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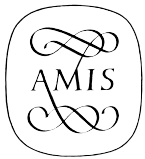

Reviews

Barbara Owen. *The Organ in New England: An Account of Its Use and Manufacture to the End of the Nineteenth Century.* Raleigh, N.C.: The Sunbury Press, 1979. xx, 629 pp.; one color, 183 black-and-white plates. $72.00.

Although the history of the organ in America began with instruments imported from the Old World in the early days of colonization, the first native American organ builders did not begin their work until the last half of the eighteenth century. From that time until the present, the building of pipe organs on this continent has been a continuous and active development, the importance of which has often been obscured by preoccupation with European examples. Nevertheless, America occupies a distinguished place in the history of organ building during the past two centuries.

If one part of the United States were to be singled out as especially important in the development of the American organ, it would certainly be New England. In spite of the fact that other areas were also important, none other sustained either the quality or the quantity of organ activity as did the New England states, especially Massachusetts. It is appropriate that one of the first comprehensive studies of American organ building be devoted to the organ in New England.

Even though the organ in general has been extensively treated in the literature, relatively little of depth has been written on the organ in America; serious study of American organ history has begun just in recent years. With the exception of a few studies of individual builders, one can cite only Orpha Ochse's *The History of the Organ in the United States* (Bloomington, Ind., 1975) and *Organ Building in New York City: 1700–1900* by John Ogasapian (Braintree, Mass., 1977). The work of Barbara Owen is the first thorough study of the organs of New England, and one hopes that this book will pave the way for other regional studies of the American organ.

As a practicing organ builder, organist, and historian, Owen is exceedingly well qualified to have written such a study, which is the result of an extended period of work and research. She has drawn on a large body of such primary sources as advertisements, correspondence, newspaper accounts, opus lists, and programs, most of which are not readily accessible. The process of sifting through such a large amount of material and integrating it with information previously available has resulted in a work which is well documented. Perhaps most important to an evaluation of the book is the fact that the author has personally examined a large number of organs which are extant in the area, or which remained until recent years. The ability to describe such instruments in terms both technical and musical has contributed enormously to the success of the text.

The main body of the book is organized in sixteen chapters which proceed chronologically from the Colonial era to the close of the nineteenth century, with substantial sections devoted to the major builders: William Goodrich, George Stevens, William B. D. Simmons, the Hook brothers, the Johnson Company (together with Steere & Turner, Emmons Howard, and other Johnson associates), Hook & Hastings, and Hutchings. Approximately fifty builders are treated in some detail, while many others are mentioned peripherally. For each chapter, illustrations and stoplists, grouped separately at the conclusion of the main text (384 pages) but keyed to it, are included. The stoplists reflect original spellings and technical details, as well as the sources of the information. In addition to a bibliography of several hundred items, there are four valuable appendices: biographical sketches of over two hundred New England organ builders; the stoplists previously mentioned, over one hundred in number; a discourse "On the Use of the Stops of the Organ" (from *The American Journal of Music*, 1845), together with Johnson's glossary of stops and other related material; and the inventory from the estate of builder William A. Goodrich, which details tools and components which must have been common to the period. One combined index serves for text and plates; spot checks revealed it to be thorough and accurate.

The printing of the book employs the letterpress process and is considerably above average in quality; the clear layout is easy to comprehend and is aided by footnotes on the pages and running

headings. The publisher is said to be preparing an *errata atque corrigenda* list, but the level of accuracy seems quite high; the few typographical errors are easily detected. The plates embrace a fine gallery of representative organ cases and scenes of workshop activity; included among them are a number of significant photographs not previously published.

In spite of the fact that some of the names and works of the New England builders have become increasingly familiar to students of the American organ, such material has not been placed in perspective prior to this book. Owen's work allows us to distinguish between these names and to gain some understanding of the individual instruments. In addition to giving details on the builders' outputs, she discusses the similarities and differences between their various accomplishments, and she shows the ways in which each builder evolved tonal designs and building techniques. It is possible here, perhaps for the first time, to find explanations of scaling, of the relationships within the principal choruses, and of the disposition of the chorus mixtures (the Sesquialtera commonly appeared in this category). Attention is also paid to the differences between the ensemble stops and the solo ones, which the builders customarily termed the "fancy stops."

The author also discusses concurrent trends which were not necessarily in sympathy with each other. For instance, during the middle decades of the nineteenth century, two of the main builders were George Stevens and William B. D. Simmons, and the temporal association of their names often causes their building to be considered as being similar. Barbara Owen, however, analyzes their output in detail and shows that the former was of a conservative cut, while the latter was quite radical and experimental. Just what constituted a well-designed organ seems to have been the subject of continuing controversy!

