start screw where one rotation of the shaft causes a movement of four times the pitch of the screw. It should be noted that many engineers today would be unable to cut a four-start screw; there could have been very few engineers in 1832 who could have produced such a component. It is most unlikely that Rudall & Rose themselves had the equipment to produce this part; they would probably have purchased it, and its attendant threaded disc, from a specialist source such as a maker of scientific instruments or perhaps from a toolmaker such as Holtzapffel. Workshop photographs (see Appendix 2) taken in 1913 and in 1950, and interviews with surviving employees of Rudall Carte, suggest that even in the twentieth century the firm was not equipped to produce a part like this. In the drawing attached to the patent specification, Figure 2, the shaft and threaded disc are shown as figure 4 within the original drawing.

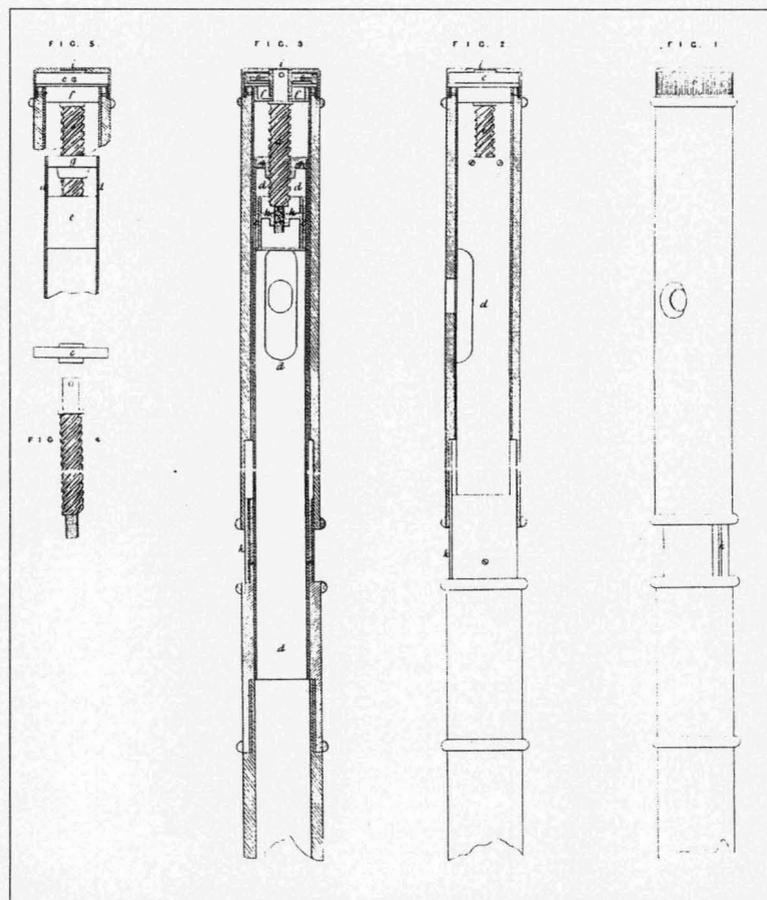


Figure 2: Drawing attached to Rudall & Rose's specification for the Patent headjoint of 1832.

The effect of turning the crown on a patent headjoint is shown in the chart, Figure 3. (The graph should, of course, be a straight line, but the four-start screw is particularly sensitive and any method of setting the mechanism accurately to a predetermined point may result in damage.)

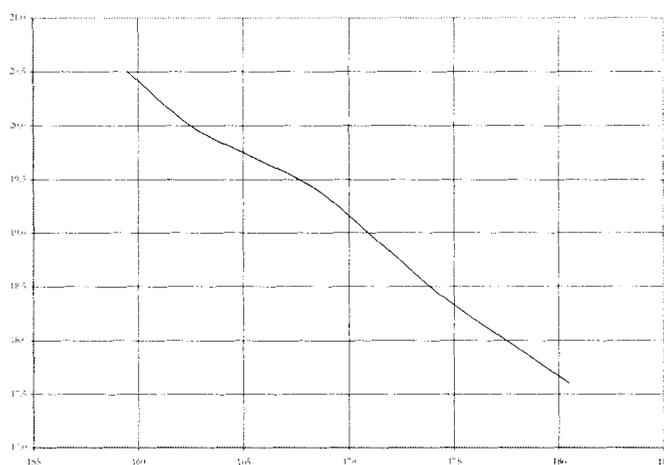


Figure 3: Movement of the stopper in relation to the extension of the tuning slide. X=length from centre of embouchure to end of tuning slide. Y=length from centre of embouchure to stopper. It can be seen that an increase in the length of the tuning slide causes a decrease in the distance from the centre of the embouchure to the stopper.

The Patent headjoint would appear to have more disadvantages than advantages. An advanced player would probably have preferred to set the stopper to the position he considered correct, not to one determined by the manufacturer. The headjoint was expensive (the 1851 price list published with Carte's *Sketch*, the earliest available, quotes an extra £2. 2s for the patent head, an addition of 20 per cent to the price of an eight-keyed flute). Finally, the Patent headjoint was heavy: some 225 grams as opposed to just over 160 grams for a standard headjoint. The craftsmanship of these Patent headjoints was robust enough that many have survived intact, and so many survive today that it would seem that they were quite popular.

The majority of Patent headjoints that have been observed have tinned copper lining tubes and tinned copper inner sliding tubes; number 3312 unusually has silver tubes. All the tubes that have been observed are seamed. It is unlikely that the tubes were made in the flute maker's workshops but were instead probably bought in from specialists. A telescope maker, for example, would be equipped to produce very accurate tubes, and it is unlikely that a flute maker would have need for so many tubes that he would consider it worth installing tube drawing equipment. The surviving Rudall Carte workers report that even in the twentieth century the firm bought in its tubing (by then invariably seamless tubing), and Boehm claimed in a letter to W.S. Broadwood in 1867 that 'Neither the English nor the French makers

Plate 5



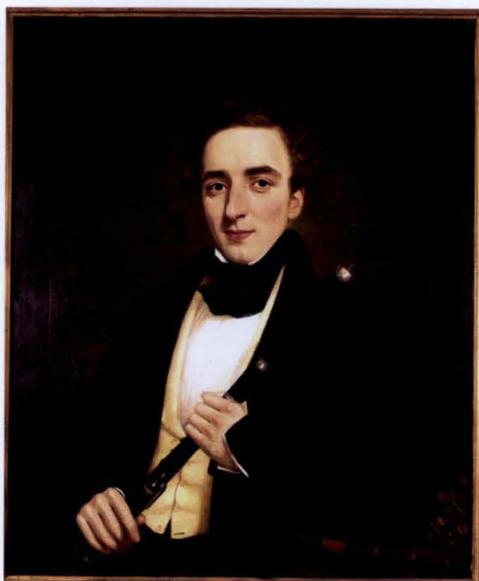
a



b



c



d



e

a: Rudall & Rose 3312, extension to low B. b: Rudall & Rose 3205, extension to low B flat. c: Patent headjoint crown. d: Portrait of Charles Nicholson by T. Bart (NPG). e: Nicholson Model flute by Thomas Prowse.

draw their tubes themselves; they have not the necessary machinery, and they can procure them ready made cheaper and with less trouble.¹⁸ The granting of a patent to Rudall & Rose for this headjoint gave them cause to use the royal coat of arms on their literature and on the crowns of their headjoints (Plate 5c).

Principal competitors of Rudall & Rose

Of the many flute makers operating in London in the second quarter of the nineteenth century, most were selling flutes of lower quality and lower price than Rudall & Rose, and cannot therefore be considered competitors. As an example of the quantity of instruments some of the makers were producing, the auction of Richard Potter's effects in 1836 listed 200 flutes left in stock on his retirement from business, along with five lathes and other goods.¹⁹ If 200 flutes were left in stock, then Potter must have been producing an impressive number of instruments, and if the auction included five lathes, then he probably employed at least five turners in addition to his other workers, suggesting a very large output indeed. Potter's instruments do not appear to have been expensive, and he does not appear to have been operating in the same market as Rudall & Rose. The makers who were competitors to Rudall & Rose were producers of high-quality, high-value instruments, principally Thomas Prowse and Monzani & Hill.

Nicholson flutes by Thomas Prowse. Charles Nicholson's flute was in essence a standard eight-keyed instrument, but in the form played and promoted by Nicholson himself the flute had huge fingerholes and perhaps as large an embouchure hole as has ever been made on a standard-sized flute. These features were important to Nicholson's style of playing, which was, by all accounts, very powerful indeed. In addition to the large holes Nicholson's flutes had a flattened area around the right-hand fingerholes to facilitate his famous 'glides'. They also had a cutaway where the left index finger touches the flute and a flattened section lined with sharkskin where the right thumb supports the flute. These flutes were made to the highest standards of craftsmanship by Thomas Prowse, at first for Clementi & Co. and later by on his own account, operating from what he referred to as

¹⁸ Boehm. *Essay on the Construction of Flutes* ed. W.S. Broadwood, p. 51.

¹⁹ Advertisement of Warlters and Co., auctioneers, *The Times* 26 April 1836.

‘Nicholson’s Flute Manufactory’ even after Nicholson’s death in 1837.²⁰ Plate 5e is a Nicholson model flute on which the cutaway and the flattened area are clearly visible.²¹ Plate 5d is a portrait by T. Bart of Charles Nicholson holding an identical flute.²² Annand, as previously noted, claimed that all but two professional players working in London at the time he was writing (1843) played Nicholson flutes made by Prowse. This may well have been true. No evidence can be found to support Ardal Powell’s claim that Rudall & Rose built Nicholson flutes.²³

Confusion has surrounded the various people in the music business named Prowse, with the *New Langwill Index* declaring of the family, ‘Inter-relationships unknown’. In fact, it would seem that all the musical Prowses were related through Thomas Prowse the elder, born before 1785, whose will is dated 1833.²⁴ Thomas Prowse had a number of children, of whom three are of particular interest: Thomas Prowse the younger (1803-1867), the maker of the Nicholson flute, who inherited his father’s tools and work in progress; Joseph Prowse (1809-1865) of 5, Eldon Street, Finsbury Square, whose trade card described him as a ‘Flute & General Musical Instrument Maker’ and ‘From Clementi & Co.’²⁵; and William Prowse (1804-1886), who entered into partnership with Robert William Keith. William Prowse married his partner’s daughter and produced, amongst other children, Blanche Julia Prowse, who was the first wife of Richard Carte’s eldest son, Richard D’Oyly Carte.²⁶ William Prowse, as will be seen, was a silent partner in the firm of Rudall, Rose & Carte as well as a visible partner in the firm Keith, Prowse & Co. The family connection now established between the Prowses is interesting given the antipathy between Thomas Prowse the younger and, it would seem, anyone who attempted to promote an improved flute, including, in 1843, Rudall & Rose.

Thomas Prowse the younger’s 1844 letter to the editor of *The Musical World*, previously referred to, suggested a diminished grasp of public relations, but his

²⁰ An advertisement in *The Times*, 29 September 1834, announces that Prowse, manufacturer of Nicholson’s flutes for Clementi and Co. has just taken premises in Hanway Street where Nicholson flutes would in future be manufactured under his superintendence. The advertisement concludes ‘N.B. Mr. Nicholson will attend daily.’

²¹ Horniman Museum 14.5.47/68A.

²² This portrait is used by kind permission of Mrs. M. Harris in whose possession it was before being placed in the National Portrait Gallery (NPG 5200).

²³ Powell. *The Flute* p. 143.

²⁴ Prowse’s will is in the PRO.

²⁵ Bodleian Library, John Johnson Collection, Trade Cards 23 (18).

²⁶ The author is most grateful to Mr. Terry Silcock for genealogical information regarding his Prowse ancestors.

advertisements of 1844 make astonishing reading. His early advertisements, such as this one from January 1844, had been mild enough:

TO FLUTE AMATEURS.—T. PROWSE, 13, Hanway Street, Oxford Street, (manufacturer of the celebrated “Nicholson Flute”) begs to inform his friends and the musical public that it is his intention to establish Morning and Evening Parties for the practice of FLUTE TRIOS, QUARTETS, &c. He has engaged the services of the following distinguished and popular flautists:—Messrs. RICHARDSON, SAYNOR, HODGINSON—and others, whose names will be duly announced. Times and further particulars may be had of T. PROWSE, 13, Hanway Street, Oxford Street (where a large assortment of “Nicholson Flutes” are always on sale.)²⁷

However, he appears to have begun to lose perspective with this advertisement of April 1844:

THE NICHOLSON FLUTE.—It may be very well for certain manufacturers, to answer their own purposes, sturdily to support the pretensions of a newly invented instrument, whose chief distinction from previously made flutes consists in a different nomenclature; but it is well known to all FLUTE CONNOISSEURS, that the only *faultless* instrument, correctly speaking, is THE NICHOLSON FLUTE. Mr. Nicholson, the greatest flautist the world ever saw, produced all his wondrous effects without the aid of charlatanism, either as a matter of manufacture or of finger-mechanism. His motto was—THE SIMPLER THE MEANS, THE GREATER THE EFFECT; and in illustration of this, he rejected all adventitious aids of imaginary benefit or abstract significance. He laughed at the notion of *improving* his flute, (a manifest absurdity—to improve PERFECTION being impossible), and continued up to the last hours of his sojourn on earth, to explain its FAULTLESS MECHANISM, its exquisite TONAL QUALITIES, and its MARVELLOUS EXECUTIVE FACILITY (“Simplex munditiis,” as the great Horace would have exclaimed had he been lucky enough to hear Nicholson play on the NICHOLSON FLUTE)—he listened of course to the arguments of the would-be improvers, and with the urbanity for which he was famous, would turn round to them with a smile, take a NICHOLSON FLUTE in his hand, play his in own unequalled style a simple melody, and without further trouble convert them to his opinion. The great flute phenomenon of the present day is undoubtedly JOSEPH RICHARDSON, and he, even to enthusiasm, shares the opinion of his mighty predecessor on the NICHOLSON FLUTE, *and will play on no other*. Can those who have heard Joseph Richardson play, desire that flute capabilities should go further? Impossible. T. PROWSE, sole manufacturer of this splendid and unrivalled instrument, thinks it not unallowable in him to venture these few remarks in its favour, knowing that in recommending it, he is bestowing a real boon on FLUTE AMATEURS AND PROFESSORS. A large assortment of NICHOLSON’S FLUTES, are always on sale at the Warehouse of T. PROWSE, Hanway Street, Oxford Street.²⁸

²⁷ *Musical Examiner* 6 January, 1844.

²⁸ *The Musical Examiner* 27 April, 1844. A similar advertisement appeared in *The Musical World* 28 March 1844.

By June 1844 he was beginning to knock his opponents:

THE CELEBRATED NICHOLSON FLUTE

This unrivalled instrument may now fairly be said to have ridden roughshod over the paltry pretensions of the occasional obfuscations of modern invention. The B----flute, and the C----flute, and the D----flute, and so on till the end of the alphabet, have PROVED THEMSELVES, by their own failure, without adventitious discussion,

BASELESS FABRICS !!

No true amateur—no true artist—NO ENTHUSIASTIC DISCIPLE
EVEN! ever lends an ear or applies a lip to any of the

IMPOTENT ADVERSARIES

of the noble and unconquerable flute, the beloved of the great departed
NICHOLSON,

the cherished of the great living

RICHARDSON,

the unequalled, unrivalled, not-enough-to-be-estimated

NICHOLSON FLUTE,

which is at the mouth of every true flute lover day and night.

T. PROWSE, Hanway Street, Oxford Street, Of whom a very large
assortment of Nicholson [flutes] are constantly on sale.²⁹

And within another few months he was running an advertisement that suggested he was losing the argument, and possibly his mental balance:

THE CELEBRATED NICHOLSON FLUTE.

The flute-playing public appear to have come to their senses. Truth cannot long be hid under a bushel. CHARLATANISM may, for a time, prevail, but the reckoning must come at last, and EXPOSURE lifts up the veil which concealed the unseemly countenance of IMPOSTURE. We do not particularize NAMES, we do not individualize INSTRUMENTS. The Bo-Bo Flute, and the Fe-Fi-Fo-Fum Flute may have their merits, but when their advocates RASHLY INSINUATE their superiority over the oldest established, and in all respects MOST PERFECT INSTRUMENT, which the united voices of NICHOLSON and RICHARDSON, the greatest past, and the most illustrious present FLAUTISTS, whom history can signalise, have pronounced THE NICHOLSON FLUTE, sober argument is prostrated, and PITY sits upon the throne where erst discussion held its sway. A word to the wise is enough in all conscience. The public no longer will be deceived. T. PROWSE, Hanway Street, Oxford Street, of whom a very large assortment of Nicholson Flutes are constantly on sale.³⁰

The 'Bo-Bo flute' referred to is, of course, the Boehm flute that had so exercised Prowse in his letter to the editor of *The Musical World* the previous year. The 'Fe-Fi-Fo-Fum Flute' has eluded identification.

²⁹ *The Musical World* 13 June 1844.

³⁰ *The Musical Examiner* 20 July 1844. The same wording, but with capitalised words highlighted in Gothic type, appeared in *The Musical World* 18 July 1844.

Prowse's business appears to have dwindled in the later 1840s. His prized supporter, Joseph Richardson, as will be seen, defected to the Siccama flute some years later. Prowse did not display his instruments at the 1851 Exhibition.³¹

Monzani. Tebaldo Monzani, apparently the market leader in the supply of high-class flutes before 1820, had seen his flute business dwindle substantially by the 1830s. Kreitzer shows Monzani and his successor Hill to have sold (or at least numbered) some 1700 flutes from 1810 to 1820; some 1100 flutes from 1820 to 1830; and a mere 201 flutes between 1830 and 1837, when the firm appears to have finally ceased making flutes.³² Monzani's instruments cannot be said to have had much impact on the market in the 1830s.

'A bungling compromise': The end of the era of the old flute

The deficiencies of the old flute are not in dispute; writers from as far back as Tromlitz ('...there is hardly an instrument which is so rarely played in tune as the flute'³³) were aware of its inadequacies. Indeed, had the old flute been adequate there would have been no need for an improved instrument, and the existence of so many competing flutes of new systems is proof enough that there was dissatisfaction with the instrument. Contemporary complaints about the old flute are not difficult to find. Care, of course, must be taken in selecting these complaints as some writers had a vested interest in supporting one flute or another. The opinion of those writers who supplied both old and new types of flute is the most valuable. Richard Carte, whose firm held the British patent for the 1847 Boehm flute but continued to produce the old flute until well into the twentieth century, wrote of the old instrument:

This flute has two great defects: it is out of tune—some of its notes being too flat, and some too sharp; and it varies in quality of tone—some of its notes being free and clear, and others feeble and muted.³⁴

Cornelius Ward, a London instrument maker active from the 1830s who produced his own improved flute in the 1840s, was scathing about the old flute:

The instrument is, in fact, a bungling compromise between tone, tune and the ordinary dimensions of the human hand; the manufacturer transferring to the performer the consequences of his own deficient knowledge and skill,

³¹ MacTaggart. *Musical Instruments at the 1851 Exhibition*.

³² Kreitzer. 'Serial Numbers and Hallmarks on Flutes from the Workshop of Monzani & Hill.' *Galpin Society Journal XLVIII* (1995) p.168.

³³ Tromlitz. *The Virtuoso Flute-Player* p.122

³⁴ Carte. *Sketch* p. 10.

and demanding of him the sacrifice of toilsome practice; not in acquiring that skill which all practical arts alike demand, but in overcoming the evident and palpable defects of the instrument.³⁵

The problem with the old flute was a simple one: some fingerholes had to be drilled higher up the flute than they should have been, to positions where the player could reach them, and the resulting sharpness of those notes had to be adjusted by reducing the size of the holes, so reducing the volume of those notes. It would seem unexceptionable that a flute will be easier to play in tune with an even scale if the holes are evenly-spaced and of equal size. This is, in fact, the basis of Boehm's design. It is the evenness of the scale more than the intonation that is at issue; a hole placed higher up the tube than it should be can be adjusted for intonation by making it smaller, but the note coming out of that hole will not be as loud as it would have been had the hole been correctly-positioned and of the same size as its neighbours. A competent flute player, given enough time, is able to adjust the pitch of any note sufficiently in either direction to make the note in tune (adjusting a note by as much as a semitone is not difficult), but that note may have a quite different tone colour from the next note in the scale, and of course in a quick passage the player will be unable to make the adjustment. Two holes in particular give problems: the A and the E, covered by the ring finger of each hand. These holes must be placed higher up the tube than is ideal, and the maker must either compromise the sound for the intonation by making the hole smaller or he must compromise the intonation for the sound by making the hole the same size as its neighbours. In some cases the maker chose the worst of both alternatives and produced a note that was both out-of-tune and muffled. In addition to problems of intonation, the system of fingering where open fingerholes were used together with closed-standing keys produced awkward cross fingerings where the player was required to close one hole at the same instant as opening another, making it difficult or impossible in some cases to slur from one note to another.

The effect upon the music of the inequality of tone of the old flute was limited in those cases where the composer wrote around the weaknesses of the instrument, as many composers did, and particularly composers of solo music written for amateurs. The mania for flute playing in the first half of the nineteenth century made for a vast market for easy music, and many composers, particularly those who

³⁵ Ward. *The Flute Explained* p.13.

played the flute themselves, were able to take advantage of those techniques that are easy to play on the old flute but appear to show great skill on the part of the player. Countless works, many of them variations on popular airs, were published, and many of those were in D or G, the easiest keys for the old flute. Some passages specifically required the old flute, such as those in pieces by Nicholson, which called upon the player to use Nicholson's trademark glides or finger vibrato. Such techniques are of no value in orchestral music where the player simply has to play evenly, smoothly and in tune. A flute of the old design made this difficult; a flute designed to more scientific principles would make this easier, and if Nicholson's glides and vibrations were not possible on these new flutes they do not appear to have been missed.

4: Richard Carte

Rudall & Rose were makers of high-quality but rather conservative flutes before Richard Carte became associated with the firm. It was probably due to the influence of Carte, even before he became a partner in the firm, that Rudall & Rose began in 1843 to make the conical flute of Boehm's 1832 design, and within a few years of his joining the firm as a partner the firm had extended its range to include the most innovative flutes then in production, had moved to new premises in fashionable Bond Street, had acquired the thriving business of the military musical instrument maker Thomas Key, and had expanded into retailing and into publishing. Richard Carte was a man with a collection of skills that allowed him to turn Rudall & Rose into a very successful enterprise: musical ability, mechanical aptitude, inventiveness and considerable business acumen.

Carte was born in Silchester in 1808, the son of Richard Cart, quartermaster of the Royal Horse Guards.¹ Confusion has surrounded the spelling of Carte's name. Richard Carte the flute player was originally known as Richard Cart. David Eagle, discussing a review by W.N. James of an arrangement for three flutes of a Mozart symphony, complains that 'either James himself couldn't spell or he had some very illiterate typesetters' as the arrangement was said to have been by one R. Cart.² In fact, James, for all his other faults, could indeed spell, and his typesetters were blameless. Richard Cart had become Richard Carte by 16 May 1839; on that date he wrote to the editor of *The Musical World*:

Sir,—I shall feel much obliged if you will do me the favour of correcting in the next number of the Musical World, a mistake which occurred in the last as to my name. It is mentioned in a notice of Mrs. Anderson's Concert, that Mr. Card played a Fantasia on the Flute. From the similarity of the names this mistake has frequently been made.

I am, Sir, your's [*sic*] obediently,

R. CARTE³

Before this letter the man was known as Richard Cart; after it as Richard Carte.⁴ It is entirely possible that it was upward social mobility rather than confusion with

¹ Boase, Frederick. *Modern English Biography*. (1908)

² Eagle. *A Constant Passion* p. 177.

³ *The Musical World* 23 May 1839 p. 58.

⁴ See for example the notice of concerts by 'Mr. Cart' in *The Musical World* 17 January 1839.

William Card that prompted the addition of the letter e.⁵ Carte was certainly moving in social circles higher than those to which he might have aspired as the son of a non-commissioned soldier.

Little is known about Carte's early life beyond the information recorded by Rockstro, who was Carte's pupil and who knew and admired him. According to Rockstro the young Carte, who as a boy had first played the violin and had shared a desk with Mori, the leader of the orchestra in a concert in Reading, was much taken with the playing of Nicholson and was taught the flute by George Rudall. Rockstro records that Carte was employed from 1824 both as a solo and as an orchestral player and that at the age of nineteen he went to work in Newcastle-upon-Tyne where, he says, 'his enterprising character began to develop itself.' Carte, according to Rockstro, went to Kassel in 1828 with an introduction from Sir George Smart to Spohr hoping to study composition with him, but instead studied with Hauptmann. On his return from Kassel after a year Carte lived for a time in Edinburgh and finally settled in London in 1831.⁶ Rockstro's account of Carte's early career may not be entirely accurate. Cranmer quotes an 1830 advertisement in Edinburgh that suggests Carte was resident in London by then:

Mr Cart (from the Nobility's Concerts, London), Professor of the FLUTE, respectfully informs Amateurs of this instrument that, during his stay in Edinburgh this Winter he will be giving INSTRUCTIONS.⁷

Carte arranged two sets of trios for the flute based on symphonies by Beethoven and by Mozart, one published by Mori & Lavenu and the other by Rudall & Rose, which were reviewed by James in 1827.⁸ Copies of these arrangements have not been traced. Carte would have been no more than nineteen years old at the time of their publication, and he seems to have been a sought-after if perhaps callow youth; he responded to an invitation from Samuel Wesley in 1826 inviting him to play in a concert with this possibly misguided letter:

It was my intention not to play in a public orchestra till I had made my appearance as public performer, but the desire of serving you overweighs other considerations and there is now only the following trifling demur—

If Mr. Saust is your other flute of course and as a gentleman of more practice and experience, and who has done as it were with the profession, I

⁵ To avoid confusion he will be referred to as Carte throughout this study.

⁶ Rockstro. *The Flute* §925.

⁷ Cranmer. *Concert life and the music trade in Edinburgh* p. 183.

⁸ James. *The Flutist's Magazine* p. 65 and p. 171.

shall willing play as second flute to him; if Mr. Nicholson it will perhaps be prudent in me not to play at all, and if any one else not to play a secondary part.

I do hope you will not think me fastidious convinced that you will know the tender thread on which the reputation of a young man entering the world hangs and though things would not [illegible] you and I it is not so with the majority.

In expectation of your answer I shall hold myself engaged for the 4th May.

Yours very respectfully,
R. Cart
Hyde Park Barracks
11th April 1826⁹

Youthful exuberance and an as-yet-untempered ego may explain his reluctance to play second flute, but Carte's refusal to play with Nicholson suggests an awareness of public image; Carte may not have minded playing second flute to Saust who could have been nearing the end of his career, but the much younger Nicholson was a rival for the solo playing he clearly wanted to do, and he may have considered a direct comparison to be a bad idea.

There seems little doubt that Carte was a fine player. James's praise has already been quoted. Rockstro remembered,

This talented artist, though not possessing the extreme delicacy of Rudall, the wonderful volubility of Richardson or the extraordinary facility of Frisch, was yet a better player than any one of these, for he possessed, in some degree, the best points of all, which he was not deficient in any respect, and in the matter of tone, he was transcendently their superior.¹⁰

Rockstro reports that in 1843 Carte temporarily replaced Ribas as principal flute in the orchestra at Her Majesty's Theatre and for a time held the chief orchestral appointments in London.

Of greater importance than his fine playing, however, was Carte's entrepreneurial ability. By 1838 he was well established as the promoter of a series of concerts, and he certainly did not miss an opportunity to make his concerts attractive to the many players of the flute; at a concert he promoted in that year, in addition to singers and instrumentalists he enlisted three prominent London flute players, Clinton, Saynor and Hill, doubtless ensuring the attendance of many of their amateur

⁹ BL: add. 35027 f. 89. Also quoted in Kassler and Olleson. *Samuel Wesley 1766—1837: A source book*. Kassler and Olleson mistakenly refer to the writer of this letter as 'Carter'.

¹⁰ Rockstro. *The Flute* §925.

students, plus ‘Herr Heinemeyer, (First Flute to the King of Hanover)’.¹¹ Not only could Carte attract some fine musicians to perform, he had considerable success in attracting the great and the good to his concerts. In 1839, for example, *The Musical World* reported,

MR. CARTE’S MUSICAL SOIREE was given on Wednesday week, at the Hanover-square Rooms, under the distinguished patronage of His Grace the Duke of Roxburghe, the Most Honourable the Marquis of Douro, the Right Honourable the Earl of Powis, the Right Honourable the Countess of Powis, Sir Watkin Williams Wynn, Bart., M.P., Miss Williams Wynn, Sir Rowland Hill, Bart., M.P., Lady Hill, Sir Arthur Chichester, Bart., Sir William Keith Ball, Bart., the Right Hon. C. Watkins Williams Wynn, M.P., and Colonel Thoys. The programme embraced a very agreeable mixture of the delightful, the serious, and the humourous [*sic*]. Among the first we must class the *bénéficiaire’s* own performances, for he is one of the few *flautistes* who make his instrument “discourse most eloquent music”...¹²

Carte was not without high-powered friends in the music profession. His application to become an Associate of the Philharmonic Society in 1841 (‘Mr. Richard Carte of No. 61 Greek Street, Soho’) was signed by G.F. Anderson, Sir George Smart and J. D. Loder.¹³ Carte, though at the time principally concerned with playing and teaching and with the promotion of concerts, nevertheless must have had time to observe new developments in the flute. His view of most new flutes of the 1830s is not recorded, but in the course of an 1845 argument in the letters columns of *The Musical World* in which it was alleged that Carte was not, in fact, the first professional performer on the Boehm flute, Carte, as will be seen, claimed that he had been responsible for introducing George Rudall and the firm of Rudall & Rose to the new Boehm flute.

Richard Carte evidently had a brother of whom only one mention has been found: ‘Mr. Carte played a flute solo charmingly, and a duet with his brother, Mr. Harry Carte, who evinced very considerable talent for a debutant.’¹⁴

In 1840 Carte married Eliza Jones, the daughter of a cleric at the Chapel Royal who was descended on her mother’s side from the Suffolk branch of the D’Oyly family, which arrived in Britain at the time of the Norman Conquest.¹⁵ Carte and his wife named their first child, born in 1844, Richard D’Oyly Carte, and had five

¹¹ *The Musical World* 10 May 1838.

¹² *Ibid.* 27 June 1839.

¹³ BL: RPS MS. 315 f.136.

¹⁴ *The Musical World* 26 January 1843.

¹⁵ An annotated family tree in the hand of Daniel Jones, grandson of Richard Carte, is in the possession of Mrs. Michelle Stanbury, daughter of Daniel Jones. This family tree is broadly in agreement with an anonymous manuscript biographical note survives in the archives of Richard D’Oyly Carte in the Theatre Museum, London (Box 45).

other children: Blanche, Viola, Rose, Henry and Eliza. Richard D'Oyly Carte's opera company and its productions of the works of Gilbert and Sullivan brought him fame and considerable wealth; he owned, amongst other properties, the Savoy Theatre, the Savoy Hotel and Claridge's. D'Oyly Carte began his concert and operatic agency within his father's firm. D'Oyly Carte's first wife, Blanche Prowse, was the daughter of William Prowse of Keith, Prowse & Co., who will be shown to have been a partner in the business of Rudall, Rose & Carte. D'Oyly Carte is known to have kept the company of well-known artists and writers; in addition to his association with Gilbert and Sullivan he promoted Oscar Wilde's tour of America and was on friendly terms with Whistler, who is said to have decorated the library of D'Oyly Carte's home in Adelphi Terrace. Whistler, in 1886, borrowed money from D'Oyly Carte against which he left him three paintings as security, one of which was his 'Arrangement in Grey and Black', otherwise known as 'Whistler's Mother'. Whistler made an etching of D'Oyly Carte's second wife Helen Lenoir, who ran the opera and property business after her husband's death.¹⁶ Richard D'Oyly Carte's son Rupert, who took over the management of the businesses from his stepmother, married the daughter of the second Earl of Cranbrook. Their daughter, Bridget, married her cousin, the son of the fourth Earl of Cranbrook.

Richard Carte's younger son, Henry, took over the firm of Rudall Carte from his father in 1884.¹⁷ Henry Carte's son Geoffrey Carte, a surgeon educated at Rugby and Oxford, married twice, the second time in 1934 to Desirée Ellinger, a successful singer in the West End and on Broadway.¹⁸ In 1934 at Puttick & Simpson's auction in London Desirée Ellinger sold a number of flutes, some of which were bought on behalf of Dayton C. Miller and are now in the Miller Collection in Washington. It is thought by a surviving member of the family that Desirée Ellinger may have cleared the clutter from her new husband's home and that this clutter may have included the flutes from Geoffrey Carte's father's and grandfather's collection. One of these instruments now in the Miller Collection (DCM 1237) is a B flat flute, an instrument of the greatest rarity, made by Boehm in 1848 for Richard Carte.¹⁹ The absence of

¹⁶ The Centre for Whistler Studies Web site: <http://www.whistler.arts.gla.ac.uk/index.htm>, accessed 3 December 2003.

¹⁷ *The London Gazette* 1 February 1884 p. 503 announces the dissolution by mutual consent on 28 January 1884 of the partnership in the firm Rudall, Carte, and Co. between Richard Carte and Henry W. Carte.

¹⁸ Power and LeFanu. *Lives of the Fellows of the Royal College of Surgeons 1930-1951*.

¹⁹ http://memory.loc.gov/cgi-bin/query/D?dcm:5:./temp/~ammem_00S7:: accessed 1 May 2004 incorrectly refers to Desirée Ellinger as Mrs. Henry Carte rather than Mrs. Geoffrey Carte.

papers relating to the family business has been attributed to the same clearing out of clutter.²⁰

Of Richard Carte's other children, Viola married Daniel Jones, a successful and well-to-do barrister. Their son, the phonetician Daniel Jones, is thought by some to have been the model for Henry Higgins in Shaw's *Pygmalion*.²¹ Viola is said by her granddaughter Michelle Stanbury to have been a fine pianist, and Viola's oil painting of her father, which remains in the possession of the family, is executed with considerable professional competence. Viola Carte exhibited twice at the Royal Academy.²²

Richard Carte, as can be seen, navigated his family from comparatively humble origins to upper-middle-class and even aristocratic respectability.

A number of images of Richard Carte have survived: a portrait bust, executed by A.L. Vago and presented to Carte by Giuseppe Tamplini, the bassoonist and bandmaster, the oil portrait by Carte's daughter Viola and a published photograph.²³ (Plate 2.) Another oil painting is known to exist in a private collection.

Carte and the development of the flute.

Carte's letter to the editor of *The Musical World* of 27 March 1845, quoted below, in which he gives the chronology of his adoption of the conical Boehm flute, does not give a date for his purchase of the French-made Boehm flute with which he first became acquainted with the system. This was unlikely to have been the first sight of such a flute for either Carte or Rudall. Boehm had been a frequent visitor to London, had had considerable success as a performer and is known to have worked with Gerock & Wolf and to have had some contact with William Card and Cornelius Ward. It seems most unlikely that Boehm would not have made himself known to the firm of Rudall & Rose or that they would not have wanted to make themselves known to him, and it seems equally unlikely that Carte would not have come into contact with Boehm. Boehm's conical flute had been in production since 1832, and as it was not subject to patent protection it was being produced by Boehm himself in Munich, by some makers in Paris and at least in small numbers by Ward and by Card. It would appear that at some time before 1843, when Rudall & Rose began

²⁰ Conversation with Mrs. Michelle Stanbury, 26 April 2004.

²¹ Collins and Mees. *The Real Professor Higgins*.

²² Wood, Christopher. *The Dictionary of Victorian Painters*.

²³ The bust is in a private collection. The oil portrait is in the possession of Mrs. Michelle Stanbury, Carte's great-great-granddaughter. A copy of the photograph is in the Dayton C. Miller Collection.

production of the conical Boehm flute, Carte became attracted to the new instrument, and given his later involvement with the firm it may be inferred that it was Carte who persuaded Rudall of the benefits of the Boehm flute and that it was Carte's influence that caused Rudall & Rose to begin its manufacture.

Carte wrote a tutor for the new flute, but his was not the first. Clinton had rushed out a tutor in 1843²⁴ with an expanded and improved second edition following in 1844.²⁵ Carte's tutor was announced as being 'in the press' in an advertisement in *The Musical World* on 31 October 1844. Clinton and Carte were by this point rivals in the promotion of the Boehm flute, with Clinton, describing himself as 'professor of the Boehm flute in the Royal Academy of Music' promoting his 'Flute Soirées' at his home at 14, Greek Street, Soho,²⁶ and Carte presumably attracting students up the road at his home at 61, Greek Street.

Carte's Complete Course of Instructions for the Boehm Flute

Carte's tutor is a comprehensive work intended both for beginners and for experienced players of the old flute, unlike Clinton's tutor which is intended for those with a previous knowledge of the old instrument. Carte prefaces his method with a substantial essay explaining the advantages of the Boehm flute, answering objections to it, explaining the benefits of the open G sharp, condemning flute makers (not named) who have adopted only a part of Boehm's design and giving one of the earliest accounts of the controversy surrounding the invention of the new flute, in which he firmly supports the claim of Boehm against those who insisted the invention was really that of Gordon. He explains clearly and with illustrations the differences between a flute with evenly-spaced holes of approximately equal sizes such as Boehm's, and the old flute's unequally-spaced holes of varying sizes. He gives examples of passages that are difficult on the old flute but easy on the Boehm, he explains the benefits of Boehm flute's open-standing keys and he explains the fact that all trills (known then as shakes) are possible on the Boehm flute whereas many are difficult on the old flute and some actually impossible. The work includes a section on the rudiments of music. Carte provides a complete fingering chart including an impressive range of alternative fingerings, a full list of trill fingerings and

²⁴ Clinton. *Theoretical and Practical Essay on the Boehm Flute as Manufactured by Messrs. Rudall and Rose*. (Reviewed in *The Musical World* 19 October 1843, p. 351.)

²⁵ Advertised in *The Musical World* 5 December 1844.

²⁶ *The Musical World* 21 November 1844.

even alternative trill fingerings, with all the fingerings provided for flutes with both an open and a closed G#. On the benefits of the Boehm flute, Carte writes:

Having taught and performed upon the old Flute for nearly twenty years before I became acquainted with the Flute invented by Boehm, it may be readily conceived that I should not have adopted the new Instrument, without full conviction of its superiority...[T]he Boehm flute possesses advantages of *more correct intonation, greater volume, equality and purity of tone, and increased facilities of execution.*²⁷

On the objections to the new flute he writes:

[Objectors] have argued, that because admirable effects have been produced by some few performers on the old Flute, no improvement in the Instrument is necessary. The fallacy of such an argument is evident. It is admitted that admirable effects have been produced, and that some performers, by skilful management, have succeeded in concealing those imperfections of the old Flute, the existence of which is not denied by its strongest adherents; but that is assuredly no reason why an instrument, free from such imperfections, should not be preferred.²⁸

On the open or closed G sharp Carte quotes a letter from Boehm in which he says:

After what I had seen and known in mechanics, and done myself in my youth in that line, I may be believed if I say, I did not want to wait for the French artists to construct a key for G#, but that I might have made half a dozen pans very soon for that purpose, perhaps better than that made by M. Dorus. But I cannot see why my simple and most rational system should be sacrificed to prejudice and unwillingness to overcome an old habit, which by any one is conquered in less than four weeks, and rewards sufficiently the small trouble at the beginning.²⁹

On the matter of partial adoption of Boehm's principles, Carte condemns one (he seems to be referring to Card's system) in which Boehm's ideas are copied in the right hand but not in the left, and another (possibly Ward's instrument) on which the holes are equally-spaced but the fingering is more complex. Carte also refers to the Gerock & Wolf flute, which he says was manufactured by Boehm in Munich but issued under Gerock & Wolf's name in London. This claim does not accord with the evidence of the sole surviving Gerock & Wolf early Boehm-style flute. (These flutes are discussed in Chapter 3.)

²⁷ Carte. *Complete Course of Instructions for the Boehm Flute*. [1845] p. 1.

²⁸ Ibid.

²⁹ Ibid. p. 3.

On the controversy regarding the invention of the new flute, Carte writes that Captain Gordon, after engaging the assistance of makers in London, Paris and Germany, failed in his attempts to produce a playable instrument, but that Boehm had all the abilities, musical, mechanical and scientific, to complete his instrument. Carte quotes a letter from Boehm to Coche dated 1838 in which Boehm explains his relationship with Gordon. Carte was evidently satisfied that Boehm was indeed the inventor of the flute that bears his name.³⁰

The *Musical World* controversies

The introduction of the Boehm flute in 1843 provoked a flurry of letters both for and against the new invention in response to a favourable review of Clinton's new tutor and of the new flute in *The Musical World*. A fresh flurry of letters followed the publication of Richard Carte's tutor for the Boehm flute in 1845. The anti-Boehm partisans were led by Thomas Prowse, the maker of flutes to the design of Charles Nicholson. Carte, perhaps wisely, refrained from direct involvement in this argument, as did Rudall and, of course, the ever-silent Rose. Chief of the pro-Boehm partisans was John Clinton, who was later to change his mind and become vehemently anti-Boehm before changing his mind back again and producing Boehm-style cylindrical flutes. The *Musical World* correspondence of 1843, but not that of 1845, has been dealt with in some detail and the full correspondence reproduced by Welch, who did not miss an opportunity to denounce in his usual scornful language any who asserted that the Boehm flute was anything other than the best instrument.³¹ The basis of the argument, apart from the fact that Prowse was justly worried about a loss of business to the makers of the new flute, was Prowse's insistence that the Boehm flute could only be played in one key:

...my opinion, blended with that of *Mr. Saust, M. de Folley*, and Herr Friesch is this, that the instrument is a failure, for the only key the Boehm flute is playable in is C...³²

This claim was ridiculed by Clinton in a letter of some 1750 words published in the next issue in which he writes of Prowse:

³⁰ The controversy is dealt with in the greatest depth in Welch's *History of the Boehm Flute*.

