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BOOK REVIEWS

Jeremy Montagu. *The World of Baroque and Classical Musical Instruments.* Woodstock, N.Y.: The Overlook Press, 1979. 136 pp.; 15 color, 101 black-and-white plates. \$23.95.

Jeremy Montagu. *The World of Romantic and Modern Musical Instruments.* Woodstock, N.Y.: The Overlook Press, 1981. 136 pp.; 13 color, 106 black-and-white plates. \$27.95.

The two volumes listed above are sequels to Jeremy Montagu's *The World of Medieval and Renaissance Musical Instruments*¹ and complete a three-volume history of Western musical instruments. Fortunately, Montagu has not forgotten non-Western cultures, and one further volume, entitled *The World of Ethnic Musical Instruments*, is in preparation. As the pagination reveals, the entire series is comparable in size to such general books as those by Curt Sachs and Karl Geiringer and makes no pretence of definitive treatment in any one area. Such a compendium serves a most useful purpose, certainly for the amateur and the novice, who will not be bogged down by technicalities, but also for reference in college courses in history of music or for survey courses in musical instruments. One must not expect to find measurements, ranges, designations in other languages, or much other desirable information, which can be found elsewhere. Montagu has carefully weighed what information seems to him appropriate for his purpose. Others might have chosen somewhat differently in approaching this problem, but, on the whole, the author has selected wisely. Unfortunately, the bibliography is restricted, not including this *Journal*, for instance, but not neglecting the *Galpin Society Journal*; and casual references to sources within the text could be considerably more helpful if proper footnotes led the reader to precise locations. Nevertheless, the volumes serve an excellent function, even for the specialist. They present a balanced point of view within each period, relating changes in musical instruments with musical and social styles and with advances in technology. The late Hans David used to tell his doctoral students preparing for preliminary examinations to read books like these. He recognized that

1. Woodstock, N.Y.: The Overlook Press, 1976. This book was reviewed in this *Journal* 4: 121-25.

after years of detailed study, it was far too easy not to see the forest for the trees.

The books are actually distinctive and elegant in appearance and easily reveal the reason for their high cost. With exceptionally wide pages and wide margins, the format presents a pleasant, uncluttered appearance and provides space for the insertion of the numerous black-and-white plates, most of which are presented on the pertinent page. The photography for both the black-and-white and the less-numerous color plates is superb, but the small size of some photographs leaves much to be desired in illustrating details discussed in the text. At times, I found a magnifying glass useful, particularly on some illustrations of valve mechanisms and compensating devices. Nevertheless, the large number of excellent photographs considerably enhances the value of these volumes. The author's special attention to folk-amateur instruments is also a virtue, for in many cases, little can be found easily about such instruments elsewhere. The chapter on electronic instruments will also be welcomed by many.

Another reviewer has already pointed out the danger in books of this type in overstatement and sweeping generalizations, a danger which Montagu has not entirely avoided. Although his accuracy over this broad area is in general commendable, I must point out a few pitfalls. Pitch in 1800 was certainly not universally A-440 or higher, regardless of early documentation at specific times and locations (3: 110). The cruelly high vocal tessitura in Beethoven's Ninth Symphony, for instance, is far more accurately assigned to the prevailing *hoch Kammerton* pitch than to Beethoven's ineptness in vocal writing. The placement of the sound post in the violin family is not *under* the right foot of the bridge, but slightly behind it (2: 112). The placement as described would stifle transmission of vibration to the resonance box. The author fails to mention the Cramer violin bow, the first step toward the modern bow, which David Boyden so eloquently described to the American Musicological Society in 1975 (2: 109ff.). It is true that early in the present century, strings were sometimes made of silk, but even Alberto Bachman, after comprehensive description of the manufacture of gut strings, mentions silk only in passing (3: 1).² Perusal of a current extensive catalog of strings reveals not a single silk string, although a thin overwinding of silk between a gut core and its metal winding is not

2. Alberto Bachman, *An Encyclopedia of the Violin*, trans. H. Martens and ed. Albert E. Wier (New York: D. Appleton and Co., 1926), p. 150.

uncommon. It functions to prevent buzzing if the gut dries out. Gut-wound strings remain generally preferable on the upper bowed string instruments, the violin E excepted; but steel (or aluminum) strings, largely wound over steel-rope core, are available, as well as wound strings over various synthetic cores replacing gut. In lower stringed instruments, the steel-core strings are more prominent, particularly for the double bass, where these strings define pitch so much more accurately that orchestrators can now treat old restrictions requiring doubling the bass in the upper octave with far more freedom than heretofore. The author, furthermore, apparently does not realize the vast difference between playing the double bass with the German (Simandl) bow and playing the gamba (3: 18f.). The underhand positions on the two are not identical. The German bow is so constructed and held as to provide a solid bite with ease on the down-bow stroke, and the up-bow is simply not the power stroke.

Montagu's illustration of the Neapolitan mandolin looks more like the Milanese type, regardless of its four pairs of strings, since it has neither the "broken" belly and tortoise-shell plate necessary to accommodate wire strings, nor the extremely deep, narrow body (3: 27). If only a single illustration is given, it should at least be typical. Although many sources mention ca. 1880 as a date for Steinway's cessation of manufacture of the square piano, the square remained popular in America much longer (3: 27). Otherwise, it would not have been necessary for the American Piano Manufacturers in their 1903 Congress to provide the fifty-foot-high bonfire of square pianos to dramatize the obsolescence of the instrument. Montagu fails to mention, in discussing the recent history of the flute (3: 46), the present trend toward manufacturing varieties of head joints which professionals are using increasingly either to expand volume, particularly in the lower registers, or to alter tone quality. Furthermore, I would seriously doubt the author's contention that Beethoven's famous horn passage, the A-flat scale in the high register in the Ninth Symphony (third movement, meas. 96) can be played easily on the hand horn (3: 82). Morley-Pegge carefully points out that E. C. Lewy, who played this part in the original performance, used a valve horn.³

My last complaint deals with the generality that average amateurs want to play only dance tunes and hymns in church bands (3: 62). Such

3. R. Morley-Pegge, *The French Horn* (London: Benn, 1960), p. 108f. See also W. F. H. Blandford, "The Fourth Horn in the Choral Symphony," *The Musical Times* 66 (1925): 29, 124, 221.