The author successfully evaluates the work and standing of each of the important builders, pointing out the relative strengths and weaknesses of each. This is a difficult procedure when one is dealing with outputs which often are no longer extant. Owen has, however, examined the remaining instruments whenever possible and has reconciled the information thus derived with the opinions expressed by sources

contemporary with the builders. Her frequent analyses of nineteenth-century commentaries not only assist in defining the instruments, but shed light on performance practices and on the general musical outlook. Thus, this book holds great interest for a person having general interest in the subject, even though the organ historian may appear to be the primary subject of address.

The Organ in New England is one of the most significant writings to appear in the history of American organ building and is the most important in its specific area. It is highly recommended to all individuals and institutions who wish to have the benefit of the most authoritative work in the field.

ARTHUR LAWRENCE

Peter Williams. *A New History of the Organ, from the Greeks to the Present Day*. Bloomington: Indiana University Press, 1980. 233 pp.; 51 black-and-white plates. $27.50.

Peter Williams is one of the foremost organ historians of today, as well as a lucid writer who has the ability to condense a formidable amount of material into a readable account. While it is not strictly true, as Williams states, that no writer has attempted to present in a single volume the complex history of the organ since Hopkins and Rimbault (1855; rev. eds., 1870 and 1877), there is no question that much has been learned since the first publication of his compatriot William Leslie Sumner's *The Organ* in 1952, and even since then, as Williams points out, scholarly attitudes toward the organ have changed considerably.

The *New History* is plainly intended for both scholar and novice, and this approach has both its strengths and its weaknesses. Obvious strengths lie in its value as a concise reference work and the generally up-to-date nature of its sources. A weakness is its occasional sketchiness; questions are often left without answers, opinions without apparent documentation. Granted there are excellent bibliographical references by means of which the determined scholar might fill in most of the lacunae, but the novice may well be left puzzling over

portions which presuppose prior knowledge, such as the not infrequent quotation of stoplists of all periods by pitches only. Where stoplists are given, however, the source is always cited, so that the curious reader may look up additional information on a given organ, if desired. Still, it is sometimes amazing how much background material Williams does manage to squeeze into relatively few pages: maps, a guide to pitch designations, useful bits of knowledge such as how wind pressures are measured, etc. If there is any inconsistency in this book, it is that in one place considerable detail will be given, while in another a subject will be quickly skimmed over, as though the writer feels he has run out of space and must rush on to the next chapter.

In the brief first chapter Williams indulges an obviously lively interest in etymology with an excursion into the origins of the word "organ." Chapters 2, 3, and, to a large extent, 4 are essentially a digest of Jean Perrot's *L'orgue de ses origines hellenistiques à la fin du XIIIe siècle*. This should by no means be construed as a criticism, for although Perrot's rather exhaustive work is now available in English, it tends to be turgid and repetitious. Williams strips it to its essentials, which turn out to be fascinating if spare.

In Chapter 4 Williams analyzes several medieval treatises on pipe scaling, but cites no actual examples. The modern history of the organ essentially begins with Chapter 5, in which Williams raises some thoughtful questions on the use and location of church organs in the twelfth and thirteenth centuries. He also offers his own knowledgeable interpretation of the Gothic organ of Halberstadt, as described by Praetorius in his *Syntagma musicum*. But can he really believe that, considering the apparent clumsiness of the whole mechanism, the organist played Manual III with his knees?

In Chapter 6 Williams gives us some extremely lucid definitions of the differences between portative and positive, complete with a good diagram of the "pin" type of action which was typical of all of the former and many of the latter. Another important treatise, that of Henri Arnaut de Zwolle, is briefly and informatively analyzed in Chapter 7. The discussion of fifteenth-century organs is continued in Chapter 8, and in Chapter 9 another early source, Schlick's sixteenth-century *Spiegel der Orgelmacher*, is treated. Williams's analysis of the technical aspects is excellent, but some of his conclusions regard-

ing performance practice are questionable. Early examples by Bull, Santa Maria, and others effectively deny the myth of totally "thumbless" fingering, and the presumed three- and four-part "pedal" passages are just as likely to be *terza mano* passages such as are occasionally found in French and Italian sources.

With the tenth chapter we begin to come onto more familiar ground as far as extant organs and accessible musical sources are concerned. Williams's observations on sixteenth-century registrational practices, particularly with regard to the prevalence of "spare" registrations, are worthy of careful study by performers. Likewise instructive are the mechanical descriptions and excellent diagrams of Chapter 11. Chapter 12 discusses the development of the so-called *Werkprinzip* (a modern term), which determined both the physical shape and tonal disposition of the seventeenth-century organ. An error not caught in the text (although it is corrected in the caption of a picture later on) is the attibution to Dirk Hoyer of the organ in Stade completed by Schnitger; it was actually begun by Schnitger's mentor, Barend Huss.