³¹ Welch. *History of the Boehm Flute*, p. 314ff.

³² *The Musical World* 2 November 1843.

...He appears to dwell very much upon the idea that the Boehm flute can only be played in the key of C, because Dorus played Boehm's variations to the "Swiss Boy" in that key, and (*as he asserts*) could play no other piece, although it is a well known fact, that Dorus has been one of the greatest favourites in Paris as a solo performer for many years. But Mr. Prowse is not over nice in his assertions, and without any intention on my part to take up the cudgels for M. Dorus, I will merely state that I was present at the Philharmonic concert when he played Boehm's Swiss Boy *in C*, and heard him accompany his sister (Madame Dorus Gras) in a very brilliant song, which, if I remember rightly, was in E, four sharps, and the opinions of the audience, the press, and the professors who heard him, all pronounced his playing to be of the very highest order; but, of course, Mr. Prowse sets all those opinions at nought, and likewise gives a direct contradiction to part of the same number of the "Musical World" in which my letter appeared,—for in page 360 of that number—it states that I took a part in Spohr's Quintette *in E flat*, (the slow movement *in A flat*,) and in the last number of the same journal it gives a flattering encomium upon Mr. Carte's performance of my Duo *in E flat* for flute and clarinet, a piece *far more difficult* than the majority of solos; therefore the facts are simply these, Mr. Prowse publicly states that the Boehm flute is playable *only* in the *key of C*, while your journal records two performances upon it in the *key of E flat*; now as your statements are *quite right*, and his *quite wrong*, the public will perceive how much confidence can be placed in him.³³

Carte's response to Prowse's claim was rather less prolix; he merely advertised in *Musical Examiner*:

MR. CARTE will perform Variations Brilliantes on the Boehm flute, in the key of E major.³⁴

Carte was finally drawn into the conflict over a year later after the publication of his own tutor for the Boehm flute. In January 1845 this advertisement appeared in *The Musical World*:

TO FLUTE PLAYERS

On Monday, the 20th January, will be published, Price 10s. 6d,
A COMPLETE COURSE OF INSTRUCTION FOR THE BOEHM
FLUTE

Both the open and the closed G keyed flute, designed for beginners, as well as for those acquainted with the old flute, and preceded by an analysis of the Boehm flute, and of the old eight-keyed flute, with a comparison between them, to enable the reader to judge of their relative merits—by RICHARD CARTE.

ADDISON AND HODSON, 210, REGENT STREET³⁵

³³ *The Musical World* 16 November 1843.

³⁴ *The Musical Examiner* 16 December 1843.

³⁵ *The Musical World* 2 January 1845.

The advertisement provoked a number of letters denouncing Carte, with Clinton, by then a fierce rival, a possible suspect as the orchestrator of the attacks. In March someone using the pseudonym ‘Amateur’ wrote to the editor of *The Musical World* accusing Carte of plagiarism over a trivial matter of his method of notating fingerings, which ‘Amateur’ claimed Carte had copied from a tutor by Bertini. This letter was later shown to have been by Bertini himself:

For aught I know the inventor may consider himself *highly flattered* at a man of MR. CARTE’S deserved reputation making free with *his* ideas, and passing them off as genuine! But I, who have a natural horror for *one* PEACOCK who steals his *brother* peacock’s feathers because they are better than his own, do not think I should be capable of duly appreciating the honour conferred. Be that as it may, I have nothing to do with it; I merely wish to signalize the fact *Pro bono publico*; and because I have never yet been able to understand why *one* man should invent a thing, and MR. CARTE or *any other Mr.* be suffered with impunity to appropriate to himself the merit of the discovery.³⁶

Carte responded indignantly:

... For proof that Mr. Bertini was not the first to represent the fingers by figures, I refer Amateur to the famous old books of instruction by John Gunn and John Wragg, both published before the year 1800; that is to say, thirty years before that of Mr. Bertini, and also to numerous others published before the year 1830, as those of Keith, Prowse and Co., Metzler and Co., &c. &c. So that if the title of *inventor* is to be awarded to any for this mode of marking the fingering in instructions for the flute, (a manifest absurdity by the way) it is due to Messrs. Wragg and Gunn; and in bringing a charge of plagiarism against me on this trifling subject, “Amateur”—who is evidently more zealous than well informed in matters connected with the flute—to be consistent, must now turn his artillery against his former *protégé*, and stand the champion of those ancient worthies against all who have followed in their steps.³⁷

This was followed in the same issue by a letter from ‘A Professor’, quite possibly Clinton himself, confirming his view that Carte was indeed guilty of plagiarism despite Carte’s solid defence and complaining that Carte failed to mention Clinton as the man who introduced the Boehm flute to England:

That he has been guilty of plagiarism as regards Mr. Bertini’s system is beyond a doubt; but, as the letter signed “Amateur”, which appeared in your last number, sufficiently exposes that fact, I need not dwell upon it, but proceed to another of similar description, viz. that of his explaining the nature of the flute by comparison to organ pipes. The Continental writers

³⁶ *The Musical World* 13 March 1845.

³⁷ *Ibid.* 20 March 1845.

upon the Boehm flute have taken much pains to point out the defects of the old system, and the correct principles of the new, yet the comparison to organ pipes, which at once renders the subject clear, was never made use of until Mr. Clinton's "Essay on the Boehm Flute" appeared. Now as Mr. Carte's sagacity in matters pertaining to the instrument could suggest nothing of his own, he ought to have acknowledged the source from whence he derived his explanation, instead of arrogating to himself that which he well knew to have emanated from Mr. Clinton... if there be really any merit, then, in introducing it, or rather *establishing* it here, Mr. Clinton is, to all intents and purposes, entitled to that merit; and it is most unjust to attempt to take it from him.³⁸

This writer included a postscript: 'I enclose my card with my name and address, but request you will use it only in case of necessity.' Carte chose to continue the battle:

I lament that a second letter, signed this time "*Professor*" should compel me to waste my time and occupy any portion of your pages with such childish nonsense as the charges he pleases to prefer against me; and I can only wonder that any *Professor* can allow his mind to be absorbed by trifles which would excite the risibility of a school boy. Although, from the uncourteous, not to say coarse [*sic*], style of "*Professor's*" remarks and their very trivial nature, I might very well decline replying to them, yet I am willing to do so for the satisfaction of those who take an interest in the subject; but it must be upon one condition, and that is, that "*Professor*" will allow his name to be published, otherwise, I may subject myself to the puerile criticisms and ill-natured remarks of any *Amateur* or *Professor* that may chose covertly to assail me.³⁹

In the same letter Carte addressed the question of who was the first to play the Boehm flute in Britain. He wrote:

My third delinquency is grounded upon my having thanked Mr. Rudall, of the firm of Rudall and Rose, for having, *as a manufacturer*, introduced the Boehm flute, into this country; in doing which, I am accused of wresting the honour of introducing it from the writer of the above mentioned essay [i.e. Clinton]. Now, really, Mr. Editor if, which I deny, what I said to Mr. Rudall could bear this construction, I cannot see the sin I have been guilty of here. *After* the inventor, I think most credit is due to the manufacturer, who, setting aside all prejudice, risks his money and reputation in putting forth what at first is certain to meet with opposition. If I had taken any other view of the matter and had thought it a point of so much importance, I might possibly have aspired to some share of this *great honour* myself, on account of my having been the first English player to exhibit the new flute as a public performer. Before I conclude this letter, which is longer than I intended to make it, must caution "*Professor*" to be more accurate in his statements in future. Having seen a Boehm flute (of French manufacture) at a shop, and being impressed

³⁸ *The Musical World* 20 March 1845.

³⁹ *Ibid.* 27 March 1845.

with the superior principle upon which it was made, I induced Mr. Rudall to accompany me to see it, and shortly after I became possessed of this flute. This was before Messrs. Rudall and Rose had thought of manufacturing them. Further than this, I had the first of the new flutes produced by these gentlemen and had even pupils on the Boehm flute before this time.⁴⁰

This letter is followed in the same issue by one from ‘An Admirer of the Boehm Flute’ who insists he had lessons on the Boehm flute from Richard Carte before Clinton’s tutor was published:

Having seen a letter from a Professor in your useful work, wherein he states that professors and Amateurs, and even Mr. Carte himself among the number, adopted the Boehm flute, in consequence of Mr. Clinton’s Essay on that instrument. I beg to state, that I for one took lessons from Mr. Carte prior to the appearance of that essay, and know of other amateurs in England, who played the Boehm flute long previous to its publication. As to the essay in question, it is really a pity that it should be styled “An Essay on the Boehm flute” at all, which title, being calculated to mislead amateurs, for it is an essay only on a French innovation on the Boehm flute, which innovation Mr. Boehm discountenances, and even Mr. Clinton himself now disowns it, by playing upon the original Boehm flute.⁴¹

This in turn is followed by a letter from ‘A Subscriber’ complaining again about Carte’s supposed plagiarism of Bertini’s method of notating fingerings, and by one from Bertini himself:

I cannot here refrain from expressing my regret that my friend Mr. Carte should be the very man to do me this *unfriendly* act. Let me also embrace this opportunity for publicly thanking “Amateur,”* (query? professor of the flute) who, without knowing me, has so warmly espoused my cause. This, nowadays so *common* an occurrence, to find men making free with other men’s ideas, that, had this affair entirely rested with me, I most probably should never have thought it worth my while to write one word about the matter.

The asterisk is explained thus at the bottom of the page:

* Query. M. Auguste Bertini himself.—(PRINTER’S DEVIL.)⁴²

Finally on this subject, which must surely have left the readers wondering why anyone should be expending so much energy on such a trivial matter and perhaps on what Richard Carte had done to deserve the attention, John Parry wrote:

Observing several letters in your miscellany, on the new and old mode of fingering the flute, I beg to say, that upwards of forty years ago, Mr.

⁴⁰ *The Musical World* 27 March 1845.

⁴¹ *Ibid.* 27 March 1845.

⁴² *Ibid.* 27 March 1845.

Bainbridge published a book of instructions for his patent flageolet, with the fingering represented by figures, and not by close and open dots; and I published exercises for the double flageolet, with the fingering marked in the same manner. In 1809, I wrote and published a flute preceptor, with the figures both horizontally and vertically, being, I believe, the first thing of the kind submitted to the public; so that the several gentlemen, who claim to be the inventors of the mode of representing the fingering of wind instruments, by figures, must produce something that was printed anterior to my publications; any of which, I shall be happy to show to the contending parties.⁴³

This bizarre controversy could only have demonstrated that Carte was sensible and his detractors rather foolish, and in the small world of flute players in London the identities of the anonymous letter writers would surely have become known. Carte's reputation could not have suffered from this. But the controversy continued a month later, with 'An Unbiassed [*viz*] Amateur' insisting in a letter entitled 'The Boehm Flute; or, Clinton versus Carte' that Carte had indeed stolen from Clinton's Boehm flute tutor the idea of relating the holes on a flute to a series of organ pipes, and that Clinton had indeed played the Boehm flute before Carte. It is possible to argue that no-one but Clinton himself would consider this important, and as with 'A Professor', the suspicion is that Clinton was responsible for this letter. On the subject of the organ pipe controversy the letter-writer states:

Now, in justice to Mr. Clinton, I must say that he may claim it as his own idea; and for a good reason, *viz.*, *no other author employed it before him*. If I am in error, Mr. Carte has merely to name the work in which the comparison appeared previous to the publication of Mr. Clinton's essay; but, until he does do this, he must be contented to lie under the imputation of having taken the idea from that work.

And on the subject of who was the first to play the Boehm flute, he writes:

Were I to enter into all the particulars of this subject, it would occupy more time than I can afford, and more space than you would feel inclined to allow me; besides which, it could be attended with no profitable good or useful result; I will, therefore, with all respect to Mr. Carte, merely observe, that he is labouring under a very *very* erroneous impression with respect to his seniority in the knowledge of the Boehm flute, and its manufacture by Messrs. Rudall and Rose; there are circumstances connected with it with which he is entirely unacquainted; but, as these circumstances do not concern either him or the public, I may dismiss this subject, assuring him that Mr. Clinton played the Boehm flute long before he (Mr. Carte) knew it.⁴⁴

⁴³ *The Musical World* 27 March 1845.

⁴⁴ *Ibid.* 24 April 1845.

Carte apparently chose not to respond to this, but the next issue brought a glowing review in *The Musical World* of his Boehm flute tutor, prefaced by words that should have brought the controversy to an end:

The discussions about the respective merits, of the new and old flutes are no concern of ours... We can judge, however, of the talent of the performers, which, to us, as art-critics, is of far more consequence than the individual peculiarities of the manufacture of the several instruments on which they exhibit. We have heard Richardson play on a Nicholson Flute, and wished for nothing better. On the other hand, we have listened to Carte and Clinton on the flutes of their predilection, and found no reason to complain. The genius of the performers and the ingenuity of the music concern us in a much greater degree than the *mecanique* of the instrument.

In this spirit, then, we are free to pronounce unqualified eulogy on the treatise before us. Mr. Carte is one of the fore most of our professors—an artist, moreover, acknowledged for his appreciation of what is good in music, as much as for his great ability as a flautist. The “Boehm Flute” is the *enfant chéri* of Mr. Carte, who, has labored hard for some years, to promote its circulation in England. For this purpose he has composed the above able work, which is equally adapted for beginners and for those acquainted with the “Nicholson Flute.” It commences with an elaborate and admirable analysis of the “Boehm Flute”—proceeds to a comparison between it and the old flute—and concludes by arguments and illustrations (consisting of ably executed woodcuts) demonstrating the preference which, according to Mr. Carte’s opinion, should be given to the “Boehm.” Details of the manufacture, in its various stages, are entered on fully and accurately. Besides this, Mr. Carte’s book includes a body of elemental instruction adapted to the general art of flute playing—and also the first principles of music itself. The whole is admirably arranged—concisely and intelligibly written—and produced by the publishers in a manner that reflects credit on their liberality.⁴⁵

It is undoubtedly the case that Carte’s tutor is superior to Clinton’s; Carte’s work is more complete, better presented and better illustrated, and Clinton’s is crude by comparison. The controversy, however, did not end. The next issue brought another letter from ‘An Admirer of the Boehm Flute’ entitled ‘Carte versus Clinton’, claiming that Clinton’s tutor is for the Boehm flute as altered by the French manufacturers and that Clinton did not play a true Boehm flute:

I still repeat that Mr. Clinton, in common honesty, ought to have mentioned that his Essay was intended for the Boehm flute modified, so that persons, like myself, possessing the *veritable* Boehm flute, and those desirous of possessing it, might not have been misled—or, at least, he ought to have pointed out the existence of another. To say that the essay was written for flutes as manufactured by Messrs. Rudall and Rose does not alter the case,

⁴⁵ *The Musical World* 1 May 1845.

for these manufacturers make both kinds, though the first issued by them was according to Boehm's own principle and like that in my possession. *Unbiassed Amateur's* endeavour to clear "Professor's" mis-statement as to Mr. Carte, as well as others, taking up M. Boehm's flute *in consequence* of reading this essay, is an admission that "Professor" was in error, for he states, that Mr. Clinton *possessed* that instrument previous to Mr. Carte, which is quite another thing and not to the purpose. It must however be evident, that the two letters came from the same pen, although under different *significations*; that of "Professor" being no longer of any avail since he has not given his real name, in compliance with Mr. Carte's most reasonable requisition—a tacit acknowledgment of the weakness of his cause.⁴⁶

The following issue of *The Musical World* included one of the more interesting letters in the series, this time from William Card, a successful flute player and flute maker (or at least employer of men who made flutes under his name), whose account appears to be credible. Card stated that he, in fact, was the first to play the Boehm flute in England apart from Boehm himself, having imported one from Buffet in Paris. He stated that Boehm had asked him to make improvements to his first flute fourteen years before and to take out a patent for him, but Card declined due to lack of time. Boehm went to Gerock & Wolf instead. Card says Boehm in fact offered him his ideas for fifty pounds but Card declined. Card went on to develop his own flute, which he claimed was better. Card's letter deserves to be quoted in full:

The various conflicting statements that have appeared in your Journal, in relation to the Boehm Flute, have induced me to address you with a few observations on the original introduction, into England, of that instrument; as I perceive the merit of it is most unjustly claimed, by advertisement, in the *Musical World* of the 10th inst., for a person who has no pretension to it whatever. The facts connected with the introduction, into this country, of the Boehm Flute are as follows:—*Fourteen years* since, Boehm played at the Philharmonic Concert, in London, and, being much dissatisfied with his instrument, he was then first led to suggest to himself those improvements the result of which is his present flute. Being myself then, as now, engaged in the manufacture of flutes, Mr. Boehm brought the joint of his flute to me, with the chief of his improvements, and requested that my partner should execute the silver work of it under his, Mr. Boehm's direction; but, being very busy, we were obliged to decline the offer, as I also did Mr. Boehm's, to sell me his improvements for the sum of £50, on condition that I took out a patent for them. During the same year, Messrs. Gerock and Co., Cornhill, undertook and made several Boehm Flutes; but, finding that none of the professors took up the instrument, in consequence of the changes in the fingering, they abandoned any further manufacture of the instrument. More than ten years since, Mr. Boehm again visited England, and first played on his improved flute in this country, at a concert given for some charity, at the

⁴⁶ *The Musical World* 8 May 1845.

Italian Opera. Soon afterwards, the Boehm Flute was adopted at Paris, by M. Dorus of the Academie Royale; but he altered the arrangement of the G sharp key, by making it a close instead of an open key, as originally invented by Boehm. My friend, M. Camus, Principal Flute of the Opera Italien, Paris, then also adopted the instrument; and, at the same time, published a scientific treatise on the Boehm Flute, which it is but justice to him to pronounce the best that has yet appeared before the musical world. Mr. Baumann, our principal Bassoon, being about that time in Paris, was much pleased with Mr. Boehm's instrument, and, kindly remembering the interest I took in such matters, brought me a pamphlet then just published in the French capital by M. Coche, descriptive of the superiority of the Boehm Flute over the old flute. This prompted me to write to M. Buffet, then the only maker in Paris, for a Boehm Flute, which I imported accordingly. From this pattern, I immediately manufactured three other Boehm Flutes, and for two years I played upon one of the latter, as Principal at the Concerts of Ancient Music; and at the Grand Sacred Performances at Exeter Hall, and also at the whole of the Musical Festivals in the country. *This, I may confidently assert, was the first introduction of the Boehm Flute into this country, with the exception of the one performance of Boehm himself, at the Italian Opera, before stated.* Still finding the changes in the fingering an objection with my pupils, by the recommendation of my friend, M. Camus, who at this time paid me a visit in London, as well as by that of his and my subsequent pupil, E. Edwards, Esq., of Framlingham, Suffolk, to adopt as many of the improvements of the Boehm Flute as I could, altering as little of the old system of fingering as possible, I did so, and I am gratified to be able confidently to state, that I have succeeded in this beyond my most sanguine hopes or expectations, the full extent of my alterations being confined to two notes only, in the natural scale of the flute. From that time to the present, a period of five years, my large and distinguished circle of pupils have invariably adopted my so improved patent flute. I have, however, continued to manufacture the Boehm flute, as originally produced by the distinguished inventor; and such as prefer the latter, after playing on my improved flute, will be able to do so with a few hours' practice, my improvements being based on the Boehm system. I must conclude by adding, that from the improved volume of tone, brilliant intonation, and facility afforded in the execution of the upper notes by the instrument, I am led confidently to anticipate that it will be universally adopted, ere long, by all professors of the flute, and by every amateur who desires to be distinguished for the essential characteristics of a perfect master of the flute. I am, my dear sir, Yours faithfully, WM. CARD. (*Principal Flute at her Majesty's Concerts of Ancient Music*)⁴⁷

Card was a respected player (he had replaced no less a figure than Nicholson at the 'Ancient Concerts' and was a long-time member of the orchestra of the Philharmonic Society), and it must be said that the flutes bearing his name were exquisitely made. His account appears to be largely accurate in every respect that can be checked: Boehm did play at a Philharmonic Society concert on 9 May 1831, Gerock & Wolf did produce a flute for Boehm in 1831, Boehm did play at a charity concert, not in

⁴⁷ *The Musical World* 15 May 1845.

fact 'more than ten years hence' as Card remembered it but rather in 1836, for the New Musical Fund for the Relief of Decayed Musicians,⁴⁸ Dorus did play a modified Boehm flute (the modification is known as the Dorus G# key) and Camus and Coche did publish works as described by Card. There is no reason to disbelieve his claim that Boehm had asked him to make his 1831 flute or that he had offered him the design for fifty pounds. Card's opinion of the Boehm flute, essentially that it was an improvement on the old flute but that he could do better still, must be considered valid given his position in the profession and given that he was prepared to supply a Boehm flute to anyone who asked for one. It is important to note that Card abandoned the old flute possibly as early as the 1830s and seems to have encouraged his students to do the same.

Clinton, as will be seen in Chapter 5, entertained the hope that Boehm would ask him to produce the new flute he was developing. In his letter to Boehm dated 20 December 1845 regarding what is taken to be the second edition of his tutor for the Boehm flute, Clinton asked Boehm if he had yet developed any plans regarding manufacture. ('I must now enquire have you matured any plan or ideas relative to your project of commencing the manufactory here'). Clinton was not a flute maker and had not yet set up his business. He may have been somewhat divorced from reality if he thought Boehm would ask him to make his new instrument instead of Rudall & Rose, who were well-established, successful and already experienced at making Boehm's 1832 conical flute, and with whom Boehm had had a good enough relationship to have sent his partner, Greve, to show them how to make his conical flute.⁴⁹ Clinton's letter provides support for Boehm against those who claimed his work was copied from that of Gordon. The postscript to this letter is of particular interest in making plain Clinton's conflict with Carte.

T. Boehm Esqr., Member of the Royal Chapel, Munich, Bavaria.
London Dec. 20/45
My dear Boehm

It is now about four Months since I took my leave of you in Munich, and altho' you *promised* to write me in a few weeks, I have never yet received a line.

In the expectation of receiving your letter, I have purposely delayed writing you until now.

In the first place let me express my thanks to you and Mrs. Boehm for your very kind and hospitable reception when I was at your House, and to assure you that the kindness of you both, will be long remembered by me.

⁴⁸ The concert was given at the King's Theatre, Haymarket on 17 June 1836.

⁴⁹ Carte. *Sketch* p. 17.

I only hope you will afford me the opportunity of returning the compliment by visiting me in London; believe me nothing would afford me greater pleasure than having you with me.

Now for business. My new work is engraved, and according to promise, I wait for your MS which you wished me to see before my work was printed. Pray let me have it *immediately*, as I find my work is much wanted - already has the Introduction of the *Crutch*, your plan of the *foot keys* &c. &c. &c. brought down upon me the sneers of the parties I named to you who are now busily engaged in pronouncing both to be not only *useless* but *injurious*.

I attribute this to the fact of their not liking themselves to be considered unacquainted with *all* your plans; but as I feel and think that my work records the *truth*, and that it meets with *your* approval, I am very well contented to bear their sneers. A friend of mine called at the publisher of Carte's Book for your flute, to ask if mine were yet published. They replied in the negative, but added that Mr. Carte's work was *the only* one. My friend replied, that he understood my work had received *your sanction*; what do you suppose they had the impudence to say? That you would sanction *any* work on your flute, and that Mr. Carte was going to write you, to nullify the letter you gave me.

This you will say is a cool proceeding.

I should tell you, that I have had a Bill printed, to announce my work, and in it, I have given an extract from your letter, and that has annoyed them much, as many parties are now, waiting to learn your flute according to *your own ideas*, and consequently they will not purchase the other Book, nor order flutes, until my work appears. Many players have already had the *Crutch*, and have ordered the foot joint to be made on your plan, but there is a strong opposition to both from certain parties whom I need not name. However I feel quite convinced, that before many months, you will find your flute generally adopted here, *precisely as you wish it*. I enclose you two of the Drawings I have had made; one, of *your* flute, and one of *Gordon's*, which I give by way of comparison, in order to *prove* that you did not copy from him. In the text of my work, I have given an extract from that paper of Gordon's which you lent me, which acknowledges that *he copied from you*, and I think you will on the whole be pleased with the way I have written on the subject. I must now enquire have you matured any plan or ideas relative to your project of commencing the manufactory *here*. Write me by return of Post, and send me your MS if possible. Should you not yet have completed it, had I not better print my work at once, and *add* anything you may wish, at another reprint. Still I should like it to come out *at first*. Let me have your opinion. When you write me, I will send you a long letter in reply. Give my *very best* regards to Mrs Boehm & all your family, & remember me to Dr. Shawfitel. I do not know how to spell his name.

[The next section is written across the first page, on top of the letter but at right angles, bottom to top.]

Believe me my dear Boehm your very sincere friend and well wishes
J. Clinton, 14 Greek St., Soho Square

P. S. It is possible that Mr. Carte may write you for a testimonial for his work, as I hear he is much chagrined at the prospect of my work, and as he is a very *plausible* person, he may feel inclined to practice upon you; should he do

so, you know of course how to reply to him. He will doubtlessly make out a strong case for himself.⁵⁰

Boehm's reply, if he sent one, has not survived, but within a few years Boehm had made an agreement with Rudall & Rose to produce his new flute, John Mitchell Rose had taken out a patent on the new flute on behalf of his firm, Carte had received the very first cylindrical Boehm flute, and Clinton, as will be seen in Chapter 3, had turned into a vociferous critic of Boehm's system, at least until 1861 when the patent expired on the 1847 flute, at which time Clinton started making cylindrical Boehm flutes himself.

Boehm's 1847 flute was, eventually, overwhelmingly successful. A century and a half after its introduction Boehm's design is still being used. Boehm flutes have outsold all others by a factor of thousands to one, but at the time of its introduction it was far from the only new flute on the market, and it was far from clear that it was going to capture the market as completely as it did. The many new flutes, and the manoeuvrings of their inventors, deserve careful scrutiny.

⁵⁰ Stadtarchiv München, Nachlaß Theobald Böhm V/3. [Clinton's underlined words have been rendered as italics.]

5: Inventors and the market before the cylindrical flute

The vast market for flutes is demonstrated by the proliferation of flute designs in the two decades before the middle of the nineteenth century, and the number of new designs demonstrates that inventors realised that this vast market was calling for an improved instrument. In addition to the standard eight-keyed instrument (generally referred to as the ‘old flute’) it is possible to identify some fifteen new instruments in the two decades before 1851 (the date of the Great Exhibition, at which many new inventions were displayed) and another ten or so in the two decades after. These numbers represent only those instruments that have survived or have been documented. There were countless variations of materials and decorations as well. Richard Carte claimed in 1851 that the firm of Rudall & Rose alone had made ‘not less than ten flutes for different contrivers’ in the few years since the introduction of the cylindrical Boehm flute of 1847.¹ This inventiveness was driven first by the size of the market, second by the wealth of the sort of person who played the flute (the high price of flutes compared to other instruments has already been referred to), third by the clear inadequacy of the old flute and fourth by the complete freedom from any form of restraint of trade imposed on any maker.

The absence of restraint of trade was an important factor in the inventiveness of London makers; in Britain there was no central authority equivalent to the national conservatory in France whose professor could (and did) influence the choice of flute for an entire generation, nor was there any mechanism, beyond simple market pressures or patent restrictions, of stopping a manufacturer producing anything he wanted to produce.² No permission had to be sought to go into business and no control could be imposed upon a manufacturer attempting to sell an instrument as long as it did not infringe another manufacturer’s patent. The City livery companies had by this time lost whatever powers they may have had to regulate trade, and trade unions had yet to develop any real power of their own.³ There was, in fact, a completely free market; if a manufacturer thought he could sell an instrument he was free to make it, and if he made an instrument the market

¹ Carte. *Sketch* p. 23

² Giannini. *Great Flute Makers of France* p. 106ff. provides a good account of the controversy surrounding the attempts to introduce the Boehm flute into the Paris Conservatoire and in particular the opposition to the new instrument of Tulou, who had an interest in a firm supplying the old system flute to the institution in which he was professor.

³ Champness, Roland. *The Worshipful Company of Turners of London*. The Turners’ Company was the livery company most appropriate to wind instrument makers.

wanted, he could be successful. There was, too, a large pool of skilled workers. The combination of a large, wealthy market, a lack of restraint of trade and a large and available skill base provided perfect conditions for inventive flute makers and designers.

The differences between the markets for flutes and for other wind instruments will be immediately apparent to a visitor to any large collection of instruments of the first half of the nineteenth century: the majority of the clarinets and oboes of this period are made of cheap materials such as boxwood and brass, while the majority of the flutes are made of expensive tropical woods or ivory, and most have silver keys. As an example, the Horniman Museum's published catalogue lists some 50 clarinets dating from between 1800 and 1850, of which all but five are described as made of boxwood or of a dark-stained wood that is almost certainly boxwood, but some 69 flutes of similar date, of which 27 are made of boxwood, 31 of a wood other than boxwood (ebony, cocus or rosewood) and 11 of ivory.⁴ Lavishly-decorated flutes are not uncommon, as will be seen, but similarly lavishly-decorated clarinets and oboes are rare. The prices of instruments reflect the different markets; reference has been made to D'Almaine's price list showing their most expensive flute cost £9. 9s but their most expensive clarinet cost just £5. 10s, a price difference that cannot be explained by the relative difficulty in making an eight-keyed flute and a thirteen-keyed clarinet even if the flute does have silver keys and the clarinet brass ones. D'Almaine's prices for flutes, as has been shown, were far from the highest. Quite simply, the market for flutes could stand higher prices than the market for other instruments.

Artists and manufacturers

Flutes are objects of manufacture, not objects of art. It may be possible that in the absence of sales or of recognition a painter may continue to paint, a writer may continue to write and a composer may continue to compose, but if manufactured objects such as flutes do not sell, their maker is unlikely to make more. If examples of a manufactured item such as a flute by a particular maker or of a particular design survive in large numbers, it is clear that many must have been made, and therefore that many must have been sold. Such an instrument must be called a success. If, on

⁴ Horniman Museum. *Wind Instruments of European Art Music*.

the other hand, there are few surviving examples of a flute it must be assumed that the instrument was a failure. If a particular flute is rare it is not even likely that there was some problem with the manner of marketing the instrument rather than with the instrument itself; if the design of the flute was one that appealed to the market, someone else would have copied at least some of its features. In examining the many flutes developed between 1830 and 1860 it is important to consider how many of each might have been produced. Hundreds of eight-keyed flutes by Rudall & Rose and by Thomas Prowse have survived, evidence that they were successful makers. Flutes of Siccama's and Pratten's designs are not so numerous, but are still commonly found. Ward's flutes are very rare, and it is likely that because of their beauty a larger number have survived than might otherwise be expected. Nevertheless, Ward's flute cannot be said to have been a success, and it is notable that no other maker copied his designs. Clinton's flutes are also rare, again probably because few were sold. The Boehm flute, of course, eventually overwhelmed all other designs, but in its early days its success was by no means a certainty, and Boehm's many rivals produced some very interesting instruments indeed.

Before considering the first Boehm flute it is necessary to consider the true importance of flutes by Gordon and by Gerock & Wolf.

Gordon

No flute by J.C.G. Gordon has survived. Gordon's flute has been described and argued over by virtually every writer on the flute, with the consensus being that Gordon did not manage to produce a flute that worked in spite of the protestations of some that Boehm plagiarised Gordon's ideas. The simple fact is that Gordon did not apparently persuade a single player that his instrument was viable, in spite of assistance from the workshops of some of the finest makers in Europe: Rockstro claims to have been told by John Mitchell Rose that the firm of Rudall & Rose produced a flute for Gordon, although Rockstro states that Rose's memory was 'a perfect blank with regard to the design of the instrument'⁵; Ward describes his attempts to make a flute to Gordon's specification⁶; and Boehm describes his placing his workshop and employees at Gordon's disposal in 1833.⁷ Welch describes in the greatest detail the entire tale in a manner that has come to be accepted as correct. Of

⁵ Rockstro. *The Flute* §567.

⁶ Ward. *The Flute Explained* p. 9.

⁷ Boehm. *Essay on the Construction of Flutes* p. 15.

Rudall & Rose's involvement with Gordon, Welch could only say, 'It is a tradition in the house of Rudall and Co., that the former heads of the firm worked for Gordon.'⁸ It is clear that Gordon's flute made little impression on either Rudall or Rose. Ward has a little more to say on Gordon's flute. He writes of the instrument:

In this flute, the apertures were placed consistently with the proper length of tube required for each fundamental note in the chromatic gamut; and the captain contrived a method of acting upon the additional apertures beyond the number of fingers. With this flute, the captain returned to Paris. Mr. Boehm was at the same time trying to improve the flute, or to remodel it; and it is said, with some reason, that he adopted a great part of the captain's contrivance. Upon this matter much has been said and written, and although some points were never clearly ascertained, we must give our decided opinion that Gordon is entitled to most credit in the affair.⁹

It cannot be explained why Boehm, but not Ward, should have been accused of plagiarising Gordon's work. Ward's own patent flute, described below, similarly has holes correctly spaced to play a chromatic scale and a mechanism to cover these holes. Gordon's flute is illustrated in Figure 1. Clinton's illustration (see Chapter 5) and Boehm's rendering of it in his *Essay on the Construction of Flutes* undoubtedly describe the same instrument.

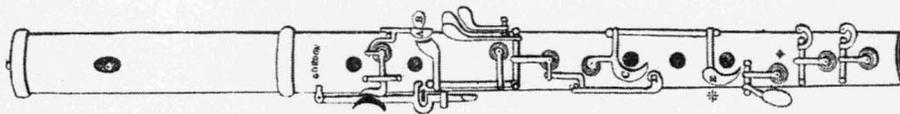


Figure 1: Gordon's flute from his fingering chart reproduced by Welch in *History of the Boehm Flute*.

Gordon's instrument employed crescent-shaped key touches to allow the player to close a finger hole and manipulate a remote key at the same time. A ring key, as later employed by Boehm, accomplishes this task more effectively.

It is possible that jealousy of Boehm's success resulted in more words being written on the subject of Gordon's flute than it perhaps deserves.

Gerock & Wolf and the supposed Boehm flute of 1831

The importance of this instrument has been overstated, not least by Gerock & Wolf themselves in their leaflet describing this flute.¹⁰ It is in fact most likely that Boehm

⁸ Welch. *History of the Boehm Flute* p. 26 note 11.

⁹ Ward. *The Flute Explained* p. 10.

¹⁰ Gerock & Wolf. *Scale and Description of Boehm's Newly-Invented Patent Flute*.

had very little to do with the production of this flute, and the possibility exists that Gerock was less than fully honest in describing it as Boehm's flute. The flute was clearly a failure; only one example has survived, suggesting that few were made, in turn suggesting that not many players liked it. Few of the authors who have described this flute have seen this surviving example, much less examined it in detail. Rockstro, Welch, Fitzgibbon, Bate, Toff and most recently Powell have discussed this flute solely from Gerock & Wolf's leaflet, although Bate by the time of publication of the second edition of his book had been in contact with Mr. Michael Zadro, who had discovered and at the time owned the sole surviving example of this flute.¹¹ Powell's knowledge of this instrument is especially suspect; he incorrectly describes it as having open keys for G sharp and D sharp despite reproducing an illustration of the flute that shows both keys to be closed.¹²

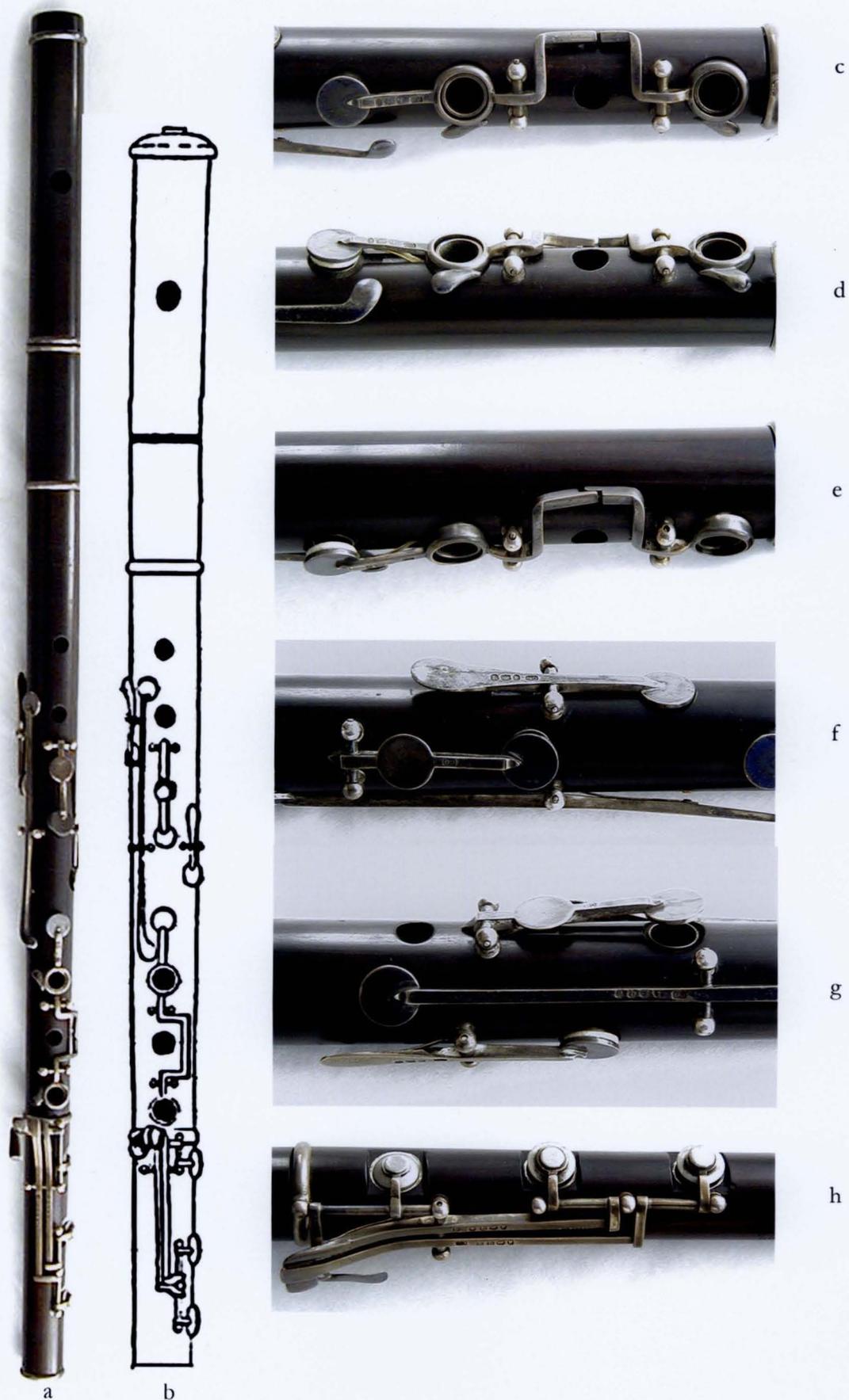
This flute is now in the Stadtmuseum, Munich, where it was examined on 26 August 2002, apparently for the first time in any detail.¹³ It is illustrated in Plate 6. The flute is made of Cocuswood with silver keys. The headjoint is unlined apart from a tenon tube that fits into the tuning slide. The flute is not stamped Gerock & Wolf but rather [Unicorn]/C.GEROCK/79/CORNHILL/LONDON, followed by a space where something else had been stamped but removed, followed by the word PATENT. It was impossible to determine what had originally been stamped on the flute even with examination under a microscope. The flute was not in fact patented.

¹¹ Zadro. 'Boehm's 1831 London Flute'. *National Flute Association Newsletter* July 1976.

¹² Powell. *The Flute* p. 168-169.

¹³ Stadtmuseum, Munich 46/77.

Plate 6



a: Gerock's 'Boehm' flute of 1831. b: Engraving from Gerock & Wolf's leaflet. c, d, e: Detail of right hand mechanism. f, g: Detail of extended A key. h: Footjoint.

The keys on this flute bear London hallmarks for the year 1831 and the maker's mark CG, for Christopher Gerock. Wolf's name does not appear on this flute. The instrument has heavy silver ferrules, a heavy crown and pewter plugs to the footjoint keys. The footjoint keys are of Boehm's double-lever design, not the standard English articulated design (Plate 6h), and the keys are mounted on pillars, as were the keys on Boehm's 1829 flutes, rather than on blocks. The holes covered by keys are lined with protruding silver tubes giving a good surface for the pads to bear against. This flute incorporates two innovations designed to allow the holes to be placed in something approaching their correct acoustical positions: an extension for the left ring finger to put the A hole in its correct position (Plate 6f and 6g), and a new ring-key mechanism to give F natural to the right index finger (as on all Boehm flutes since) and F sharp to the right ring finger (Plate 6c, 6d, 6e).

The lack of success of this flute comes as no surprise, and many of its design features make it difficult to believe that Boehm had much to do with its execution. The bore of this flute bears little resemblance to the bores either of Boehm's 1832 flute or to the bores of the old-style flutes (referred to here as the 1829 model), both of which match the measurements he published in his *Essay on the Construction of Flutes*.¹⁴ Graphs of the bores of 1829 and 1832 model Boehm flutes along with a graph of his published measurements show marked similarities. A graph of the bore of the Gerock & Wolf flute (Figure 2) shows it is nothing like Boehm's bores.

¹⁴ Boehm. *Essay on the Construction of Flutes* p. 18.

3. The pillars are so short that Gerock had to cut into the wood to allow the keys room to operate, and he had to cut even more deeply into the wood to leave room for a spring.

Given Boehm's known skill as a maker and designer it is impossible to believe he could have made such basic mechanical errors, let alone produced a key system of such monstrous ugliness. His flutes of 1829 and 1832, by contrast, are masterpieces of elegant design. Of greater importance, however, is the fact that while Boehm stated his desire to produce a flute that would allow him to match Nicholson's huge tone,¹⁵ this 1831 flute cannot fulfil that desire; the holes are not large enough, and are certainly not as large as they would become on his 1832 design.