a statement indicates a profound ignorance, shared by many other European and some American scholars, of the achievements of thousands of American amateurs who play in bands and civic orchestras across the country—a phenomenon simply not duplicated abroad, at least in any comparable sense. The players in the best of these organizations demand and use the finest professional equipment that they can afford, and many achieve outstanding results. The reason that more are not professional is simply disinclination or the fact that there are not enough professional jobs to absorb them all. All major music schools in America have percussion instruction, usually from a highly qualified professional teacher (3: 107ff.). Although the term “orchestra bells” appears in parentheses in most American orchestration tutors, *glockenspieler* here as in Europe has been the accepted terminology for decades (3: 56). With due respect (and even awe) for eighteenth-century trumpet virtuosi, I would take exception to Montagu’s statement that their achievements have never been equalled except by early twentieth-century American jazz players. Standards of trumpet playing since mid-century have risen constantly in both quality and quantity of competent artists, including mastery of various piccolo trumpets and, more exceptionally, historically accurate “Bach” trumpets.

With due regard for such peccadillos, I would still maintain that Jeremy Montagu has achieved a monumental success with his beautiful, multi-volumed history, and I would heartily recommend it.

ROBERT AUSTIN WARNER

Helmut Giesel. *Studien zur Symbolik der Musikinstrumente im Schrifttum der alten und mittelalterlichen Kirche, von den Anfängen bis zum 13. Jahrhundert.* *Kölner Beiträge zur Musikforschung*, ed. Heinrich Hüschen, vol. 94. Regensburg: Gustav Bosse, 1978. 309 pp. DM42.

This book, a survey of text citations that treat musical instruments as symbols, contains more than 1,200 citations from the second to the thirteenth century A.D. To a certain degree the author is justified in his claim that this collection represents a complete corpus of texts of the authors of the Church.

Chapter 2, the first major chapter, consists of an account of musical symbolism in early non-Western literary cultures and in ancient Greece. Since there are no historical connections between, e.g., Chinese or Indian symbolism and early Christian symbolism, and since Giesel makes only one short statement about allegorical interpretation in ancient

Greek literature (p. 41), this chapter seems superfluous on the whole. In chapter 4 the author characterizes briefly the writers who are the main representatives of symbolical exegesis. Though it was clearly difficult to choose the names to be included, it would have been appropriate for him to justify the omission of such figures as Isidor, Amalar, and Joachim de Fiore.

Chapter 5 treats the eight most important biblical instruments. Tables are given for each of them, grouping the text concordances from the Old and New Testament according to the uses of the instrument in Jewish life: in the case of *tuba*, for example, the categories are war, feast, ritual, theophany, eschatology, and "musical instrument proper." The purpose of this last is not clear, since the passages under this heading indicate ritualistic uses (1 Par. 15:28; 2 Par. 5:13f.), a pagan rite (Dan. 3:5, 7, 10, and 15), or religious visions modelled on the Temple service (Ps. 97:6 and Ps. 150:3). For each instrument there is also a list in which the key words of the exegetic texts are grouped according to subject. Using the example of *tuba* again, the subjects are homily/kerigma, evangelium, preacher, the word, doctrine, precept, testament, law, holy scripture, praise, voice, mouth, and tongue. Within each group the arrangement is chronological. After the concluding chapter (6) and bibliography, there is an appendix of one hundred pages which lists the symbolical explanations again, grouped this time not according to subject, however, but strictly chronologically; and here the texts are cited as complete phrases.

Our knowledge of music and its place in culture, in both its real and metaphysical aspects, during the first thousand years of our time, has been based exclusively on literary references and pictures. Hence a correct evaluation of the character and meaning of these secondary sources is of crucial importance.

Giesel believes that by the fifth century, writers no longer understood what a term found in the Septuagint or Vulgate actually meant—a dangerous assumption, for he therefore feels justified in dispensing with a consideration of the musicological and organological reality of the time. As the title indicates, he excludes pictorial evidence, though Edward Buhle's book, *Die musikalischen Instrumente in den Miniaturen des frühen Mittelalters* (Leipzig, 1903), and Reinhold Hammerstein's article, "Instrumenta Hieronymi," *Archiv für Musikwissenschaft* 16 (1959): 117–34, on the Dardanus letter, are listed in the bibliography. A brief glance at medieval miniatures and sculptures, and even a slight acquaintance with modern iconographic scholarship, however, teaches us that the

exclusion of pictorial evidence is dangerous. Sometimes symbolism may indeed be used without reference to current musical reality, but at other times it may reflect—or deliberately reject—some aspect of the musical practice of the time. The usefulness of an analysis of medieval psalter-prefaces without a consideration of the psalter-illustrations seems questionable.

To Giesel's credit, it must be said that he does attempt to provide an organological basis for his work: at the beginning of each of the eight sections for the instruments he gives a short explanation of the instrument as of the time of the Temple and lists the concordances for the name of the instrument in its Hebrew, Greek, and Latin equivalents. But though he mentions that the translations for *hasosra* (trumpet) and *shofar* (horn) (*salpinx* and *keratine* in Greek; *buccina*, *tuba*, and *cornu* in Latin) are in no way consistent, he disregards this in his analysis, reducing the scope to the terms *hasosra*, *salpinx*, and *tuba*. His lists of concordances for these three main terms in parallel columns are not of great help, because they are not given synoptically; we therefore cannot learn when *salpinx* was translated as *tuba* and when as *buccina*, etc.

The main merit of Giesel's book lies in the provision of the data as such. But the explanations of symbolism are taken out of context and isolated from theology and the history of ideas as well; and as a bibliographical reference for a citation we are given only the name of the author with the page and number of the volume of Migne's *Patrologia*, but no title for the treatise, commentary, or homily. The absence of an index also makes working with the book cumbersome. One might expect the index to reveal which authors participated in the transmission of a certain symbolical explanation, which were the channels of tradition, and which symbols and allegories were used for one or more instruments. Without such an index the author's enormous efforts do not pay off appropriately.

Giesel mentions in his foreword that he tried to make his work as complete as possible—a questionable claim, since the poetical writings of the Church, its hymns, sequences, and tropes, are absent. He relies exclusively on the prose writings in Migne to such an extent that he does not make use of any edition after Migne, thus disregarding the editorial scholarship of almost one hundred years (modern editions provide lists of manuscripts, thus allowing an evaluation of the importance of a text in medieval tradition, and critical apparatus, which most often give the sources from which an author excerpted.) Consequently, the bibliography is uneven and incomplete.