Continuing with the seventeenth century and beyond, Chapter 13 discusses the French classic organ. Williams perhaps places too much trust in Mersenne as a source (although admitting that he may have been influenced by Praetorius), and his statement about early pedal 16′ ranks is ambiguous, since these early French examples (*trompes* or *bourdons*) were hardly independent stops but rather downward extensions of the 8′ Principal, played by pedals for the sake of convenience. In discussing French reeds, Williams notes their distinction from Spanish reeds (often overlooked by modern builders), their important function in the chorus, and their role in determining wind pressure. With regard to the latter, Poitiers Cathedral is probably not the most reliable example, as the entire wind supply of this organ dates from the nineteenth century.

Williams begins Chapter 14 (on Bach's organs) with the extremely important observation that Bach was exposed to very different types of organs during the course of his long productive career—a fact which should be taken very seriously by every interpreter of Bach's organ works. In his discussion of Silbermann's organs, Williams makes an intriguing reference to the possibility that Silbermann may have worked in Schnitger's Berlin workshop before building his Frei-

berg (Saxony) Cathedral organ in 1710. The Freiberg organ seems to be remarkably free of Schnitger influences, however. Its layout is more French than Hamburgian, its reeds are of the French double-block construction, its covered flutes (similar to French ones in scale) have moveable caps, and its Principals, with their slightly overhung upper lips, are typical of South/Central German work. There is no *Rückpositiv*, and the Pedal is rather spare. On the other hand, if Silbermann did indeed work for Schnitger in Berlin, it might explain some of the un-Schnitger-like inconsistencies of the Schloss Charlottenburg organ of 1706. Certainly it is hoped that Williams will pursue this research further.

Chapters 15 and 16 (Iberian and Italian Baroque) are essentially condensations of the chapters on the same subjects in Williams's *The European Organ*, and this might be a good place to suggest that this earlier and more detailed work should be regarded as an almost indispensable companion to the *New History* on one's bookshelf.

Chapter 17, on the early English organ, commences with some deprecating comments with which this reviewer cannot completely concur. Because of the dearth of records we cannot know whether the English organ before the sixteenth century had any influence on the Continent or not (English musicians certainly did). Williams notes that many early English builders appear to have been Flemish or French, but overlooks the fact that English and Scottish builders are recorded in France in the fifteenth and sixteenth centuries. Expatriate English builders were found in France in the seventeenth century also, and the eighteenth-century English organ had a crucial influence on early American organ building, even altering the practices of Germanic builders here.

Williams begins Chapter 18 with the observation that after 1500 the historian must deal with two distinct types of organ: the "average" and the "really large," which is always something of an exception (and usually had secular as well as churchly functions). Several such instruments are briefly analyzed. One must question Williams's citation of "unsteady wind" as part of the specification of the great Stellwagen organ at Stralsund, which might mislead the reader into thinking that Stellwagen intentionally made the wind supply less steady than the norm for his day, which is certainly not the case.

Comments on the wind supply of this organ are at any rate moot, since it has been altered. Williams concludes the chapter with the statement that by 1800 the Baroque organ had been pushed to its tonal and technical limit and the time was ripe for new philosophies.

Chapter 19 charts some of the background of the nineteenth-century organ as reflected in new concepts such as the orchestral theory (i.e., the concept that the organ was, tonally, more of a substitute for an orchestra, or for orchestral instruments, than an idiomatic instrument in its own right). Curiously, there is no mention of changes in tuning procedures, especially the shift from mean-tone-based systems to equal or "well-tempered" ones, which would explain the disappearance of tierce mixtures that seems to puzzle Williams. Considering that the subject of nineteenth-century organ technology could easily occupy a whole book, Chapter 20, while covering many high points, is so fast-paced as to leave one almost breathless. Unfortunately, it also dumps a lot of unanswered questions on the reader. By "Hodges of Bristol" does Williams mean the organist Dr. Edward Hodges, or some obscure builder? A few additional words could have clarified references such as this.

This reviewer must take issue with some of the statements on free reeds. Certainly they were used in Germany after 1850, and occasionally in the United States and England as late as the 1880s. They hardly led *to* the reed organ, but probably derived *from* it, at least in the form used. The free reeds of Callinet and other Alsatians, often used as a pedal 16′ in the mid-nineteenth century, possibly have a closer link with Grenié's individual-resonator reed organ of 1810 than with German examples. Also unfortunate are the probably unintentional suggestion that detached consoles were a nineteenth-century development and the presumed misprint on page 166 that substitutes "rollerboards" for "rollerbeards."