It worth noting that no mention of Gerock can be found in the writings of Boehm after 1832, suggesting some displeasure on Boehm's part, although he is known to have had continued business dealings with Wolf.¹⁶ It is also the case that the partnership of Gerock & Wolf does not appear to have survived beyond 1832.¹⁷ This is all the more surprising given that Wolf married Gerock's daughter.¹⁸ Considering the differences in bore design, the obvious shortcut taken in the manufacture of the headjoint, the crude design of the right hand mechanism and the fact that the flute does not begin to meet Boehm's principal desire to produce a flute with that could play as loud as Nicholson's, it is difficult to escape the conclusion that Boehm had little to do with the design and nothing to do with the production of this instrument. It may not be unfair to suspect that Gerock attempted a commercial exploitation of some rough experiments Boehm had carried out in his workshops, and that he did so without Boehm's consent. The flute was not available to be played in the Munich museum, but its former owner, Michael Zadro, remembers it as a poor playing instrument.¹⁹ This is in contrast to other flutes by Boehm played by the author, all of which are excellent instruments.

The possibility that the surviving Gerock flute was an experiment or a prototype has been considered and can be discounted. Despite the crude design of the right hand mechanism the keywork is competently executed in silver. A maker

¹⁵ Boehm. *Essay on the Construction of Flutes*. Letter from Boehm to W.S. Broadwood, p. 59.

¹⁶ Wolf's pianoforte patent of 1834 (No. 6780) was the subject of a court case in 1835 brought against Wolf in which Wolf defended his entitlement to the patent by virtue of it having been communicated to him by Mr. Boehm and Dr. Schalenthal, both of Munich. The case, which was reported in *The Times*, 27 and 28 February 1835, was won by Wolf.

¹⁷ NLI.

¹⁸ 8 September 1831 St. Nicholas, Cornhill, London.

¹⁹ Personal communication, 2002.

producing a mere prototype would not have wasted money on silver for the keys and would certainly not have gone to the trouble of having the keys hallmarked. This flute was clearly intended for sale or at the very least as a sample to demonstrate the model to a customer. Gerock would not have gone to the trouble of producing a leaflet advertising this new flute unless he had a number of examples available to show to customers. The image of the flute on this leaflet is reproduced as Plate 6b to show how accurately the engraver rendered the image. There are two mistakes on the engraving: the articulation on the right hand mechanism is not shown and the footjoint keys are not shown to scale. Rockstro, ever keen to find fault with Boehm, remarked, 'The holes of the foot-joint, if the engraving is to be trusted, were shockingly ill-placed, and the arrangement of the keys was even more inconvenient than usual.'²⁰ Rockstro, of course, had not seen the actual instrument, and in this instance the engraver may simply have applied some artistic licence in order to fit the image on the plate. Other flutes of this model must surely have been made; Gerock would certainly not have wanted to be in a position where he had sold his only example, nor, of course, would he have gone to the trouble of producing a leaflet unless he had the instruments available for sale. The flute attracted enough attention to have been reviewed in *The Harmonicon* in 1832, but it quickly disappeared from view and must be considered a failure.²¹

Richard Carte claimed that flutes issued under the name of Gerock & Wolf were in fact made by Boehm in Munich but that Boehm was not satisfied with them.²² There is nothing to corroborate this, and Carte may have been mistaken. It would be difficult to accept that the surviving flute was made by Boehm, particularly as it carries London hallmarks. Further proof, if any were needed, that Gerock's flute did not represent Boehm's ideas is provided by Boehm's 1832 instrument, which exhibits a level of sophistication so far removed from Gerock's flute that it is impossible to believe the same man could have been responsible for both instruments just one year apart. Yet further evidence against Gerock is provided by an examination of Rudall & Rose's first flutes made to Boehm's 1832 pattern. These early flutes were made under the supervision of Boehm's own workshop colleague and are so similar in bore profile to Boehm's own flutes of 1829 and 1832 as to make

²⁰ Rockstro. *The Flute* §596.

²¹ *The Harmonicon* 1832 p. 85.

²² Carte. *Complete Course of Instructions for the Boehm Flute* (1845) p. 2.

it difficult to believe that Boehm could have accepted Gerock's deviations from his design.

Boehm's conical flute of 1832 as produced in London by Rudall & Rose.

As a measure of its sophistication, the fingering system of the 1832 flute has survived virtually unchanged to the present day. The 1832 flute unquestionably meets Boehm's stated aim of making a flute that would allow him to match Nicholson's powerful sound.

According to Richard Carte, writing just a few years after the events in which he was an active participant, Rudall & Rose began to produce Boehm's conical instrument in 1843 and invited Boehm's colleague, Greve, from Munich to supervise production.²³ The early Rudall & Rose flutes are remarkably similar to Boehm's own flutes; only the most careful inspection will identify subtle differences in the shapes of some of the keys. Plate 7a is a photograph of a conical 1832 flute by Boehm himself. Plate 7b is a photograph of one of the early flutes of this design made by Rudall & Rose.²⁴ Plates 7c and 7d are photographs of the right-hand mechanisms of the two flutes, identical but for an extra trill key on the Rudall & Rose flute. Plates 7e and 7f are photographs of the footjoints, both with C natural and C sharp keys made to Boehm's double-lever design where the touch levers operate second levers that close the keys positioned on the other side of the flute. These footjoints are similar in basic design but for a roller on the C sharp key of the Rudall & Rose flute and for the reversal of the action of the C natural and C sharp keys; on the Rudall & Rose flute the key touch closest to the centre line operates the C natural (as it does on a modern flute), not the C sharp as on the Boehm. What differences exist between these flutes are in the headjoint; the Boehm flute lacks a

²³ Carte. *Sketch* p. 17.

²⁴ The Boehm flute (no serial number) and the Rudall & Rose flute (number 5) are both in a private collection in Germany.

Plate 7



a: 1832 system flute by Boehm. b: 1832 system flute by Rudall & Rose (number 5).
c: Boehm right hand mechanism (detail). d: Rudall & Rose right hand mechanism (detail).
e: Boehm footjoint (detail). f: Rudall & Rose footjoint (detail).

tuning slide and has a basically rectangular embouchure with Boehm's unique cutaway whereas the Rudall & Rose flute has a standard London-style headjoint with a tuning slide and an oval embouchure. A final difference is the existence of what appears to be an extra key at the top of the Boehm flute; this is explained by the fact that the Boehm flute has leaf springs as opposed to needle springs, and the extra key is simply an extension of the closed-standing trill key on the back of the flute to allow the leaf spring to keep the key closed.

The bores of the body sections of early Rudall & Rose flutes are virtually identical to those of Boehm. Figure 5 represents the bores of four of the firm's 1832 instruments, serial numbers 5, 31, 121 and 274.²⁵ (Plate 8) It will be seen by comparison to Figure 4 that the bores of Rudall & Rose flutes 5, 31 and 121 are virtually identical to the bores of Boehm's 1829 and 1832 flutes, and that all match Boehm's published measurements. There are variations in the footjoints, as indeed there are variations in the footjoints of Boehm's own flutes. It is clear, however, that the London market preferred louder flutes with bigger bores. The bore of number 274, as can be seen, is very much larger. The headjoint bore of this flute is 18.8mm in diameter, as opposed to 18.4mm (or within 0.1mm of that size) on the others, and the diameter at the widest end of the body section on number 274 is 19.0mm as opposed to 18.0mm or 18.1mm on the others. The bore of number 274 is of the improved design of Rose, described by Carte, who was clearly well aware of the requirements of the British market:

The Germans, although the original inventors of the ordinary flute, have ever been slow in experimenting with the bore. Experiments in this direction have been chiefly made in England. In France, very little was done in this way before the introduction of Boehm's flute. The eminent performers also, both German and French, have always aimed rather at mere sweetness of tone than power. Very different has been the case in England. No performers have ever approached the English in the union of a rich and large volume with sweetness of tone. And it has, doubtless, been from the desire to obtain this, that so many experiments have been made by the English performers and manufacturers, with different-sized holes and variations of the general bore. Tacet, as before observed, in the last century, experimented with large holes, as did also the late Mr. Nicholson's father: but the most important improvements as to the tone of the ordinary flute, especially those gained by variations in the bore, have been effected by Messrs. Rudall and Rose... strenuous efforts have been made by Mr. Rose so to vary the proportions of

²⁵ Number 5 is from a private collection in Germany. Numbers 31, 121 and 274 are from private collections in Britain. Number 274 is stamped Rudall, Rose & Carte with the address 100, New Bond Street, dating it between 1852 and 1857. The other flutes are stamped Rudall & Rose. (See Appendix 3.)

the cone, as to correct the defective notes mentioned as having existed in the first of Boehm's flutes; and so successful have been his efforts, that not only are these notes rendered equal to the others, but, so much is the general tone of the instrument improved, that it becomes a matter of opinion whether the wooden flute, with parabola and cylinder, or that with this improved conical bore, is now the better. This improved bore is therefore adopted, if required, for the two new Patent flutes, as well as also for the flute of Boehm.²⁶

It is also possible that number 274 is an example of the flute described by Rockstro as his first attempt to improve the flute.²⁷ Rockstro's flutes will be described in Chapter 5.

Carte's remark that it is a matter of opinion which bore produces the better result is perhaps an example of good salesmanship rather than a statement of personal choice; as the large majority of surviving instruments of both his 'Old System' and his 1851 patent have a cylindrical bore it would seem likely that this was his preference, and certainly that of most of his customers. There was controversy regarding conical and cylindrical bores, and Carte was clearly too good a businessman to refuse to make one or the other. Carte was attacked for his statement by 'Index' in a letter to *The Musical World* in 1851:

Here then we have an honest avowal from the patentees of the cylinder, that the conical bore is *just as good* to say the least it. Now that being the case, we are enabled to obtain as good a tone as can be produced without having to pay either for the patentee cylinder or parabola head, and hence that most important element "cheapness" can be regulated by the competition of the manufacturers. We may, therefore, not unreasonably augur that an equal arrangement of the holes, united to a well regulated *conical* bore, will ultimately become universal, both being indispensable and free to be used by all the manufacturers.²⁸

²⁶ Carte. *Sketch* p. 21-22.

²⁷ Rockstro. *The Flute* §668.

²⁸ *The Musical World* 5 April 1851.

Plate 8



a

b

c

d

Boehm 1832 system flutes by Rudall & Rose. a: No. 5. b: No. 31. c: No. 121.
d: No. 274 (possibly Rockstro's model).

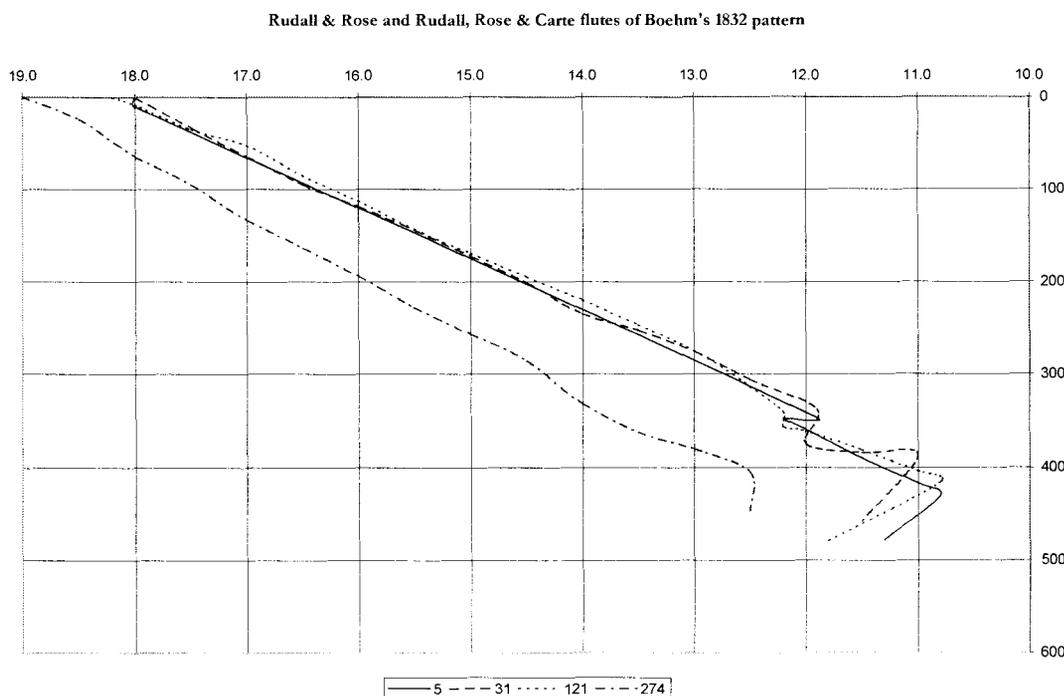


Figure 3: Bores of four Rudall & Rose or Rudall, Rose & Carte 1832 Boehm system flutes. (X=diameter, Y=length) Numbers 5, 31 and 121 have body section bores virtually identical to those of Boehm shown in Figure 4. Number 274, stamped Rudall, Rose & Carte, is a later instrument with Rose's enlarged bore.

The requirement of power over mere sweetness, important to the British market that had so admired Nicholson's powerful tone and much easier to achieve on a Boehm flute than on a small-holed eight-keyed flute, was central to the success of the Boehm flute in Britain.

Rudall & Rose made one slight bow to easing their customers' transition from the old flute to the Boehm; their instruments were available either with Boehm's intended open G sharp or with a closed G sharp. Carte's tutor for this flute gave fingerings for both, but in the introduction to the work he stressed the superiority of the open G#:

These Instructions are written for the Boehm Flute as invented and manufactured by M. Boehm himself. They are also designed for that modification of it which is occasioned by the substitution of a closed G key for the open G key of Boehm. This modification originated in Paris, for the accommodation of those who have long played upon the old Flute; the change of fingering for the closed G key being less than for the open G key. The following is an extract from a letter of M. Boehm, on the subject of this alteration, written, it must be recollected, not in his native tongue:— "The Boehm Flute as I play it myself, [with] the G# key open, is perhaps the best among a dozen of other systems of fingering, all well considered, and some executed and tried by myself, playing for months upon that which I found adapted best to all possible combinations of notes, and consequently of

passages of all descriptions. After what I have seen and known in mechanics, and done myself in my youth in that line, I may be believed if I say, I did not want to wait for the French artists to construct a key for G#, but that I might have made half a dozen plans very soon for that purpose, perhaps better than that made by M. Dorus. But I cannot see why my simple and most rational system should be sacrificed to prejudice and unwillingness to overcome an old habit, which by any one is conquered in less than four weeks, and rewards sufficiently the small trouble in the beginning...”²⁹

It would appear that some 275 conical Boehm flutes were made by Rudall & Rose, with some sold after the introduction of the cylindrical Boehm flute in 1847. Rudall & Rose did not, of course, cease production of their eight-keyed flute when they began to make the Boehm. In the absence of the firm’s records from this period it is not possible to determine which model provided the larger part of their business.

Other improved flutes

Boehm’s conical flute of 1832 was not the only new design, nor was it immediately, or indeed ever, dominant in the way his cylindrical flute of 1847 would become. Other makers developed their own improved flutes, in some cases based on aspects of Boehm’s design and in at least one case, the flute of Ward, based on quite novel and indeed bizarre ideas. The basic improvement common to all the new flutes was the spacing of the fingerholes evenly along the flute, as Boehm had done. Most of the inventors attempted to keep the fingering of the old flute at the same time. The principal inventors (or at least those whose instruments have survived) were Ward, Card, Siccama, Pratten and Clinton, and of course Richard Carte, whose inventions are described in later chapters.

Ward. Cornelius Ward’s flutes were perhaps the most beautifully-made of his, or indeed of any period, but their eccentricity was bound to affect their acceptability to the market. It has not been possible to identify a single professional player of the 1840s who used one of Ward’s flutes. So few flutes by Ward have survived that it is possible to surmise that few were made, and the beauty of their workmanship would perhaps have led to a greater proportion surviving than with more common flutes. These flutes, admirable though they are, were a commercial failure.

²⁹ Carte. *A Complete Course of Instruction for the Boehm Flute* (1845) p. 1-2.

Ward's complaint with the old flute was not only that it was hard to play in tune but also that it forced constant adjustment on the player to control the sound as well:

...whilst [the flute] ADMITS of shades of tone and gradations of power for the purposes of expression, it is one of its greatest faults, that it continually REQUIRES this humouring process, for the ordinary purposes of tone and tune.³⁰

Ward was of the clear opinion, too, that little improvement could be made without a change of fingering:

...we have now to state that there are such radical defects of construction in the ordinary flute, as to have to this day defied the ingenuity of the makers to correct or remedy, and to retain the same fingering.³¹

Ward's answer to the problem of spacing holes equally along the flute was to use eight fingers to cover an open hole each, sometimes with a ring key, with the exception of the left ring finger which was provided with an extension. Every key, including the D sharp key, was open-standing. The right little finger was in use to cover a hole and was unavailable to operate the footjoint keys in the usual manner. The operation of the footjoint keys was therefore given to the only digit available: the left thumb. The thumb key touches were connected to the footjoint keys by means of silver wires running the length of the flute. These silver wires meant the entire flute apart from the headjoint had to be in one long piece.

The execution of Ward's flutes is exquisite. He was aware of the possible reach of each finger and positioned his holes accordingly. Plate 9a shows the holes for the right hand drilled into the flute such that the fingers will drop onto them in the most comfortable manner.³² In spite of this concern for the player's comfort, Ward was so uncompromising in insisting on such a radical change of fingering that acceptance of his flute was bound to be limited; the idea of using the left thumb to operate the D sharp is simply bizarre, and the possibility of damage to the silver wires would be bound to put

³⁰ Ward. *The Flute Explained* p. 7.

³¹ *Ibid.* p. 4.

³² Private collection, Germany.

Plate 9



a



b



d



c



e



f

a: Ward's Patent flute. b: Ward's flute (detail of thumb keys and wires to operate footjoint keys). c: Ward flute footjoint keys set with stones. d: Ward flute footjoint keys, engine decoated. e: External dial of Ward's Terminator. f: Internal cam-operated stopper from Ward's Terminator.

off many prospective purchasers even if no fingering change had been necessary. Plate 9b shows the thumb keys and silver wires on the same Ward flute. Plate 9c is a photograph of the stone-set footjoint keys of 9a. Plate 9d is a photograph of the engine-decorated footjoint keys of another Ward flute.³³ Ward's flutes were rather individual instruments, with many variations.

Ward's plan had been to develop an instrument that would avoid the limitations of the old flute, about which he had written so scathingly. Rockstro records that Ward had claimed to have had a flute of Pottgiesser's 1803 design and that although he accepts that some thought this flute existed only in Ward's imagination, he recalls:

...although I saw him almost every day for more than twelve months, I was unable to obtain a sight of this mysterious flute, or to gain any information concerning it. Not a word would he say on the subject beyond promising that he would someday show it to me.³⁴

Many might indeed have wondered if this flute existed, but Rockstro eventually satisfied himself that Ward's insistence that he had one of these flutes was 'no doubt strictly true, but it is probable that he made the flute himself from the published engraving.'³⁵ Many reading these statements would be inclined to think Ward had lied, and if he had lied about this then it may difficult to accept his word on the Boehm-Gordon controversy. It was, of course, important for Rockstro to promote Ward as an honest man as he needed him to support his campaign that Boehm had indeed stolen his ideas from Gordon. It is remarkable that Ward avoided such an accusation himself.

Ward's 'Terminator' (Plate 9e and 9f) is a mechanism for altering the position of the stopper in the headjoint by means of an external dial that operates an internal cam. Turning the dial causes the stopper to move up and down. Cornelius Ward's flute was patented in 1842.³⁶

Card

William Card, as has been noted, was a successful performer who sold flutes of his own design in which he incorporated some aspects of Boehm's flute (Plate 10a³⁷).

³³ EUCHMI 46.

³⁴ Rockstro. *The Flute* §489.

³⁵ Ibid. *The Flute* §499.

³⁶ Patent specification 9229 (1843).

³⁷ Private collection, Germany.

Card's surviving instruments are exquisitely crafted in a manner that suggests the work of Cornelius Ward. Indeed, Geoffrey Rendall wrote to Dayton C. Miller, 'I believe from the general appearance that Cornelius Ward made them.'³⁸ Card's flute was fingered like a standard flute in the left hand and essentially like a Boehm flute in the right, with the exception that F sharp could be played only with the middle finger, not with the ring finger (Plate 10b). In this regard Card's flute is similar to that of the Gerock & Wolf instrument. Card invented a headjoint tuning mechanism that relied on a rack-and-pinion to extend the tuning slide. His advertisement for this mechanism read:

CARD'S MELODION, OR FLUTE-TUNER, REGISTERED, August 2, 1851.—The use of the Melodion is to either flatten or sharpen the pitch or tone of the Flute whilst playing, which may be done with the greatest ease and exactness without removing the flute from the mouth, or the left hand from its position—the inconvenience of doing which every flute-player must have found whilst playing in concert. This instrument may be attached to any kind of flute, and detached at pleasure. It may be had at W. CARD'S Flute Manufactory, No. 29, St. James's-street, Piccadilly, London.—Card and Co. manufacture flutes retaining the old fingering upon an approved principle, in wood and metal, of various kinds; as well as his patent Flutes, which require a very trifling change of fingering, doing away with the long F key, and rendering the execution of music written in the flat keys much easier.³⁹

An example of this Melodion is illustrated in Plate 10c.⁴⁰ Card's flutes, like Ward's, are so rare today as to suggest that not many were made and that his impact on the market was limited.

³⁸ Letter from Geoffrey Rendall to Dayton C. Miller May 1928 [no exact date], DCM.

³⁹ *The Musical World* 10 April 1852.

⁴⁰ DCM 1230.

Plate 10



a



b



c



d



e

a: Flute by William Card. b: detail of flute by Card. c: Detail of Card's Melodion.
d: Flute by Siccama. e: Detail of flute by Siccama.

Siccama

Rather more successful was Abel Siccama, a British-based but Dutch-born teacher of languages⁴¹ designed a flute notable for its simplicity and for its superb workmanship (Plate 10d⁴²). Rockstro quotes a letter from Richard Carte who recalled from his diary that in 1842 he, George Rudall and John Mitchell Rose met Siccama, in conditions of secrecy, to see his newly-invented flute. Neither Rudall nor Rose considered the flute worth pursuing, and Carte, although apparently pleased with the idea if not its execution, agreed with them. By 1845 Siccama had advanced to the point of taking out a patent.⁴³ It is not known for certain who made Siccama's flutes for him; it has commonly been assumed that the maker was John Hudson, but no proof has been found.⁴⁴ Whoever the maker was, he was a craftsman of the greatest skill; early Siccama flutes (those stamped with Siccama's name, not those made later by Boosey and by others) are superbly made.

Siccama's flutes maintained the old system of fingering but achieved equality of spacing of the holes by means of two key extensions, for the A and the E holes, similar to those used for the A hole on the Gerock flute described above. Such a key extension (Plate 10d), a long lever with a short hinge, has the potential to wear, leading to substantial play at the end of the lever causing the pad not to seat correctly. However, such is the level of craftsmanship that on the example shown, in spite of evidence of heavy use, there is virtually no play. Further evidence of the excellence of the workmanship is shown in Plate 10e, a photograph of the exquisitely-made articulated footjoint keys. Siccama's flutes were made with the central body section in one piece.

Siccama advertised his new flute heavily, first in February 1847⁴⁵, and then with weekly repetitions until May when he announced the publication of his *Theory of the New Patent Diatonic Flute*.⁴⁶ By the middle of May he was advertising that:

Mr. William Forde... Begs to inform his Pupils and Flute Players in general, that after a careful investigation of Siccama's Patent Diatonic Flute, he has adopted that instrument...

⁴¹ Siccama was born 4 June 1801 in Franeker, Friesland, Netherlands (www.familysearch.org). Welch mistakenly says he was German (*History of the Boehm Flute* p. 209).

⁴² Author's collection.

⁴³ Patent 10,553 (1845) 'Manufacture of Flutes, &c.'

⁴⁴ NLI states that Hudson was the maker.

⁴⁵ *The Musical World* 27 February 1847.

⁴⁶ *Ibid.* 1 May 1847.

This was followed by a similar statement from Frederick Hill.⁴⁷ This advertisement was repeated weekly, with the addition in July 1847 of Mr. King to the list of new devotees of the instrument. By August 1847 Siccama added the first big name to the list of endorsers of his new flute:

Mr. R.S. Pratten begs to inform his Friends, Amateurs, and the Public, that he has returned from Vienna, where he has met with the most flattering success, and is prepared to give instruction on the Flute. Having carefully studied the New Patent Diatonic Flute, he has exclusively adopted that instrument...⁴⁸

Pratten got first mention on this advertisement, with Forde, Hill and King receiving second billing. Siccama later gained another important endorser, Joseph Richardson, who a few years before had been Thomas Prowse's prized supporter of the Nicholson flute. By 1850 Richardson was running an advertisement just below Siccama's that read:

DIATONIC FLUTE. By Royal Letters Patent. Mr. Richardson having exclusively adopted this instrument, begs to announce that he continues to give Instruction on it.⁴⁹

Siccama's business, for all the beauty of construction of his instruments, for all the advertising and for all the celebrity endorsements, does not seem to have thrived. By 1854 he had lost the support of Pratten, who had by then developed his own flute and was having it made by John Hudson:

R.S. Pratten's Perfected flutes (on the old system of fingering). This instrument is universally acknowledged to possess the most powerful tone, combined with perfect intonation, sweetness, and ease to the performer. Prospectus and testimonials on application to John Hudson, Manufacturer, 3, Rathbone-place.⁵⁰

Siccama did, however, keep the support of Richardson, apparently to the end of his life. The photograph of Richardson in the National Portrait Gallery dating from the late 1850s, towards the end of Richardson's life, shows him holding a Siccama flute.⁵¹ Siccama flutes continued to be offered for sale by other makers, including Boosey. A catalogue of Hawkes & Son in 1926 continued to list Siccama flutes, and a number of anonymous, cheap Siccama-style flutes of unknown date have been seen. Rudall Carte made a few Siccama flutes and listed them in one catalogue in the 1870s.

⁴⁷ *The Musical World* 15 May 1847.

⁴⁸ *Ibid.* 7 August 1847.

⁴⁹ *Ibid.* 13 April 1850.

⁵⁰ *Ibid.* 21 April 1854.

⁵¹ NPG P301(149).

Pratten

Robert Sydney Pratten, principal flute of the orchestra of the Royal Italian Opera, Covent Garden and of the orchestra of the Philharmonic Society, applied his name to flutes ranging from a simple eight-keyed instrument to a fully-keyed conical flute. Pratten's flutes, like those of Siccama, had conical bores and large, equally-spaced holes. Like Siccama's instruments, they were fingered like the old flute, and also like Siccama's, they were usually made with a one-piece body section. Many surviving Pratten flutes display the exquisite workmanship associated with John Hudson.⁵² Pratten appears to have sold the rights to the manufacture of his 'Perfected' flutes to Boosey and Sons, and judging by the quality of workmanship of some surviving examples it is possible that Hudson was employed by Boosey to make them.⁵³

Boosey's 1856 advertisement offers:

R.S. PRATTEN'S PERFECTED FLUTES on the old system of fingering, superbly finished, and possessing a greater amount of tone than any other instrument. Manufactured by Boosey and Sons, 24 and 28, Holles-street, London, under the personal direction of Mr. Pratten, principal Flute at the Royal Italian Opera, Philharmonic Concerts, etc.⁵⁴

Prices ranged from 4 guineas for a flute with eight German silver (i.e. nickel alloy) keys to 13 guineas for a flute with nine silver keys on pillars.

The 'Pratten's Perfected' flutes favoured today by many players of Irish traditional music are the simple eight-keyed instruments. Pratten himself favoured a much more sophisticated flute (Plate 11a and 11b⁵⁵). This flute is fully-keyed and has equally-spaced holes as large as can safely be drilled into an instrument with conical bore. The flute is played with the old system of fingering has a mechanism of a complexity and sophistication that rivals those of Boehm and Carte.⁵⁶

Pratten's design of flute continued to be produced after his death in 1868 but does not seem to have been used by the leading players. The Pratten flute cannot be said to have provided strong competition for Rudall, Rose & Carte after its inventor's death.

⁵² Rockstro. *The Flute* §671 states that Pratten worked with the man who had made Siccama's flutes.

⁵³ Ibid. §672 states that Pratten's maker became foreman to Boosey.

⁵⁴ *The Musical World* 27 December 1856.

⁵⁵ Boosey & Sons 'Pratten's Perfected', serial number 6108. Author's collection.

⁵⁶ Two known photographs of Pratten (DCM and in the author's collection) show him holding a similar flute.

Plate 11



a: Pratten's Perfected flute. b: Detail of thumb keys of Pratten.
c: Clinton's Equisonant flute, early version. d: Detail of back of Clinton flute.
e: Clinton's final, Boehm-style flute.

Clinton

An assessment of John Clinton's writings shows him to have been a very odd character indeed. He had been a strong supporter of the conical Boehm flute and had written the first English-language tutor for this instrument in 1843,⁵⁷ but by 1851, the date of his *Treatise*, he had become an opponent of Boehm and had set up a business making flutes of his own system.⁵⁸ By 1855, when he wrote his *Practical Hints*, he was openly hostile to Boehm and even went so far as to credit Gordon with the ideas that Boehm later developed:

Mr. Boehm made a step in the right direction by following up Gordon's plan of equal size and distance in the arrangement of the holes; by those means he rendered the instrument infinitely superior to the *old* flute.⁵⁹

This is in apparent contradiction to his letter to Boehm of 1845 in which he wrote, 'I enclose you two of the Drawings I have had made; one, of your flute, and one of Gordon's, which I give by way of comparison, in order to prove that you did not copy from him'.⁶⁰ It is presumed the drawings referred to are those in the engraving reproduced as Figure 4.⁶¹

⁵⁷ Clinton. *Theoretical and Practical Essay on the Boehm Flute as Manufactured by Messrs. Rudall and Rose*.

⁵⁸ Clinton. *A Treatise upon the Mechanism and General Principles of the Flute*.

⁵⁹ Clinton. *A Few Practical Hints to Flute Players* p. 17.

⁶⁰ Stadtarchiv München, Nachlass Theobald Boehm V/3.

⁶¹ Clinton. *A School, or Practical Instruction Book for the Boehm Flute with the Open or Shut G# Key*, Op. 88.

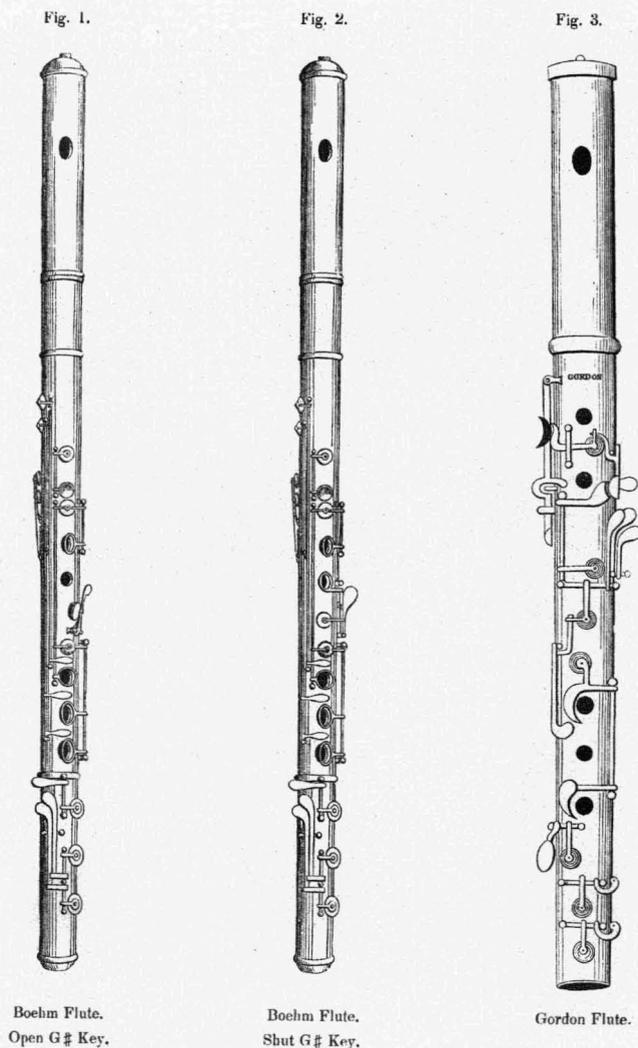


Figure 4: Illustration from Clinton's *A School, or Practical Instruction Book for the Boehm Flute with the Open or Shut G# Key*, Op. 88., intended by Clinton to show that Boehm did not in fact steal his ideas from Gordon.

Clinton's statement also contradicts his 1851 *Treatise*, in which he stated:

About the year 1832, Mr. Boehm completed a system of improvement upon the flute, which for some time previous he had been constructing; this instrument resembled the Gordon flute, in having its holes at equal distance and of equal size, and being constructed upon the system of open keys. It was supposed, from this resemblance, that Mr. Boehm copied his mechanism from Captain Gordon. The ideas might have been adopted from him, but the general plan was so superior, that I conclude we are chiefly indebted to Mr. Boehm for the first great advance in the knowledge and construction of the flute generally.⁶²

⁶² Clinton. *Treatise* p. 19-20.

In his *Treatise* Clinton made a ludicrous attempt to liken Boehm's 1847 metal cylindrical flute to Miller's fife of 1810. He wrote of Miller's instrument:

The first attempt I can discover to have been made towards the improvement of the instrument, was by Mr. Miller, flute manufacturer of Pantou Street, which was directed rather to the bore and material of the instrument, than to regulating the size and distance of the holes. In 1810, he obtained letters patent for his improvements, which I find, from two instruments now in my possession, to have consisted in the adoption of *metal* instead of wood, and the *cylindrical* instead of the conical bore. In examining the merits of this instrument, I shall content myself with stating a few objections: first, as to its material; this I consider most objectionable—the absence of vocality, richness and body of tone in the metal when compared with wood; its harsh and shrill quality, a peculiarity attached to all brass or metal instruments, added to the unpleasantness of its use, and its sensibility to heat and cold, causing a constant variation in pitch; and, secondly, as to the bore—the cylindrical form preventing the possibility of obtaining that gradation requisite for equality of tone.⁶³

Of Boehm's new cylindrical flute, Clinton wrote:

I was grievously disappointed to find he had adopted the old cylindrical bore, and made the flute of metal instead of wood. The reader will recollect the objections which appeared to me to exist in Mr. Millar's [*sic*] metal flute; and if my judgment be correct, the same must equally apply to this alteration of Mr. Boehm's; added to which, I found an enormously increased complication in the mechanism, and consequently a considerable advance in the cost of the instrument. I was, under these circumstances, reluctantly compelled to decline its purchase.⁶⁴

Carte's description of Clinton's attempt to liken Boehm's new flute to Miller's fife as '...to say the least of it, a mis-statement calculated to mislead and deceive' is perhaps too kind to Clinton.⁶⁵ Miller's instrument, a brass fife designed for use by soldiers, is far from the sophistication of Boehm's flute and is in fact close to the line that divides a musical instrument from any other object that merely makes a noise. Clinton's statement, quite simply, is a lie, as the briefest examination of Miller's fife will show. (Figure 5.)

⁶³ Clinton. *Treatise* p. 7-8.

⁶⁴ *Ibid.* p. 23.

⁶⁵ Carte. *Sketch* p. 20.

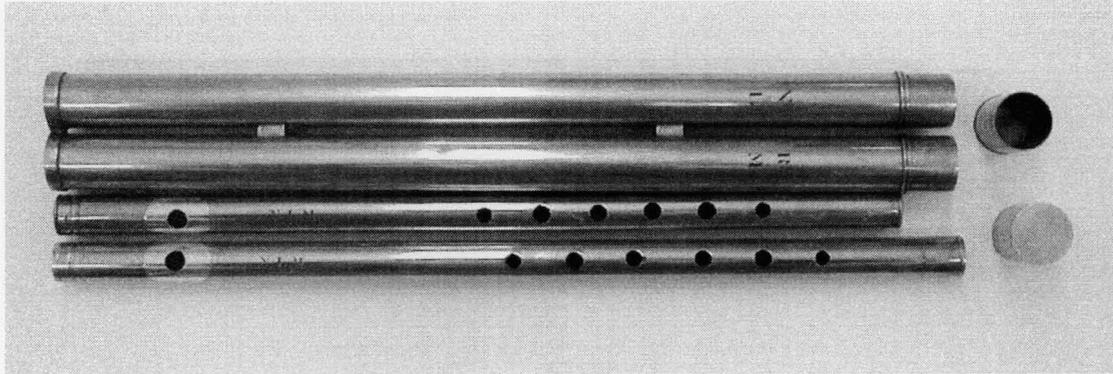


Figure 5: A pair of brass fifes by Miller, with their double tubular brass case meant to be attached to a soldier's belt. The instruments are engraved N.L.M., for Nairn Local Militia. Clinton made a ludicrous attempt to liken these simple fifes to Boehm's sophisticated 1847 flute. (National War Museum of Scotland ML-1931-2)

Clinton's claim that he was 'reluctantly compelled' to decline the purchase of Boehm's new flute must be read with suspicion. It seems more likely that Clinton had his own ideas and had communicated them to Boehm, who rejected them. History, of course, has shown that Boehm was right, and a century and a half later his design of flute is still being played, and in huge numbers. In Clinton's later *Code of Instructions for the Fingering of the Equisonant Flute* he went further to identifying the cause of his problem with the Boehm flute:

My appeal to the manufacturers in this country to remedy the defects being unavailing, I undertook a Journey to Munich to consult with Mr. Boehm. Our interview ended with the understanding that he would endeavour to carry out my views, and if successful, I was to have the sole right of his improvements in the Instrument for England... A most careful and impartial trial convinced me, that, as a whole, he was as far as ever from removing the defects, or of perfecting the Instrument; and feeling that I could not adopt it with pleasure or satisfaction, nor conscientiously recommend it to my Pupils, I was (most reluctantly, I confess) compelled to decline it.⁶⁶

It would seem that Clinton had hoped Boehm would ask him to make his newly-designed flute of 1847, although Clinton had never made a flute and at the time employed no flute makers. In his letter to Boehm he had written, 'I must now enquire have you matured any plan or ideas relative to your project of commencing the manufactory here.'⁶⁷ Rudall & Rose, who did come to an arrangement with Boehm to produce his new flute, had been in business for a quarter of a century, had been making Boehm's earlier conical flute to the highest standard for some years (originally under the direction of Boehm's principal workman) and had a strong

⁶⁶ Clinton. *Code of Instructions for the Fingering of the Equisonant Flute*.

⁶⁷ Stadtarchiv München, Nachlass Theobald Boehm V/3.

position as one of the leading flute makers in Europe. It is difficult to imagine how Clinton thought he might persuade Boehm to allow him, and not Rudall & Rose, to make his flute. It was most likely pique, along with commercial desire, that led Clinton to become as opposed to the Boehm flute as he became. Clinton was clearly preparing to enter the flute-making business and was unable to make anything similar to Boehm's new flute of 1847, which was protected by patent (taken in the name of John Mitchell Rose of Rudall & Rose). He therefore pronounced Boehm's fully-vented cylindrical flute a bad idea and developed instead a conical flute with closed-standing keys that could be played with the old system of fingering, his 'Equisonant flute', which he declared superior to the fingering of the Boehm flute he had previously so loudly supported.

The possibility exists that Clinton had a problem not so much with Boehm as with Rudall & Rose, and in particular with Richard Carte, his rival as a writer of a tutor for the conical Boehm flute, whose involvement with the firm Rudall & Rose was deepening. Clinton's letter to Boehm, quoted in Chapter 4, in which he writes that Carte 'is a very *plausible* person, he may feel inclined to practice upon you' provides more than a hint of a conflict. It is in fact possible that some of the letters denouncing Carte in *The Musical World* in 1845 had been written at the suggestion of Clinton. The rivalry between the two men had descended into open hostility by 1857, when their two firms ran advertisements in *The Times*, each cautioning the public about the other (Figure 6). The evidence suggests that Rudall, Rose & Carte were telling the truth and that Clinton was placing an interpretation on the report of the jury of the Great Exhibition that did not match the intention of the jurors.

FLUTES.—A Caution.—Messrs. RUDALL, ROSE, CARTE, and Co., flute clarinet, and military musical instrument manufacturers, 20, Charing-cross, beg to direct attention to the following facts:—At the Great Exhibition in 1851 there were three awards, representing three degrees of merit. The first and highest, for flutes, was the Council's medal, obtained by M. Boehm for his cylinder flute, purchased, patented, and manufactured solely by Rudall, Rose, Carte, and Co. The second was the juror's prize medal, obtained by Rudall, Rose, and Co. for Carte's improved Boehm flute. The third and only other award was the honourable mention, which was obtained by Mr. Card. See Report, class 10a. Other articles, although favourably noticed in the Report, were not considered of merit sufficient to entitle them to any award.

CAUTION to FLUTE-PLAYERS.—The Jury of the Great Exhibition pronounced that CLINTON'S FLUTE had all the advantages of others without their difficulties or defects. A reference to page 332 of the official report will testify to the truth of this. The jealousy this verdict has excited is the strongest evidence in its favour. This beautiful instrument may be seen at Clinton and Co.'s flute and clarinet manufactory, 35, Percy-street, Bedford-square.

Figure 6: Advertisements in *The Times*, 15 May 1857, offering differing interpretations of the views of the jury of the Great Exhibition. Clinton cannot be said to have been telling the whole truth.