It is regrettable that the author did not receive advice on crucial problems such as what to include and what to exclude, or when to be comprehensive and when selective. One closes the book with the sigh, "Less would have been more."

TILMAN SEEBASS

C. F. Colt. *The Early Piano*. London: Stainer & Bell, 1981. 160 pp.; 37 color, 36 black-and-white plates. £22.50.

"Only a few years ago buying an early piano . . . would have been thought an act of lunacy," says C. F. Colt, whose own "lunacy" of thirty-five years of piano collecting and nurturing has been brought before the world (with the editorial aid of Antony Miall) in this sumptuously illustrated publication. The thirty-five featured instruments in *The Early Piano*, including two harpsichords and a claviorganum, represent the "stars" of the world-famous Colt Clavier Collection, each elegantly illustrated in a full-page color photograph. Begun in 1944 with the purchase of a Broadwood square piano, C. F. Colt's collection has grown to be the largest private collection of pianos in the world, numbering about 130 instruments, of which over forty are grand pianos! Its relative size may be compared with the Smithsonian's 163 pianos, of which nineteen are grands.

"Part 2: The Pianos" presents the featured instruments in chronological order, from the Heilman grand of 1775 to the Erard grand of 1868. Over half were built between 1800 and 1830, closely reflecting the predominance of instruments from those years in the collection as a whole. Chief makers represented are Heilman, Hancock, Kirkman, Schiedmayer, Broadwood, Stein, Erard, Haschka, Clementi, Dulcken, Wornum, Pape, Pleyel, Graf, Collard & Collard, and Schneider. The collection contains no American instruments. Broadwood pianos constitute about one-fourth of the collection, but here only three are illustrated in color. The intent of the book seems to be to show the variety of European workmanship within the general historical development of the piano in the early nineteenth century. In this *The Early Piano* succeeds admirably.

Sir Geoffrey Shackerly's warm-toned photographs stunningly capture an accurate impression of each instrument's proportions and physical beauty. A few seem a bit too red in color, thereby distorting the comparison of woods and finishes among instruments. Supplementing

the color photos are over thirty black-and-white shots showing other views of the same instruments, full views of an additional nineteen pianos from the Colt Collection, name plates, and original directions for tuning and hammer adjustment.

Earlier descriptions of instruments in the Colt Collection appeared in a 1969 inventory catalog¹ and in an article in the inaugural issue of *Early Music* (1973).² In *The Early Piano* the description of each featured instrument is more complete and detailed than in either of the two previous publications. Next to each color photograph is provided the following information in convenient tabular form: length, width, and depth or height of case, floor-to-keyboard height, number and function of pedals, type of case wood, style of legs, key materials, compass, octave size, number of iron braces, whether strings and wrest pins are original or replacements, damper type and material, continuous or divided bridge, type of action, material of hammer covering, and recording company if the instrument has been recorded. An accompanying page or two of written commentary provides other details of construction, biographical information on the builder, evidence for dating, and interesting anecdotes related to that instrument.

The featured instruments are still housed in Bethersden, Kent, where all the photographs were taken, although the book does not make this clear. The Collection is not open to the public on a regular basis, but for the serious scholar, performer, or builder of early pianos, access to the actual instruments may be requested by writing Mr. Colt in Bethersden. According to the jacket notes, some less important instruments from the Collection are located in Switzerland and "museums throughout the world."

The value of *The Early Piano* reaches beyond its picture-book aspects, however. "Part 1: The History" contains a concise seven-page essay on the early development of the piano, emphasizing details Mr. Colt finds important, especially with regard to English builders. Leading figures mentioned include Cristofori, Maffei, Hebenstreit, Silbermann, Zumpe, Stein, Broadwood, and Erard. The information is generally accurate, but American builders are omitted altogether, and any organ aficionado would violently disagree with Colt's statement that Gottfried Silbermann died "in relative obscurity."

1. C. F. Colt, *The Colt Clavier Collection: Silver Jubilee, 1944-1969* (Portsmouth: Grosvenor Press, 1969?), 25 pp. Difficult to find in U.S. libraries.

2. C. F. Colt, "Early Pianos: Their History and Character," *Early Music* 1 (1973): 27-33. Six of the ten pianos discussed and pictured here are featured in the book.

The contents of "Part 3: The Techniques" may be the most worthwhile section of the publication for some readers. Its thirty pages contain extracts from J. N. Hummel's piano method (1828), advice on restoring and caring for early pianos, guidelines for dating of pianos, and a glossary of technical terms. The extracts from Hummel are particularly valuable, since his *Ausführliche theoretisch-practische Anweisung zum Pianofortespiel* (Vienna, 1828) has not yet been reprinted in any of its early German, French, or English editions (although a reprint of the French version is projected by Minkoff), and the English version is not readily available in the United States. Colt is a bit cavalier about the publishing facts, giving the citation incorrectly as "*Elementary Instructions* (Weimar, 1828)." Hummel's method was written between 1822 and 1825 in Weimar and published by Haslinger in Vienna in 1828; French and English versions appeared later in 1828 or in 1829, and the correct English title is *A Complete Theoretical and Practical Course of Instruction on the Art of Playing the Piano Forte* (London: T. Boosey, 1829?). These details aside, Colt has accurately reproduced sections from the English version dealing with the position of hands and fingers, the use of the damper pedal (including a two-page musical example with pedal markings by Hummel), and the section "On the Touch Proper to Different Piano-fortes of German or English Construction." Hummel prefers the light facility, dynamic flexibility, and clarity of the German (Viennese) pianos, but admits to the fullness and harmonious sweetness of tone of the English instruments, while warning against employing too much arm weight on the instruments with heavier action.

Colt's advice on restoring and maintaining early pianos is directed toward preservation, not rebuilding or remodeling. Some professional restorers or conservators may disagree on a few points, but the principles resulting from his extensive experience with his own instruments should not be discounted. Colt advises: restringing only if absolutely necessary, using thinner strings rather than thicker strings; keeping the piano in tune; tuning a half-step low; repairing only those soundboard cracks that affect the tone; not stripping and refinishing the case work; washing and reusing original flannel cloth; not replacing flannel with felt; retaining original wrest-pins; using only water-soluble glues; etc. This advice is valuable for the collector wishing to provide minimum care for his instruments. Full restoration work, though, requires more extensive knowledge and specialized skills which must be obtained from sources beyond this book.