Further evidence of a falling-out between Clinton and Rudall & Rose exists in the form of a curious work of Clinton's, *The Quadrille Melodist*, a sectioned box full of hundreds of cards on each of which is printed a short section of music. The cards in each section can be shuffled to produce what Clinton referred to as 'an almost endless variety of new quadrilles composed for the pianoforte'. The publishers of this work were Rudall & Rose, but on one surviving copy the name and address of the publisher has been inked out, possibly by Clinton himself, leaving only the words, 'May be obtained on order from other musicsellers, and of the author, at his residence, No. 14, Greek Street, Soho'.

Clinton's 'Equisonant' flute developed in a number of different forms, conical and cylindrical, wood and metal, old system and Boehm system of fingering.

An example of a conical, wooden Clinton flute with the old system of fingering is shown in Plate 11c and 11d.⁶⁸ This flute failed to win a prize at the 1851 Exhibition, at which Boehm's flute won the Council Medal, Richard Carte's 1851 Patent flute as made by Rudall & Rose won the Prize Medal and Card's flute was given an Honourable Mention.⁶⁹ The *Reports of the Juries* included this paragraph:

It should also be mentioned, that several improvements are illustrated in Mr. J. CLINTON'S Flute, exhibited by Mr. H. Potter, in which the facilities of other modern flutes, and the ordinary system of fingering are combined, and their defective parts avoided. In this instrument the tone and tune are rendered equal by the same means that M. Boehm has adopted, namely, an

⁶⁸ Private collection.

⁶⁹ Great Exhibition of the Works of Industry of All Nations, 1851: *Reports of the Juries*. (1852) p. 727-730.

equality of size and distance in the holes. It has likewise claims to consideration for comparative cheapness, the mechanism being so simple, that its price does not exceed that of the old eight-keyed flute.⁷⁰

This was later seized upon by Clinton in his mendacious advertisements in *The Times*, of which this is an example:

THE FLUTE.—CLINTON'S FLUTE is the only one of English invention recommended by the juries of the Great Exhibition; see page 332 of their final report, the only official and authentic record, wherein it states that Clinton's Flute combines the facilities of all the modern flutes, and avoids their defects. These beautiful instruments are manufactured solely by CLINTON and Co., 35, Percy-street, Bedford-square.⁷¹

Yet another contradiction is displayed in Clinton's advertisement in 1858 in which he offers lessons on his flute, on the old flute and on the very Boehm flute that he claimed to dislike:

CLINTON'S EQUISONANT FLUTE combines all the modern improvements without their difficulties or complication, and is adopted by the most distinguished amateurs. Mr. Clinton, Professor in the Royal Academy of Music, explains its advantages, and continues to give Lessons upon the Boehm and ordinary flute as usual.—35, Percy-street, Bedford-square.⁷²

In final contradiction of his previous views, Clinton's protestations that a cylindrical, fully-vented metal flute was a bad idea had disappeared by 1861, at which time he had his workmen produce just such a flute with Boehm fingerings. (Plate 11e.) It is impossible not to notice that Clinton's change of mind regarding this design coincided with the expiration of the patent on Boehm's 1847 flute. Clinton's own cylindrical, fully-vented metal flute with Boehm fingerings has toneholes that increase in size towards the bottom of the instrument. He claimed this feature as his unique selling point, although Boehm himself had tried graduated toneholes and rejected the idea, and makers have not bothered with graduated toneholes since.⁷³

George Rudall, in his letter to Boehm, wrote of 'another wandering of his brain' in relation to Clinton.⁷⁴ It is certainly difficult to avoid the conclusion that Clinton was a man about whom the kindest things that might be said are that he

⁷⁰ Great Exhibition of the Works of Industry of All Nations, 1851: *Reports of the Juries*. (1852) p. 725.

⁷¹ *The Times* 14 March 1857. It cannot be established in which edition of the *Reports of the Juries* the statement can be found on the page mentioned by Clinton.

⁷² *The Times* 27 July 1858.

⁷³ Boehm. *The Flute and Flute-Playing* p. 27.

⁷⁴ Stadtarchiv München, Nachlass Theobald Böhm V/3.

changed his mind frequently and had some difficulty in telling the unalloyed truth. Even the numbering of his instruments suggests some embellishment of the facts; Clinton flutes with serial numbers over 5900 have been seen, yet only some three dozen of his instruments appear to have survived.⁷⁵ When compared to Rudall & Rose and their successors, whose eight-keyed flutes have serial numbers over 7000 but which survive in the many hundreds, it would seem likely that Clinton's serial numbers were more a boast than a true reflection of the instruments he sold.

Clinton obtained a patent in 1848 for his first Equisonant flute.⁷⁶ He obtained a second patent in 1857. In the specification for this second patent he wrote:

The bore or internal configuration of wind instruments (blown into or filled by the breath of the performer) has hitherto assumed one or other of the following forms:

No. 1, cylindrical in the body, with a conical head.

No. 2, entirely conical, with the small end at the mouthpiece.

No. 3, the head-piece cylindrical, and the body conical.

No. 4, which is the most perfect and natural form, the head cylindrical and the body conical, but with enlargements or cells at various points of the body at or near the apertures. Any of the above bores may be obtained for metal instruments by drawing the tubes upon or over a mandril [*sic*] in the ordinary way of drawing tubes, except No. 4: when that form is required for a metal tube, the cells or undulations that have been obtained by the employment of boring bits used with the hand in the usual manner of boring wooden instruments. I employ mandrils of conical forms, with the proper undulations upon them, so that when a tube is formed thereon the most perfect form of bores may now be obtained in a metal tube, by which the internal configuration is quite true and always the same, while the process of producing such tubes effects a saving of expence [*sic*] in the manufacture.⁷⁷

It will be noted that not many years before Clinton had denounced Boehm's new flute on the grounds that it was made of metal.

Clinton's third patent, for the Boehm-style flute with graduated toneholes, described above, was obtained in 1862.⁷⁸ He took out a fourth patent in 1863 for some modifications in key mechanism.⁷⁹

Clinton's flutes cannot be seen as much more than curiosities. After his death, flutes made to his design were not made available by other makers in any

⁷⁵ http://www.mcgee-flutes.com/clint_extant.htm (accessed 28 February 2005) contains a list of known Clinton flutes.

⁷⁶ Patent 12,378 (1848).

⁷⁷ Patent 1857 (3192).

⁷⁸ Patent 886 (1862).

⁷⁹ Patent 617 (1863).

significant numbers. Someone would surely have made them if there had been any call for them. A few specially-ordered flutes are listed in the Rudall Carte stock records as 'Clinton System', but Rudall Carte, with one exception in the 1870s, did not find the need to include them in their catalogues or price lists.

Clinton cannot be said to have had much impact on the market, particularly when seen against the success of the instruments designed by Boehm and by Richard Carte.

The improved flutes developed in London in the 1830s and 1840s all shared the principal design feature, developed by Boehm and possibly originated by Gordon, of evenly-spaced holes of equal sizes. These improved flutes can be divided into those on which their designers attempted to maintain the original system of fingering (Siccama, Pratten and Clinton's first system), those on which the original system of fingering was abandoned (Gordon, Boehm and Ward) and those on which slight changes were made to the original system of fingering (Gerock & Wolf and Card). The flutes of Gordon, Gerock & Wolf, Ward and Card made virtually no impact on the market. Clinton's flutes made some impact, Siccama's and Pratten's flute more so, and Boehm's conical flute, while in itself not an overwhelming success (Rudall & Rose only sold about 250 of this model before the cylindrical flute was introduced) nevertheless inspired the other designers to produce their own flutes. It was Richard Carte, more than any other nineteenth-century inventor, who managed to discover what the market was looking for, and it was Carte's promotion of the cylindrical Boehm flute and of his own designs of modified Boehm flutes that led to his firm's domination of the market in the second half of the nineteenth century.

6: Expansion and invention

The many competing designs of improved flutes are an indication of the size of the market in mid-nineteenth century London. The market may have been large, but a successful flute maker had to sell his products against many competitors. Richard Carte understood the basic principle of success in business: he had only to discover what people wanted to buy, and then to sell it to them. That he did discover what they wanted to buy, and that they bought it, is clear by the success of his firm. The firm, it would seem, would supply almost any flute anyone might ask for. By the 1870s their price list included Boehm system flutes, 1851 Patent, 1867 Patent, 'Old System', Rockstro Model, Radcliff Model, ordinary eight-keyed and ten-keyed flute, Clinton Model and Siccama Model, with options of materials including cocoa wood (now called cocus wood), ebonite, silver and gold, plus dozens of variations available to order.¹ Piccolos of all systems were listed as well. It is difficult, indeed, to think of any type of flute the firm would not supply. An examination of their sales records extant from 1869 is therefore most valuable in discovering which types of flutes were most popular.

Not all the flutes listed in the firm's catalogues are of equal importance. The mere fact that a maker listed an instrument in a catalogue does not mean the instrument was made in any quantity, or indeed made at all. A catalogue does nothing more than list the instruments the maker is prepared to produce, or indeed even instruments the maker claims to be able to produce, and it is in the maker's interest to make it seem that his firm is larger and more important than it might actually be by inflating the catalogue. In the case of Rudall Carte, given the wide range of their offerings, the survival of their stock records provides evidence of which flutes were popular and which were not. For example, although Carte listed Clinton and Siccama flutes in one version of his firm's catalogue from the 1870s, in the twenty years to 1889 they sold only thirteen Clinton flutes and just two Siccamas. By comparison, in the same period they made, amongst other instruments, 630 Boehm flutes (of which 219 were of Rockstro's model), 182 'Old System' flutes, 530 flutes of the 1867 Patent, 58 of the 1851 Patent and 274 Radcliff Model flutes.² Clinton and Siccama

¹ Undated price list from Rudall, Carte & Co., 20, Charing Cross. This list dates from after 1872, when the firm dropped Rose's name from its title, and before 1876, when they moved to 23, Berners Street. (See Appendix 3.)

² These figures are approximate due to inconsistencies in the stock records.

flutes are not listed in the firm's other catalogues other than this one. While ordinary eight-keyed flutes were been listed, the company records show that the firm and its predecessors made (or at least numbered) some 3500 eight-keyed flutes in the 35 years before 1869 (most, presumably, before the 1850s), they made just 900 eight-keyed flutes in the 35 years after 1870. In the same 35-year period from 1870 the firm made some 4000 modern flutes. The comparative value of the instruments is striking: a standard modern flute (Boehm system, 1851 Patent, 1867 Patent, 'Old System', Rockstro model or Radcliff model) cost £29. 8s (28 guineas), whereas an eight-keyed flute cost £4. 4s (4 guineas), £7. 7s (7 guineas) or £11. 11s (11 guineas). Simple arithmetic shows the relative importance to the firm's business of the sales of 4000 flutes at 28 guineas as compared to a mere 900 flutes at between 4 and 11 guineas. It is clear that by the 1870s modern flutes had nearly superseded old flutes, but Richard Carte's firm would continue to supply an old flute to any customer who asked for one.

Carte had been connected with Rudall & Rose before joining the firm as a partner in 1850; he had studied the flute with George Rudall in the 1820s, he had been involved in Rudall & Rose's venture into the manufacture of the conical Boehm flute in 1843, and by 1848 he had been running advertisements offering flute lessons at Rudall & Rose's premises at 38, Southampton Street. Documentation has not survived regarding the circumstances of his joining Rudall & Rose as a partner. It is possible that he had made enough money through his musical and concert promotion activities to be able to buy his way into the firm, and it is equally possible that his wife's family had money that allowed him to do this. It is, in fact, possible that Rudall & Rose simply gave him a share of the business in exchange for his entrepreneurial skills. As no records are available, it is only possible to speculate. The firm had become Rudall, Rose & Co. by 1851 (it is presumed Carte represented at least part of the '& Co. '), and Rudall, Rose & Carte soon after. Carte had at least one silent partner in William Prowse, of Keith, Prowse & Co.

Investment

No details of the establishment of the partnership between William Prowse and Rudall, Rose & Carte are available, but the dissolution of the partnership on 31

December 1870 due to Prowse's retirement was noted in *The London Gazette*.³ The notice of dissolution was signed by Rudall, Carte and Prowse, Rose having died in 1866.

William Prowse's will shows him to have been a wealthy man.⁴ When he died in 1886 he left assets worth £76,000, a sum equivalent today to over £5,000,000 using the retail price index or over £32,000,000 using an average earnings index.⁵ It has not been possible to discover whether he made his fortune before or after investing in Rudall, Rose & Carte, but it seems probable that he was already wealthy by 1850, and it seems equally probable, given some joint ventures between the firms, that it was Prowse's investment that financed Rudall, Rose & Carte's substantial expansion in the 1850s.

Within a few years of Carte, and presumably Prowse, joining the firm they had moved to new premises in New Bond Street; had expanded into publishing music; had launched *The Musical Directory*, issued annually until the 1930s; had begun importing and retailing instruments by other makers; and had purchased the firm of Thomas Key, military musical instrument makers of 20, Charing Cross. *The Musical Directory* was published by Rudall, Rose & Carte along with Keith, Prowse & Co. The connection with Prowse is obvious, but it has not been possible to find any documentation regarding the partnership beyond the announcement of its dissolution. What is clear is that a large investment was made in the firm.

Rudall, Rose & Carte's move to 100, New Bond Street was announced in an advertisement in *The Musical World* on 3 July 1852:

RUDALL, ROSE, AND CARTE, Patentees, Manufacturers and Importers of Musical Instruments, Music-sellers and Publishers, beg to announce that they have REMOVED from 38, Southampton-street, Strand, to more extensive premises, 100, NEW BOND-STREET, where they intend to include in their business every branch connected with music. All their instruments will be of the first quality, as well those imported and selected from other manufacturers as those manufactured by themselves, to the excellence of which the awards of the Great Exhibition have borne testimony. Military bands supplied with complete sets of instruments.⁶

A month later they were advertising the publication of songs and of *The Flute Player's Monthly Journal*, including a *Fantasia on La Figlia del Reggimento* by Remusat, an

³ *The London Gazette* 13 January 1871 p. 128.

⁴ Prowse's will is in the PRO.

⁵ Conversions from www.eh.net.

⁶ *The Musical World* 3 July 1852.

original solo composition for the flute by Mozart (the *Andante*, K. 315), edited by Boehm, a *Grand Fantasia upon Scotch Airs* by Boehm, and the *24 Capriccios*, Op. 26, by Boehm, which remain amongst the most popular studies for the flute.⁷ By September 1852 the firm was advertising its extensive range of instruments, showing how far it had expanded into new areas of the music business, and demonstrating how much had been invested in the firm:

FLUTES, OBOES, CLARINETS, AND BASSOONS.

Rudall, Rose, and Carte are enabled to state respecting this department, that the Jurors of the Great Exhibition have borne testimony to the excellence of their Instruments, by awarding them the only Prize Medal for Flutes in England. They are also sole Patentees and Manufacturers of Boehm's New Flute, made with Parabola and Cylinder Tube, for which and for the application of his new principles in the construction of the Oboe, Clarinet, and Bassoon, the Council Medal was awarded. They are now prepared to supply every variety of these Instruments, viz., those constructed upon the new principles with new systems of fingering; those constructed upon the new principles, but adapted to the old system of fingering; and those made altogether on the old system.

Rudall, Rose, and Carte, in addition to instruments of their own manufacture, supply also Oboes, by Triebert of Paris; Clarinets, by Buffet of Paris; the Prize Medal Bassoon by Ward, and Bassoons by Savary of Paris. They also construct these instruments upon the old system as well as upon the new principles of Boehm.

CORNET-A-PISTONS, SAX-HORNS, TRUMPETS, TROMBONES, &c. Rudall, Rose, and Carte beg to invite the Professors and Amateurs of the Cornet-à-Pistons to an inspection of their New Cornet, No. 10 in their List, which they submit to their notice as unsurpassed either as to elegance of form and high finish of workmanship, or as to beauty of tone and perfection of intonation. Their stock comprehends also genuine instruments from the manufactories of the celebrated makers in Paris, Antoine Courtois, Besson, Gautrot, as well as the most approved of their models. Also Kohler's Patent Lever Cornet and the other new Cornets which obtained Prize Medals at the Great Exhibition.⁸

Rudall, Rose & Carte's expansion continued with the announcement in November 1852 of the publication of the *Musical Directory, Register and Almanack, and Royal Academy of Music Calendar* for 1853, which they produced annually for some eighty years. The firm advertised the first issue as being 'Under the Sanction of the Committee of Management of the Royal Academy of Music', with an ambitious prospectus:

⁷ *The Musical World* 14 August 1852.

⁸ *Ibid.* 25 September 1852.

Our Universities have their annual CALENDARS and ALMANACKS; the Medical Profession has its admirable MEDICAL DIRECTORY; the Law has a similar work; Painting and Sculpture embody, in the FINE ARTS ALMANACK, a concentration of valuable information which cannot be obtained elsewhere;—these, and numerous other publications, are annually distributed for the use and gratification of those who take interest in the several departments they illustrate; but there is no similar channel through which those devoted to Music may have conveyed to them the multifarious information connected with this most universal and delightful of all the arts and sciences.

The Publishers of the MUSICAL DIRECTORY propose to supply this deficiency. They propose to publish an annual work, which, in addition to the fullest amount of information given in Almanacks generally, shall also be the exponent of as great an amount of Musical information as can be obtained; designed not only for the use of the Musical Professor and Amateur, but for all who take pleasure in Music,—and who does not? Some of the heads will be such as have never hitherto been published in any form, but which, nevertheless, have been greatly desired. Among the most prominent will be—

1st.—Information relating to all Musical Societies that exist in London and throughout the country.

2nd.—A List of the Names and Addresses of all the Musical Professors of the United Kingdom.

3rd.—An Epitome of the principal Musical Occurrences of the past year.

4th.—A List of all the Music published during the past year.

In addition to the strong claims such points as these, carefully carried out, must give this work, Messrs. RUDALL, ROSE, & CARTE have the honour of announcing that it is undertaken with the sanction of the noblemen and gentlemen forming the Committee of Management of the Royal Academy of Music, as the authorised Public Organ of that Institution—an Institution which, while it has fostered a large amount of native talent, including the greater portion of our most celebrated composers, vocalists, and instrumental performers now before the public, has also been unquestionably the means of improving musical education throughout the country.

A brief History will be given of the Royal Academy of Music; also a statement of all the Students who have been educated there, with the dates of their entrance and departure, and the honours bestowed upon them, from the time of its commencement up to the present year, with every particular respecting the constitution and rules of the Institution.⁹

By 1852 the firm had been transformed from a specialised one supplying high-quality flutes to gentlemen into a substantial, wide-ranging business. By 1854 they were even selling saxophones, having become sole agents for Adolphe Sax.¹⁰

Thomas Key, whose business was bought by Rudall, Rose & Carte in 1854 after Key's death, ran a successful and evidently large firm of makers of military

⁹ *The Musical World* 13 November 1852.

¹⁰ *Musical Directory*, 1854. Saxophones were advertised in *The Times*, 15 March 1854.

musical instruments.¹¹ Algernon Rose reported, 'In 1834 Mr. Key had 40 men employed solely in the making of brass instruments.'¹² Key produced woodwind, brass and percussion instruments of all sorts. Records of the transaction between Rudall, Rose & Carte and Key's heirs have not survived, but Key's will provides some evidence of the size of business he ran.¹³ He died in 1852, leaving the business plus £5,000 to one of his sons, who evidently sold the enterprise to Carte and his partners. In addition, Key left annuities totalling some £600 to family members, suggesting, if the rate of interest was a nominal 2.5 to 3.0 per cent, a capital sum of over £20,000 to fund the annuities without drawing on capital. In today's terms Key was a millionaire; he also left a substantial mansion, Grove Hill House in Camberwell.¹⁴ His will provides a further clue regarding the success of his business: he instructed his heirs to retain the firm's foreman at an annual salary of £250, an impressive amount for a working man in the 1850s, equivalent to some £150,000 using an average earnings index.¹⁵ Thomas Key's business was clearly highly profitable and therefore valuable, and Rudall, Rose & Carte must surely have paid a substantial amount to acquire it.

Rudall, Rose & Carte maintained the two addresses, 100, New Bond Street and Key's former premises, 20, Charing Cross, for some years. By 1857, however, they were advertising only the Charing Cross address, where they remained until 1876.¹⁶

Carte and the cylindrical Boehm flute.

There may have been controversy about who was the first person in Britain to play the conical Boehm flute, but there is no doubt that Richard Carte was the first British flute player to take up the cylindrical Boehm flute when it was introduced in 1847. Boehm sold the French rights to manufacture his new flute to Godfroy and Lot, in a contract dated 14 August 1847, and it is assumed that a similar agreement

¹¹ The takeover of Thomas Key's business was announced in 1854 in an advertisement in *The Musical Directory*.

¹² Rose. *Talks with Bandsmen* p. 104.

¹³ Thomas Key's will is in the PRO.

¹⁴ The house survives as 8, Grove Park, London SE5.

¹⁵ www.eh.net.

¹⁶ An advertisement for *The Musical Directory* in *The Musical World* 5 December 1857, gives only the Charing Cross address.

was reached with Rudall & Rose for the British rights at about the same time.¹⁷ No documentation survives regarding the agreement, but the patent for the new Boehm flute was taken out by John Mitchell Rose on behalf of his firm a few weeks after the date of the Godfroy and Lot contract, on 6 September 1847.¹⁸

The first cylindrical flute made by Boehm, marked with the roman numeral I, was delivered to Richard Carte in London in June 1847. A flute marked with the roman numeral II was delivered to Godfroy in Paris.¹⁹ These were probably samples or, more likely, patterns to which the makers could refer. Boehm recommenced his number sequence with arabic numerals for what is presumed to be his production models. (It is the flute marked with the arabic numeral 1 that is presently in the Dayton C. Miller Collection at the Library of Congress in Washington. Miller's notes state that this flute was made for Briccialdi in London.²⁰) The surviving documents do not record the recipient of Boehm's flute number 2. Number 3 was delivered to Sir Charles Douglas in London, number 4 to Briccialdi, also in London, number 5 to Zaduk, and finally, in February 1848, number 6 to George Rudall. This was the flute referred to in Rudall's letter to Boehm of 2 September 1847 quoted in Chapter 1.

It is a test of salesmanship to promote a new model without attracting the criticism of a potential customer who might remind the salesman that he had already claimed perfection for the last new model. Carte had to handle the introduction of Boehm's new cylindrical flute with some delicacy, coming not many years after Rudall & Rose's introduction of Boehm's previous conical model. Carte's method was to use the salesman's device of introducing a new term, 'Parabola Head', that was bound to cause a potential customer to ask for a definition, so allowing a sales pitch to be launched. Boehm himself had used the term just once, in passing, in his 1847 *Essay*:

I made at the upper end of my tube shorter or longer contractions, which in the outline of their form approached the "parabola," and which terminated in, or converged to, a hemisphere.²¹

Carte found the term very useful indeed. The cylindrical Boehm flute made its entry into London's musical life when Carte ran this advertisement in February 1848:

¹⁷ Giannini. *Great Flute Makers of France* p. 134 provides details of the agreement between Boehm and the firm of Godfroy and Lot.

¹⁸ Patent Specification 11,853 (1847).

¹⁹ Böhm, Ludwig (ed.). *Theobald Böhm: Geschäftsbuch der Flötenwerkstatt 1847-1859, 1876-1879*.

²⁰ DCM 0652.

²¹ Boehm. *Essay on the Construction of Flutes* p. 35.

TO FLUTE PLAYERS. Mr. CARTE begs to inform his Friends and Pupils, that his TRIO and QUARTET PARTIES will be held in future at No. 38, SOUTHAMPTON STREET, STRAND, where he will also give Private Lessons upon the common eight-keyed Flute, and upon the last splendid invention of the celebrated Theobald Boehm, of Munich, which has excited enthusiastic admiration in Italy, France, and Germany, called **Boehm's Metal Flute, with Cylinder Tube and Parabola Head**, which, although fingered in precisely the same manner as the Inventor's former Flute, differs essentially from it as to perfection of tone and intonation.²²

This small advertisement deserves careful scrutiny. Carte's new address was that of Rudall & Rose, of which he was probably not yet a partner. Carte's advertisement made it clear that he was still prepared to teach the old flute (it would have been commercially unwise to refuse to do so), and he found an elegant way to forestall any complaints from detractors who might ask why, as he had been so keen on the conical Boehm flute introduced just a few years before, he was now promoting a new model, and who might indeed ask why he was claiming this new flute had perfect tone and intonation when he had made the same claims about the last model. This new model, he could say, is made of metal, not wood, and with all the ease of a natural salesman he knew the term 'Parabola Head' would attract the right sort of attention. The design of the new headjoint is not in fact parabolic at all; graphing the diameter versus the length simply produces a gently curved line rather than a straight one. (Rockstro says of the shape that it 'resembles the frustrum of a paraboloid.'²³) That the term parabola is in fact next to meaningless in this circumstance does not detract from its value in marketing the new product; one has only to consider the dozens of successful advertising slogans over the years to realise the power of a well-chosen word. Carte marketed the new flute in a manner we might recognise today, using a slogan and a unique selling point: only this flute, he could say, had a Parabola Head, and only this flute was made of metal. Carte's use of the word parabola was an act of brilliance, suggesting to the market a scientific approach, a degree of learning and a level of achievement beyond that of the average instrument maker.

Carte wasted little time in presenting the new Boehm flute in public. An advertisement in *The Times* on 24 February 1848 announced:

EXETER-HALL.—Madame Dulcken, pianist to Her Majesty, will perform "Fantasia on Bohemian airs," Schulhoff, M. Benedict, and M. Sainton: a

²² *The Musical World* 19 February 1848.

²³ Rockstro. *The Flute* §653.

Grand Concertante Duet, pianoforte and violin, on airs from “La Sonnambul,” Benedict and De Beriot, and M. Sainton; Paganini’s celebrated “Carneval de Venise”—at the GRAND EVENING CONCERT, at Exeter-hall, on Monday next, the 26th instant. The vocal portions of the concert will be sustained by Miss Emma Lucombe, Miss Dolby, Madame F. Lablache, Master Sloman, and Mr. Braham, the elder. Mr. Carte will perform a solo on Boehm’s metal flute, and Miss. S. Woolf (King’s scholar, R.A.M.) will perform a concerto, pianoforte. Tickets to be had at the principal music warehouses, and Mr. Cahan’s, next door to Exeter-hall.

By September, Carte was playing the new flute to acclaim as far away as Newcastle, where he promoted concerts. A correspondent for *The Musical World* reported:

...Mr. Carte, the *entrepreneur*, to whom the Newcastletonians owed this great treat, played a fantasia on the flute, composed by Briccialdi upon two popular Scotch airs. I do not recollect ever hearing before of the name of Briccialdi, but the fantasia was effective for all that, and encored into the bargain. I am inclined, however, to lay this at the door of Mr. Carte, who was in admirable play, and used a flute called the “Boehm metal flute,” I believe, for the first time in public. The tone of this flute almost resembles a mellow *soprano* voice, so liquid and pleasant is it; the gradations from soft to loud, and the extremes of each, seem producible in a manner I never remarked in a flute before. I should certainly (judging from this one hearing) be inclined to give the metal flute a preference over the wood flute, for the quality and quantity of tone that is obtained from it. The pitch, moreover, is less likely to suffer by the changes of temperature than in the wooden flute. The *purity* of the tone is remarkable, and it retains the same quality throughout the register. Mr. Carte and his flute made a decided hit on this their *debut*; a more hearty and genuine encore than that which followed the piece (a very long one) could not have been desired by [an] artist. After the air from *I Lombardi*, Mr. Carte gave us another specimen of his talent, and his flute, in a clever and showy duet for piano and flute, on themes from Adolphe Adam’s *Postilion de Lonjumeau*, the composition of Benedict, who executed the pianoforte part with consummate ability; it was a very brilliant performance on both hands.²⁴

In addition to his concerts, Carte presented lecture recitals. The back pages of his *Sketch* are filled with reviews of lecture recitals given in London, Liverpool and Manchester, and *The Musical World* reproduced a long review from the *Chelmsford Chronicle*:

LITERARY AND MECHANICS’ INSTITUTION.—On Wednesday evening, R. Carte, Esq., the great English master of the flute, delivered a lecture in the hall of the institute, on the construction and capabilities of that instrument—those capabilities being shown by various astonishing and exquisite illustrations, which it is scarcely possible to believe any other musical hand of the day could have executed in the same style. An audience

²⁴ *The Musical World* 30 September 1848.

literally overflowing, for some were glad to secure seats upon the edge of the platform, bore testimony to the popularity of Mr. Carte in this county... The *flute d'amour* was illustrated by another of the lecturer's compositions, "Love not," and Boehm's air and variations of the "Swiss Boy," and this closed the illustrations... If the flute has reached perfection in construction, so has Mr. Carte in the handling of it.²⁵

The *flute d'amour* mentioned in the review is without doubt Boehm's flute number 14, delivered to Carte in August 1848.²⁶ This flute was one of the instruments sold at Puttick & Simpson's auction by Desirée Ellinger, the second wife of Carte's grandson, Geoffrey Carte. The instrument is now in the Dayton C. Miller Collection.²⁷

Rudall & Rose's early cylindrical Boehm flutes.

Rockstro recorded that George Rudall at the age of sixty-two (in 1843) had abandoned his large-holed boxwood eight-keyed flute in favour of the new conical Boehm flute with an open G sharp that had just been introduced by his firm. Four years later he made the change to the new cylindrical Boehm flute.²⁸ In a letter dated 2 September 1847 from the firm of Rudall & Rose to Boehm (in George Rudall's handwriting) Rudall writes glowingly of the new instrument and suggests a name, the 'Siren Flute', which was, perhaps wisely, never again mentioned:

The French seem to be going from your original Intention, and their Instruments are not equal to your silver flute in our possession. There is not the slightest doubt, as to the vast superiority of your metal flute over every other. Indeed, we think that there is no wind Instrument that possesses so many charms... We have put your Silver Flute into most complete Repair and, we think, that it looks better than it ever did. We shall present it to your friend at the Society of Arts, as you requested. The Name of the Flute, has been suggested by a Gentleman of capital knowledge and a Flute Player of great Taste, as the most expression of its perfections, viz. the Siren Flute. What do you think of it?²⁹

Boehm's response is lost (as indeed is every other piece of correspondence to the firm of Rudall & Rose). Rudall continued with an attack upon Clinton, who had by then become hostile to Boehm and to the Boehm flute:

²⁵ *The Musical World* 27 October 1849.

²⁶ Böhm, Ludwig (ed.). *Theobald Böhm: Geschäftsbuch der Flötenwerkstatt 1847-1859, 1876-1879*.

²⁷ DCM 1237.

²⁸ Rockstro. *The Flute* §877.

²⁹ Stadtarchiv München, Nachlass Theobald Böhm V/3.

Clinton who, at first, said that the Flute was a failure, begins to come round - He said that you told him we had an objection to his publishing your Book - Now, as we have not the slightest recollection of such a circumstance, we conclude that it is another wandering of his brain.³⁰

To this letter Rudall attached a private note, signed in his own name, not that of the firm, in which he admitted his technical shortcomings:

I am very anxious to receive my flute from you, with the size holes you think best. I have been playing upon one of Godfroy's which is not a first rate Instrument; and I shall not rest satisfied until I possess one from the Inventor. You know, that I am not a great Player of difficult Passages. but I have played in my own Style in a great number of Parties and your Metal Flute has astonished and delighted every one. They all exclaim, that they had no conception, of the flute being brought to such high perfection. It would be wise, if Briccialdi could visit London, at this time to introduce it to the Publick, while it is a novelty. You may be assured that whatever alterations we can show him, we shall be too happy to exercise them.

P. S. As it is most important, being a manufacturer that I should possess the finest Instrument that can be made, perhaps, you might be able to send me my flute with the Model.³¹

Rudall at this stage in his life (he was then sixty-six years old) was apparently ready to leave the marketing of the new cylindrical flute to Richard Carte who, although not yet a partner in the firm, was already giving flute lessons at 38 Southampton Street, the premises of Rudall & Rose.

The patent for the 1847 cylindrical flute of Boehm's design, granted to John Mitchell Rose, was for 'Certain Improvements in Flutes, Clarionets, and other similar Wind Instruments, being partly a communication from a foreigner residing abroad'. The specification reads, in part:

The Invention, for which I have obtained Her Majesty's Letters Patent, as aforesaid, consists, firstly, in constructing flutes of all descriptions, clarionets, and other similar wind instruments, of metal, instead of wood or other materials; by so doing, the instruments may be kept in better tune than those of the ordinary construction, and are less liable to split or crack from heat, as is often the case with wooden instruments when exported to warm climates. Various metals or alloys of metals may be employed for the purpose, but the metals I prefer for the tubular part of the instrument are either silver, silver gilt, alloys of gold or brass, gilt or silvered inside and out. I do not, however, intend to confine myself to the above, as other metals or their alloys may be employed, and will be found to answer for ordinary purposes; however, a drawn tube made of brass, and silvered inside and out by the electrotype process, is perhaps the most desirable, as combining cheapness of cost with great brilliancy of tone; but when expence [*sic*] is not a matter of importance, I propose to employ silver or gold, or alloys of these

³⁰ Stadtarchiv München, Nachlass Theobald Böhm V/3.

³¹ Ibid. Part of this letter was quoted in Welch *History of the Boehm Flute* p. 192 note 26.

metals, as the tone of the instrument when made of these metals is much finer than those made of less expensive substances.

The Invention consists, secondly, in making the body of flutes perfectly cylindrical, instead of a long cone, as has heretofore been done; but the head or mouth-piece of the instrument, instead of being cylindrical, as heretofore, I make conical, or, rather, in the form of a parabola. By constructing a flute internally in this manner, I am enabled to produce an instrument that may be played with greater facility and give more perfect tones than the ordinary instrument.³²

Rose also describes a means of improving middle C by the addition of a small vent hole.

It would seem that Rudall & Rose's early cylindrical Boehm flutes were all made of metal; no wooden flutes have survived, and it cannot be established how many were made. A brass flute, with most of its original gilding worn off, survives in the Bate Collection and is shown in Plate 12a.³³ This flute has five open holes, four of which are fitted with rings similar to those on the conical Boehm flute of 1832. The flute has an open G# and trill keys as on a modern flute. There is a single thumb key, without the second key for playing B_♭ that is now known as a Briccialdi key. The keys are of simple design, with cups that lack a rim of the sort now commonly known as a French design. The clutches are of the vaulted design bearing onto the centres of the cups, as on the earlier conical flute. The embouchure is wooden and is of barrel design, but may not be original. Plate 12b shows a similar flute but with a silver barrel embouchure.³⁴ The existence of two flutes of such similar design and construction suggests the design of this open-holed, ring-keyed flute had stabilised and was no longer in an experimental stage.

Flutes by Rudall & Rose of the more modern design commonly thought of as French survive in the Bate Collection and in some other collections. Plate 12c shows a silver cylindrical Boehm flute by Rudall & Rose.³⁵ This flute displays many of the characteristics of the supposed French style: five perforated keys, cups with a rim and pointed arms to the centres of the cups. The flute has a Dorus G#, invented in France but used in from 1843 by Rudall & Rose on some of their conical Boehm flutes. The thumb key is of the design known as Briccialdi's. Plate 12d shows another silver cylindrical Boehm flute by Rudall & Rose.³⁶ This instrument is very similar in

³² Patent 11,853 (1847).

³³ Bate Collection 157.

³⁴ Private collection, Germany.

³⁵ Bate Collection 158.

³⁶ Private collection, Germany.

Plate 12



a



b



c



d

Early cylindrical Boehm flutes by Rudall & Rose. a: Gilded brass. b: Gilded brass with silver. c: Silver with open holes (detail) d. Silver with covered holes (detail).

design to a modern flute, yet the fact that it is marked Rudall & Rose and not Rudall, Rose & Carte shows it must date from before 1851.

The matter of the origins of the so-called French model flutes was raised by David Shorey in 1987.³⁷ Shorey suggested, on the basis of visual rather than any other evidence, that a number of cylindrical Boehm flutes marked Rudall & Rose were in fact made by Godfroy and Lot. This suggestion cannot be supported. Shorey's photographs of one of these flutes suggests an instrument almost identical in mechanism to the two early gilded brass flutes mentioned above. This flute has a metal barrel embouchure of the sort used for many years by Rudall & Rose and by their successors. Shorey's photograph of another flute marked Rudall & Rose but supposed by him to have been made by Godfroy and Lot has key cups that look much like those in flute 158 in the Bate Collection. Another flute photographed by Shorey, this time marked Rudall & Rose, Paris, again looks much like other flutes by Rudall & Rose; the unusual marking 'Paris' was explained to the author by the late Norman Maloney, former managing director of Rudall Carte, who owned a similar flute, as a device to allow the flute to be displayed at an exhibition in France that was reserved for domestic instruments.³⁸

It is difficult to think of a circumstance in which Rudall & Rose would even need to ask their French rivals to supply them with flutes. Rudall & Rose had a successful workshop in which for some years they had been making conical flutes with a mechanism similar to the one on the new cylindrical flute, and there is the evidence of Rudall's letter to Boehm quoted above ('The French seem to be going from your original Intention, and their Instruments are not equal to your silver flute in our possession.') that suggests some disapproval of the French instruments.

It is, in fact, quite as likely that the so-called French model flute was Rudall & Rose's design and was copied (and arguably improved) by Godfroy and Lot rather than the reverse. The chronology cannot be determined. The flute from the private collection in Germany shown in Plate 12d demonstrates several features of Rudall & Rose flutes that distinguish it from French ones: the shape of the Briccialdi thumb B_b lever, which is long, flat and rather more slender than the way the French made it; the arm on the open G_# soldered to the top of the key cup, a poor design that may lead to the cup being bent and the pad not seating correctly (on later flutes this lever,

³⁷ Shorey. 'The French-model flute and its origins'.

³⁸ Conversation with Norman Maloney, early 1980s.

which protrudes and is easily bent, was attached directly to the hinge tubing instead); the shape of the trill key touches, flatter than on French flutes; the shape of the footjoint key touches, which are of a design similar to that of both the cylindrical 'Old System' flute and the silver 1851 Patent flute described below, and which are in fact longer than they need to be and therefore liable to be bent out of adjustment; and finally the socket for the crutch. Some of these features suggest a design still in the process of being refined, rather than a finished design copied and simplified. It cannot be shown from the evidence available that these flutes were made anywhere other than in Rudall & Rose's workshops in London.

Although Rudall & Rose's price list, published in the back of Carte's *Sketch*, offers cylindrical Boehm flutes in wood as well as in metal, no wooden cylindrical Boehm system flute stamped Rudall & Rose (as opposed to one of their successors) has come to light. Richard Carte offered an explanation for his preference for metal flutes by saying of wood:

It becomes somewhat bulky if made of wood of the usual thickness, owing to the larger size of the cylindrical part of the instrument, and if made thinner, it has been thought more liable to split than the usually shaped flute, and more likely to shift internally as to the bore.³⁹

Richard Carte's new flutes.

Carte, ever the sharp businessman, evidently discovered some resistance from the market to the fingering of the Boehm flute. It is understandable that a player of many years' experience would be reluctant to learn a new system of fingering, and it is undeniably true that a flute with the old system of fingering is easier to play in the common keys of D major and G major. The unfamiliarity of his customers to the new fingering led Carte to develop his 'Old System' flute, on which he kept most of the old fingerings but applied them to a tube that conformed to Boehm's acoustical designs, with the important exception that most of the keys were closed- rather than open-standing. What Carte perceived as the awkwardness of fingering of the Boehm flute led him to develop his 1851 system flute, fully compliant with Boehm's design of equally-spaced holes of equal size with a fully-vented mechanism, but with Carte's own, entirely new mechanism, for which he claimed increased facility. These two

³⁹ Carte. *Sketch* p. 19.

flutes were offered alongside the Boehm and were discussed in detail in Carte's *Sketch*, published by Rudall & Rose, to explain the two new instruments they were offering.

Carte's 'Old System' flute. In his *Sketch* Carte identified the target market for this 'Old System' flute, which was one of a pair of instruments designed to appeal to two parties of objectors to the Boehm flute:

One party consisted of those who were anxious to have the advantages of this flute, without the necessity of changing their old method of fingering. This desire was expressed not only by numbers of amateurs, who, having once studied the instrument, were indisposed, either from want of leisure or inclination, to go to school again; but especially by some of the most eminent professors, who, although fully alive to the desirableness of securing a flute of the finest and most perfect tones, were so circumstanced as to be totally unable to study a new method of fingering, owing to the nature of their professional duties, which would not allow the necessary time for acquiring perfect facility upon it. For it must be borne in mind, that the time necessary to establish that union of the mind with its agents the fingers, which enables the performer to utter his notes without reflection, as it were, instinctively, must be greater in the case of a professor than the generality of amateurs, on account of the much greater facility which he requires to have at his command.

The other class of objectors to the Boehm flute consisted of great numbers of those, Professors as well as Amateurs, who, after having adopted it, although enthusiastic in their admiration of its superior tone and intonation, and altogether unwilling to return to the Ordinary flute, were yet constrained to admit that they were limited upon it as to the third *essential, facility of execution*. It was the Professor more particularly, and the highly graduated Amateur, who felt this.⁴⁰

This flute employed old-system fingerings on one of two designs of body: either a conical body with a cylindrical head as on the old flute and on the conical Boehm of 1832, or a cylindrical body with a conical head as on the new Boehm flute. This was a surprisingly popular instrument. In the twenty years from the beginning of the firm's surviving stock records some 182 flutes described as 'Old System' or 'Old Fingering' were sold. Only one example of the conical variety is known to have survived.

An example of the cylindrical variety of the 'Old System' flute is shown in Plate 13a.⁴¹ This is fingered like the old flute, although the similarities in fingering system may not be immediately evident. Carte's design incorporates all the features

⁴⁰ Carte. *Sketch* p. 23-24.

⁴¹ Rudall, Rose & Carte, serial mark IDI. Author's collection.

of the Boehm flute, with the exception of the open-standing keys. The flute has large, evenly-spaced holes covered with keys of the design now commonly known as French. On the footjoint the D \sharp key is fixed under the key touches for C \sharp and C \natural , so making it impossible to slide from D \sharp to C \sharp . Discounting the footjoint, the flute plays a scale of D major by lifting one finger after the other, just as on an old flute. The F \natural is produced in two ways, as on an old flute: by playing E and opening either the back F \natural key with the right ring finger, or else the long F \natural key with the little finger of the left hand. G, G \sharp and A are produced in the normal way, as is B \flat , by means of a large, closed-standing thumb key. C \natural is produced, as on the old flute, by playing B and, using the right first finger, operating a small key touch on the same system as an additional trill key for C \sharp to D. The first finger key is perforated and provided with a ring mechanism. This key closes automatically when the second finger is depressed. The perforation allows sufficient venting when the left first finger is raised for the middle D, and the ring mechanism closes both that key and the small one next to it. This arrangement allows full venting for the C \sharp without compromising the middle D. It is clear that Carte thought carefully about the best method to retain as many features of the Boehm flute as he could without losing the old system of fingering. This flute's sound is not too dissimilar to that of a standard Boehm flute, and as the fingering is like that of the old flute it can be seen that this instrument would appeal to some players. The instrument in Plate 13a is unusual in having a lip-plate that lacks the 'skirt' on the sides common on most metal flutes. The flute is made of silver and has a fully-engraved lip-plate. It would appear that this was an instrument made for a discerning and possibly wealthy customer.

The sole surviving wooden conical 'Old System' flute, Plate 13b, is stamped by Rudall & Rose at their Southampton Street address, and is also stamped 'Carte's Patent'.⁴² No patent was in fact registered for this flute. This instrument is to the conical Boehm as the silver 'Old System' flute is to the cylindrical one. As with the cylindrical 'Old System' flute, it has evenly-spaced holes of approximately equal size, although, of course, its holes cannot be anything like as large. The keys are of the simple, not the so-called French pattern. The footjoint is of modern design, in this case allowing a slide from D \sharp to C \sharp . The right ring finger covers a simple hole and operates, as before, the back F \natural . The right middle finger operates a key with a small hole in the centre of the cup that is probably the result of an incompetent repair to a

⁴² Rudall & Rose, serial number 34. Author's collection.

Plate 13



a: Carte's 'Old System' flute. b: Carte's conical 'Old System' flute.
c: Carte's 1851 Patent flute. d: Detail of thumb keys of Carte's 1851 flute.
e: Detail of long F arrangement on Carte's 1851 flute.

pad retaining screw. The right index finger operates the long key for C \natural and the left little finger operates the G \sharp and long F, as before. This flute differs from the cylindrical one in lacking a ring-covered key for the left index finger to provide suitable venting for the middle D.

Carte did not publish a tutor for his 'Old System' flute, and no copy of a fingering chart for the instrument has been located.

Carte's 1851 Patent. It would seem that Carte felt that if players were to be required to learn a new fingering system in order to take full advantage of Boehm's acoustical innovations, then he could design a fingering system superior to that of Boehm. Carte's 1851 Patent flute (for which a patent was in fact taken out, unlike the 'Old System') incorporated Boehm's acoustical design with a quite new fingering system.⁴³ An example is shown in Plate 13c, with details of the thumb mechanism in Plate 13d and of the long F mechanism in Plate 13e.⁴⁴ This silver flute dates from the period during which Rudall, Rose & Carte were at 100, New Bond Street (1852-1857). There is no serial mark. Unusually, the embouchure is of Boehm's rectangular shape rather than Rudall, Rose & Carte's oval shape. The flute has a lip-plate rather than Rudall, Rose & Carte's more common barrel embouchure, and the lip-plate has 'skirts' as on most modern flutes. The footjoint, as with the 'Old System' flute above, has the D \sharp key touch piece below the C \natural and C \sharp touch pieces, making it impossible to slide from D \sharp to C \sharp . Carte, ever the salesman, invoked Boehm's name and that most useful word, parabola, on his 1851 flute; the engraving includes the words 'Boehm's Parabola, Carte's Mechanism'.

The fingering system of the 1851 Patent flute has little in common with that of the old flute; on the 1851 Patent flute the all-fingers-off note is D rather than C \sharp ; it has two open-standing thumb keys rather than one closed-standing one; it has an open G \sharp , not a closed one; and the long F key closes a key to produce F \natural when F \sharp is fingered, rather than opening a key to produce F \natural when E is fingered. Almost the only similarities between the fingering of the 1851 Patent flute and the old flute are that lifting the right hand fingers consecutively produces D, E, F \sharp , and the back F \natural is retained. This is a quite different system, and in many ways it is superior to Boehm's

⁴³ Patent 12,996 (1850). It cannot be explained why this instrument has always been known as the 1851 Patent. Carte also took out a French patent for this instrument in 1850 ('Brevet d'Invention, No. 9706, Invention étrangère.') The author is grateful to Mr. Tony Bingham for his efforts in tracing the French patent.

⁴⁴ Rudall, Rose & Carte, no serial mark. Author's collection.

system of fingering. It could be said, in fact, that it conforms to Boehm's intentions of a fully-vented system better than Boehm's own flute; firstly, the F \sharp is fully-vented on the 1851 but is partially veiled by the right ring finger on the Boehm, and secondly the B \flat is fully-vented either by being played with the correct thumb key, or else by using the back F \sharp , which does a second duty in closing the B \flat , as opposed to the original Boehm in which the right index finger produces a small amount of veiling to the B \flat , with no alternate fingering. On the 1851 Patent flute the right index finger closes the top thumb key, giving an alternative B \sharp , not B \flat . Boehm's original design provided just the one fingering for B \flat , although the Briccialdi key and Boehm's own B \flat thumb key later provided a second, and on modern flutes a right hand touch piece provides a third.⁴⁵

As the 1851 Patent flute has an open G \sharp requiring the left little finger to be depressed when playing a note below G, a means had to be provided to allow this finger to operate the long F key. Carte freed the left little finger by devising a brilliantly simple mechanism to close the left little finger key when the right index finger was depressed. This is shown in the drawing attached to Carte's patent specification, Figure 1.⁴⁶ On this somewhat confusing and inaccurate drawing the touch piece labelled 4, operated by the right index finger, closes the key labelled g (mistakenly also labelled G \sharp rather than G \sharp) as well as the key labelled f and also labelled G \sharp . The drawing does not exactly describe the final production instrument, on which two thumbholes were provided, rather than one thumbhole and one lever to operate a key on the top of the flute.⁴⁷ No flute exactly matching the drawing has been noted.

⁴⁵ The right hand first finger touch piece on most Rudall Carte Boehm system flutes closes the thumb key, giving B \sharp rather than B \flat as is common today.

⁴⁶ Patent specification 12,996 (1850).

⁴⁷ An attempt to explain the differences between the patent specification and the production instrument was made by Stuart-Morgan Vance in 'Carte's Flute Patents of the Mid-Nineteenth Century and Related Systems'. *Journal of the American Musical Instrument Society* Vol. XIII, 1987.

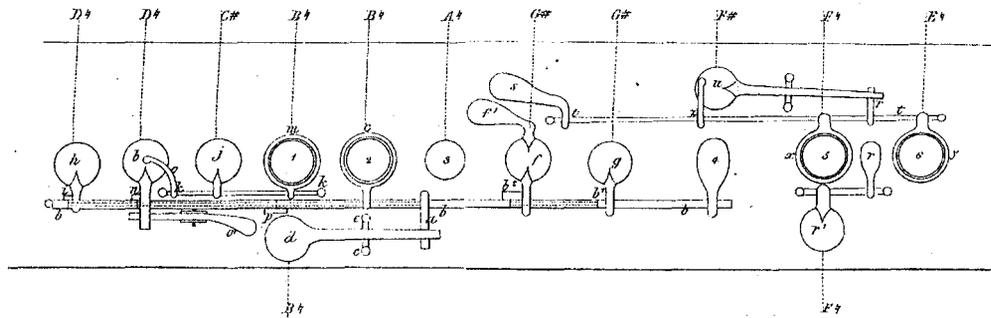


Figure 1: Drawing from Carte's patent specification for the 1851 flute. The note names refer to the note emitted from the hole, not to the finger that is depressed to produce the note.

Carte's 1851 flute has the great advantage over the Boehm in that music written in sharp keys, as much flute music was, is easier to play. On the Boehm, a passage requiring a rapid alternation between E and F# requires the player to lift two fingers at the same instant as putting down a third; on the 1851 flute the player simply lifts one finger. Boehm's alternative fingering for F#, using the middle finger of the right hand instead of the ring finger, produced the very sort of veiled note he wanted to avoid. Carte's design included an alternative fingering for F# using the ring finger of the right hand instead of the long F# key, correctly described by Rockstro as giving a badly veiled note.⁴⁸

Carte did not publish a tutor for his 1851 Patent flute, but he did publish a fingering chart, only one copy of which has been located, inserted into a copy of Carte's tutor for the conical Boehm flute. A reproduction is shown in Figure 2.⁴⁹ The annotation correcting the address appears to be in Carte's handwriting.

⁴⁸ Rockstro. *The Flute* §663.

⁴⁹ The original measures approximately 335mm by 230mm. The author is grateful to Mr. Tony Bingham for providing this copy.

CARTE'S PATENT FLUTE, WITH THE NEW FINGERING.
MANUFACTURED BY
RUD LL, ROSE & CO
 58 Southampton Street Strand, London. *See 100 New Bond Street Price 1/1.*

G.A.M.U.T.

SHAKES.

Observations. The figures 1, 2, 3, indicate when the fingers of either hand are to be used. The O's indicate the fingers off the hole. Three signs & indicate the keys that are to be closed, and those & of the keys that are to be opened. The sign @ indicates that the ring round the hole is to be pressed without covering the hole. The Shake @ indicates the fingers employed in shaking. In the flat keys or modes the thumb is to press down the two keys placed near it in the natural and sharp keys it presses down only the upper key. When an accidental B natural occurs in a flat key, the second fingering given for B natural is to be employed, and when A sharp or an accidental B flat occurs in the natural or sharp key, the second fingering for A sharp or B flat is to be used. The thumb is not required for any of the notes above D sharp in the highest octave; it may however rest upon the upper key for all of them excepting the G and one of the G sharps. It is also not required for any note below G in the lower octave, but yet it may rest upon the keys if found convenient. The G key (acted on by the little finger of the left hand) is required only for the note G natural, and one of the upper D's; consequently only in the modes of C, of one, and two sharps; and of one, two, three, and four flats. The keeping the little finger however on this key in these modes so that it may move with the third finger as on the Boehm Flute, gives additional smoothness to the execution. In three sharps, four sharps, five sharps, six sharps, six flats, and five flats it is not required at all.

Figure 2: A fingering chart for Carte's 1851 Patent flute, found inserted into a copy of Carte's tutor for the conical Boehm flute. The annotation correcting the address appears to be in Carte's handwriting.

The fingering chart shows the variety of alternative fingerings available on this instruments; there are no less than six fingerings for C#, and remarkably, two fingerings for middle D, which could be played in the usual way (as on the old flute or on the Boehm) or else with all fingers off. The all-fingers-off fingering for D provides for greatly increased facility in many passages.

Carte had yet more explaining to do concerning his invention of yet another new flute. This he accomplished first by praising Boehm's innovations (which he did with evident sincerity), and then by claiming that more needed to be done:

...if, in what I have to advance respecting the Flutes I have myself patented, I shall have to record some strictures upon Boehm's flute, they will be strictures, not so much upon what he *has done*, as upon what he has left *undone*.⁵⁰

Carte was clear about what was to be done to improve the Boehm's flute:

⁵⁰ Carte. *Sketch* p. 23.

It was therefore the aim of the Makers, in any third flute they should publish, not to lose any portion of that perfection of tone and intonation which constituted the excellence of the Boehm flute, but to unite this with increased facility of execution, if they could obtain it. Any instrument consequently giving up any portion of this excellence, whether fingered in any new method, or like the Ordinary flute, would necessarily be rejected by them... It was requisite, if any change were made from the Ordinary eight-keyed flute, or from the Boehm flute, that both should be greatly superior to either of these instruments, in order to make it desirable for parties to adopt the new one.

It must be said that Carte succeeded. Some passages that can cause problems to a player of the Boehm flute are comparatively straightforward on Carte's. An example is the opening to the third movement of Mozart's flute concerto, K. 314 (Figure 3).

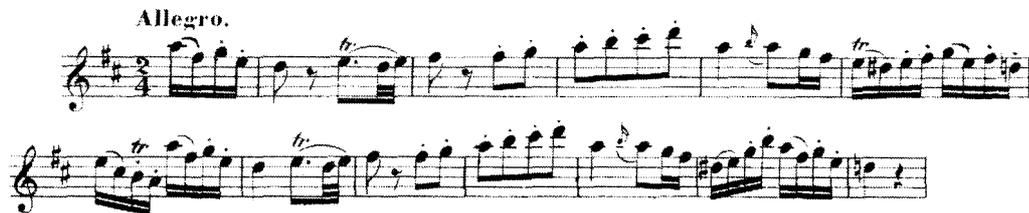


Figure 3: Opening of the third movement of Mozart's Flute Concerto in D major, K. 314.

This passage, known to most players today (but admittedly perhaps less known in Carte's day), presents the player of the Boehm flute with a challenge in passing from E to F#, which requires two fingers to be lifted as a third is lowered unless the player uses the veiled fingering for F# using the middle finger instead of the ring finger; and it presents the player with an awkward trill from B to C# requiring thumb and first finger to be trilled together. On Carte's 1851 flute the trill from E to F# is produced simply with the first finger of the right hand, and the trill from B to C# with the first finger of the left. In both cases the fingering used on the 1851 flute is similar to that on the old eight-keyed flute, yet Carte's flute provides so many alternative fingerings that most passages that would have been difficult to play on a flute with the old fingering become as easy to play on Carte's flute as on Boehm's.

Carte provided evidence of the advantages of his system of fingering over both the eight-keyed flute and the Boehm flute:

But perhaps the most effectual mode of demonstrating the extraordinary facility afforded upon the new flute compared with the others, is to make a statement of the number of cross-fingerings, and the number of

times the action of the little finger and thumb of the left hand is actually required in all the scales and chords in every key.

In ascending the twelve major keys and twelve major common chords, taking the compass from the lowest C to the highest B flat,

The number of cross-fingerings upon these Flutes are as follows :—

Ordinary Flute	176
Boehm's Flute	127
Carte's Flute	91

The number of times the little finger of the left hand moves.

Ordinary Flute	51
Boehm's Flute	71
Carte's Flute	22

The number of times the thumb moves.

Ordinary Flute	37
Boehm's Flute	54
Carte's Flute	6

Upon the above statement, it may be observed, that under the head of "Cross Fingerings" the new Flute has about half the number of those upon the Ordinary Flute, and about one-third fewer than the Boehm Flute.⁵¹

Carte's insistence that the thumb was made to work too hard on the Boehm is shown by an example from his *Sketch* (Figure 4). This passage, which he says is:

...formed of the chords of the tonic and dominant, and played in all the major keys, may also be instanced as a remarkable illustration of the extraordinary facility of execution upon the *Patent Flute with the new fingering*, as seen in one simple fact, namely, that in playing through the whole of them, the thumb of the left hand has actually to be moved only *seven times*, while upon the ordinary flute it has to be moved *one hundred and forty-nine times*, and on the Boehm flute no less than *two hundred and twenty-three times*. These, and the preceding calculations, will serve to enable those who have not the three flutes in their hands, to form a definite conclusion upon the subject. These are facts which speak for themselves. If we bear in mind that one of the chief causes of the cross-fingerings of the flute arises from the moving of the thumb, and that on one flute it moves but seven times, where on another it moves a hundred and forty-nine, and another two hundred and twenty-three, it must be evident to a demonstration which has the advantage as to facility of execution.⁵²

⁵¹ Carte. *Sketch* p. 30.

⁵² *Ibid.* p. 32.

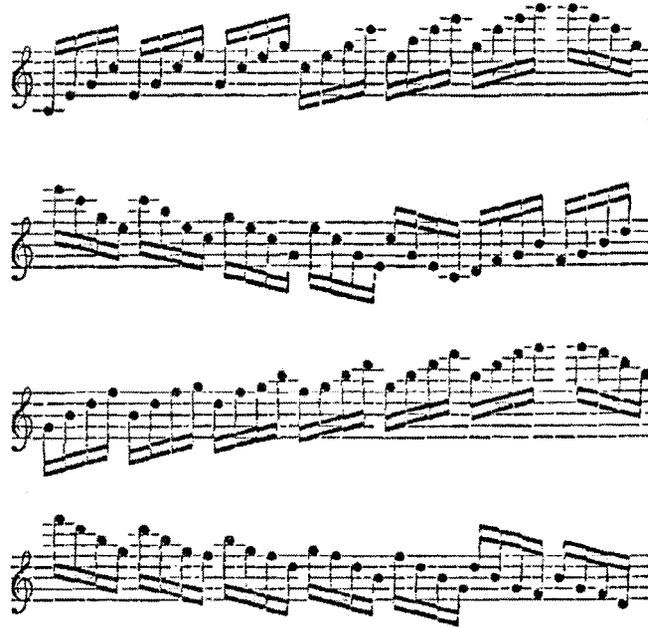


Figure 4: Carte's example to show the superiority of his fingering system over that of the old flute over of Boehm, from his *Sketch*, p. 32. This passage was to be played in all keys.

The 1851 Patent flute was in no sense a compromise of Boehm's design. Carte clearly considered his system to be improvement on Boehm's system of fingering. It is important to note that unlike the 'Old System' flute, the 1851 Patent flute does not represent an attempt to ease the change for a player of the old eight-keyed flute to a flute made to Boehm acoustical designs easier. The fingering of the 1851 Patent flute is, in fact, as far removed from the old eight-keyed flute as is the Boehm. As Carte's firm also held the patent for the Boehm flute, Carte's decision to market the new instrument must be seen as a sincere attempt to supply a better flute rather than as an attempt to promote a rival one. And Carte, of course, was as ever prepared to supply a Boehm flute, or indeed almost any other type of flute, to anyone who would ask for one.

The 1851 Patent flute was available in the metal cylindrical version or in the rather less common wooden conical version. Examples of conical 1851 flutes exist in the Bate Collection,⁵³ in the Edinburgh University Collection,⁵⁴ and in a private collection in the USA.⁵⁵ A silver conical 1851 flute is said to exist in a private collection in New Zealand.

⁵³ Bate 159.

⁵⁴ EUCHMI 2023.

⁵⁵ Collection of Prof. Rick Wilson, California, USA.

Carte's 1851 Patent flute obtained a Prize Medal at the Great Exhibition (the second rank of honour, after Boehm's flute, which was given the Council Medal). The flute's appearance at the exhibition, and the publication of Carte's *Sketch* describing two new flutes, each available with cylindrical or conical bore, provoked another controversy, and another series of letters to *The Musical World*. The communication from 'Index' concerning Carte's offering of two different bores was quoted in Chapter 3. Another letter, from someone calling himself 'Marsyas' (a pseudonym not, perhaps, the most appropriate for a flute player), demonstrated the confusion and frustration felt by some amateur players at the proliferation of rival designs:

We see almost all the professors in this country of any note, at open feud with each other on this point, and using instruments which, in structure and appliances of fingering, are so totally different, as scarcely to bear the smallest comparison one with the other. Let me enumerate them. Nicholson subdivided his flute into large, small, and medium-sized bores, using in the highest octave different fingerings for each. Boehm reversed the *whole* order of fingering, and professors had to relearn the instrument. He subsequently re-modelled it, and tortured the vocal sound of wood into the shrill blast of metal. Another change of fingering ensued. A failure here set all to work; they cut up, reversed, changed, altered, and so modified Boehm's invention, as to annihilate his system. Mr. Carte has now *two* flutes of his own invention for sale, differing from each other. Mr. Siccama has another; Mr. Briccialdi has another; Mr. Clinton has just favored us with another. Now, Sir, the evil of this is apparent. Those who learn under one of these masters will not presume to go near another for improvement, because, either they are wedded to their own system, or they do not understand the nature of the flute you bring them. Hence each system has become a monopoly, and so the art has become crippled. Why should not a committee of able artists this year set the point at rest as to which is best, and so make one system *universal*? The general and, I believe, the best-founded opinion is to retrace the old ground, and get back to the old fingering.⁵⁶

'Marsyas' (who from his style of writing and from the points he makes may have been the Rev. Thomas Clotworthy Skeffington, who a decade later wrote *The Flute in its Transition State*), makes a complaint that will be familiar to consumers in our own time who are confused about the competing standards of new items of technology. 'Marsyas' published another letter in which he made a rather more direct complaint about the promoters of rival systems, their contradictory claims and their commercial activities:

⁵⁶ *The Musical World* 1 February 1851.

Let us, then, calmly inquire into the cause of these strange discrepancies. Professors of the flute were once united, now they are like a rope of sand. The evil, Sir, I fear, is not so much in choice as in interest. The truth is, that London flute professors have of late years become too much interested in the sale of their instruments. I speak this with much caution, but also with a sense of its truth. Formerly they applied themselves to their art solely; now they attend a little too much to the shop; and the result is, they are given up now to the construction of that which before they were content to turn to a beautiful and a practical art. I believe there are very few of our English Flute professors who are not in some way or other interested in the sale of instruments. . . Now, sir, is it possible, under these circumstances, that that eminent professor can ever hereafter countenance or recommend any but his own flutes, were the improvement ever so far beyond his? The flute, it is justly said, is in a transition state, and therefore all have a right to try their hand upon it. True. But let not those who do so be so fettered by the investment of their entire interests in it, as almost compelled to advocate their own as the best, whatever that be. Artists, to be conscientiously free, ought to have nothing to do with the sale or make of instruments. Let them construct, invent, or improve, but let them, in God's name, sell their inventions to the maker at the best premium, and be free thenceforward to unite together for each other's good, and for the promotion of the general cause:—viz., the advancement of their art.⁵⁷

To the letter of 'Marsyas' came an equally long-winded response from 'Index', who insisted, in part:

With two exceptions, namely, Mr. Carte of the firm of Rudall and Rose, and Mr. Card, of St. James's-street, Piccadilly, I believe no London professor has any interest, more than the ordinary interest of the profession, in the sale or manufacture of flutes—although each may have his favourite instrument and manufacturer.⁵⁸

'Marsyas' responded with a surprising attack on Carte:

It is but fair now to state that Mr. Clinton published his book about three months, I think, before Mr. Carte's made its appearance. In that book he stated that Mr. Boehm had offered him the purchase of his metal cylindrical Flute, but owing to his strong objection to its material, and its complicated mechanism, he declined its purchase. This, by the way, is the Flute now offered for sale by the firm of Rudall, Rose, and Carte. He stated its tone to be harsh, shrill, unvocal, and owing to the liability of the note breaking with any sudden effort, as in a *sforzando* (an evil which is inherent in the cylinder), "a constrained and painful exertion of the breath was occasioned, which made it injurious to weak lungs." There is both sense and reason here; how the contradiction was made by Mr. Carte, who, for some reason I can hardly

⁵⁷ *The Musical World* 1 March 1851.

⁵⁸ *Ibid.* 15 March 1851.

understand, takes occasion to meet this assertion without disproving it, by saying, apparently without design, that the metal Flute is in tone sweet and resonant, and “so easily played on, that the most delicate person may use it.”...One word in conclusion about Mr. Carte’s New Patent Flute, and I have done. Mr. Carte acknowledges the defects of Boehm’s Flute, and sets about constructing one, nevertheless, on the same principle—the gist of his objections to it refer almost wholly to the cramp execution it affords—and so to obtain a perfect flute, he endeavours to effect this end, by removing the action of two keys from the thumb and little finger of one hand, to the first and second fingers of both hands, in some cases still employing the first and old method, and thus *increasing* the complication of fingerings. The form of the cylinder, against which I could name serious objections, is retained. I had heard a year ago of a new design for the flute by Mr. Carte being in progress: I little dreamt it would have resulted in this “*opus Exiguum*” The notion is preposterous that a system so radically defective as Boehm’s should be made practicable and good simply by the removal of the action of two keys. I am really sorry to find so talented an artist should stake his reputation and his money on so small a work...⁵⁹

Early players of Rudall, Rose & Carte’s flutes. Complaints like those of ‘Index’ and ‘Marsyas’, and indeed the less than truthful advertisements of John Clinton quoted in Chapter 3 did not seem to affect Carte’s business. Carte did not hesitate to let the public know who was playing on one of his firm’s flutes. In 1858 the firm ran an advertisement in *The Times* listing the following leading performers on their ‘New Cylinder Prize Flutes’: Benjamin Wells, the professor at the Royal Academy of Music; Remusat, of Her Majesty’s Theatre; Reichert, of Jullien’s concerts; Rockstro, of the London Concerts; Svendsen and Hartman, of the Crystal Palace; De Jong, of the Hallé Orchestra (who survived well into the 20th century and made recordings) and others, lesser known.⁶⁰ In 1859 they advertised a performance on their patent cylinder flute at the Crystal Palace by Edward De Jong.⁶¹ Later the same year Rudall, Rose & Carte were promoting concerts by one ‘Master Drew Dean, the extraordinary Juvenile Flutest [*sic*] (pupil of Mr. Richardson) who had the honour of performing before Her Majesty and Court at Buckingham Palace...’⁶² By 1862 they were able to run an advertisement announcing a performance at the International Exhibition by Benjamin Wells, who was to play on a gold flute.⁶³ Yet another youthful performer was Master J. Churchill Arlidge, who performed every morning and evening at the Colosseum, on Rudall, Rose & Carte’s Prize Medal Silver Cylinder flute. An undated

⁵⁹ *The Musical World* 22 March 1851.

⁶⁰ *The Times* 10 May 1858.

⁶¹ *Ibid.* 29 April 1859.

⁶² *Ibid.* 12 August 1859.

⁶³ *Ibid.* 6 June 1862.

picture of Arlidge as a very young boy shows him holding a silver 1851 Patent flute with a barrel embouchure (Figure 5).⁶⁴



Figure 5: Joseph Churchill Arlidge as a young boy, holding an 1851 Patent flute.

The first gold flute. What is thought to be the first gold flute was made by Rudall, Rose & Carte and was described in an article in *The Times* in 1856:

A NOVELTY IN MUSICAL ART.—An article of considerable interest, as well in an artistic point of view for its rarity and intrinsic value, as just been produced by Messrs. Rudall, Rose, and Carte, the musical instrument-makers and publishers in New Bond-street and at Charing-cross, and is now on exhibition by them previous to being forwarded to its destination. It consists of a flute made entirely of the purest gold, with just so much alloy as was absolutely indispensable in the adaptation of the metal to such a purpose, and has been manufactured by them expressly for Mr. Gilbert Wright, a solicitor and an amateur fluteplayer, resident in Sydney, who sent over to this country the requisite quantity of Australian gold with that view. The instrument, in its finished state, contains 14½ ounces of gold, besides the slight quantity of alloy, which makes the metal of the quality of 18½ carats, and its value is from 130 to 150 guineas. In its construction all the improvements of M. Boehm have been introduced which gained for him the Council Medal at the Exhibition of 1851, as well as the additional improvements as regards facility of fingering made by Mr. Carte, and for which his firm obtained the prize medal on the same occasion. It were

⁶⁴ The author is grateful to Mr. Bob Arlidge for supplying this photograph.

not too much to say that these radical changes in the construction of the flute have given to that instrument a capacity for the production of sweet sounds heretofore wholly unknown, while it retains all its well-known peculiarities, and these highly intensified, and is divested of the difficulties of blowing and manipulation inherent in the old instrument.⁶⁵

This notice was a triumph of one-upmanship for Carte. No other London maker could claim to be operating in circles in which a flute of such value could be sold. Rudall, Rose & Carte's position at the top of the market, and their international reputation, was secured.

⁶⁵ *The Times* 5 August 1856.

7: The 1862 Exhibition, Carte's 1867 Patent, Rockstro, Radcliff, Carte's 1875 Patent and some eccentric amateurs

The 1862 International Exhibition provided an opportunity for Rudall, Rose & Carte to secure their position as the leading flute makers in Britain and as suppliers of other instruments. Their military musical instrument business, based around the firm of Thomas Key which they had purchased some years before, appears to have been thriving. The 1862 exhibition brought Rudall, Rose & Carte success in the form of a medal for a 'clarinet with improved arrangement of keys to facilitate the fingering, and for improved piston for brass instruments'. Almost as an afterthought the jurors praised their flutes:

They exhibit also a flute of excellent tone and finish, made on Böhm's principles, so modified as to render the fingering very similar to that of the common flute.

John Clinton's firm, however, received apparently greater praise for their flutes:

For flutes on a modification and improvement of the system of Böhm. This improvement is made by gradually enlarging the holes as the scale descends, thus equalizing the voicing of the tube, while the true intonation is preserved.¹

The jurors' decision provoked a furious reaction from Rudall, Rose & Carte, who, referring to their pamphlet describing the instruments they had exhibited,² put their case in the 1863 edition of their *Musical Directory*. Four full pages ahead of the title page were devoted to Rudall, Rose & Carte's offerings at the International Exhibition, much of the coverage being quotations from other journals.³ On the matter of Clinton's graduated holes, Rudall, Rose & Carte provided a letter from Boehm to show that this was far from a new idea:

The Flute-playing world knows that for six years I made all my Silver Flutes with graduated holes. I furnished such to several English gentlemen—Mr. Greville, Mr. Cherry, and others. I myself made use of a Flute with graduated holes during my stay in London in 1851, the smallest, C, being twelve millimetres in diameter, and the largest, C sharp below, being fifteen millimetres, always a quarter of a millimetre of graduation. TH. BOEHM.
Munich, 12 June, 1862.

¹ International Exhibition, 1862. *Reports of the Juries*, p. 9.

² *A Description of the Musical Instruments Manufactured by Messrs. Rudall, Rose, Carte & Co., 20, Charing Cross, and Exhibited by them at the International Exhibition, 1862*. No copy of this pamphlet has been found.

³ *Musical Directory* 1863 p. 1-4.

On the matter of the lack of the correct award for their flutes, Rudall, Rose & Carte quoted from an article in *The Times*:

One rather amusing oversight occurred in a very important class. In this class the goods of one great firm were so pre-eminent that the jury agreed to take them as their standard, and to award medals and honourable mentions according as other competitors were more or less successful in approaching it. These awards were duly made, but the firm whose goods had been taken as the standard were forgotten, and the mistake was not discovered till the Council of Chairmen of Juries was dissolved.

To this, Rudall, Rose & Carte added:

The omission of Rudall & Co.'s Flutes here alluded to was purely accidental, and was corrected with the greatest promptitude when brought to the notice of the Jurors. The mistake was only circulated in the first edition of the List of Awards. The Prize Medal had been awarded to RUDALL and Co., but in the Wording of the Award the Flute had been unintentionally omitted. RUDALL and Co.'s improvements in the Flute were added to their improvements in the other Instruments in the second edition.

A quotation from the *Daily News* described a concert demonstrating the firm's instruments, including a performance on a gold flute by the young John Radcliff:

Saturday is a great day for the music; and on last Saturday the musical public had a treat of more than ordinary attraction. Messrs. RUDALL, ROSE, and CARTE, the exhibitors of the 'golden flute,' which the jurors, having first taken it as a standard by which to test all the rest, afterwards forgot to give a prize medal to, arranged a little concert, in which not only this famous instrument, but all their inventions, should be tested before the select Saturday audience. Mr. Woodhouse gave his singular performance on one of their open side drums, Mr. Catchpole performed on their new English horn, Mr. Harper on their trumpet, and Mr. Ratcliff [*sic*] on the golden flute. The whole performance was exceedingly good and highly appreciated, but the greatest successes were Mr. Harper's trumpet solo, and Mr. Ratcliff's [*sic*] flute fantasia. It is asserted that the beautifully clear tone of the latter was attributable to the costly material of the instrument, but whether or no that be true, the effect was very charming. It may be interesting to flute amateurs to learn that this unique instrument, made of eighteen and a half carat gold, may be purchased for about a hundred and thirty guineas.

The gold flute referred to may have been the one described in the article in *The Times* quoted in Chapter 6, but it would seem that the firm made other gold flutes. One such, made to Rockstro's modification of Carte's 1851 Patent, has survived in the Stadtmuseum in Munich (Plate 14a, 14b and 14c). This instrument is made to the highest standards of craftsmanship and is richly decorated with ornamental engravings. The elaborately-engraved silver barrel embouchure has been allowed to tarnish and is now almost black, as are most of the silver keys. The flute is marked 'Council & Prize Medals/1851 and 1862/ Rudall, Rose, Carte & Co./Patentees/20

Charing Cross/London/Carte's System/Rockstro's Model/S.E.S.⁴ As the engraving refers to the 1862 International Exhibition, this is unlikely to have been the very instrument displayed unless the engraving was added or altered later, suggesting that more than one wealthy flute player was prepared to spend 130 guineas on an instrument. As the flute is made to Rockstro's modification of Carte's design it would seem that by the 1860s Richard Shepherd Rockstro's influential position was already established. No other maker is known to have produced a gold flute until 1869, when Louis Lot in Paris produced a gold flute that was presented to Remusat by the members of the Société Philharmonique de Shang-Hai.⁵ This instrument, for many years in the possession of the late Jean-Pierre Rampal, is thought to be the only gold flute made by Louis Lot. It cannot be determined how many gold flutes were made by Rudall, Rose & Carte before 1869 when the surviving records begin, but in the next twenty years the records show six gold flutes.

The 1867 Patent.

Carte's 1867 Patent (the patent is actually dated 1866) was granted for 'Improvements in the Musical Instrument Designated the Flute'.⁶ The improvements are effected by combining some of the fingerings of the Boehm flute with the fingerings of Carte's 1851 instrument (Plate 14d⁷). In fact, the changes to the 1851 flute are slight: the long F key has been removed and replaced by an extra key touch for the right index finger, which can therefore be used to play either F# as on the 1851 flute or else F \natural as on the Boehm. The right index finger can also be used, as on the Boehm, to produce B \flat . Carte abandoned the 1851 flute's alternative forked (and badly veiled) fingering for F \natural , produced by playing F# and depressing the right ring finger. On the 1867 flute the right ring finger can be used, as on the Boehm, to produce F#. All other fingerings remained unchanged from the 1851 flute. Given that it was a requirement that an invention be novel in order to qualify for a patent it is remarkable that Carte managed to obtain a patent for this flute, on which the only novelty is the comparatively trivial joining of features of two previously patented flutes. Carte described this flute as 'Boehm and Carte's systems combined'. The

⁴ The serial marks on the firm's metal flutes operate according to the code MUSICTRADE, with the M representing 1, the U representing 2, and so on. SES would be number 303. (See Appendix 3.)

⁵ Lenski and Ventzke. *Das goldene Zeitalter der Flöte*. p. 190.

⁶ Patent Specification No. 3208 (1866).

⁷ Rudall, Carte & Co. Serial mark RET (706). Author's collection.

Plate 14



a



b



c



d

a: 1851 Patent, Rockstro's Model, gold tube with silver keys, ferrules and barrel embouchure. b: Detail of embouchure. c: Detail of engraving. d: 1867 Patent flute, silver.

system, novel or not, is brilliant, and the ability to use the right index finger either for F \flat or F \sharp provides greatly increased facility in all keys. The patent specification drawing for this flute (Figure 1), unlike the drawing for the 1851 flute, matches the instrument as actually produced, except that the drawing lacks the two extra trill keys for D \flat and D \sharp that were often added.

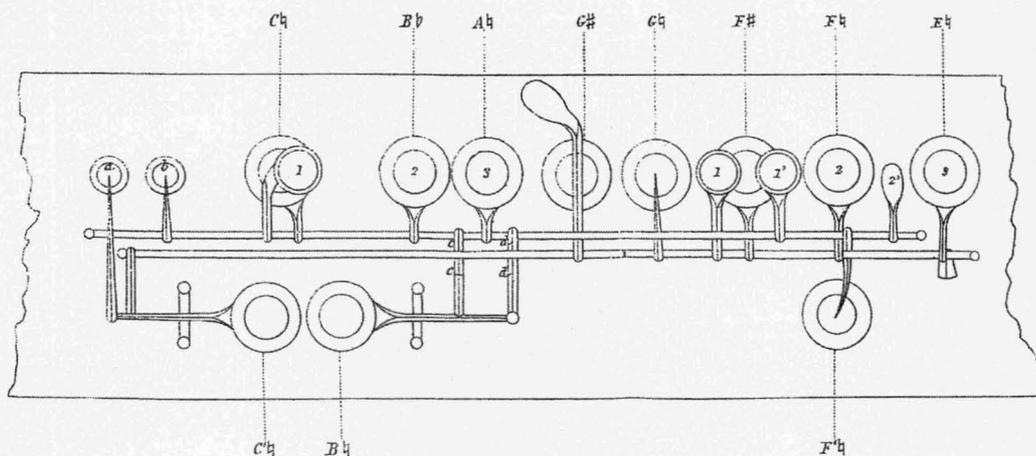


Figure 1: Patent specification drawing for the 1867 Patent flute. The drawing does not include the two extra trill keys often added to the instrument.

The 1867 flute is sometimes wrongly supposed to allow the player to use the fingerings of the old flute or of the Boehm. It is difficult to understand how anyone who has handled an 1867 flute could think it could be played with the fingerings of the old flute.⁸ In fact, there is almost no similarity between the fingering of the old flute and that of the 1867: on the 1867 the all-fingers-off note is D, not C \sharp as on the old flute; the 1867 flute has two open-standing thumb keys rather than one closed-standing one; it has an open G \sharp rather than a closed one; and the right index finger can be used to play either F \flat or F \sharp . The only similarities between the two fingering systems are that it is possible on both to play D-E-F \sharp by picking up the right hand fingers in succession, and on both it is possible to play F \flat by fingering E and opening the back F key. Figure 2 shows the right hand mechanism of an 1867 flute.⁹

⁸ Powell. *The Flute* p. 163 makes this claim.

⁹ Serial number 2738. Author's collection.

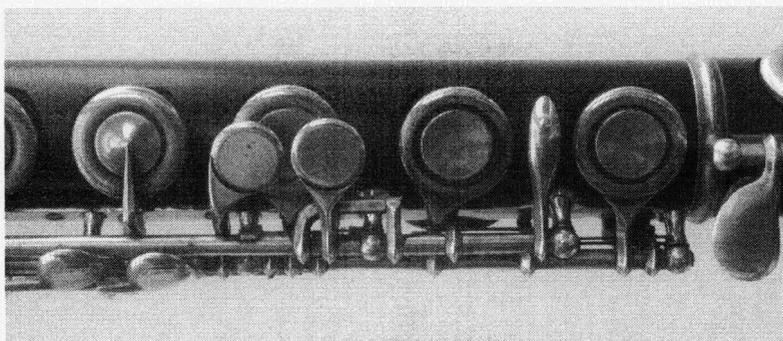
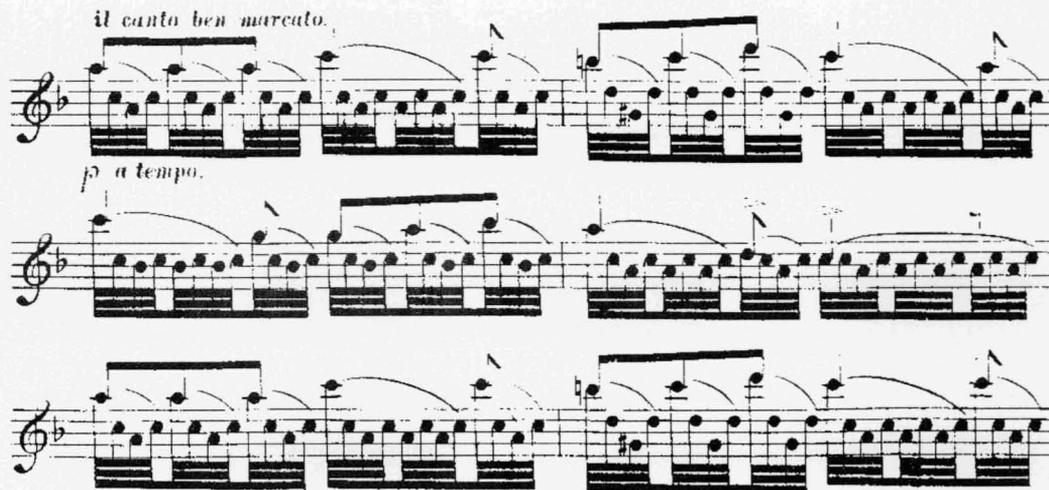


Figure 2: Right hand mechanism of an 1867 Patent flute. The two key touches for the right index finger produce either F \flat as on a Boehm flute or else F \sharp as on an old flute. The back F \flat of the old flute is retained. F \sharp can also be played using the right ring finger, as on a Boehm flute.

Carte produced a tutor for his new flute.¹⁰ This is a rather shallow work intended for complete beginners; it includes pages on the rudiments of music and its first musical example is the tune now known as ‘Twinkle, Twinkle’, but it does include a comprehensive and useful fingering chart. (Appendix 4.)

The 1867 flute provides so many alternative fingerings that many passages are made easier than they would be on either a Boehm or a flute with the old fingering. The excerpt from the Mozart concerto quoted in Chapter 6 is as easy on the 1867 flute as it is on the 1851 if played using the index finger on the F \sharp key. Passages requiring an F \flat are as easy on an 1867 as on a Boehm. In practice the player simply uses the F \flat key in passages in flat keys or in C major and the F \sharp key in passages in sharp keys. Passages requiring rapid movement including a D are greatly simplified by the open D. The back F \flat is retained along with its secondary function of providing an alternative fingering for B \flat , as on the 1851 flute. It is in fact difficult to find a passage that is more difficult to play on the 1867 flute than it is on any other. There was even a piece written specifically for this instrument, Ottomar Beckert’s *The Nightingale*, that cannot be played on any other as it requires the open D, and in this case the composer specifies that the piece is to be played using the left hand alone. (Figure 3.)

¹⁰ Carte. *Complete Course of Instructions for the Flute on Carte & Boehm’s Systems Combined*.