The section on how to determine the date of an early piano pertains

mainly to Broadwood instruments, especially grands. Characteristics such as makers' numbers, nameboard inscriptions, keyboard compass, stringing style, iron bracing, types of action, damping systems and materials, pedal types, casework woods and styles, leg styles, and music rest styles are all tied to specific time periods as an aid to dating an instrument. At the same time the author warns against placing too much importance on differences in some characteristics, since variances may occur even within the work of one maker.

The glossary contains definitions of forty-four technical piano terms. Some of the simple and commonly known terms like "key" and "string" hardly seem worthy of treatment, but the presence of the more specialized terms is helpful, particularly since the entries often include more than a simple definition.

The Early Piano concludes with acknowledgements of five basic books on piano history, John Broadwood and Sons, and a long list of performers, builders, museums, scholars, collectors, curators, patrons, universities, auction houses, exhibit galleries, and others. The list represents Mr. Colt's "lunatic fringe," as it were, his world-wide circle of friends who share his fascination with early pianos. To all of them, to Stainer & Bell, Sir Geoffrey Shackerly, and Antony Miall, and especially to Mr. C. F. Colt, we moonstruck lovers of early pianos and their lore are deeply indebted for this enriching gift.

FREDERICK K. GABLE

Fenner Douglass. *Cavaillé-Coll and the Musicians*. Raleigh, N.C.: Sunbury Press, 1980. 2 vols., x, 1,534 pp. \$78.

Monsieur Jean Lapresté of Paris was a senior employee of the Mutin firm, successors to A. Cavaillé-Coll et Cie. His widow has preserved eight volumes of company correspondence and six of organ contracts, as well as hundreds of miscellaneous items. All this material documents the first twenty-six years of Aristide Cavaillé-Coll's career as organ builder (1833-59). Prof. Douglass' patient efforts won for him Mme. Lapresté's permission to photograph the manuscript collection: the present work transcribes a generous portion of the material, providing English translations of the most important letters and contracts. The microfilms are preserved in the Oberlin Conservatory Library, and a set of photocopies has been placed in the Duke University Music Department Library.

In a monograph prefacing the archival material, Prof. Douglass

traces the origins and apprenticeship of Aristide Cavaillé-Coll, his spectacular debut on the Paris scene with the organ for St. Denis, and his rise to fame as designer and builder of organs that reshaped the very notion of how an organ should sound. Where the mechanism and wind supply were concerned, Cavaillé-Coll followed principles of efficiency, reliability, and convenience; tonally, he moved away from traditional structure towards closer imitation of the orchestra and greater "expression." His contracts and his correspondence with critics and musicians show his thought evolving under the stimuli of harsh competition as well as a growing awareness not only of physics as applied to organ building but also of organ literature and different schools of performance. The result of his first quarter-century as a builder was the French Romantic or symphonic organ, which for a century dominated the thinking of builders, players, and audiences alike in Europe and America.

Prof. Douglass' study brings us down to the completion of the organ for Ste. Clotilde (1859), redefining César Franck's role in the specification. This instrument, like the colossal first venture of St. Denis (1833) and the *tour de force* of St. Vincent de Paul (1854), is documented at length as regards both specification and mechanical design. (Prof. Douglass does not go into scaling, as Cavaillé-Coll's innovations involve fundamental changes in wind supply, action, and specification.) Interwoven with chapters built around such technical data are sketches of the musical scene in France (particularly the quarrel over the Romantic organ and its use in churches) as well as Cavaillé-Coll's discovery of builders elsewhere in Europe and organists of a more learned, disciplined temper than his trusty Lefébure-Wély. This survey takes on its full color when read against the background of the letters, contracts, and outside source material contained in the five appendices, which constitute about five-sixths of the work. These documents illustrate the obstacles and handicaps Cavaillé-Coll overcame in becoming established: revolution, financial uncertainty, family crisis, and bitter polemic. From these trials emerged the prestige of A. Cavaillé-Coll et Cie. and the strong, kind personality fondly remembered as "papa Coll."

The Sunbury Press, which has already done great service to the organ world by publishing numerous essential texts, has spared no effort in making this fund of material available to the public. My only disappointment comes from routine editorial matters: typographical errors are frequent enough to be noticeable, the illustrations are not where the table of contents says they are, and there is confusion in referring

to the St. Vincent de Paul plates by number, as they retain the (different) numbers from the source from which they were reproduced. Apart from these minor concerns, the book is a solid contribution to Cavallé-Coll's biography and the history of organ building in the nineteenth century. No research library or student of organ history should be without it.

CHARLES FERGUSON

John Fesperman. *Organs in Mexico*. Raleigh, N.C.: The Sunbury Press, 1980. viii, 109 pp.; 17 color, 47 black-and-white plates. \$18.50.

The history of organs in Mexico has received relatively little study, despite the fact that organ-building traditions there date from a considerably earlier time than do those of the United States. Since the heritage of building organs in Mexico began with the Spanish conquest of the Aztec empire, it is not surprising that it followed the style indigenous to Iberia. As the Christianization of Indians began in Mexico, the first bishop decreed that music be taught and used as part of the conversion process. A music teacher was dispatched to the Mexico City area as early as 1523; choirs were established, and instruments, including organs, were used to accompany the singing. The first organ for the cathedral in Mexico City arrived from Seville in 1530. Splendid churches at Yanhuítlán, Cuilapan, Mérida, Huejotzingo, Acolman, and Yuriria were completed by the end of the sixteenth century and presumably were outfitted with organs. That such instruments, especially the vestiges of them that remain today, should be subjected to serious study is both worthwhile and overdue.

The volume at hand arose from a project of 1967 undertaken by members of the Division of Musical Instruments of the Smithsonian Institution in Washington. At that time, John Fesperman and photographer Scott Odell made an exploratory trip to Mexico to confirm the existence of large numbers of significant organs from the seventeenth century onward. The stated aims were "to accumulate information directly from the instruments themselves, which could then be made available to the inter-American cultural community; to arouse interest leading to the restoration of important instruments; and to provide conservation advice in collaboration with Mexican colleagues."