The Nightingale.

Figure 3: Excerpt from *The Nightingale* by Ottomar Beckert, to be played on an 1867 flute using the left hand alone. This passage requires the all-fingers-off note D that is a feature of the 1867 flute.

Christopher Welch claimed credit for the principal innovation of the 1867 flute, that of moving the F₄ from the long key on the front of the flute to its new position on the top.¹¹ Welch explained that in *Musical Opinion*, 1 January, 1890, Benjamin Wells, writing with what Welch describes as ‘the most perfect good faith’, stated that in 1867 George Spencer, an amateur flute player and engineer, suggested dispensing with the long F of the 1851 flute and replacing it with a key to be operated by the right index finger. Rockstro also gave the credit to George Spencer.¹² Welch, however, had a different version of events:

... as a matter of fact, it was not from Mr. Spencer that Mr. Carte derived the idea of how to dispense with the complicated mechanism necessary for the side-hole by doing away with this hole and making another at the top, but your humble servant. This idea, instead of being elaborated in the brain of an engineer, originated in the fortuitous circumstance that I once accidentally injured my right forefinger.¹³

Welch explained that he had had the right index finger touch piece raised to accommodate his damaged digit, after which it became apparent that another hole and another key could be fitted under it. He claimed to be in possession of the drawings he produced for the Rudall, Rose & Carte workman, James Collins, dated October 1865. In fact, it is possible that Rockstro himself was the originator of the

¹¹ Welch. *History of the Boehm Flute* p. 245-247.

¹² Rockstro. *The Flute* §684.

¹³ Welch. *History of the Boehm Flute* p. 246.

idea, though he may not have known it at the time. On one example of his version of Carte's 'Old System' flute, serial mark MRD (described below), Rockstro added a crescent-shaped key touch for the right index finger to close the front F \sharp key at the same time as the F \sharp . Rockstro's arrangement did not move the hole from the front to the top of the flute, yet in other respects the idea is similar to that of the 1867 flute.

The 1867 Patent flute was used by a number of well-known and influential players. W.L. Barrett, who played in the orchestra of the Philharmonic Society and was professor of flute at the Royal College of Music, was a prominent player of this system. (Figure 4.) Barrett devised a slight modification of the 1867 flute.



Figure 4: W.L. Barrett, professor of flute at the Royal Academy of Music, photographed holding an 1867 Patent flute. (DCM).

One of Barrett's students, who also used an 1867 flute, was the brilliant virtuoso Eli Hudson (1877-1919), a popular recording artist in the early years of the twentieth century. Hudson used this system from an early age; an undated photograph of him as a young boy shows him holding an 1867 flute (Figure 5).

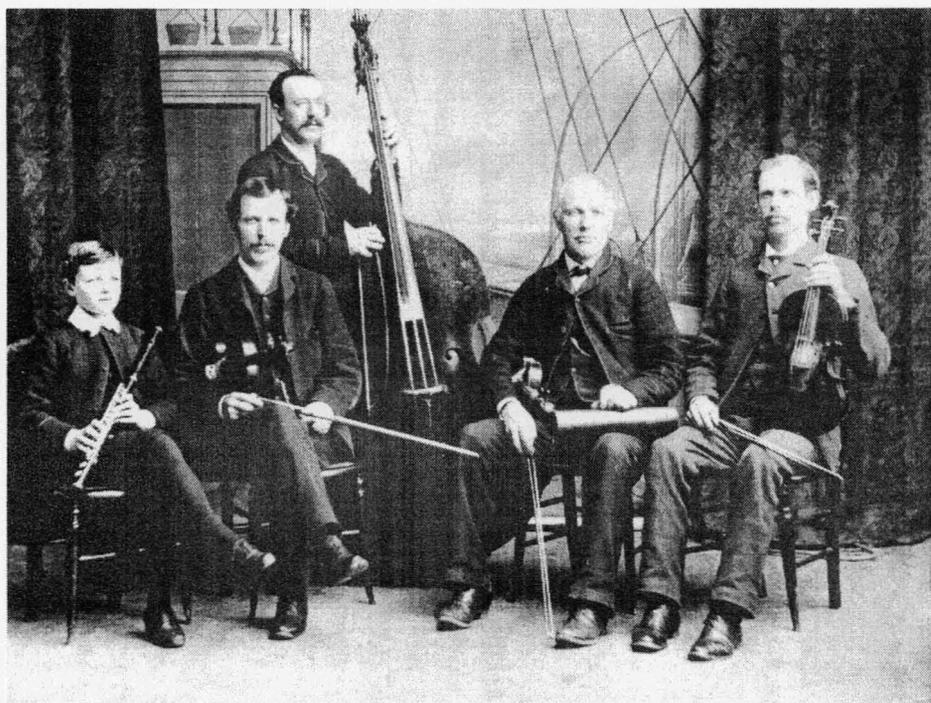


Figure 5: Eli Hudson as a young boy in a photograph thought to have been taken in Skegness about 1890. Hudson is shown holding an 1867 Patent flute, with its distinctive top-mounted open D key. (Private collection.)

The last professional player of the 1867 flute, Mr. William Bartlett (Figure 6), principal flute of the BBC Concert Orchestra, only retired in the 1980s, and a few elderly amateur players use the system still.



Figure 6: William Bartlett, principal flute in the BBC Concert Orchestra, playing an 1867 Patent flute in the 1970s. (Photograph by Mr. Bob Cooper.)

The last 1867 Patent flute was produced in 1963 by the firm Flutemakers Guild, whose employees were former Rudall Carte workers, for Mr. George Gwilt of Edinburgh.¹⁴

The 1867 flute has an undeserved reputation of being difficult to keep in adjustment. In fact the instrument is robust and, although more complicated than the standard Boehm flute, it cannot be said to have a more complicated mechanism than a modern oboe.

Flutes of the 1867 pattern were made in wood, silver, ebonite and gold. An 1867 flute with a gold tube and gold keys is in a private collection in Yorkshire.

Rockstro's flutes.

Richard Shepherd Rockstro made modifications to Boehm's conical flutes, Carte's 'Old System' flute, 1851 Patent flute and 1867 Patent flute and to Boehm cylindrical flute, in most cases mentioning the original designer and adding the words 'Rockstro's Model'. Such was Rockstro's antipathy to Boehm that although his final model is in almost every regard a Boehm flute, he could not bring himself to acknowledge the fact, insisting throughout his life that Boehm had stolen Gordon's design.

Rockstro's version of the conical Boehm. Rockstro described the origins of his first model, a variation on the conical Boehm flute of 1832, and the involvement of John Mitchell Rose:

I had no intention of posing as a regenerator of the system, my chief wish was to have a flute for my own use that should be correctly tuned according to equal temperament... The scale for the positions of the holes was completed on April 10th, 1852 and was given, set out on a slip of box-wood, to Rose on the same day. On May 11th I received a flute made precisely in accordance with my design.¹⁵

The flute shown in Plate 8d, Rudall, Rose & Carte's number 274, may be the very instrument described by Rockstro. It has the larger bore described by Carte, larger holes than on most flutes of this type, and it matches the description Rockstro gave, after a paragraph reminding his readers how clever he was:

¹⁴ Conversation ca. 1995 with Mr. Harry Seeley and Mr. Angus Harris, formerly of Flutemakers Guild. The instrument was made by Mr. Angus Harris.

¹⁵ Rockstro. *The Flute* §668.

When this flute was finished, and I tried it, my good friend Rose remarked: "I have been trying experiments all my life and this is the first time that I ever knew one to answer completely." Rose was less critical than I, with regard to the third octave, but the success of the flute being indisputable, though qualified, he adopted, with my willing consent, the new positions of the holes, and the firm never afterwards made a conoidal flute with Boehm's positions of the holes.

The instrument described above had the open $g\sharp$ key, and the $d''\sharp$ key of C^oche [*szé*]; the lowest four notes were fingered as on the eight-keyed flute; in other respects the fingering was the same as that of Gordon's flute... The material was cocus-wood. The metal-lined head-joint was provided with the ordinary tuning slide and screw-stopper. I sold the flute in 1858 and I have now lost sight of it; I have also lost the scale. It would not be worth while to recalculate the distances of the holes, as the pattern is now obsolete.¹⁶

It cannot be said that Rockstro's design became the norm for this type of flute as Rudall, Rose & Carte made few conical Boehm flutes after 1847, and the design was nearly obsolete by 1852. This first of Rockstro's flutes exhibits one important feature of Rockstro's final, Boehm-inspired cylindrical flutes: the so-called Rockstro $F\sharp$, a key between the right middle and ring fingers that allows $F\sharp$ to be played without closing the right ring finger key and thereby veiling the sound. Placing the key in this position made it necessary to place both trill key touches one stage higher up the tube, to be operated by the middle and index fingers rather than the middle and ring fingers. The charge has been made that Rockstro's $F\sharp$ key was not in fact his invention; Bate credits Ward¹⁷ while Welch so inflates the importance of the matter as to devote four pages to it, mostly filled with invective about Rockstro.¹⁸ In fact it is probably correct to credit Rockstro with the invention of this key; as with many inventions it is possible someone else previously did something similar, but it would seem that Rockstro was the person who introduced the key in an acceptable form. The right hand mechanism, with Rockstro's key, is shown in Figure 1.

¹⁶ Rockstro. *The Flute* §669.

¹⁷ Bate. *The Flute* p. 146.

¹⁸ Welch. *History of the Boehm Flute* p. 173-176.

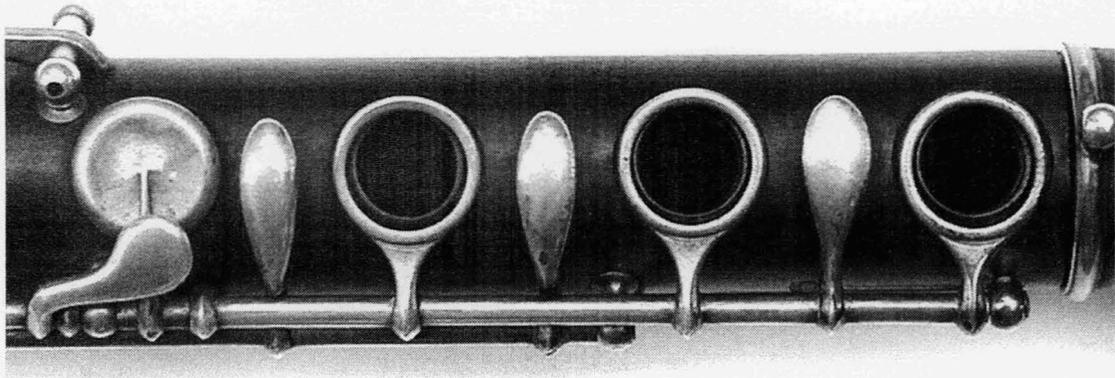


Figure 7: Right hand mechanism or RR&C 274, a conical Boehm flute with Rockstro's F# key modification. The key operated situated between the middle and right ring keys produces an F# free of the veiling influence of the right ring finger covering the hole.

Philip Bate wrote of this flute, 'Should it ever come to light again, it will be a rare prize for some collector.'¹⁹ It is very likely that number 274 is the flute, or else it is one very like it; the instrument matches Rockstro's description in almost every regard, and the stamp reading Rudall, Rose, Carte & Co, 100, New Bond Street places it in the correct time period. Some doubt remains regarding the Briccialdi B₁ lever fitted to the flute. Rockstro says that the fingering of his 'improved' cylinder flute of 1858 was identical to the 1852 flute but that the Briccialdi key was added to the later flute.²⁰ However, in his description of the Briccialdi key, invented in 1849, he speaks glowingly of the invention and says he had a flute with this key in 1849 or 1850.²¹ Given his enthusiasm for the Briccialdi key, it would seem unlikely that he would not have had one fitted to his 1852 design, and it is possible that, writing some decades after the events, he had become confused. It is also possible that the Briccialdi lever was added later.

'Old System, Rockstro's Model'. Rockstro does not include in his book a description of his second flute, a variation on Carte's 'Old System'. It would seem he would rather his readers forgot it:

Since the year 1849 there have appeared, from time to time, many different kinds of flutes retaining the old closed keys, for which their inventors have claimed a combination of all the advantages of the old and the new flutes, but which, in reality, have generally possessed all the worst qualities of both, and none of the special merits of either. Space will not admit of a description of these numerous efforts, which would indeed be out of place in a history of the development of the flute, inasmuch as none of them ever led, directly or

¹⁹ Bate. *The Flute* p. 146.

²⁰ Rockstro. *The Flute* §673.

²¹ Ibid. §658.

indirectly, to any real improvement of the instrument. The most that can be said, even for the best of them, is that they were ingenious attempts:
“Downward to climb and backward to advance.”²²

Amongst the designs retaining the old system of fingering must be included the Radcliff Model, which Rockstro does not even mention in his book. This omission is remarkable, not least because the firm’s records show that in the twenty years to 1889, when Rockstro was preparing his book, 274 Radcliff flutes were sold as opposed to 219 of Rockstro’s model.

At least three flutes marked ‘Old System, Rockstro’s Model’ have survived. The earliest of these is a silver flute engraved ‘Rudall, Rose, Carte & Co./Patentees/20 Charing Cross/London/Old System/Rockstro’s Model/MRD’.²³ Using the code MUSICTRADE, the mark MRD becomes 179.²⁴ As the stock records for this period of the firm’s history have not survived it is not possible to determine the precise date of manufacture of this flute, but from the address it must have been made after 1857 when the firm left 100, New Bond Street. Two later examples of silver ‘Old System, Rockstro’s Model’ flutes are known to have survived: MDM (191)²⁵ and MDE (192).²⁶

The flute marked MRD (Plate 15a) uses a fingering system and a key mechanism similar to that of Carte’s original ‘Old System’ flute, with the principal exception of the long F key, which has been replaced by a crescent-shaped key touch to be operated by the side of the right index finger. This crescent-shaped key closes a key on the front of the flute, in the same position it would have been had there been a long F key, and produces the note F $\frac{1}{2}$ when pressed together with the F# key. This crescent-shaped key is awkward to manipulate, and it is easy to understand why its use was not continued. Apart from this fingering for F $\frac{1}{2}$, the flute is fingered as was the old eight-keyed flute. The footjoint is of modern design, allowing the player to slide smoothly from C# to D#, and has a crescent-shaped D# key to facilitate movement of the little finger around the footjoint keys (Figure 8). This flute bears another feature common to Rockstro’s flutes in that its holes are huge, indeed almost as large as it is possible to make them.

²² Rockstro. *The Flute* §660.

²³ Author’s collection.

²⁴ See Appendix 3.

²⁵ Author’s collection.

²⁶ Private collection, Germany.

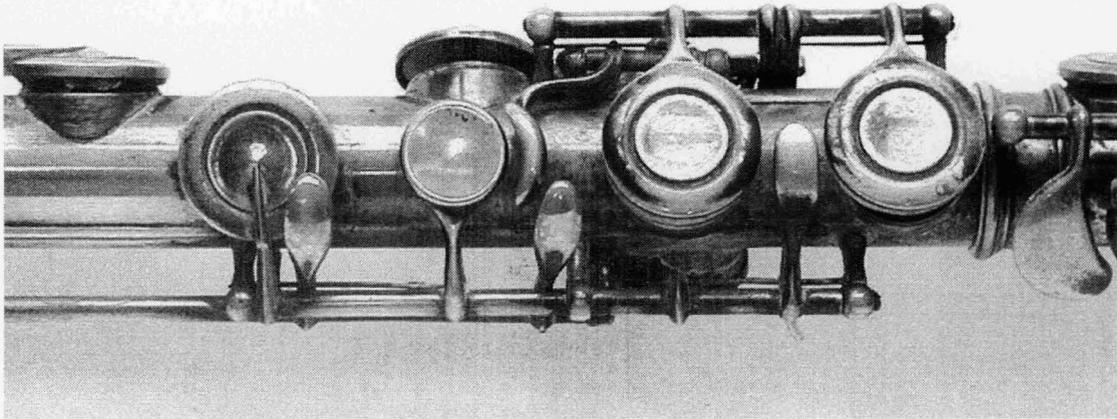


Figure 8: Right hand mechanism of 'Old System, Rockstro's Model' flute MRD. The crescent-shaped key, pressed by the index finger along with the F# key touch, produces F# and replaces the long F. The D# key is crescent-shaped to facilitate movement of the little finger on the footjoint keys. This flute has yet to be restored.

The later 'Old System, Rockstro's Model' flute, MDM, is engraved with the same information as MRD but for the additional words 'COUNCIL AND PRIZE MEDALS/1851 and 1862'. As this flute has a serial mark just twelve numbers from MRD it may be assumed both flutes date from 1862 or soon after. The surviving stock records, dating from 1869, begin with CMC (515). If MRD was made in 1862, then the firm would have produced some 336 flutes in seven years, a not unimpressive rate of about 48 per year or just less than one per week. This was in addition to modern wooden flutes which had a separate number sequence and old-style eight-keyed flutes, which had yet another sequence.

The flute marked MDM (Plate 15b) differs from MRD in that it has the traditional long F rather than the crescent-shaped key, and in the shape of the D#, which on MDM is teardrop-shaped rather than crescent-shaped. There are a few trivial differences besides, but the arrangement and shape of the keys suggest the same worker made both flutes.

'1851 Patent, Rockstro's Model'. The gold flute, SES, in the Stadtmuseum in Munich, described above, is a particularly lavish example of Rockstro's variation of Carte's system. A silver example is shown in Plate 15c.²⁷ A wooden example is shown in Plate 15d.²⁸ This flute is fingered in precisely the same manner as the standard 1851 flute and has the same mechanism, but it has the huge holes that are a feature

²⁷ Rudall, Rose & Carte UMR (217). Author's collection.

²⁸ Rudall, Rose & Carte 404. Private collection, USA.

Plate 15



a: 'Old System', Rockstro's Model, MRD. b: 'Old System', Rockstro's Model, MDM. c: 1851 Patent, Rockstro's Model. d: 1851 Patent, Rockstro's Model. e: 1867 Patent, Rockstro's Model.

of Rockstro's designs. The comparison with this flute and the standard 1851 flute described in Chapter 6 is striking: the diameter of the holes of the standard 1851 is 13.5mm for the footjoint, 12.5mm for the right hand and 11.5mm for the left hand; on Rockstro's model the equivalent holes are 16.0mm in diameter, almost as large as it is possible to make them. This size is nearly equivalent to the size Rockstro claimed was ideal:

After many careful experiments, I arrived at the conclusion, about twenty-five years ago, that, all things considered, the diameter of the finger-holes of the quasi-cylindrical concert-flute...should be approximately .64 inch... Finger-holes of .64 inch in diameter enable the player to produce the greatest power of tone with a given expenditure of breath; they are peculiarly well-adapted for metal flutes, and they permit the advantageous employment of a tube of greater thickness, whatever may be the material, than would be desirable with smaller holes.²⁹

Rockstro did not mention his variation of the 1851 flute in his book. He appears to have attempted to disown it, as indeed he attempted to disown his other early efforts at design:

The Flute known as "Rockstro's Model", 1864-1877. The above title was given to this instrument by my worthy friend J. M. Rose at the time when the firm, in which he was the manufacturing partner, undertook to make it. Unfortunately in his generous desire to publish my name as widely as possible, he caused it to be placed on all flutes with the large holes of 1864...although some of these instruments were constructed on principles of which I by no means approved, and some of them were, in fact, mere experiments. The error was soon afterwards rectified, but many of these experimental flutes, for which I am in no degree responsible, are still in existence, and the unwary purchaser of a second-hand flute, engraved or branded with my name, may be deceived.³⁰

Rockstro must be doubted on this matter, as it is scarcely credible that Rudall, Rose & Carte or Rockstro's 'worthy friend J.M. Rose' would have applied Rockstro's name to as lavish an instrument as the gold flute SES without his consent, and it is equally scarcely credible that Rockstro would not have heard that the instrument was being made and would not have wanted to try it when it was completed.

'1867 Patent, Rockstro's Model'. Some evidence that may partly support Rockstro's claim that his name was applied to instruments that he had not approved exists in the form of a wooden 1867 Patent flute, number 420 (Plate 15e).³¹ This is a

²⁹ Rockstro. *The Flute* §345. (0.640 inch equals 16.25mm)

³⁰ Ibid. §679.

³¹ Private collection.

large-holed flute of the Rockstro type. Under the stamp Rudall, Rose & Carte is another stamp that has been nearly effaced. Examination under a microscope revealed traces of the letters RO..., suggesting the flute might originally have been marked Rockstro's Model and had been altered following Rockstro's intervention. This flute was made in about 1869, just before the surviving stock records begin.

The Rockstro flute in its final form. The flute that has come to be known as the Rockstro Model is in almost every regard a Boehm flute; it has the 19.0mm bore and the so-called parabolic headjoint of the Boehm flute; it has a fully-vented mechanism using Boehm fingerings; and it has large, equally-spaced holes (Plate 16a).³² In fact, it has much larger holes than the standard Boehm, and this is its principal difference. The Rockstro Model flute has some features of mechanism not used by Boehm: the F# lever previously described; the so-called 'vented D', often fitted to the Rockstro flute; the open holes, commonly used on French flutes but rare on British flutes other than Rockstro's; the extra B \natural lever to be operated by the left index finger, fitted on some Rockstro flutes; and the clutches fitted behind the mechanism rather than on the hinge tubing.

The 'vented D' is an extra key fitted between the thumb key and the lower trill key and fixed to open with that lower trill key when the touch piece is depressed by the right middle finger (Plate 16b). Opening this key produces the note D when B is fingered, greatly facilitating passages involving rapid movement from B to D. The key also provides a useful high G to A trill.

The open holes or 'perforated keys' were not popular in Britain. Removable plugs were often supplied for those Rockstro Model flutes made with this feature. The Rockstro Model flute illustrated in Plate 16a, 16b and 16c has had its perforated keys plugged.

The extra B lever (Plate 16c) is of such limited use that it was apparently rarely ordered. It closes the thumb key to produce B when the lever is depressed with the left index finger, facilitating a trill from B to C#.

The Rockstro clutches (Plate 16d³³) are mechanically superior to the common kind, particularly as the tradition on British-made flutes was not to use adjusting screws. On Rockstro's arrangement the lever for the key that pushes and the lever for the key to be pushed are positioned behind the mechanism, far from the fulcrum

³² Rudall, Carte & Co. serial number 800. Author's collection. The ebonite has faded from its original black to a yellow-green.

³³ Rudall, Carte & Co. serial number 7284. Author's collection.

Plate 16



a



b



c



d



e

a: Rockstro's final model. b: Detail of vented D. c: Detail of extra B lever.
d: Detail of teardrop-shaped Rockstro clutches. e: Detail of a deep C sharp hole.

of the lever, so allowing easier adjustment and a more positive action. The space between the levers can be filled by a substantial piece of cork that can easily be made thicker or thinner to adjust the keys. The common type of clutch, by contrast, has two disadvantages: the clutches are fitted immediately against the hinge tubing and are therefore close to the fulcrum, allowing room for only a thin piece of material to adjust the keys, and the piece of material (cork or even paper) is in a position where it can be loosened by oil from the mechanism. Rockstro's clutches are better in every way, and were often made in a most elegant teardrop form.

Rockstro flutes were occasionally made with a very deep chimney for C#, allowing the hole to be bigger and therefore increasing the volume of the note while maintaining the correct amount of venting for middle D (Plate 16e).³⁴

Some of Rockstro's mechanical innovations have merit. His clutch mechanism has recently found favour with some makers who appreciate its advantages. His 'vented D' has proved to be useful if uncoupled from the lower trill key, so turning it into a C# trill key; in this form it has become popular in recent decades.

Rockstro's acoustical innovations have proved less popular. The large holes, most of them the same size to the top of the flute (not including the trill keys), are held by many to produce a sound that becomes too loud at the top of the flute.

Rockstro insisted this was not true:

It has been asserted that these large holes give rise to "wildness" in the tone, an assertion without the smallest foundation in fact. A wild, or unmanageable, tone is generally the fault of the player, not of the instrument, and the most frequent cause of this evil quality is violent blowing in the attempt to obtain a powerful tone from a flute with holes of insufficient size.³⁵

In spite of his protestations, Rockstro's large holes have not found favour.

In the twenty years from the commencement of the surviving stock records in 1869 the firm sold 411 standard Boehm flutes but only 219 of Rockstro's model. In the same period the firm sold 520 flutes of Carte's 1867 pattern, 58 of Carte's 1851 pattern and 274 of Radcliff's Model.

³⁴ Rudall, Carte & Co. serial number 7284. Author's collection.

³⁵ Rockstro. *The Flute*. §345.

The Radcliff flute.

John Radcliff had been admitted as a student at the Royal Academy of Music in 1858 at the age of sixteen, where his teacher had been Benjamin Wells. Radcliff's application to the Academy had been supported by George Rudall.³⁶ He would seem to have been a successful player from a young age; Rudall, Rose & Carte, as described above, engaged him to demonstrate their gold flute at the 1862 exhibition. Radcliff later became first flute at the Royal Italian Opera, Covent Garden.

Radcliff redesigned the Boehm flute to give it a fingering system very close to that of the old flute, and, in common with most other inventors of flutes in his day, had his design executed by Rudall Carte. In Radcliff's case the firm saw the commercial potential of the design and produced the flute in considerable numbers. Radcliff's *School for the Flute* is a version of Charles Nicholson's similarly-named tutor, updated for the new instrument. Radcliff explained in the introduction to his tutor that his new flute is designed according to modern principles of equally-spaced holes and open-standing keys, yet maintains the old system of fingering with two exceptions: B \flat and C \natural . Radcliff's flute, in fact, employs essentially the same fingering system as Carte's 1851 Patent flute but for two changes: the all-fingers-off note is C \sharp , not D, and the G \sharp key is closed, not open. The differences between the fingering of his flute and the old flute are that his flute has two open-standing thumb keys and has a long F \natural that is produced by playing F \sharp and closing the long F key, rather than playing E and opening the long F key as on the old flute. These two features were copied from Carte's 1851 Patent flute. Radcliff's flute is shown in Plate 17a, with a detail of the thumb keys in Plate 17b. The long F key arrangement is shown in Plate 17c. Radcliff wrote in his introduction:

It has been a subject of much regret that the late Mr. Charles Nicholson's celebrated "School for the Flute" a work of such an elaborate and exhaustive character should, owing to the disuse into which the Flute for which it was designed has fallen, be lost to the Flute playing world, excepting to those few, and their number is daily lessening, who are still attached to the Old Flute.³⁷

It would be difficult to design a flute to Boehm's principles that is closer to the fingering of the old flute than Radcliff's. This is an ingenious system, and its popularity was considerable; Radcliff's flute outsold Rockstro's model.

³⁶ Royal Academy of Music. *Register of entrants, 1837-1873*.

³⁷ Radcliff. *School for the Flute*. Second edition, 1894.



a: Radcliff's Model. b: Radcliff - detail of thumb and G sharp keys. c: Radcliff - detail of long F mechanism. d: Welch's Model. e: Welch - detail of body section. f: Welch - detail of thumb keys. g: Welch - detail of footjoint keys.

Radcliff's clear aim, and his unique selling proposition, was to produce a flute with a fingering system so close to that of the old flute that a player would feel comfortable about making the change. He wrote in the introduction to his tutor:

It follows from what I have stated that the change from the old eight Keyed Flute to that according to my model is but slight. I am aware that there are still many Flute Players trembling on the verge of a transition from the old to the new class of Flutes, desiring, but hesitating whether or not to take this step. Convinced as they are of the superiority of the tone and tuning of the New Flutes, but knowing well their old Flutes, and having perhaps in some measure succeeded in managing them, so as partially to conceal their defects, they fear to take a leap in the dark as to the altered fingerings. To all such I may perhaps not be considered presumptuous if I hold out my hand and say, follow me. I have gone through all your experience, have stepped over the stream before you, and have now planned a bridge by which you may pass over still more easily.³⁸

The Radcliff flute was particularly popular in Australia and New Zealand, where it was used by John Lemmoné and by the astonishing virtuoso John Amadio, who made many recordings on Radcliff flutes and continued to use a Radcliff flute until his death in the 1960s. From Amadio's recordings it is clear that there is nothing that could be played on a standard Boehm that could not be played on a Radcliff.

Eccentric amateurs

A number of amateur players designed eccentric flutes that were made for them by Rudall Carte. It is a mark of the supremacy of Rudall Carte as flute makers in the late nineteenth century that these inventors should have gone to this firm rather than to any other, as indeed had Radcliff, and it is a sign of Rudall Carte's business acumen that they should have accepted commissions from these men. Of the flutes made to special order, one was for F.J. Frankland, who had been involved in the design of Mathews's flute (a silver 'Carte and Frankland System' flute is listed in the Rudall Carte stock records as serial mark RTU), and another for George Spencer, the engineer mentioned above in relation to the design of the 1867 flute. Spencer, it would seem, was unsatisfied with a simple and proven system when he was able to design a more complicated one. A flute made for him in 1887, serial

³⁸ Radcliff. *School for the Flute*. Second edition, 1894.

number 714, is described in the stock records as Cocoa (later known as cocuswood) 1867 middle and foot joints with extra mechanism (Figure 9).³⁹ The flute, in fact, is thinned throughout (meaning the wood has been carved away leaving the toneholes standing proud), and a number of alterations have been made: one of the two trill keys has been moved to the top of the flute; the lower of the two keys normally operated by the thumb has been moved to the top of the flute and is now operated by a lever (Figure 10); and the D# key on the footjoint has been moved to the top of the flute and is operated by a horizontal lever (Figure 11). The intention appears to have been to put as many holes on the top of the flute as possible, leaving only one thumb key and one trill key underneath. The result was to make an already complicated mechanism almost unworkable. Rudall Carte were prepared, however, to indulge Spencer's whim, although an experienced flute maker would surely have raised objections to his alterations.

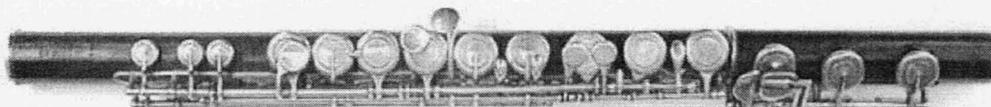


Figure 9: George Spencer's experimental 1867 flute.

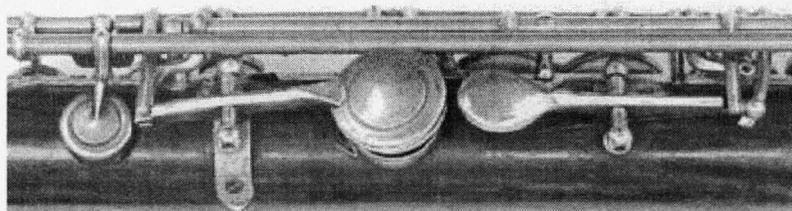


Figure 10: Spencer's altered thumb key arrangement.

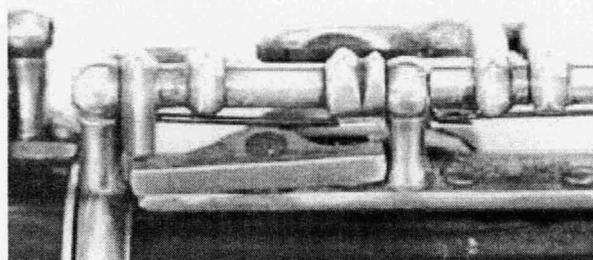


Figure 11: Spencer's horizontal lever operating the D sharp key.

³⁹ Rudall, Carte & Co., serial number 714. (Private collection.)

There were doubtless other inventors and improvers whose flutes were listed in the stock records, but without noting anything unusual about the flutes. There is little doubt that any workable new design would have been taken up by others. None were. Two amateur flute-playing inventors, however, stand out for their startlingly complicated instruments: Christopher Welch, whose *History of the Boehm Flute* was discussed in the Introduction, and James Mathews, who would appear to have relished the very most extreme complexity, perhaps for its own sake. Rudall Carte were, as ever, willing to oblige these gentlemen.

Christopher Welch's Model. A letter from John Finn to Dayton C. Miller dated 5 July 21 reads:

Mr. Welch was always having new flutes or middle joints made for him by Rudall Carte & Co., some with small holes, medium holes, large holes, open G# &c., &c. With these he preferred to use headjoints by Lot, Paris and a few footjoints he possessed. I have a number of these middle joints, high pitch, cylinder bore, silver keys and mechanisms, finely made by Rudall, Carte & Co., one of cocus others of ebonite. Only one other person has this model flute, and that was obtained from me.⁴⁰

Welch's first flutes may have been the ones listed in the stock records on a page titled 'Improved Conical Flutes' and dated 1 and 2 August 1870.⁴¹ These flutes are described simply as 'made to order'. The surviving example, the second of these flutes, is a most complex conical flute stamped Rudall, Rose & Carte on the body and footjoint, but Rudall & Rose on the headjoint, which is made of a lighter-coloured piece of wood. It would seem that from that early date Welch was already alternating headjoints. The surviving conical flute has a mechanism similar to that of a later cylindrical flute, illustrated in Plate 17d, an ebonite flute that was, in this case, supplied with a headjoint.⁴² Plate 17e is a closer view of the front of the mechanism. Plate 17f shows the thumb keys, the upper of which is open-standing and the lower closed-standing. The lever above the open-standing key operates the B \flat key on the top of the flute, in a manner similar to that on a standard Boehm flute. Plate 17g shows the footjoint keys, in a configuration with the D# key below the touches for C# and C \natural , making impossible a smooth passage from the D# to either of the lower notes.

⁴⁰ DCM Correspondence files.

⁴¹ Serial numbers 6545 and 6570. Number 6570 is now in a private collection in Germany.

⁴² Author's collection. The maker's mark is barely visible on this ebonite instrument, and the serial number has vanished.

Welch's flute is one of such complexity that it is not immediately apparent to the player how it should work. Close examination shows it to be a variation on the 1851 Patent flute; it has an all-fingers-off note of D, it has an open G \sharp , and the right hand first finger produces an F \sharp , not an F \natural . The long F, which as on the 1851 and on the Radcliff operates a key to close the F \natural when F \sharp is fingered, has been moved from the front to the top of the flute and is operated by a lever that crosses the open G \sharp key. The short F \natural , normally positioned at the back of the flute, has been moved to the front and is fixed to the same rod as two long trill levers, which operate the D \sharp trill key. The short F \natural key, as on the 1851 flute, also operates the B \flat key, by means of a vaulted clutch with an adjustment screw. The holes on this flute are very large, as on a Rockstro flute. The embouchure hole is of Boehm's rounded rectangle type rather than Rudall Carte's usual oval, and there is a cutaway under the lip, in the style of Boehm. The flute is finely made with silver keys. This appears to be the only surviving Welch Model flute with its original headjoint. Two other cylindrical examples are known to survive, in addition to the conical version: one in the Dayton C. Miller Collection, which appears to be a composite of more than one flute,⁴³ and one in a private collection in Germany, which lacks its original headjoint and footjoint. It would seem that John Finn's description of Welch's flute-buying activities was accurate, given the mixture of headjoints, body sections and footjoints on the surviving Welch Model instruments.

James Mathews and his flutes. Mathews, a wealthy Midlands industrialist, commissioned Rudall, Rose & Carte to produce a variation on Carte's 1851 Patent flute. This flute, which he called Barbiton, was evidently made in the mid-1850s.⁴⁴ It is shown in Plate 18a, with a detailed view in Plate 18b.⁴⁵ There are in fact some similarities between Barbiton and Welch's Model; on both, for example, there are rods on either side of the main line of keys. It is, however, difficult to be certain of Mathews's original design as a number of holes have been plugged and repositioned, and it would seem that substantial improvements were carried out to the instrument as Mathews developed his ideas. The flute has one particularly bizarre design feature in the embouchure hole, which is a near-perfect square (11.0mm by 10.8mm) cut into an ivory barrel embouchure. Barbiton, for all its eccentricities, has a mechanism that is at least recognisable to a player familiar with the 1851 Patent flute.

⁴³ DCM 0320.

⁴⁴ Lewis. 'Barbiton and Chrysostom'. *Galpin Society Journal* XXIII (1980).

⁴⁵ Bate 1135.

Plate 18



a: Barbiton. b: Barbiton, detail of top. c: Chrysostom. d: Chrysostom, detail of top. e: Chrysostom, detail, front view.

Mathews' later flute, which he called Chrysostom, is, however, an instrument of such complexity that even an experienced player will be baffled, both as to how the instrument works and why its inventor should have gone to such trouble when countless musicians were able to perform with perfect competence on much simpler instruments. Chrysostom is shown in Plate 18c, with detailed views in Plates 18d and 18e.⁴⁶ It must be noted that these photographs do not begin to convey the true complexity of this instrument; even discovering how to play the note A involves considerable examination. It is made of an elaborately-engraved gold tube with silver keys and, again, an ivory barrel embouchure with an embouchure hole that is a perfect square, 10.8mm by 10.8mm. The flute is inscribed 'To James Mathews. Presented by a few who esteem him as a friend and admire him as an Artist. A.D. 1868.'

Chrysostom has clearly seen heavy use but is in remarkably good condition. It is in working order and makes a clear, strong sound. It is pitched very high: about 120 cents above A=440, making it a rather high-pitched D \flat flute.

The drawings for Chrysostom were apparently produced for him by F.J. Frankland. These survive in the Bate Collection. A preliminary drawing, marked in pencil 1865 and also marked 'Abandoned', is entitled 'A design for converting JM's flute JM's flute [*sic*] to include Mr. Frankland's complete improvements'. The drawing is coloured, to make it easier for the flute maker to understand the complexity of the instrument. This drawing is shown as Figure 12.

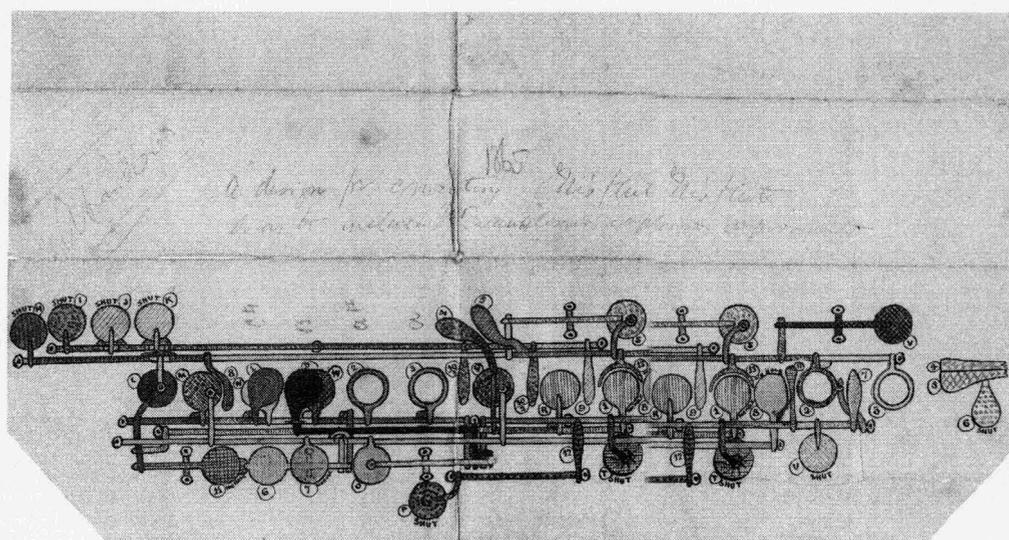


Figure 12: A preliminary drawing for Mathews's new flute.

⁴⁶ Bate 1039.

A fresh version of the plan, dated 1867, again colour-coded, shows the ring keys in the 1865 plan to have been replaced with covered keys (Figure 13).

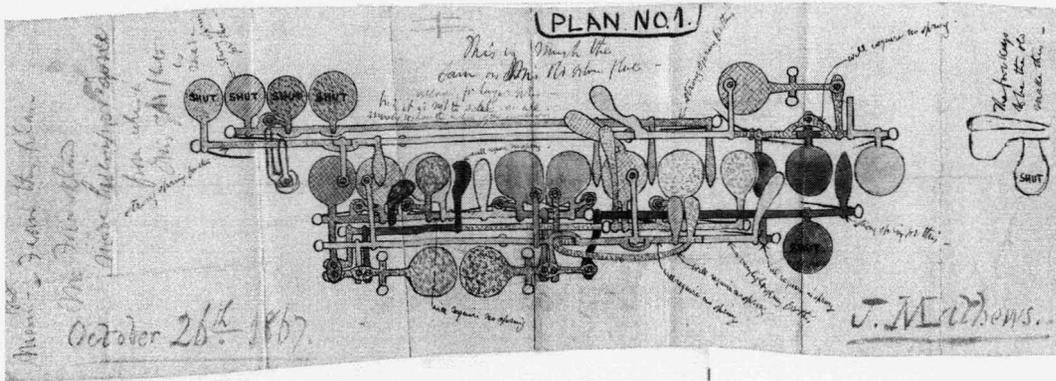


Figure 13: A fresh plan for the Mathews flute.

Plan number 2, dated August 1868, is more detailed, more complex, and more likely to cause severe anguish to the worker employed to make the flute (Figure 14).