The second point is especially significant, since the restoration of the two important organs at the Mexico City Cathedral was completed under the direction of D. A. Flentrop in 1977. An account of that work

is included in the chapter on organ restoration and comprises a major part of the writing. Other chapters deal with historical and musical background, the characteristics of the organs and their cases, and the dispositions of the instruments. Four appendices provide valuable reference material and occupy nearly as many pages as the text itself. These are: a checklist of organs in Mexico, Peru, and Ecuador; a provisional list of organ builders; documents related to organ building; and a glossary. A bibliography and index complete the written portion of the book, the printing of which is handsomely and accurately executed.

A large selection of photographs, the majority of which are by Mr. Odell, complements the text and provides visual material heretofore unavailable in print. Case design and interior mechanical detail alike are treated. The reproduction quality for both the color and black-and-white plates varies, but is generally good.

This is a well-written book, one which should be valuable as a reference work, especially since the field has not been extensively treated. As a summary of the present knowledge of organ building in Mexico from the beginning of the colonial period through the nineteenth century, it is a unique work.

ARTHUR LAWRENCE

Herbert W. Myers. *The Practical Acoustics of Early Woodwinds.* D.M.A. dissertation, Stanford University, 1981. Ann Arbor: University Microfilms International, order no. 8109026. 140 pp.

M. Castellengo, F. Drouin, and P. Sechet. *La flûte traversière à une clef.* Bulletin du Groupe d'Acoustique Musicale. University of Paris, 1978. 58 pp. (Available from Librairie La Flûte de Pan, Attn: M. Monier, 55 Rue de Rome, 75008 Paris). 40 F.

Both of these works deal with the physical acoustics of early woodwinds, a subject very sparsely represented in the literature. Myers, who has devoted many years to the study and design of antique wind instruments, presents in his thesis a summation of his accumulated knowledge of the effects of design variations, and an explication of why the instruments were designed as they were. The work deals with the principal woodwinds of the renaissance and baroque periods, with the major emphasis on the former. Included are the transverse flute and recorder, capped and uncapped cane-reed instruments of the renaissance

period (such as the shawm, curtal, crumhorn, sordun, and rackett), the "lip-reed" cornett and serpent, and the flute, recorder, chalumeau, clarinet, oboe, and bassoon of the baroque period.

Rather than taking the conventional approach of discussing each instrument in turn, Myers has organized the text in sections dealing with the principal factors and components responsible for acoustic behavior—tone holes, bore shapes, materials, mechanics of keywork, and sound generators. The behavior of the various instruments is discussed in each of these contexts. This is an excellent arrangement, as it not only avoids the duplication encountered when discussing each instrument by itself, but also allows a basic understanding of a particular factor and shows how the various instruments may be affected by it. The factors of design are presented in terms of cause and effect, much as they would have been understood by early makers, although briefly stated modern acoustical concepts are used for clarification.

Unfortunately, Myers's avoidance of quantitative relationships amounts almost to a phobia. I believe it is accurate to state that there is not a single numerical value, or even a ratio such as "twice as great," in the entire text. All of the phenomena are discussed solely in comparative terms: larger, smaller, greater, less. For example, the well-known fact that enlarging a finger hole raises the pitch is stated, but nowhere is there any information as to how much of a change may be expected in a given set of circumstances. One wonders if the title "The Practical Acoustics of Early Woodwinds" is appropriate in view of the total absence of quantitative information. Perhaps it is "practical" in the limited sense that it describes some of the early makers' *practices*—the undercutting of tone holes, perturbations of the bore, variations in mouth-piece cup depth, and shaping of reeds.

The descriptive approach is nevertheless quite successful. The author calls attention to a number of acoustical phenomena and interrelationships that are usually buried in texts too technical and theoretical for many readers. While most of these are properly described and accounted for, there are several instances in which the real reasons for them are hidden or mistaken. For example, it is stated that a higher window (the distance from windway to edge) in a recorder results in a louder sound. While this is true, it is not the size of the opening per se that is responsible: the increased distance calls for a higher jet velocity to keep the same travel time; to achieve this, the player must blow harder, making the sound louder. Similarly, the discussion of conical bores and the effect of bore angle on the frequency spread of reso-

nance modes is confused by the failure to state how the reed volume is changed while the bore angle is varied. A complete cone of any reasonable angle would have upper resonances that are very nearly harmonics of the fundamental or first mode. It is only because the tip of the cone has been removed and replaced by a reed and its cavity that the modes are inharmonic. Unless it is specified how much of the tip was cut off and what it was replaced by, the mode spread is not determined. Such confusing interactions always bedevil an empirical approach.

It is also true that in a good many respects, especially those which involve timbre, our present knowledge of the real acoustical mechanisms at work is meagre. Here Myers's careful cataloging of relationships deduced from observation and experience, as well as from acoustical principles, provides a useful reference for those who wish to inquire more deeply into the workings of some of these mechanisms. An appendix summarizes the effect of each design variation in a well-organized tabulation.

* * *

In sharp contrast to Myers's work, Castellengo's treatise on the one-keyed baroque flute is replete with measured quantities and the results of careful experimental research. There are more than fifty figures displaying dimensions of historical instruments, fingerings, sonograms, and sounding frequencies. Introductory sections deal with the definition of the instrument, the general mechanisms by which the sound and the various notes are produced, the role of the musician, and some remarks on the uncertainties encountered by the student of ancient instruments. There follows a chapter on the predecessor of the baroque flute, the simple cylindrical renaissance instrument, amply illustrated with drawings and fingering charts from contemporary sources.

The main body of the work is a complete exposition of the acoustical properties of the baroque flute, supplying very impressive data. Castellengo and his colleagues at the Groupe d'Acoustique Musicale have been engaged for many years in experimental studies of wind instruments; they have developed some very good techniques and have carried out the work with a thoroughness and care that is highly commendable. The use of the *champ de liberté*—the range over which the player can vary the frequency of a given note—has given some very consistent results by which the intonation of various instruments can be characterized in a way that is reasonably independent of the player.

Liberal use is made of the sonograph, an instrument capable of displaying the intensities of the partials of a given note as a function of time. Thus there are quantitative data on the timbre of the instruments studied: on how the timbre varies with different fingerings or perturbations in the bore, for example, and on the transient changes in emitted sound with the attack.

In addition to the experimental results on the instruments themselves, there are chapters on the method of playing the flute and on the methods of manufacture and materials and tools used. These draw extensively on the contemporary literature, supplemented by modern knowledge of such matters as the species of wood available.

The writing style is concise, often using an outline form, so that the facts and conclusions are clearly visible and easy to follow. One could not ask for a more definitive, knowledgeable, and complete treatise on this instrument.

JOHN W. COLTMAN

Nancy Toff. *The Development of the Modern Flute.* New York: Taplinger Publishing Co., 1979. 268 pp. \$19.95.

Aptly titled, Nancy Toff's book is primarily a detailed examination of the Boehm flute concentrating on details of mechanism added or subtracted during the nineteenth century. In her acknowledgements, Toff recognizes Dayton C. Miller, the "patron saint" of the flute, and his collection of instruments, books, trade catalogs, music, and correspondence now housed at the Library of Congress, which constitute the major source for scholars and performers engaged in flute research. (The instructional treatises in the Miller collection, over 200 in number, were made available on microfilm a few years ago and can be obtained from the Library of Congress.) The introduction stresses the importance of studying mechanical developments in relation to the music for the instrument. Toff tells us later that this view of the evolution of the flute—a recognition of the influence of music on mechanism—was first put forth by Richard Carte in 1851. In 1906 Miller himself had begun a manuscript concerning the "synthesis of the art and science of the flute"; Toff's *Modern Flute* is a continuation and updating of this pioneering work.

The first chapter treats pre-Boehm flutes from their emancipation from vocal music in the Renaissance to their use by Beethoven. This chapter is much less detailed than those which follow. Three important

sources should be added to the bibliography here: Frederick Crane, *Extant Medieval Musical Instruments* (Iowa City: University of Iowa Press, 1972); Emmanuel Winternitz, *Musical Instruments and Their Symbolism in Western Art* (New Haven: Yale University Press, 1979); and the translation (the original is cited) of Michael Praetorius's *Syntagma musicum*, vol. 2, *De organographia* (Wolfenbüttel, 1619) by Harold Blumenfeld (New York: Da Capo, 1980) (the last two works also appeared in earlier printings).

While all of the material in this chapter is accurately presented, Toff slightes the critically important contribution of J. S. Bach to the literature of the flute. She quotes from Bate's comment concerning Haydn that "the transverse flute seems to lose something of the specialised emotional association that it had with Bach," but misses a chance by ignoring Bach's choice of unusual and difficult keys for the flute in the E-major and A-major sonatas (G sharp being a notoriously out-of-tune cross-fingered note on the traverso, despite her assessment of A as a "relatively safe key") and the E-flat-major and G-minor sonatas of which Bach is the putative author. Toff's real forte is improvements to the mechanical design of the instrument, and she is on solid ground from Tromlitz on. Some interesting ideas explained in the concluding section of this chapter are Laurent's glass flutes, the large-tone-hole instruments of Monzani, Wood, and Nicholson, and the Pottgiesser ring and crescent-key construction.

Theobald Boehm (1794–1881), whose flutes are the subject of the second chapter, was an inventor and performer who attempted to meet nineteenth-century orchestral requirements for force and power and the demand by soloists during this age of the virtuoso for a more perfect flute. Boehm's contributions were many: large finger holes placed according to acoustic principles rather than digital convenience, keys to control distant holes, and ring keys. Modifications were added by Buffet, Coche, and Dorus.

Superb line drawings by Jerry L. Voorhees illuminate the entire text of this book. Careful study of these drawings and the accompanying explanations, particularly from chapter 2 forward, give both a visual and literal survey of mechanical development.

Chapter 3, "Contemporaries and Critics of Boehm," describes nineteenth-century "inventions" such as Schwedler's reform flute, Cornelius Ward's seven-cone flutes, the Siccama chromatic flute, and several compromise and combination instruments, such as the Meyer-system Boehm flute and John Radcliffe's efforts in 1870 to reconcile the Boehm mech-

anism with old-system flutes. By this time, only minor mechanical modifications were left to be made. Toff's summary accurately describes this period of intense activity as confused, highly competitive, and influenced by the demands of such virtuosi as Taffanel.

The two paths followed in the twentieth century are exemplified by the artist models made by Haynes and Powell and the school-instrument makers based in Elkhart, Indiana. Modifications of Boehm's design during this period include Borne-Julliot's attempt to "complete" Boehm's work and McAvoy's provision for simple chromatic fingering on a C-to-D flat transposing flute (perhaps the woodwind analog to the harpsichord with transposing keyboard). Of special interest to performers is an extremely well-presented description of the Alexander Murray flute, which was first designed by Murray in 1948 in collaboration with the brilliant English acoustician and flute maker Albert Cooper and the mathematician Elmer Cole. Several prototypes were made by Cooper, and the Murray flute is now made by Jack Moore, formerly of the Armstrong Company. Heated debate ensues whenever a Murray flute is praised or damned by any performer, and Toff's description, several fine photographs, and Voorhees's drawings provide an effective and interesting guide to an understanding of this controversial instrument. The elegance and sophistication in the wide range of flutes now available is due to such recent developments as the application of the Cooper scale to Powell flutes, more accurate cork placement, and the use of the O-ring, all of which free the performer to deal with the refinement of such aspects of tone production as "articulation, timbral subtleties and improvisatory decisions."

The final chapter is a guide to avant-garde flute technique as described by Thomas Howell, Robert Dick, and Bruno Bartolozzi, whose *New Sounds for Woodwind*, trans. and ed. Reginald Smith Brindle (London: Oxford University Press, 1967), introduced many flutists to multiphonics, glissandi, and the like.

The two appendices are interesting. The first is a bar-graph illustrating the systems used by leading performers between 1770 and 1930, centered, for obvious reasons, on the nineteenth century. Some surprises are that Franz Doppler (1821–83) and Moritz Fürstenau (1824–89), in their long professional careers, never converted to the Boehm flute, and that Georges Laurent, famed performer and teacher, began on a seven-keyed flute and did not convert to a Boehm-system instrument until the mid-1890s. The second appendix is a compilation of avant-garde notational devices which should be useful to readers because it is specifically related to the flute.