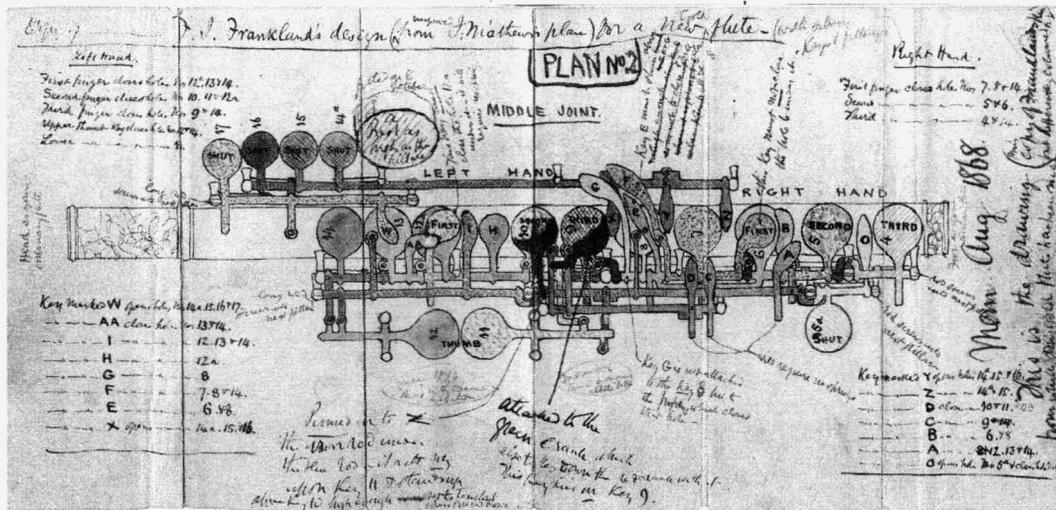


Figure 14. Plan number 2, showing the increasing complexity of the design.

The final version of the plan shows the flute much as it was actually made, although it would appear that alterations to the plan were carried out, either at the time of manufacture or at a later date (Figure 14). This instrument shows an extraordinary inventiveness on the part of Mathews and Frankland, as well as a remarkable level of skill, not to mention a scarcely credible degree of patience on the part of the man who actually made the flute.

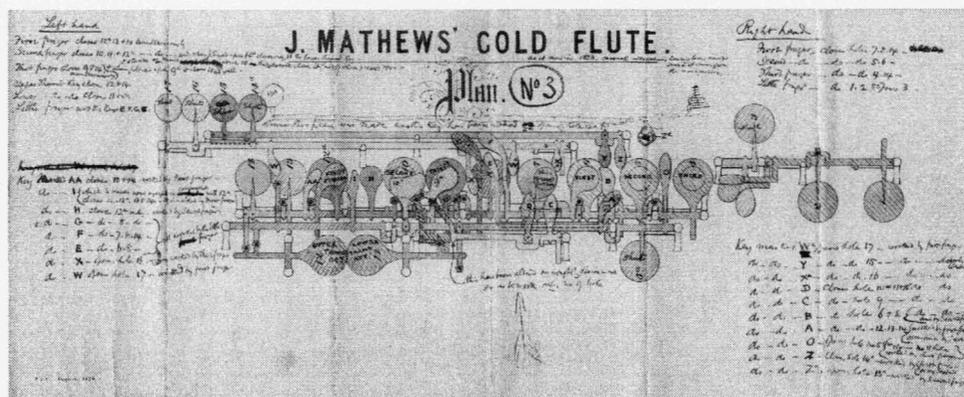


Figure 15: The final plan for Mathews's flute. The finished flute (Plate 18) closely matches this plan.

James Mathews produced a hand-written booklet of fingerings for his flute. This, too, survives in the Bate Collection. One page is sufficient to illustrate the complexity of Mathews's flute (Figure 16). This page shows no less than eight fingerings for high B_♭ and nine for high B_♮.

I	II	III	IV	V	VI	VII	VIII
3 4 8 24 25 26 27 32	4 6 8 24 25 32	4 6 10 21 22 24 26	3 4 8 21 24 26	24 25 32	3 4 8 21 22 24 26	3 4 8 21 22 24 26	3 4 8 21 22 24 26

I	II	III	IV	V	VI	VII	VIII
3 4 9 14 20 24 25 32	3 4 14 20 24 25 32	3 4 8 14 20 24 25 32	3 4 24	4 8 20 24 26	3 4 8 14 20 24 25	3 4 8 14 20 24 25	3 4 8 14 20 24 25

Figure 16: A page from Mathews's book of fingerings for Chryssostom.

The flutes produced for amateurs such as Frankland, Spencer, Welch, Mathews, and doubtless others unknown, show in Rudall Carte a firm with a profound understanding of the desires of their customers. Amateurs, it need hardly be said, are often passionate about their hobby and respond to having their passion indulged. Rudall Carte indulged passions well, and appear to have produced all that a passionate amateur could desire, even an instrument to a customer's specification if he requested one.

Richard Carte's 1875 Patent

Richard Carte invented one final, rather eccentric flute, which he patented in 1875. No example of this instrument is known to have survived. The design appears to be quite impracticable; not only did Carte expect the player to use the right little finger on an open-standing key, as had Ward a generation before, but he even had an open-standing key for the right thumb, which is generally employed to do nothing more than hold up the flute. Carte's specification states:

The object of my Invention is to produce a perfect chromatic scale with the fingering of the notes in regular succession by means of a more simple mechanism than that heretofore employed, and with more simplicity and facility of fingering the notes... The low D natural and D sharp are open, and are both closed with the little finger of the right hand, as also by the little finger of the left hand. I also pierce a hole in the flute, which is operated on by the thumb of the right hand. By pressing down the thumb of the right hand I make C natural, and when raised I produce the C sharp, and by pressing down the thumb of the left hand I close the hole C sharp and make C natural.

In order to add an additional hole D natural I press down the first finger of the right hand, which frees the lever covering the new middle D natural or new C sharp acted upon by the second d finger of the left hand, the third finger at the same time closing the lever under the first finger, so that the vent hole of the middle D natural, as to effect, is produced as on former flutes by raising the first finger of the left hand.

I can dispense with the use of the thumb of the right hand as before described by using the C sharp vent hole as just described.⁴⁷

Figure 17 shows the illustration from Carte's patent specification, which he made somewhat confusing by placing of the right thumb key at the top of the drawing. The accompanying text explains that the low D \sharp in his Figure 1 will be shut by the right first finger and the higher C \sharp will be shut by the left thumb. The

⁴⁷ Patent Specification 1875, No. 2071.

respective fingers 1, 2, 3 and 4 plus the thumbs of each hand will close their holes, while 2a of the right hand will close the D \flat hole to produce low C \sharp and 3a of the right hand will close the C \sharp hole to produce low C \flat .

The first finger of the right hand, according to Carte, may be made so as to allow the D \flat to open, as in his Figure 2. Pressing this key also closes the B \flat key, and the D \flat is relieved by the lever *d* being pressed down, opening a new vent hole when the first finger of the left hand is raised.

Carte's Figure 3 represents a modification in which 4 on the left hand operates levers to close the footjoint keys. Carte's Figure 4 is a flute similar to that in his Figure 1 but omitting the keys for the two lowest notes. The flute in this form, explained Carte, can be made in any key required for military or other bands. Carte's Figure 5 represents the left hand mechanism of his new flute. Pressing key 2 releases the key covering the C \sharp hole, and the mechanism allows a vent hole for middle D \flat , as on most flutes of standard design. The arm *i* will close the C \sharp . Carte's Figure 6 shows a modification of the right hand mechanism in which the G \flat hole is closed by the first finger of the right hand, so dispensing with a key for the right thumb.

The description of this eccentric instrument is sufficiently detailed as to suggest that a prototype may have been made. The flute could not have been supported if the player's right thumb was required to operate a key, but is possible that a support to fit in the crook of the right thumb would have freed the thumb. No explanation is given in the patent specification.

Carte's 1875 Patent was not mentioned by Rockstro and has not been noticed by later writers.

FIG. 1.

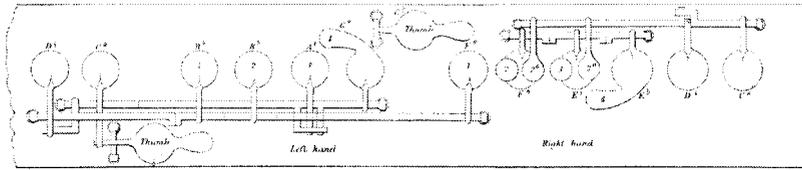


FIG. 2.

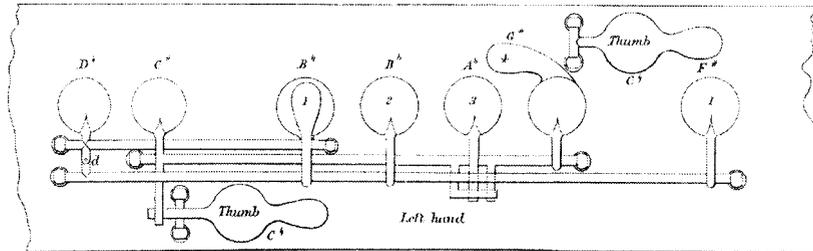


FIG. 3.

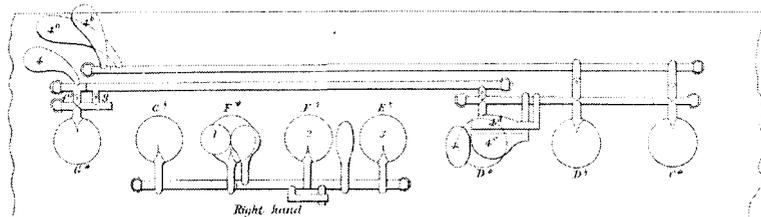


FIG. 4.

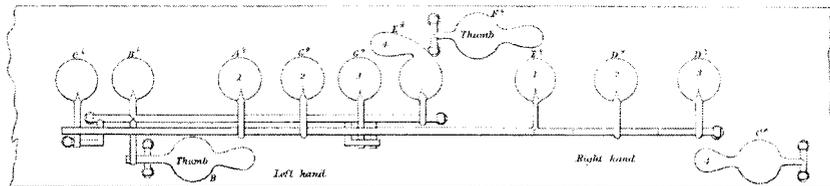


FIG. 5.

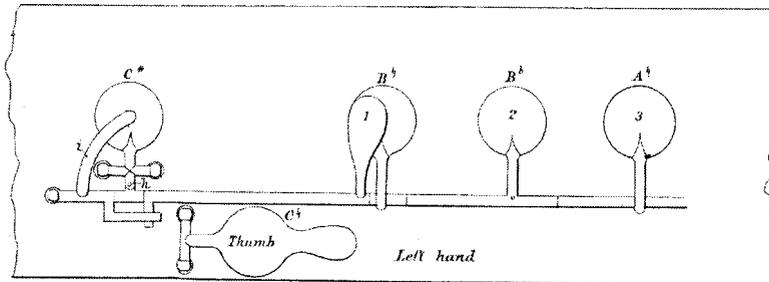


FIG. 6.

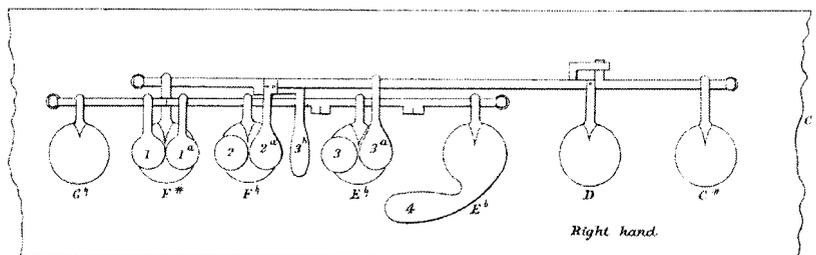


Figure 17: Drawings from the specification for Carte's 1875 Patent flute.

By the 1890s Rudall Carte could supply flutes in up to a dozen standard designs, in almost any material, with almost any extra feature, and could even make outlandish flutes to special order. In addition they held a substantial catalogue of printed music as well as books on the flute. As the twentieth century approached, their most popular instrument became the standard Boehm flute, generally made of wood with silver keys. This became the instrument of choice of most flute players in Britain. The firm's originality and innovation waned by the turn of the century, and with a very few exceptions they produced nothing new between then and the beginning of the Second World War. It is fair to suggest that they rested on their previous success; in the years soon after 1900 sales were apparently going well, all the leading players used their instruments, they had almost no competition, and it is undeniable that their flutes were made to the very highest standards. It would have seemed to the firm's managers that change was unnecessary. Their flutes did not, in fact, change in any substantial way between the 1890s and 1939.

The eventual decline of the firm can be partly attributed to the fact that the design of the standard flute had been settled; while some players continued to use 1867 and Radcliff flutes, most were content with the standard Boehm, which did not (and indeed has not) become obsolete and did not need to be replaced. There were no new models to tempt the buyer as had appeared frequently half a century before. Even worse, from a business point of view, was that Rudall Carte's flutes were made so well that they rarely wore out, and a second-hand market developed. The firm, in fact, found itself in competition with the instruments it had made a generation before.

The decline of the firm was perhaps hastened by the departure of the last member of the Carte family, Richard's son Henry, who sold the business in 1895 to businessmen who appear to have lacked the flair of their predecessors.

8: Some final innovations, then decline

Richard Carte had passed control of the firm of Rudall, Carte & Co. to his son, Henry, in June 1883, announcing the ending of the partnership in the *London Gazette* early the following year.¹ Richard Carte was then seventy-five years old. Henry, it would seem, took an active interest in the firm and seems to have had some practical experience of flute making; a letter from John Finn to Dayton C. Miller states, 'Henry Carte told me that he, personally, had served at the bench.'² Henry Carte's notebook records his activity in finding skilled workers on the continent; he listed the names and addresses of some two dozen men, mostly French or Belgian with some from the German instrument-making town of Markneukirchen, some of whom he employed in what was then, apparently, a thriving business.³ He already employed one brilliant French-born craftsman, Henri Schumacher, and persuaded a number of other continental makers to join him: Louis Janssens, Henri Nivarlet, F. Daufresne and Eugène Goullière, with other French-sounding workers such as Moujard appearing in the company's stock records for short periods. Henry Carte's notebook records details of improvements to be introduced to the tuning of some of the firm's flute, as well as fingerings, workshop notes and costings for new instruments. Many pages are devoted to a list of names and addresses of subscribers to the firm's series of works for the flute in 1882. This notebook shows Henry Carte to have been a committed manager and a good businessman.

Henry Carte sold the business in 1895. The pages of the stock records list instruments 'Taken in Stock June 29th 1895', and Rudall Carte's 1938 booklet of photographs of well-known flute players states that Henry Carte retired from business in 1895.⁴ It has not proved possible to find a complete list of the new owners of the firm, but it would appear that they included Montague Sidney George, who became the managing director and remained with the firm until the 1940s, and H.E. Klussmann, who registered a mark at Goldsmiths' Hall in 1898, giving his address as Rudall Carte's premises, 23 Berners Street.⁵ Documents have not been found regarding Henry Carte's sale of the business. The firm became a limited

¹ *London Gazette* 1 February 1884.

² Letter from John Finn to Dayton C. Miller, 22 May 1928. DCM.

³ Rudall, Carte & Co. Manager's notebook. Horniman Museum.

⁴ Rudall, Carte & Co., Ltd. *Photographs of Well-known Flute Players*.

⁵ Goldsmiths' Company Mark Book 10. Culme (*Directory of Gold & Silversmiths*) misread the name Klussmann as Uhlmann.

company in 1911, at which time the directors were Montague George with Henry Davis in place of Julius James George Zambra, deceased.⁶ Zambra is listed in the 1901 census as a musical instrument maker. It cannot be determined when he joined the business, although Dayton C. Miller's manuscript index cards record a visit to Rudall Carte on 14 August 1912, at which time Montague George told him that Zambra had died soon after the reorganisation of the firm and that he was now the sole proprietor. According to Miller, George told him that Zambra never took any interest, having other sources of income.⁷

In spite of the firm's uninspired management, two innovations and one final eccentricity date from the 1930s. The innovations were the making of the first platinum flute and the making of flutes in Monel metal, which Rudall Carte referred to as 'New Metal'. The eccentricity was the making of the Okraulos, a silver, Boehm-system shakuhachi made in a number of pitches for a Japanese businessman, Baron K. Okura.

The first platinum flute

It has been a popular belief that Verne Q. Powell, the Boston maker, made the first platinum flute for Georges Barrère. It was for this instrument that Edgard Varèse wrote his solo flute piece, *Density 21.5* in 1936. In fact, Rudall Carte made a platinum flute before Powell, and had apparently made five platinum headjoints by 1930.⁸ The first complete platinum flute, made with silver keys is listed in the Rudall Carte stock records as serial number 7653, completed on 14 November 1933. The flute was made for one A. Henderson of Glasgow. Confusion seems to have arisen, and the second platinum flute was given the same serial number. This second flute was completed on 23 July 1934 and was sold to Capt. C.F.R. Brown of London. A third platinum flute was completed on 5 May 1935 and was sold to W.B. Wellman of San Francisco. It has not been possible to trace any of these flutes.

⁶ Register of directors or managers under the Companies (Consolidation) Act, 1908, certificate number 112149 (registered 3 April 1911).

⁷ DCM Index card notes.

⁸ Dayton C. Miller's index cards record this fact, on a card dated 23 July, 1930.

'New Metal' flutes

Montague George seems to have been excited by his firm's flutes made of Monel metal. This is a hard nickel alloy that, unlike German silver (now generally called nickel silver) does not tarnish. Rudall Carte began production of flutes in this material in 1930. The earliest one listed in the stock records is serial number 7362, dated 28 January 1930. Dayton C. Miller reported seeing number 7382 on 23 July 1930. George, reported Miller, was *very* enthusiastic about the "New Metal", used for lining the heads, and now has made 5 flutes entirely of "New Metal", but it is so hard to work (tears the edge of tools) that he will make no more; only bodies of "New Metal", keys of ger. [German] silver, or silver. Purpose seems to be to get something cheaper, for competition.⁹

It must be said that Montague George did try hard to promote the flutes made from this new material. A leaflet dated 1931 includes letters of endorsement from two leading players, Gordon Walker and Gilbert Barton. Barton claimed to prefer it to his wooden flute with a gold-lined headjoint.

The new flute did temporarily revive the firm's fortunes; by the end of 1932 they had sold no fewer than 120, representing the largest part of their output at the time. By 1938, however, they were once again making more wooden flutes than any others, and comparatively few of those.

Monel metal tubes could only be worked to the extent of drawing the toneholes out of the body of the tube, but the metal was too hard to permit the tonehole being rolled over to provide a good surface for the pad to sit on. This problem was solved by drawing the hole rather deeper than usual and soft-soldering a ring over the hole, as shown in Figure 1.¹⁰

⁹ DCM Index card notes.

¹⁰ Rudall Carte serial number 7692. Author's collection.

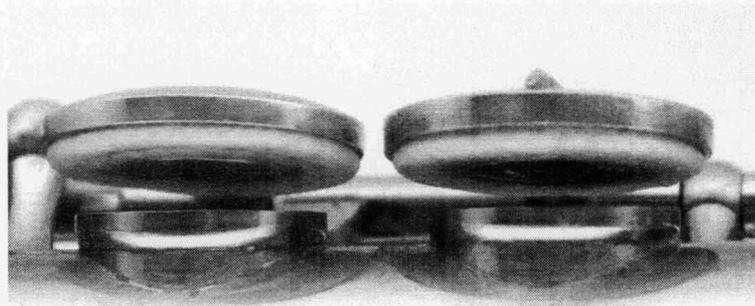


Figure 1: Toneholes on a 'New Metal' (Monel metal) flute, showing the rings soldered onto the toneholes as it was impossible to roll over the edge of the toneholes.

It would seem that few professional players used 'New Metal' flutes after the 1930s.

A final eccentricity

In 1936 Baron K. Okura, a wealthy Japanese businessman working in London, approached Rudall Carte with a commission for a most unusual instrument. It was reported by one of the men who worked with Baron Okura, Mr. Charles Morley, that the baron's appearance in the workshops (Japanese gentlemen were very rare in London in the 1930s) was as remarkable as his request for a silver Boehm-system shakuhachi.¹¹ Nine examples of this instrument, which the baron called the Okraulos, were made in different sizes and pitches. Baron Okura returned to Japan and is said to have been involved in setting up the Muramatsu flute making company, who may have produced more Okraulos instruments; anonymous examples occasionally appear, to the occasional bafflement of those interested in the history of the flute.¹²

Two photographs of Baron Okura playing his instruments are shown in Figure 2.¹³

¹¹ Conversations with Mr. Morley took place on several occasions in the 1990s.

¹² Paul Lewis. 'The Flutahachi'. *Galpin Society Journal XXXVII* (1984) p. 118 described an Okraulos but was unaware of the involvement of Rudall Carte in its development.

¹³ DCM.

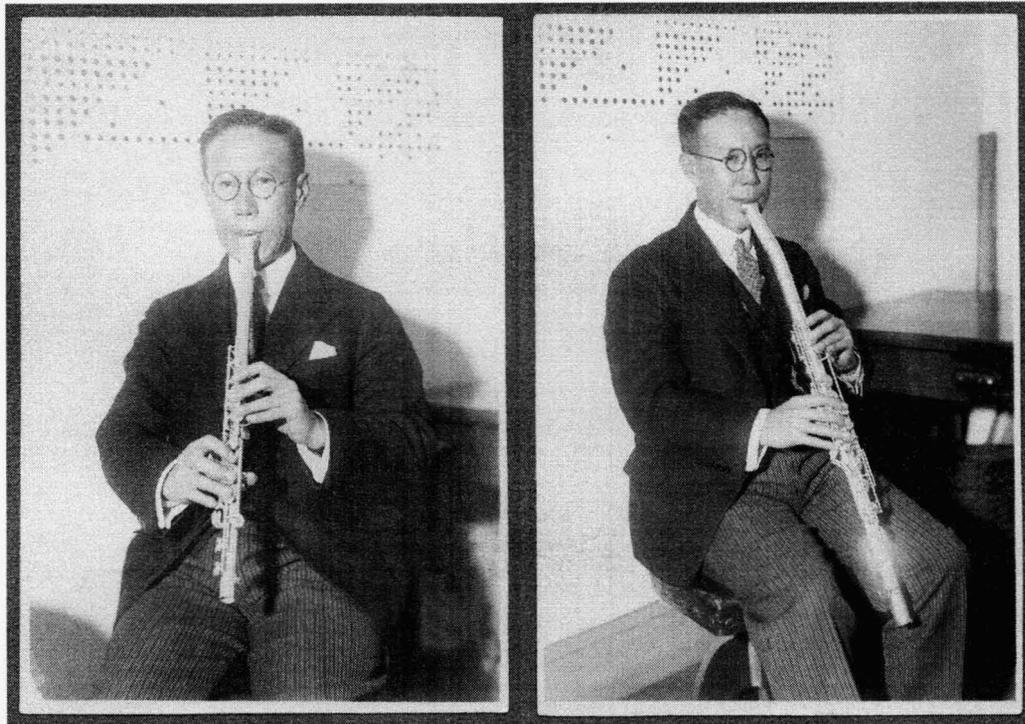


Figure 2: Baron K. Okura playing two sizes of his Okraulos.

Decline of the business

It would seem that the decline in Rudall Carte's business was already evident at the time of Dayton C. Miller's 1912 visit. On one of his index cards he records that Montague George explained at length how he could not, for the sake of wider sales, make cheaper flutes and 'sacrifice the *reputation of RC & Co.*, founded by Mr. Rose, Mr. Rudall and Mr. Carte.' The decline must have been accelerated by the decision of the United States government to impose swingeing duties on imported instruments after the First World War, at a stroke removing one of Rudall Carte's principal markets.¹⁴ Montague George appears not to have known how to move his business to adapt to the changed conditions. It would seem that he was prepared to allow Rudall Carte to continue making the instruments of the same sort and in the same manner as they had always done, with no apparent attempt to increase efficiency, reduce costs or diversify in any way. With a shrinking market, this would prove catastrophic for the business.

¹⁴ Berdahl. *The First Hundred Years of the Boehm Flute in the United States* p. 73.

The success of the business was not helped by Rudall Carte's antediluvian production methods. Images of the workshops published in 1913 (Appendix 3) show premises without electric light and with not one power-assisted machine tool.¹⁵ Indeed, there were pole lathes still in use, and it would seem that the fully-rotating treadle lathes present would have been considered out of date some decades before. There is no evidence of a compound tool slide on any of the lathes, meaning every turning operation was carried out with hand tools. Hand turning requires greater skill on the part of the turner and is neither as accurate nor as quick as using tool slides. It does not seem to have occurred to the management to invest in more up-to-date equipment. Even worse, the practice was for one man to make one flute, with no division of labour other than between the woodturner and the men who made the keys and finished the instruments. A key maker would be supplied with a completed wooden flute body and was expected to make everything else himself, working from silver sheet and rod from which he would forge the keys by hand, using nothing more than hammers, files and burnishers. It is difficult to imagine a less efficient method of making a flute; the maker was required to do those jobs that required many years of experience to do correctly, and also do the jobs that an unskilled worker could be taught to do in a few minutes. Furthermore, the quality of the flutes would vary from maker to maker. The makers were employed on a piecework basis, receiving payment only when they had completed an instrument. This often led to makers rushing and cutting corners, and could have led to a lowering of standards. Had the management been more capable they might have invested in newer equipment and divided the jobs in the workshops according to the skill levels of the workers.¹⁶

Rudall Carte's problems, then, were due to a drop in demand caused, amongst other things, by the loss of the American market and, principally, by the simple fact that their flutes were not becoming obsolete and were not needing to be replaced. It was, in fact, the stability of the demands of the market that caused the firm's decline; by the twentieth century the design of the standard Boehm flute was fixed, the market knew just what it wanted, which by the 1930s had not changed in some decades, and many excellent second-hand flutes were available. The firm was, in effect, in competition with its own instruments.

¹⁵ Rudall Carte price list, 1913 (DCM).

¹⁶ Descriptions of Rudall Carte's workshop practices came from many conversations with former employees between 1978 and 2005.

A minor salvation for the firm came when high pitch (A=452) finally fell out of use and they were able to offer to rebuild customers' high-pitched flutes by reusing the keys and the headjoint and making a new, low-pitched body. A 1930 leaflet offers this rebuilding service at a cost of £16 for a flute with German silver keys, £18 for a flute with silver keys and £20 for an 1867 or Radcliff flute. These prices were still current in a leaflet dated 1936.¹⁷ New flutes were shown in the firm's 1938 price list at just under £20 for one with German silver keys and £45 for one with silver keys.

Rudall Carte's managers could have capitalised on their firm's excellent reputation by selling other related, high-quality products. They failed to do so. The depression in the 1930s led to the most serious decline of the firm, and after the start of the Second World War Rudall Carte had been sold off to Boosey & Hawkes.¹⁸

¹⁷ These leaflets are in DCM.

¹⁸ The firm of Boosey & Hawkes was unable to find documents relating to their purchase of Rudall Carte.

Conclusion

The firm of Rudall & Rose produced excellent, if rather conservative flutes from the early 1820s to the early 1840s. In the 1830s and 1840s many flute players were no longer satisfied with the old eight-keyed flute, and many innovative makers attempted to produce a better instrument. In 1843 Richard Carte persuaded Rudall & Rose to produce flutes to Boehm's 1832 conical design. This Boehm flute was but one of the many new, improved flutes developed in the period, and it cannot be considered to have been an overwhelming success, with sales in the order of just 250 in the four years from 1843. Boehm's cylindrical flute of 1847, however, has proved to be the greatest success; a century and a half after its introduction this flute is still in use in a form that is largely unchanged from Boehm's original design. It was the ability to recognise this flute's potential and to market it successfully that set Rudall & Rose, and particularly Richard Carte, apart from their competitors.

After joining the firm as a partner in the early 1850s, Richard Carte's management of the concern can be seen as a textbook example of how to run a successful musical business: he discovered what his customers wanted and sold it to them, and he avoided the failure that could be caused by changes in the demand for his main product, flutes, by diversifying into the retailing of other musical instruments, into the manufacture of military musical instruments, into publishing and eventually into concert management (a business carried on with exceptional success by his son, Richard D'Oyly Carte).

By the time of the Great Exhibition of 1851, Richard Carte's firm could supply conical Boehm flutes, cylindrical Boehm flutes (for which his firm, of course, held the patent in Britain), plus his two new systems: the 1851 Patent flute, a radical new open-standing fingering system applied to Boehm's acoustic design, and the 'Old System' flute, an attempt to apply the fingering system of the eight-keyed flute with its closed-standing keys to Boehm's acoustical design. Carte promoted the 1851 Patent and the 'Old System' for different markets: the 1851 Patent in response to those who were not put off by the idea of learning a new fingering system but found Boehm's fingering rather awkward, particularly in sharp keys; and the 'Old System' for those who wanted as many of the benefits of the Boehm flute as they could get without having to learn a new fingering system. Carte's approach to business trumped all his competitors by simply supplying any type of flute his customers

asked for. His 'Old System' flute did everything Clinton claimed for his 'Equisonant' flute; the standard Boehm flute was available in either a conical or a cylindrical version, in wood or metal; his 1851 Patent flute did everything the Boehm flute could do with an arguably better system of fingering, and again was available in conical or cylindrical, wooden or metal versions; and of course Carte could still supply the old-style eight-keyed flute. In later years Carte would add to his firm's catalogue flutes made to the systems of Siccama and Clinton (although the firm sold very few of these), as well as flutes designed by Rockstro and Radcliff, and, of course, Carte's own 1867 Patent flute. In addition, the firm was willing to indulge gentleman amateur inventors by producing for them some outlandish bespoke instruments. Carte's firm was hugely successful and drove most of the competition out of business. By the final quarter of the nineteenth century virtually every professional and serious amateur player in Britain played a flute made by Carte's firm.

The sale of the business in 1895 to people with none of Carte's flair led to a gradual decline in the fortunes of the firm. Little or no investment was made, and, the use of platinum and Monel metal apart, little improvement to the flutes was, apparently, thought necessary. A standard wooden Rudall Carte flute of the 1930s is nearly indistinguishable from one of half a century before, and the manufacturing techniques in the workshops in the 1930s were outdated and inefficient. Far from diversifying, it appears that the firm shed its capability to make instruments other than flutes, and when the market for their flutes dwindled, the firm had no alternative product to sell. The firm's managers did not capitalise on value of the Rudall Carte name, equal in musical circles to that of Rolls Royce in motoring circles, by applying it to premium musical products other than flutes. On the contrary, after the firm's acquisition by Boosey & Hawkes, the Rudall Carte name was being applied to instruments of the poorest quality that were imported from Eastern Europe and the Far East. If Richard Carte's management of the firm in the 1850s could be seen as a textbook example of how to run a successful musical instrument business, his successors' management could be seen as a textbook example of how not to run one.

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Terry McGee's flute Web site:
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David Migoya's list of Rudall & Rose eight-keyed flutes:
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The Times Digital Archive:
<http://www.gale.com/Times/>

Appendix 1: Selected price lists.

Rudall & Rose price list, 1851 (from Carte *Sketch*)

45

LIST OF PRICES.

No. 1. Carte's Patent Flute with the Old Fingering.

	£	s.	d.
In Cocoa-wood, with Silver Keys, Pillars, and Mountings, complete in Case	17	17	0
— Do. with Key to Shake C with D, and C sharp with D	18	18	0
A simpler kind of the above	13	13	0
In Silver, with Cylinder Tube, Parabola Head, and Silver Keys, &c.	25	4	0
— Do. with Key to Shake C with D, and C sharp with D	27	6	0
In German Silver, Electro-Silver plated, with Cylinder Tube and Parabola Head, &c.	18	18	0
— Ditto, with Key to Shake C with D, and C sharp with D	21	0	0

No. 2. Carte's Patent Flute with New Fingering.

In Cocoa-wood, with Silver Keys, Pillars, and Mountings, complete in Case	21	0	0
In Silver, with Cylinder Tube and Parabola Head, &c., complete in Case	26	5	0
The above, in German Silver, Electro-Silver plated, Cylinder Tube, &c., in Case, complete	21	0	0

No. 3. Boehm's Flute.

In Cocoa-wood, with Silver Keys, Pillars, and Mountings, in Case, complete	18	18	0
In Silver, with Cylinder Tube and Parabola Head, in Case, complete	26	5	0
The above, in German Silver, Electro-Silver plated, in Case, complete	18	18	0
Either of the above with closed G sharp Key extra	1	1	0
Briccialdi's Key to B flat, extra	1	1	0

No. 4. Rudall and Rose's Ordinary Flutes.

Having had a large and choice stock of well-seasoned Wood prepared for the Ordinary Flute before the introduction of the new Flutes, RUDALL & ROSE are now enabled to reduce the prices of this class of instruments, which will in future be as follows:—

MOST HIGHLY FINISHED IN COCOA, Ebony, or Box-wood, with Silver Keys and Mountings, Double Springs, Case, and Cleanser, complete—

8 Keys,	10	10	0
9 Keys, including the B flat Shake	11	11	0
10 Keys, including the lower B and B flat Keys	14	14	0
11 Keys, ditto including the Major Shake of high D	15	15	0
12 Keys, ditto including the Major Shakes on high D and B flat	16	16	0
13 Keys, ditto including the B flat, C sharp, and the D Shakes	17	17	0
Any of these Flutes with a Patent Head instead of the common one	2	2	0

LIST OF PRICES.

No. 1. Carte's Patent Flute with the Old Fingering.

	£	s.	d.
In Cocoa-wood, with Silver Keys, Pillars, and Mountings, complete in Case	17	17	0
— Do. with Key to Shake C with D, and C sharp with D	18	18	0
A simpler kind of the above	13	13	0
In Silver, with Cylinder Tube, Parabola Head, and Silver Keys, &c.	25	4	0
— Do. with Key to Shake C with D, and C sharp with D	27	6	0
In German Silver, Electro-Silver plated, with Cylinder Tube and Parabola Head, &c.	18	18	0
— Ditto, with Key to Shake C with D, and C sharp with D	21	0	0

No. 2. Carte's Patent Flute with New Fingering.

In Cocoa-wood, with Silver Keys, Pillars, and Mountings, complete in Case	21	0	0
In Silver, with Cylinder Tube and Parabola Head, &c., complete in Case	26	5	0
The above, in German Silver, Electro-Silver plated, Cylinder Tube, &c., in Case, complete	21	0	0

No. 3. Boehm's Flute.

In Cocoa-wood, with Silver Keys, Pillars, and Mountings, in Case, complete	18	18	0
In Silver, with Cylinder Tube and Parabola Head, in Case, complete	26	5	0
The above, in German Silver, Electro-Silver plated, in Case, complete	18	18	0
Either of the above with closed G sharp Key extra	1	1	0
Briccialdi's Key to B flat, extra	1	1	0

No. 4. Rudall and Rose's Ordinary Flutes.

Having had a large and choice stock of well-seasoned Wood prepared for the Ordinary Flute before the introduction of the new Flutes, REDALL & ROSE are now enabled to reduce the prices of this class of instruments, which will in future be as follows:—

MOST HIGHLY FINISHED IN COCOA, Ebony, or Box-wood, with Silver Keys and Mountings, Double Springs, Case, and Cleanser, complete—

8 Keys,	10	10	0
9 Keys, including the B flat Shake	11	11	0
10 Keys, including the lower B and B flat Keys	14	14	0
11 Keys, ditto including the Major Shake of high D	15	15	0
12 Keys, ditto including the Major Shakes on high D and B flat	16	16	0
13 Keys, ditto including the B flat, C sharp, and the D Shakes	17	17	0
Any of these Flutes with a Patent Head instead of the common one	2	2	0

	£	s.	d.
Cork Joints, with Silver Sockets, each Joint	-	-	0 10 6
FLUTE D'AMOUR, OR B FLAT TENOR FLUTE,			
with 8 Keys	-	-	12 12 0
THIRD OR F FLUTES, with 8 Keys	-	-	8 8 0
Ditto with 7 Keys	-	-	7 7 0
Ditto with 6 Keys	-	-	6 6 0
Ditto with 5 Keys	-	-	5 5 0
Ditto with 4 Keys	-	-	4 4 0

LESS HIGHLY FINISHED FLUTES, with Silver Keys
and Mountings, without Double Springs or Case, &c.

In Cocca-wood or Ebony, with 8 Keys	-	-	6 6 0
Ditto Ditto, with 7 ditto	-	-	5 15 6
Ditto Ditto, with 6 ditto	-	-	5 5 0
Ditto Ditto, with 4 ditto	-	-	3 3 0
Any of the above in Box-wood, less	-	-	0 10 6
Ivory mounted instead of Silver, less	-	-	0 10 6

EIGHT KEYED COCOA FLUTE, German Silver Keys
and Mountings

The above in Box-wood, less	-	-	0 10 6
Ditto with large holes, extra	-	-	0 10 6

THIRD FLUTES, mounted in Ivory, with Silver Keys and
Tube Head and Screw Cork :

8 Keys	-	-	4 15 6
7 Ditto	-	-	4 4 0
6 Ditto	-	-	3 3 0
5 Ditto	-	-	2 15 6
4 Ditto	-	-	2 2 0

FLUTE D'AMOUR, OR B FLAT TENOR FLUTE,

Silver Keys, Ivory Mountings, with 8 Keys	-	-	8 8 0
with 7 Keys	-	-	7 7 0
with 6 Ditto	-	-	6 6 0
with 5 Ditto	-	-	5 5 0

N.B. Small Flutes of every description.

A best Flute Case, with Cleanser and Paste-box	-	-	0 18 0
A Rose-wood Case, with ditto and ditto	-	-	0 10 6

RUDALL, ROSE, & Co. continue to supply the Army and Navy with complete sets of Clarinets, Oboes, Bassoons, Cornets, Trumpets, Horns, Trombones, Serpents, Ophicleides, Drums, Cymbals, &c. &c., with every modern improvement.

Messrs. RUDALL, ROSE, & Co. beg to caution the Public against being imposed upon by the many spurious imitations of their Instruments, which have been for a length of time exposed for sale, having their Name and Address stamped in full upon them, but, upon examination, are found not to possess the smallest value as a Flute, the materials and manufacture being of the most inferior description.

With Country Orders a Remittance is requested.

Rudall, Rose & Carte price list, circa 1870 (DCM)

REQUEST OF
 DAYTON C. MILLER
 JAN. 19, 1942
 THE LIBRARY OF CONGRESS

RUDALL, ROSE, CARTE AND CO.,
SOLE PATENTEES AND MANUFACTURERS OF THE
CYLINDER FLUTES,

WHICH OBTAINED THE
COUNCIL AND PRIZE MEDALS OF THE EXHIBITIONS OF 1851 & 1862.
 20, CHARING CROSS, S.W., LONDON.
(Corner of Craig's Court).

a	CYLINDER FLUTE, with Parabola Head-joint, Boehm and Carte's systems of Fingering combined (1867 Patent), of Solid Silver or Cocoa Wood, with Silver Keys and Fittings, ordinary or large Holes, in Case, complete	29 8 0
b	CYLINDER FLUTE, with Parabola Head-joint, Boehm or Carte's system of Fingering, of Solid Silver or Cocoa Wood, with Silver Keys and Fittings, in Case, complete	26 5 0
c	DITTO DITTO, with extra sized Holes	29 8 0
d	CYLINDER FLUTE, with Parabola Head-joint, old system of Fingering, of Solid Silver, or Cocoa Wood with Silver Keys and Fittings, in Case, complete	26 5 0
e	DITTO DITTO, with extra sized Holes	29 8 0
	D sharp Shake Key made to order for any of the above, extra	2 2 0
f	CYLINDER FLUTE, with Parabola Head-joint, of either system of Fingering, entirely of 18 carat Gold	157 10 0
g	DITTO DITTO, with extra sized Holes	178 10 0
	D sharp Shake Key to the above, extra	10 10 0
h	CYLINDER FLUTE, with Parabola Head-joint, of either system of Fingering, of Solid 18 carat Gold, with Silver Keys and Mountings	94 10 0
i	DITTO DITTO, with extra sized Holes	105 0 0
	D sharp Shake Key, extra	3 3 0
j	CHEAP CYLINDER FLUTE, of Cocoa Wood, with German Silver Keys, etc., old system of Fingering	10 10 0
k	DITTO DITTO, with Silver Keys and Mountings	15 12 0
l	ORDINARY EIGHT-KEYED FLUTE, of Cocoa Wood, German Silver Keys and Mountings, and Tuning Slide	4 4 0
m	DITTO DITTO, with Silver Keys and Mountings, in Case, with Fittings, complete	7 7 0
n	DITTO DITTO, with stronger Silver Keys and Mountings than the above, Superior Wood, Double Springs, in Case, with Fittings, complete	11 11 0
o	DITTO DITTO, with the Keys acting on Silver Pillars, Cork Joints, and Silver Sockets	19 5 0
p	ORDINARY TEN-KEYED FLUTE (including the lowest B and B flat Keys), Cocoa Wood, Silver Keys and Mountings, Superior Wood, Double Springs, in Case, with Fittings, complete	15 12 0
	<i>Silver Plate, half round the head of the embouchure of any of the Wood Flutes, 10s. 6d. extra. Silver Plate entirely round the head, One Guinea extra. Patent Tuning Head to Eight-Kejed Flutes, Two Guineas extra.</i>	
q	OCTAVE FLUTE or D PICCOLO, Cocoa Wood, six German Silver Keys and Tuning Head	2 12 6
r	DITTO DITTO, six Sterling Silver Keys, etc.	4 4 0
s	DITTO DITTO, six Sterling Silver Keys, on Pillars	6 6 0
t	DITTO DITTO, Boehm's Fingering or Carte's Fingering, or Boehm and Carte's Fingering combined (1867 Patent)	12 12 0

Lists of Messrs. RUDALL & Co.'s Cornets, the Concert Horn in C (especially designed for Amateurs), Clarinets, Oboes, all Brass Instruments, etc., and Pianofortes, may be had on application.

Lists of Instruments, Music Stands, and every requisite for Military Bands, with Drawings and Estimates of Cost, with a large Catalogue of Music for Military Bands, sent post free. Estimates can be had for the formation of Volunteer Bands, etc., the building of Church Organs, for publishing music, and for every species of work connected with the music trade.

PIANOFORTES LENT ON HIRE, TUNED, REPAIRED, OR EXCHANGED.

Messrs. RUDALL, ROSE, CARTE, & Co.'s NEW CATALOGUE OF MUSIC IS NOW READY.
 Sent Post Free.

[FOR DRAWINGS, TURN OVER.]

PRIZE MEDAL



1851.

COUNCIL MEDAL, 1851.