Some additions to the bibliography would be appropriate for a second edition: Christopher Welch, *Six Lectures on the Recorder and Other Flutes in Relation to Literature* (London: Oxford University Press, 1911); Hans-Peter Schmitz, *Querflöte und Querflötenspiel in Deutschland während des Barockzeitalters* (Kassel: Bärenreiter-Verlag, 1952); Karl Ventzke, *Die Boehmflöte: Werdegang eines Musikinstrumentes* (Frankfurt am Main: Verlag Das Musikinstrument, 1966); and Gustav Scheck, *Die Flöte und ihre Musik* (Mainz: B. Schott's Söhne, 1975). Toff gives us several bibliographical items not available elsewhere: patent specifications for France, Great Britain, and the U.S. (but, surprisingly, not for Germany), and a list of trade catalogs. A separate listing of instructional treatises, especially for the transitional period, would have been useful and interesting. The published tutors of such composer-performer-teachers as Gunn, Devienne, Tromlitz, Hugo and Wunderlich, and Toulou and Tillmetz can add the dimension of practical applicability to a study of mechanical development. They are all available from the Library of Congress, Frits Knuf (The Flute Library), or Minkoff Reprints in Geneva.

This excellent survey should be an important reference for flutists and flute historians who want to examine the critical impact of Boehm and his successors. Toff's information is presented in a clear and objective manner, allowing readers to decide for themselves the merits of each design change and to understand the current state of the art of flute construction.

JANE P. AMBROSE

Helmut Ottner. *Der Wiener Instrumentenbau 1815–1833. Wiener Veröffentlichungen zur Musikwissenschaft, vol. 9.* Tutzing: Hans Schneider, 1977. 172 pp.

Konrad Ruhland. *Alte Musikinstrumente aus niederbayerischen Werkstätten. Bavaria antiqua: Verborgene Kostbarkeiten der bayerischen Kulturgeschichte.* Munich: Bayerische Vereinsbank, 1978. 63 pp.; 28 plates, 8 in color; 1 map.

Anyone who has ever attempted to study a historical subject is well aware of the valuable work done by bibliographers and lexicographers, those who painstakingly ferret out individual bits and pieces of information without which conclusive studies could never be written. It is just this sort of information that is presented by Helmut Ottner in *Der Wiener Instrumentenbau 1815–1833*, the final, published version of his

doctoral dissertation (University of Vienna, 1968). Ottner has combed through pertinent Viennese records—predominantly the *Wiener Zeitung* and various documents housed in the city archives—for data on over 570 musical instrument makers, whom he lists in the main section of his book. It is significant that the end of the period covered by Ottner is marked by the death of the important piano manufacturer Johann Andreas Streicher, for makers and sellers of keyboard instruments, especially pianos, account for almost seventy percent of the persons listed. Statistically eclipsed are the makers of string instruments (ten percent), winds (eight percent), and automatic instruments (five percent), as well as those engaged in the manufacture of bells, mouth organs, drums, and various accessories. Ottner's *terminus a quo*, on the other hand, was determined by practical considerations. His study was designed as a continuation and revision of the earlier, similar work by Helga Haupt, "Wiener Instrumentenbauer von 1791 bis 1815" (printed in *Studien zur Musikwissenschaft* 24 [1960]: 120–84), which is, in turn, a revised version of her dissertation, "Wiener Instrumentenbau um 1800" (University of Vienna, 1953).

The titles chosen by Haupt and Ottner are somewhat misleading, for neither author presents a full-fledged study of Viennese musical instrument making during the period in question. Rather, the emphasis in both works is entirely on individual makers (and in this respect Haupt's title of 1960 comes closer to the point); they are listed alphabetically, along with their dates, addresses, general areas of musical activity, and other personal data, including names of spouses and children, masters and apprentices, and even causes of death. While Haupt draws on a variety of sources for the information she gives on the work of these makers, Ottner provides few descriptions of musical instruments other than occasional quotations from newspaper advertisements and other information contained in the more limited sources he consulted. Surviving instruments are mentioned rarely in the former work and not at all in the latter. Thus, in view of the promises implied in Haupt's and Ottner's titles, both works seem incomplete as a result of their authors' policy of presenting only certain kinds of information and producing, in fact, biographical dictionaries. But their approach is surely valid in the world of scholarship, and the biographical facts they bring to light can serve as the basis for further investigation into the careers of individual Viennese instrument makers—a backbone to be fleshed out, as it were, by additional knowledge gained from studying the instruments themselves and the music that was played on them.

Unlike writers of historical studies, authors of lexicographical works are generally relieved of the necessity of making deductive evaluations and presenting their material in colorful, compelling language. In turn, the lexicographer is bound all the more by the requirements of accuracy, straightforwardness, and consistency. In itself, Ottner's accuracy in reporting information and citing sources in the book under consideration appears trustworthy, but his evident lack of clear, consistent method in doing so cannot fail to cast doubt on the quality and usefulness of the work as a whole. In his brief introduction, Ottner acknowledges the connection between his study and the one by Haupt that preceded it. Naturally, certain names will appear in both lists, and in these cases, he explains, his own entry—identified by an "H"—includes only supplementary information or corrections of previous mistakes. This procedure seems logical, and it appears to have been followed in most cases, but a comparison of the two lists reveals many inconsistencies in Ottner's work.

A few examples may serve to illustrate the many problems that readers will face in using Ottner's book. Unlike Haupt, Ottner provides no cross references to alternate spellings of names, leaving readers unaccustomed to the vagaries of old German orthography to fend for themselves. For example, Jakob Pertsche (Bärtsche, Bertsche), listed by Haupt with cross references from the two alternate spellings, appears in Ottner as Jakob Bertsche (Pertsche) with no cross reference and not even an "H" to indicate Haupt's listing. And Remigius Ahsfoly, for whom Haupt gives two cross-referenced alternates (Ossfaly and Uhsfoly), becomes Assfalg (Assfolg) in Ottner, with no mention of the other spellings. In many cases it is impossible to determine whether Ottner's information is meant to supersede Haupt's or merely to supplement it. For example, Haupt gives Ambros Bogner as a "Geigen- und Lautenmacher," while in Ottner he is listed as a "bürgerlicher Geigenmacher." Leaving aside the question of the man's citizenship, there seems no way for us to know what Ottner really means: was Bogner only a Geigenmacher from the beginning, or did he simply stop being a Lautenmacher after 1815? Occasionally, Ottner seems not even to know what is in Haupt. For example, Haupt lists Jakob Krasni as a "Geigen- und Lautenmacher" and goes on to comment that "his fiddles, guitars, and harps have become well known." Notwithstanding this, Ottner, who gives him as a "bürgerlicher Gitarren-, Harfen- und Klaviermacher," says that he was "not just a Geigenmacher, as indicated in Haupt." Even when it is faithfully followed, Ottner's policy of not duplicating infor-

mation already presented by Haupt diminishes the value of his book, for it cannot be used independently, and the reader must always consult both works for a full account, even of an event that occurred after 1815. For example, Haupt—going beyond her usual cut-off date—reports that Cyrill Demian, an important figure in the development of the accordion, received a two-year privilege for his invention in 1829 and a three-year extension in 1831. She also quotes his description of the instrument from the patent. Ottner's listing for Demian, however, makes no reference to the accordion whatsoever. Finally, mention should be made of the large and seemingly pointless variety of names used by Ottner to refer to occupations. Are the following terms, all taken from his book, the result of accurate reporting from original documents, or merely an attempt to avoid monotony?

Klavierbauer
 Klaviermacher
 Klavierfabrikant
 Klavierinstrumentenmacher
 Klavierfabrikant und Instrumentenmacher
 Klavier- und Instrumentenmacher
 Klaviermacher und -fabrikant

And, in the same vein, is the reader served by wondering if the author really intends to indicate different shades of meaning among the following?

Orgel- und Klavierbauer
 Orgel- und Klaviermacher
 Klavier- und Orgelmacher
 Klaviermacher und Orgelbauer
 Orgelbauer und Klaviermacher
 Orgel- und Instrumentenmacher
 Tasteninstrumentenmacher

In spite of these weaknesses in Ottner's work, it is to his credit that he was able to find so much biographical information about so many musical instrument makers active in Vienna during one of the most artistically fertile periods in the city's history. It is not surprising that most of them were born elsewhere—just like the composers who made up the Viennese school—and were drawn to the cosmopolitan city by the opportunities it offered. It is fascinating to see, as reported in Ottner's individual entries and briefly summarized in his introduction, the ingenuity with which many of these makers invented new musical instruments and devised ways of adapting old ones to changing tastes.

* * *

Konrad Ruhland is best known through the performances and recordings of his early-music ensemble, the *Capella Antiqua München*, and through his work as a music editor. He appears here as the author of a handsome little volume in a series devoted to the appreciation of "hidden treasures of Bavarian cultural history." Ruhland has chosen "old musical instruments from workshops of Lower Bavaria" as his theme, and his book is an illustrated catalogue of thirty instruments of the eighteenth and nineteenth centuries originating in the area lying some seventy-five miles northeast of Munich and bounded roughly by the cities Passau, Landshut, and Straubing.

The string instruments selected for this book include four violins, two violas d'amore, an English violet, a viola da braccio (probably originally made as a viola d'amore or a treble viol), two barytons, three contrabasses, a tromba marina, a lute, a guitar, and a zither. Winds are represented by three flutes, four clarinets, a clarinet d'amore, a basset horn, two English horns, and a natural trumpet. There is just one keyboard instrument, a positive organ. Some sixteen makers are represented, several with more than one instrument: Johann Ulrich Fischer of Landshut (4), Johann Stephan Thumhardt of Straubing (2), and Georg Heidegger (3), Simon Schödler (4), and Johann Benedikt Wasner (3), all of Passau. The instruments are located today in collections in the area studied, as well as in Basel, Berlin, Copenhagen, Leipzig, Munich, Nuremberg, Salzburg, and Vienna.

Ruhland presents his instrumental treasures in geographical order according to makers' locations (moving from west to east), rather than following the more customary method of grouping instruments together by families to facilitate comparison. Each item is discussed and illustrated by at least one photograph. In addition, there are detailed pictures of the carved heads of two of the string instruments, and a composite photograph at the back of the book includes five makers' labels (although no reference is given to the instruments in which they are found). Information is also provided in lists: the names, locations, and dates of instrument makers, including several not represented by items in the catalogue; the area's main centers of instrument making, excluding the "innumerable organ workshops"; the sources of the photographs (and therefore, indirectly, the present locations of the instruments, although readers must work hard to find this information for individual items); and a selected bibliography.

The text of this book is generally informed and well written for the

lay audience for which the "Bavaria antiqua" series seems to be intended. A few typographical errors, some of them glaring, reveal inadequate proofreading. The highest note of the tromba marina, given as G (p. 12), should be C. No doubt the following statement originally contained all real words: "Er arbeitete in einer Stadt, in welcher der Musik . . . nicht immer nur [sic] gute Stunden beschert waren" (p. 8). And one hardly knows what to make of: "Sils [sic] Begleitinstrument für den Mönchschor . . . geschaffen" (p. 56; "Sie war als"?). Also, an unfortunate transposition of two photographs, both showing a flute and a clarinet, occurred at some stage in the preparation of this work, for the picture on page 27 belongs on page 53, and vice versa. Finally, Ruhland's statement that three instruments survive by Anton and Michael Mayrhofer (p. 46) must be corrected to four to include the bass clarinet in the Munich Stadtmuseum recently discussed by Phillip T. Young in "A Bass Clarinet by the Mayrholders of Passau," this *Journal* 7 (1981): 36-46.

The photographs in the book are well executed, and the eight in color are quite striking. Ruhland mentions in his foreword that several instruments were not included because they could not be photographed in playing condition. Yet, we see a picture of a guitar (p. 17) with two of its strings missing, and the photographs of the tromba marina (pp. 13 and 59) show not only no string, but also an incorrectly inserted tuning peg. Although the proper stringing and peg position are indicated in the accompanying text, it would surely have been better to make the corrections on the instruments themselves before the pictures were taken.

Lower Bavaria is relatively little known for its musical instruments, and we are indebted to Konrad Ruhland for making us acquainted with some of the best examples of this production. The Bayerische Vereinsbank is also to be praised for sponsoring the series in which his attractive catalogue appears.

WILLIAM E. HETRICK