RUDALL, ROSE, CARTE & CO

20, CHARING CROSS,

LONDON, — S.W.

PRIZE MEDAL



1862.



(a.) CYLINDER FLUTE—Carte and Boehm's Fingering Combined. (1867 Patent.)



(b1.) CYLINDER FLUTE—Carte's Fingering. (Council and Prize Medals, 1851 and 1862.)



(b2.) CYLINDER FLUTE—Boehm's Fingering. (Council Medal, 1851.)



(d.) CYLINDER FLUTE—Old System of Fingering.

THESE DRAWINGS ARE TAKEN FROM PHOTOGRAPHS BY MR. HERBERT WATKINS, OF 215, REGENT STREET.

The Flutes represented above are of Silver, but the same Instruments are made also of Cocus Wood with Silver Keys at the same prices.

All the Cylinder Flutes have Parabola Head-joints.



(s.) PICCOLO—Carte and Boehm's Fingering Combined. (1867 Patent.) Cocus Wood with Silver Keys.

(For Prices, turn over.)

RUDALL, CARTE & CO. LTD., LONDON

BEHM'S SYSTEM, EITHER WITH OPEN OR CLOSED G \sharp

Cases are charged extra. See page 7.



WOOD FLUTE. (Standard Silver Mechanism). Behm's System. No. 5.



STANDARD SILVER FLUTE, with Oval Lip Plate. Behm's System. No. 10.

This is the earliest established form of the modern Flute. It was patented in England and France, in 1847, by Messrs. Rudall & Rose, as this firm was then styled. The open G \sharp key is the original form, but the closed one has been made to accommodate players on the old Flute, from which this system is the most removed in fingering.

7. Cocnuswood or Ebonite, nickel silver mechanism	£28 19 0
8. Cocnuswood or Ebonite, Standard silver mechanism	45 0 0
9. New Metal, middle and foot in one, nickel silver mechanism, with silver oval lip-plate	29 0 0
09. New Metal, middle and foot in one, Standard silver mechanism, plain caps, with silver oval lip-plate	36 0 0
10. Entirely of Standard silver, with barrel or oval lip-plate	48 6 0

BEHM'S SYSTEM, ROCKSTRO'S MODEL, OPEN G \sharp



EBONITE FLUTE (Standard Silver Mechanism). Behm's System (Rockstro's Model). No. 11.

The fingering of this is the same as the last, with the exception of an extra F \sharp lever between the E and F holes to avoid the veiled F \sharp made with the second finger of the right hand. The largest holes were first adopted on this model. This model is now generally made with covered holes.

11. Ebonite, Standard silver mechanism	£48 0 0
12. Entirely of Standard silver, with barrel or oval lip-plate	51 10 0
The following additions can be made to this model :-	
Shake key for C and D; B \sharp lever; High E and F \sharp shake; each	£2 12 0

CARTE & BEHM'S SYSTEMS COMBINED, 1867 PATENT, OPEN G \sharp



STANDARD SILVER FLUTE, with Barrel Lip Plate. Carte and Behm's Systems combined (1867 Patent). No. 16.

In this instrument several of the difficulties in the fingering of the Behm System are removed. It combines the advantages without the drawbacks of the F \sharp of the Behm with those of the old F \sharp . It has the extra D with all the fingers off, which greatly facilitates execution. The fingering is easier than that of the Behm or Old System. It is, at the same time, a smaller departure from the latter.

13. Cocnuswood or Ebonite, nickel silver mechanism	£38 0 0
14. Cocnuswood or Ebonite, Standard silver mechanism	47 6 0
15. New Metal, middle and foot in one, nickel silver mechanism, with silver oval lip-plate	39 0 0
015. New Metal, middle and foot in one, Standard silver mechanism, plain caps, with silver oval lip-plate	46 0 0
16. Entirely of Standard silver, with barrel or oval lip-plate	50 14 0
Extra D and D \sharp shakes to any of the above, £4 4 0	

RUDALL, CARTE & CO. LTD., LONDON

BÖHM'S SYSTEM, EITHER WITH OPEN OR CLOSED G \sharp

Cases are charged extra.
See page 7.



WOOD FLUTE. (Standard Silver Mechanism). Boehm's System. No. 8.

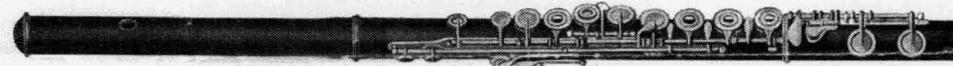


STANDARD SILVER FLUTE, with Oval Lip Plate. Boehm's System. No. 10.

This is the earliest established form of the modern Flute. It was patented in England and France, in 1847, by Messrs. Rudall & Rose, as this firm was then styled. The open G \sharp key is the original form, but the closed one has been made to accommodate players on the old Flute, from which this system is the most removed in fingering.

7. Cocuswood or Ebonite, nickel silver mechanism	£28 19 0
8. Cocuswood or Ebonite, Standard silver mechanism	45 0 0
9. New Metal, middle and foot in one, nickel silver mechanism, with silver oval lip-plate	29 0 0
09. New Metal, middle and foot in one, Standard silver mechanism, plain cups, with silver oval lip-plate	36 0 0
10. Entirely of Standard silver, with barrel or oval lip-plate	48 6 0

BÖHM'S SYSTEM, ROCKSTRO'S MODEL, OPEN G \sharp



EBONITE FLUTE (Standard Silver Mechanism). Boehm's System (Rockstro's Model). No. 11.

The fingering of this is the same as the last, with the exception of an extra F \sharp lever between the E and F holes to avoid the veiled F \sharp made with the second finger of the right hand. The largest holes were first adopted on this model. This model is now generally made with covered holes.

11. Ebonite, Standard silver mechanism	£48 0 0
12. Entirely of Standard silver, with barrel or oval lip-plate	51 10 0

The following additions can be made to this model :-
Shake key for C and D; B \sharp lever; High E and F \sharp shake; each £2 12 0

CARTE & BÖHM'S SYSTEMS COMBINED, 1867 PATENT, OPEN G \sharp



STANDARD SILVER FLUTE, with Barrel Lip Plate. Carte and Boehm's Systems combined (1867 Patent). No. 16.

In this instrument several of the difficulties in the fingering of the Boehm System are removed. It combines the advantages without the drawbacks of the F \sharp of the Boehm with those of the old F \sharp . It has the extra D with all the fingers off, which greatly facilitates execution. The fingering is easier than that of the Boehm or Old System. It is, at the same time, a smaller departure from the latter.

13. Cocuswood or Ebonite, nickel silver mechanism	£38 0 0
14. Cocuswood or Ebonite, Standard silver mechanism	47 6 0
15. New Metal, middle and foot in one, nickel silver mechanism, with silver oval lip-plate	39 0 0
015. New Metal, middle and foot in one, Standard silver mechanism, plain cups, with silver oval lip-plate	46 0 0
16. Entirely of Standard silver, with barrel or oval lip-plate	50 14 0

Extra D and D \sharp shakes to any of the above, £4 4 0

RUDALL, CARTE & CO. LTD., LONDON

THINNED FLUTES



The material used for the tube of these instruments—whether cocusswood or ebonite—is reduced very considerably in thickness. Consequently a thinned flute vibrates much more freely than one of normal dimensions, the player thus being enabled to produce with less exertion a very sympathetic and extremely beautiful tone. The firm has been making these instruments for many years, and there is an increasing demand for them. Where expense has to be studied, it is a good plan to have only the head joint made of thinned wood or ebonite. The resulting advantages are similar, but, of course, not so pronounced as when the instrument is thinned throughout.

The extra charge for a Flute of Thinned Cocusswood or Ebonite is £12 10 0

GOLD OR PLATINUM FLUTES

As the cost of Gold and Platinum fluctuates, quotations for the above can be given only on application.

This also applies to Thinned Head Joints lined with Gold or Platinum, and to Head Joints with 18 carat gold oval lip-plates.

HEAD JOINTS

Cocusswood or Ebonite, lined with New Metal, Standard silver fittings	£8 8 0	Standard silver entirely	£7 4 0
Cocusswood or Ebonite, lined with New Metal, nickel silver fittings	5 8 0	New Metal, with silver lip-plate	6 10 0
		Silver cap for silver head	1 0 0
		New Metal, with silver lip-plate for Cocusswood or Ebonite Piccolo	£5 10 0



THINNED HEAD FOR ORDINARY THICK WOOD OR EBONITE FLUTE.



THINNED HEAD FOR SILVER FLUTE.

Thinned head joints can be supplied at the following prices:—

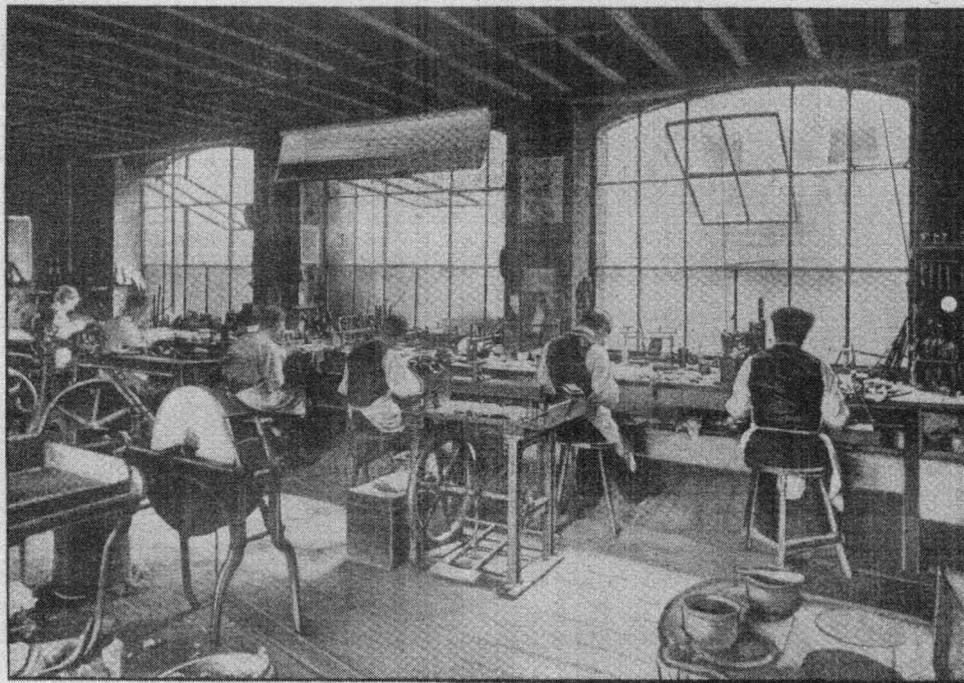
Cocusswood or Ebonite, lined with New Metal, Standard silver fittings	£8 8 0
Cocusswood or Ebonite, lined with New Metal, nickel silver fittings	7 8 0

EXTRAS

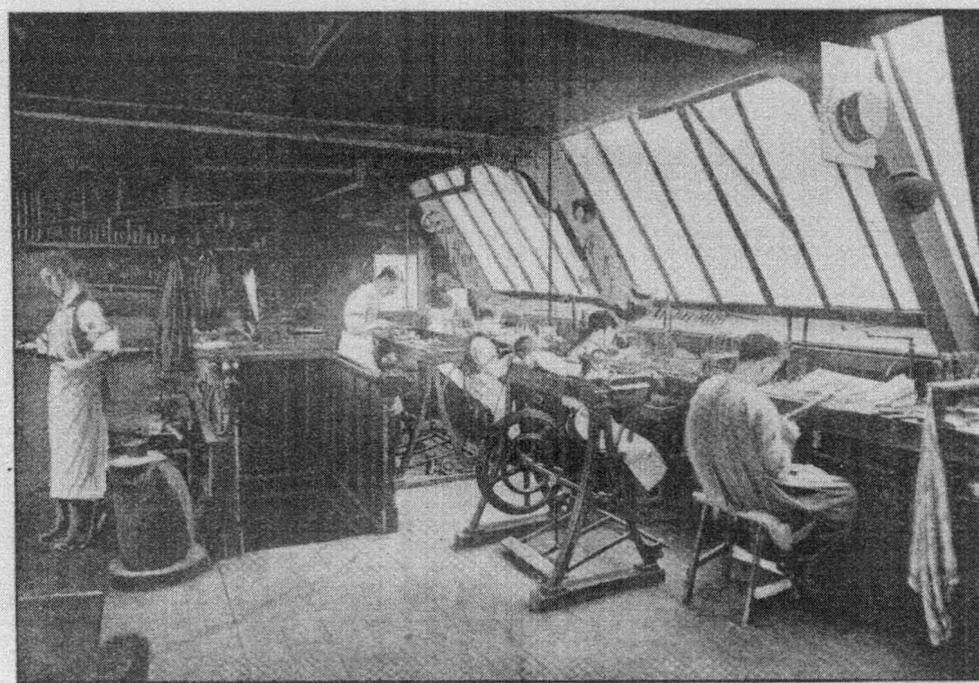
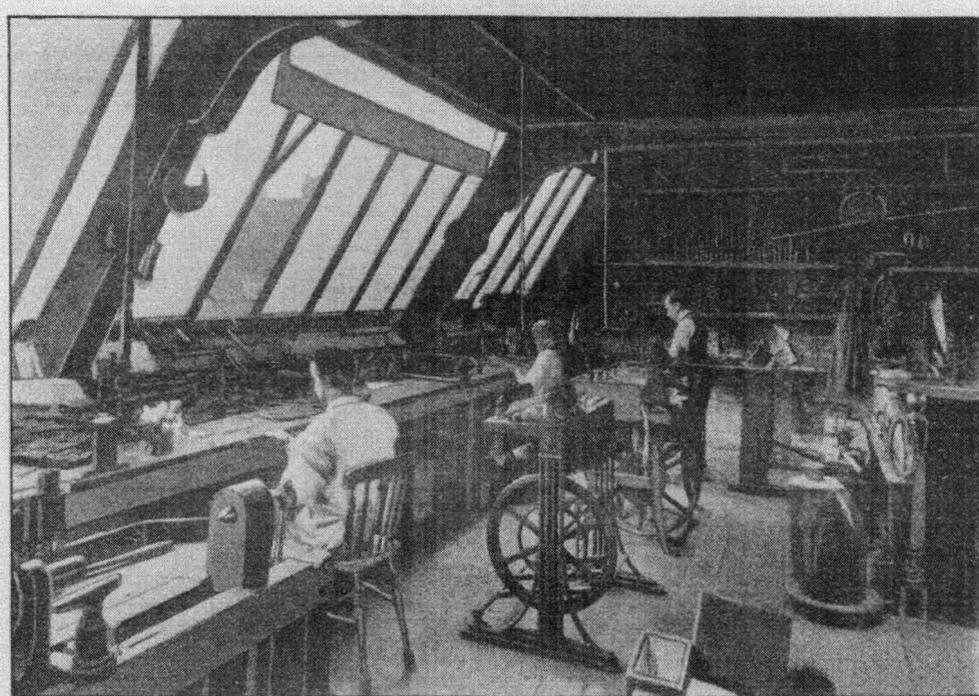
Extra charge for foot joint down to B \sharp on Wood, Ebonite or Standard silver Cylinder Flute	£4 4 0	Ebonite lip-plate entirely round the head of Wood Piccolo	£1 13 0
Extra charge for Lever 4th Left Hand to close C \sharp or foot	3 5 0	Standard silver oval lip-plate on head of Wood or Ebonite flute	2 10 0
Standard silver lip-plate entirely round the head of Wood or Ebonite Flute	1 15 0	Ditto on thinned flute	2 15 0
Ditto do. round Piccolo Head	1 13 0	Bushing embouchure with ebonite or silver	1 4 0
Ebonite lip-plate entirely round the head of Wood Flute	1 15 0	Gold springs per set	1 16 0
		Adding Brossa F \sharp	1 5 0

Appendix 2: Images from the Rudall Carte workshops.

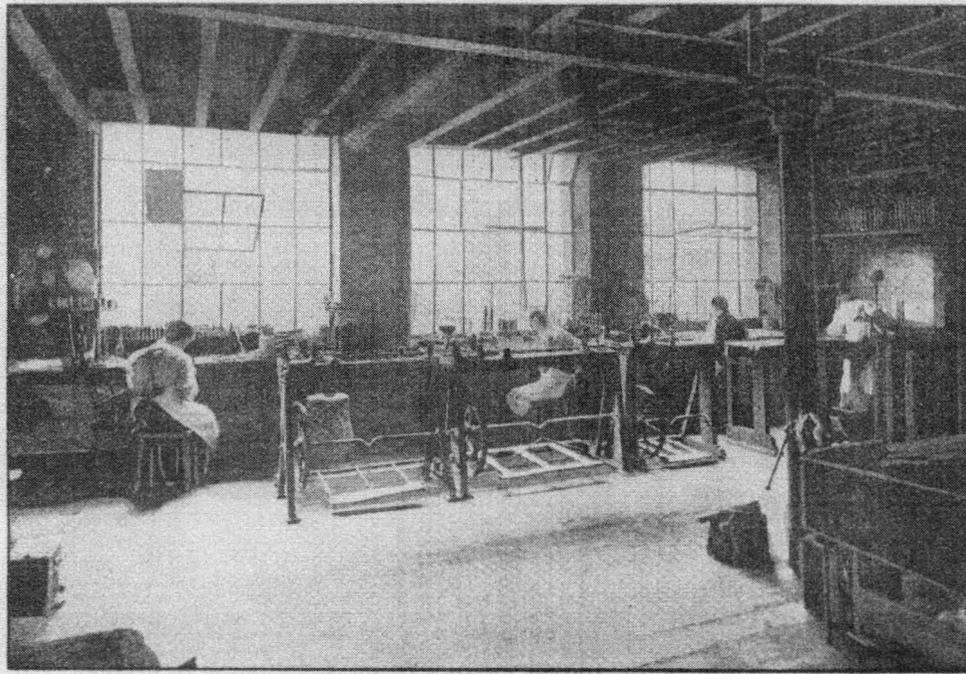
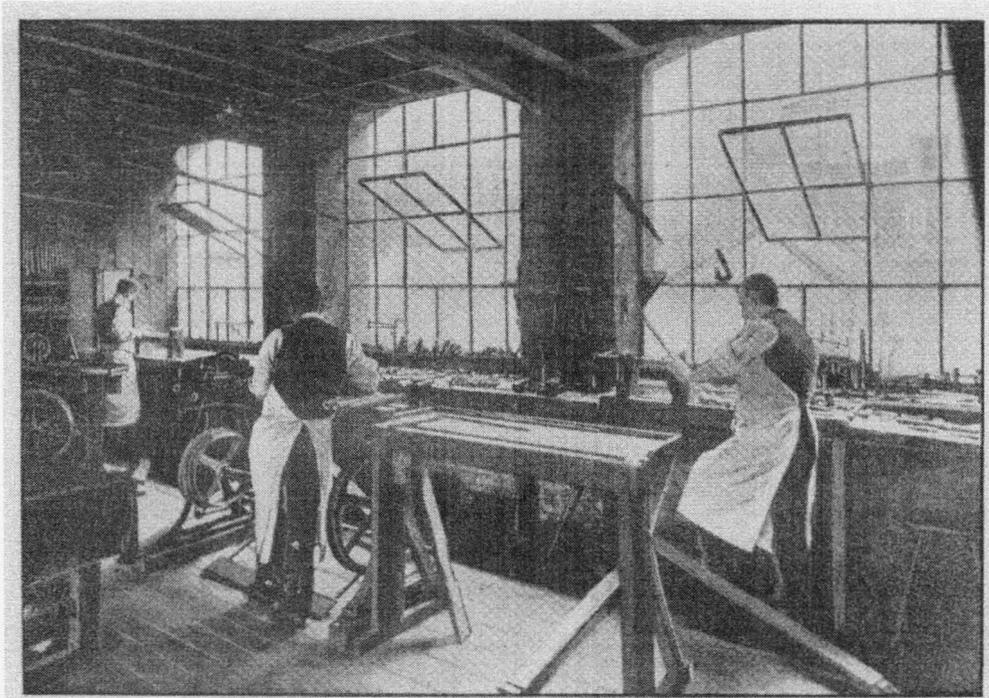
From Rudall, Carte & Co. Ltd. catalogue, 1913 (DCM). Heavily-retouched photographs taken in the firm's Berners Street premises.



These are very old-fashioned workshops, even for 1913. Note the absence of electricity and of motorised machinery. The workshops are lit by natural light and with gas lights on the ceiling.



At the left of the top picture is what appears to be a pole lathe made with wooden bearers. The lathe at the far end of the top picture is a triangular-bedded machine dating from the first half of the nineteenth century. These hand lathes are not supplied with slide rests. Each workbench is supplied with a gas burner.

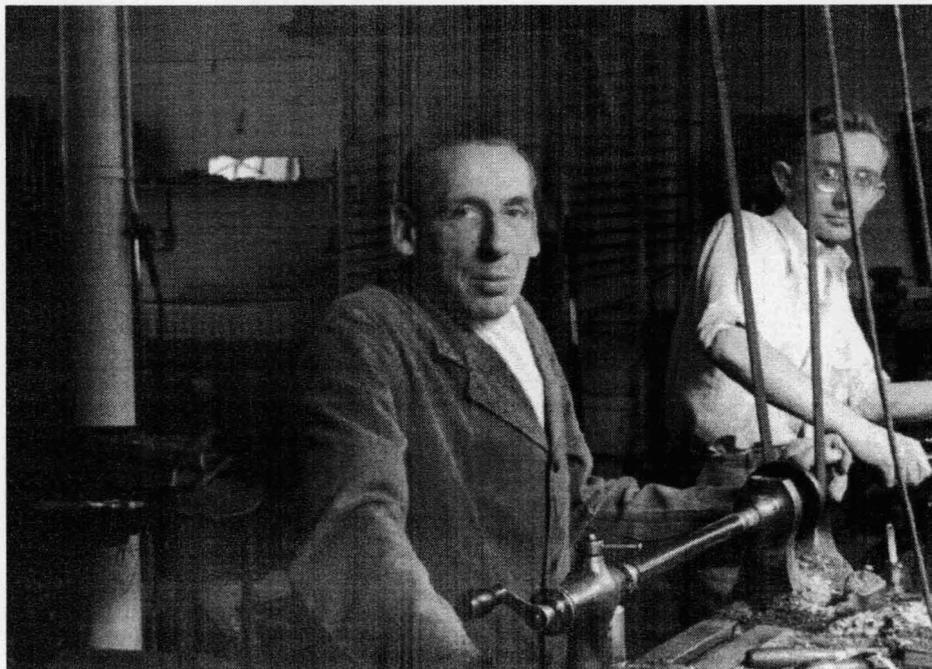


The top picture shows a pole lathe with its poppet heads removed. The L-shaped treadle arrangement on the floor is visible. To the right of the lower picture is an antediluvian lathe with a wooden support, and next to that appears to be the remains of a wooden pole lathe. Pole lathes would have been considered out of date as early as 1850. These workshops show little sign of recent investment.

Photographs of the Rudall Carte workshops, 1950s.



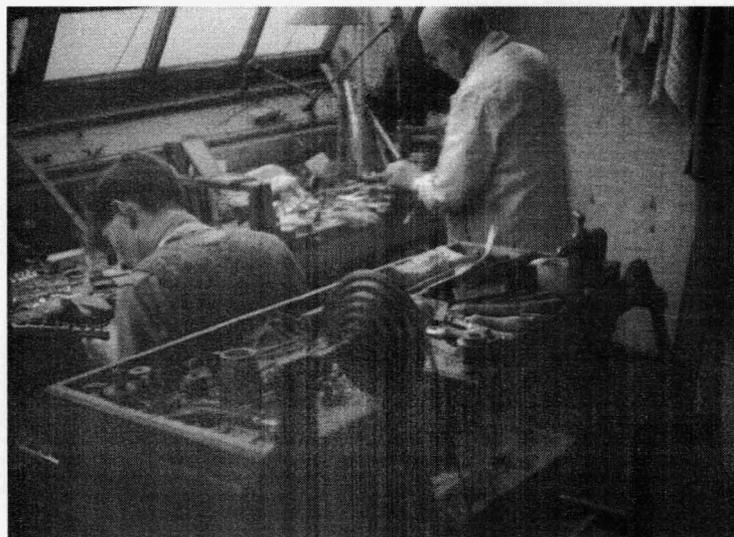
The Rudall Carte workforce in the upper workshop at 23, Berners Street. Left to right: Frank Charlton, Henry Green, Charlie Rogers, Stan Jennings, Roger Harris (known as Angus), Cyril Hellaby, Horace Brereton, Albert Cooper, Leonard Hind, Ewen McDougall, Ted Robbins, unidentified, David Keen, Fred Handke. Photograph by Roger Charters.



Ted Robbins, the principal woodturner (left) with Charlie Rogers. Ted Robbins is shown using hand tools to turn a cylindrical body joint for a flute. Such an operation would have been more efficiently carried out using a slide rest on an engineering lathe. There appears to have been little investment in the time since the 1913 photographs beyond the provision of a powered overhead shaft to drive the flat belt to the lathe. Photograph by Roger Charters.



Albert Cooper at his workbench. Note the gas burner, which appears to be one of the same burners shown in the 1913 photographs. The workers were expected to solder the keywork on their flutes using the gas burner, enhancing the flame with a blowpipe held in the mouth. Photograph by Roger Charters.



Fred Handke, the long-serving Rudall Carte employee (right) with Roger Harris, known also as Angus (left). The triangular-bedded treadle lathe is the same one from the 1913 pictures shown on page 226. This machine was used exclusively by Fred Handke, whose craftsmanship was much admired by his colleagues. Photograph by Ewen McDougall.

Appendix 3: Addresses, dates, serial marks and numbers.

Addresses of Rudall & Rose.

1823: 7, Tavistock Street, Covent Garden, listed in *Piggot's London and Provincial Directory*, 1823-4. This address appears to have been George Rudall's home.

1825: 15, Piazza, Covent Garden, listed in *Piggot's Directory*, 1825 ('Covent Garden Piazza, East'). *Robson's Directory*, 1826-7 lists 'Rudall & Rose, Flute manufacturers, Great Piazza, Covent Garden.' The instruments were stamped 15, Piazza.

1838: 1, Tavistock Street, Covent Garden. Listed in *Post Office London Directory*, 1838.

1847: 38, Southampton Street, Strand: (1.) Patent specification 11,853 (1847) reads: 'I, John Mitchell Rose, late of Tavistock Street, Covent Garden, but now of Southampton Street, Covent Garden...' The specification was actually signed on 6 March 1848. (2.) An advertisement by Richard Carte in *The Musical World*, 19 February 1848, gives the Southampton Street address.

Addresses of Rudall, Rose & Carte.

1852: 100, New Bond Street. An advertisement in *The Musical World*, 3 July 1852 reads: 'Rudall, Rose, and Carte, Patentees, Manufacturers, and Importers of Musical Instruments, Music-sellers and Publishers, beg to announce that they have REMOVED from 38, Southampton-street, Strand, to more extensive premises, 100, NEW BOND-STREET, where they intend to include in their business every branch connected with music...'

1854: 20, Charing Cross. An advertisement in *Musical Directory*, 1854 announced that Key & Co. had been taken over by Rudall, Rose & Carte, who appear to have moved their workshops to their premises. Rudall, Rose & Carte maintained both the New Bond Street and the Charing Cross premises until 1857, when their advertisement in *The Musical World*, 5 December 1857, gave only the Charing Cross address.

Addresses of Rudall, Carte & Co.

1872: *Musical Directory* gives the firm's name as Rudall, Carte & Co. No explanation is given for dropping Rose's name. Rose had died in 1866 and Rudall in 1871.

1878: 23, Berners Street. The title page of *Musical Directory* 1878 lists the address as 23, Berners Street but gives the Charing Cross address until February. The firm was registered as a limited company on 3 April 1911.

According to Mr. Harry Seeley, a former employee of the firm, Rudall Carte moved from 23, Berners Street on 22 December, 1958.

Serial marks and numbers on flutes, by year from 1869 to 1939.

Gold and silver modern flutes.

Gold and silver modern flutes were given serial marks in letters corresponding to numbers according to this code:

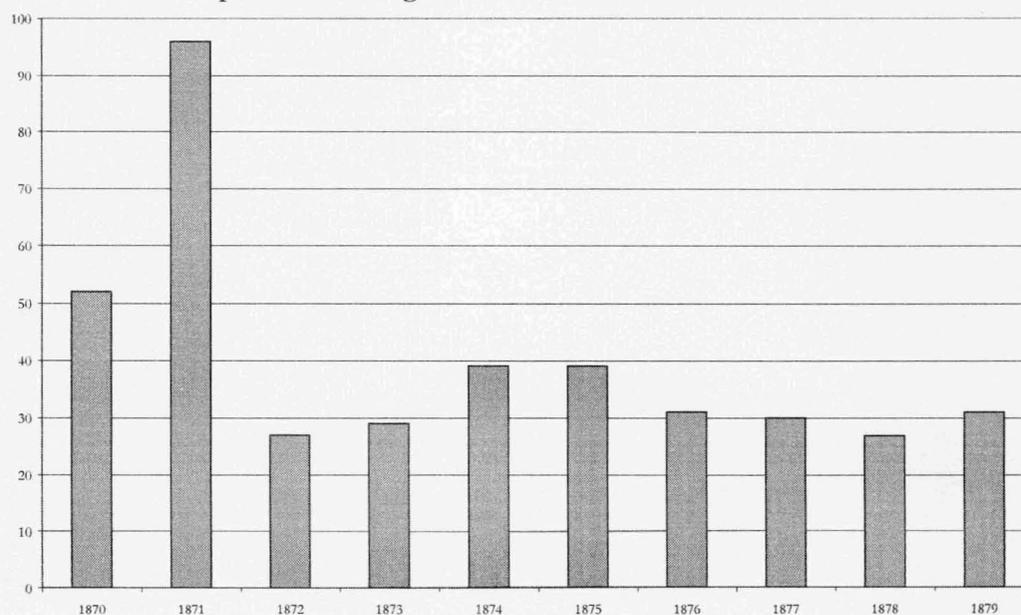
M	U	S	I	C	T	R	A	D	E
1	2	3	4	5	6	7	8	9	0

The early pages of the Stock Records include some undated instruments that may have been in stock before the first volume was begun and are clearly out of sequence. These have been ignored. After 1881, gold and silver flutes were numbered into the same sequence as wooden and ebonite flutes.

This table gives the year and the serial mark, plus the serial mark converted into numbers.

1870	CTR	515
1871	TSI	567
1872	TTS	663
1873	TDE	690
1874	RMD	719
1875	RCA	758
1876	RDR	797
1877	ASA	828
1878	ACA	858
1879	AAC	885
1880	DMT	916

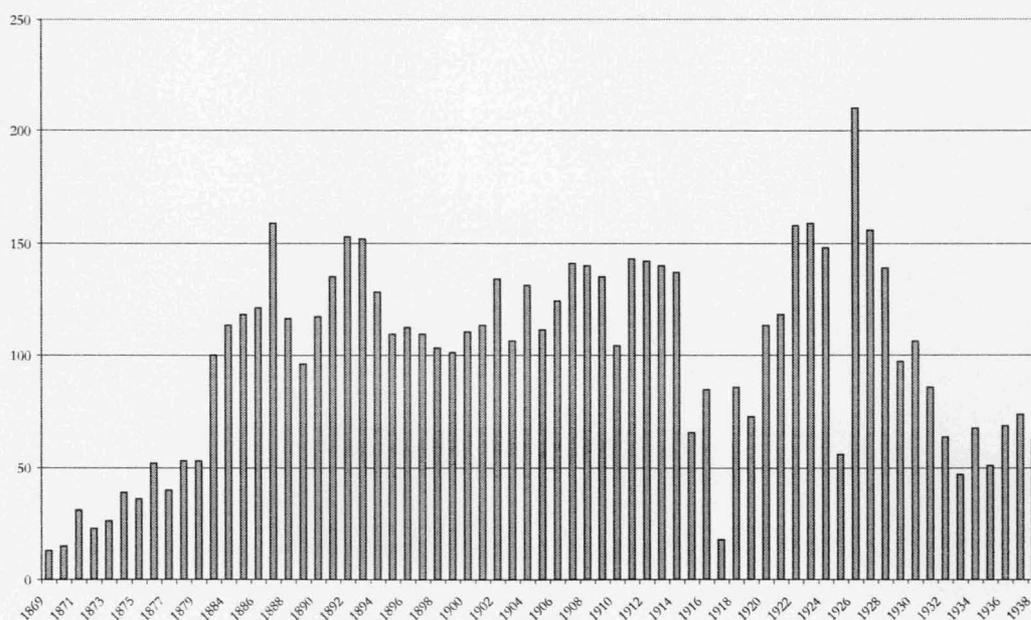
Annual production of gold and silver modern flutes before 1881



Modern flutes, not including gold and silver flutes before 1881.

1869	464	1893	2313		1917	5822
1870	477	1894	2465		1918	5840
1871	492	1895	2593		1919	5926
1872	523	1896	2702		1920	5999
1873	546	1897	2814		1921	6112
1874	572	1898	2923		1922	6230
1875	611	1899	3026		1923	6388
1876	647	1900	3127		1924	6547
1877	699	1901	3237		1925	6695
1878	739	1902	3350		1926	6751
1879	792	1903	3484		1927	6961
1880	845	1904	3590		1928	7117
1881		1905	3721		1929	7256
1882		1906	3832		1930	7353
1883	1085	1907	3956		1931	7459
1884	1185	1908	4097		1932	7545
1885	1298	1909	4237	(36 numbers omitted)	1933	7609
1886	1416	1910	4408	(92 numbers omitted)	1934	7656
1887	1537	1911	4608		1935	7724
1888	1696	1912	4751		1936	7775
1889	1812	1913	4893		1937	7844
1890	1908	1914	5033	(501 numbers omitted)	1938	7918
1891	2025	1915	5671		1939	7981
1892	2160	1916	5737			

Annual production of wooden and ebonite modern flutes, not including gold and silver flutes before 1881.



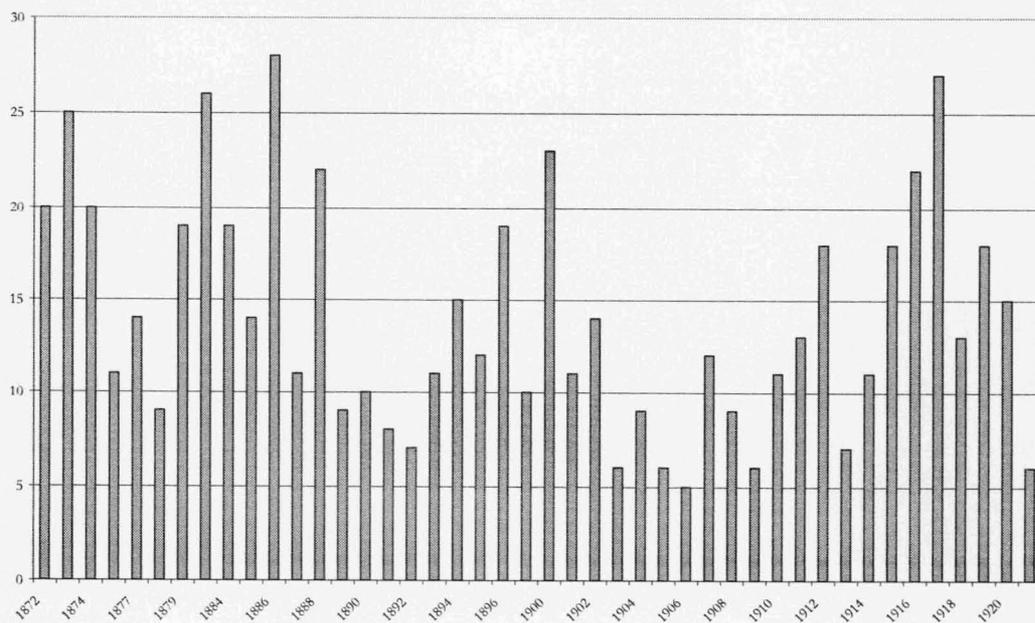
Radcliff Model flutes.

1872	20
1873	45
1874	65
1875	76
1876	
1877	90
1878	99
1879	118
1880	
1881	
1882	
1883	144
1884	163
1885	177
1886	205
1887	216
1888	238
1889	247

1890	257
1891	265
1892	272
1893	283
1894	298
1895	310
1896	329
1897	339
1898	349
1899	
1900	362
1901	373
1902	387
1903	393
1904	402
1905	408
1906	413
1907	425

1908	434
1909	440
1910	451
1911	464
1912	482
1913	489
1914	500
1915	518
1916	540
1917	567
1918	580
1919	598
1920	613
1921	619
1922	626
1923	630

Annual production of Radcliff Model flutes.



Note: Years for which no sales were recorded have been omitted.

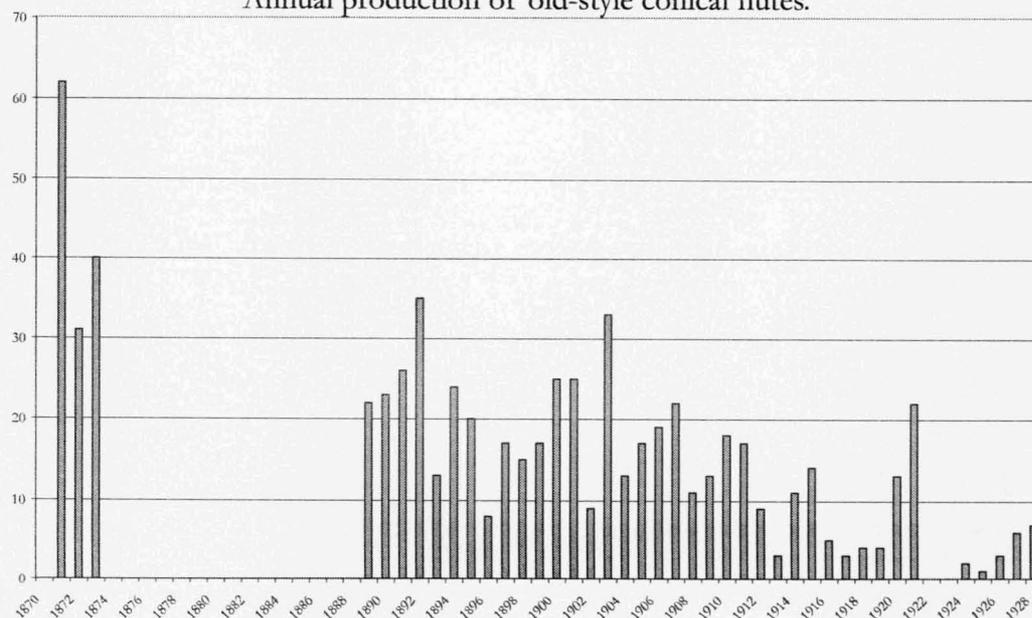
Old-style conical flutes.

1869	6705
1870	6559
1871	6621
1872	6652
1873	6692
1874	
1875	
1876	
1877	
1878	
1879	
1880	
1881	
1882	
1883	
1884	
1885	
1886	
1887	
1888	6992

1889	7014
1890	7037
1891	7063
1892	7098
1893	7111
1894	7135
1895	7155
1896	7163
1897	7180
1898	7195
1899	7212
1900	7237
1901	7262
1902	7271
1903	7304
1904	7317
1905	7334
1906	7353
1907	7375
1908	7386

1909	7399
1910	7417
1911	7434
1912	7343
1913	7446
1914	7457
1915	7471
1916	7476
1917	7479
1918	7483
1919	7487
1920	7500
1921	7522
1922	
1923	7526
1924	7528
1925	7529
1926	7532
1927	7538
1928	7545

Annual production of old-style conical flutes.



Note: The Stock Records between 1874 and 1887 did not give dates for old-style conical flutes. No flute of this type was sold in 1922.

Table of those Shakes which require Exceptional Fingerings.

The table displays four rows of musical examples, each with a staff and two rows of fingering diagrams. The first row shows trills and grace notes on various notes. The second row shows trills with grace notes. The third row shows trills with grace notes and slurs. The fourth row shows trills with grace notes and slurs. Fingerings are indicated by numbers 1 and 2. Some diagrams include a double dagger symbol (‡) indicating exceptional fingerings.

‡ This fingering can only be used when the Flute has the extra D and D \sharp shakes.

The notes of the Flute generally called Harmonics, may be illustrated by a comparison with those of the Violin. These are obtained by pressing the finger lightly on certain divisions of the string, when sounded by means of the bow. Thus if the finger press at the exact half, the vibrations of the string, will be divided into two series, and the note will be the octave of the fundamental; thus, the note produced by double the number of vibrations of the whole string. If the pressure be at the third or at any third part the string will be divided into three vibrating portions, each of which is separated by a point of rest or nodal point, the two parts not pressed by the finger being at rest in the same manner as that which is pressed. The note in this case will be the 12th. It is produced by three times the number of vibrations. At a fourth the note will be the double octave; at a fifth the 17th &c. &c. The same law applies to a column of air in a tube. The distinct series of vibrations and nodal rests analogous to those of the string, are formed in the Flute, by means of the force with which the current from the mouth, modified and regulated by the lip acts, upon the column of air within. The Octave is produced when the column is divided into two, the 12th when divided into three, the double octave when into four, the 17th into five, &c. Thus the fundamentals C, C#, D, Eb, give, by the action of the lips only, the following notes:

Harmonics

Fundamentals

&c. &c.

The following Scale contains all the Harmonics that are practically useful, and the passages are given to illustrate their application. They are written in Demisemiquavers, to indicate that they are chiefly used in rapid passages.

To produce the harmonics with a clear tone, and to prevent their being flat in pitch, the lips should be more compressed than for the ordinary notes.

The small notes indicate the fundamentals, the large notes above them the harmonics, which are to be fingered as the fundamentals. It has been stated that the notes generally called natural or common notes are also harmonics of another and superior class.

Harmonics

Fundamentals

PASSAGES TO ILLUSTRATE THE USE OF THE HARMONICS.