Important nineteenth-century organs are discussed in Chapter 21, and because of the wide variations among nineteenth-century tonal designs, specifications given only in pitches are particularly annoying here. A few misconceptions concerning American organ history appear in Chapters 20 and 21. It is hardly true that the German builder Walcker enjoyed a "boom" in America in the nineteenth century. Outside of the well-known large organ for Boston Music Hall,

Walcker's exports consisted of only one church organ and a few house organs. And the statement about the use of "general swells" by the American firm of E. & G. G. Hook is frankly puzzling; the term usually refers to all divisions of an organ being placed in a common swellbox. This was rarely done in the United States before 1900, and never by Hook. Single-manual organs were of course often enclosed, but this practice was hardly limited to any builder or country in the nineteenth century.

A good point is made concerning the growing distinction between church and concert-hall organs and the fact that technical and tonal innovations often made their first appearance in the latter. But the comment on the "reactionary" *Rückpositiv* of the Merseberg Cathedral organ is misleading, since the casework dates from an earlier organ, and the *Rückpositiv* is in any event furnished with its own keydesk to function as an independent small organ when required.

The twentieth century is entered (with a trace of distaste on Williams's part) in Chapter 22. It's a bit of a pity that he seems unable to enjoy a cinema organ, but he should be pleased to know that the Diaphone, which he feels would be more effective as a foghorn, was used in the United States for many years for that very purpose.

The final four chapters deal with a subject obviously closer to Williams's heart than cinema organs: the organ reform movement. Tracing it from its earliest beginnings in Germany during the 1920s and 1930s, he charts its progress through Europe to England and the United States. He does not gloss over its early failings and misconceptions, although one wishes he were a bit more severe with some of the misbegotten "restorations" of the early days that often radically altered historic organs and eradicated some of their authentic features. It is doubtful, too, whether the conscious attempt in some quarters to combine German and French elements was in any way related to the unconscious synthesis of these styles by eighteenth-century builders such as Riepp.

Well-earned recognition is given to some of the recent "purist" restorations and to the fact that present-day builders are learning much from old organs which affects their new work. The large organ at Muri is perhaps not the best such "restoration" that can be cited, since it contains so much new work that it is at best an excellent

Metzler organ containing old pipework. But the smaller organs at Muri certainly exemplify this new restoration ideal, as do the two Groningen restorations, still in progress, which Williams praises. More "old-new" organs might have been mentioned, although the Garnier instrument in Strasbourg that is cited is surely one of the finest. Williams does not explain why he finds this organ "not faultless"; the only fault this writer could observe was in the failure of its "new-old" wind system to function as planned, and this is now being corrected.

In his closing chapter Williams (probably wisely) makes no sweeping predictions, but concludes on an optimistic note which is shared by this reviewer. His final quotation is particularly apt, for, however reluctantly, portions of the musical world are again beginning to perceive the organ as simply a "large wind instrument," with all that is implied musically and aesthetically by this idea.

At the end of the book is a useful glossary of terms, an extensive index, and a fairly good selection of plates. "Fairly," because it seems slightly lopsided in some respects. Why is no large seventeenth- or eighteenth-century English case shown? Or any nineteenth-century German or large new American one? Why is the professional photographer Jim Lewis of California not given credit for the use of his fine photographs (nos. 39, 40, 42, and 47)? And was it a cruel fate that ordained that the caption of no. 39—the organ in this reviewer's own church—should be in error? For the record, this organ was extensively rebuilt in 1889 and 1957 (not 1975) and has always had mechanical key action.

Should one apologize for what may be an overly long review? Not, perhaps, when a book is as comprehensive and important in its field as this one, or written by such a distinguished scholar. It belongs in every college and civic library and should be owned by every serious student or admirer of the organ. Peter Williams has added to the literature on keyboard instruments an indispensable reference work which will not soon be outmoded.

BARBARA OWEN

John Allen Ferguson. *Walter Holtkamp, American Organ Builder.* Kent, Ohio: Kent State University Press, 1979. 142 pp. $9.50.

John Ferguson's book is especially welcome as the first study of the life and work of Walter Holtkamp to appear since Holtkamp's death in 1961. In organizing Holtkamp's work into four general periods, Ferguson analyzes the creative processes that resulted in Holtkamp's important instruments, many of which may still be considered genuine landmarks in the history of American organ building. Ferguson's information is drawn from the Holtkamp family archives, interviews with Walter Holtkamp, Jr., correspondence with Holtkamp's contemporaries, and the first-hand experience of playing many of Holtkamp's organs. The photographs and selected organ specifications effectively support Ferguson's commentary.

Holtkamp insisted upon freedom from obstruction to the natural speech of pipes as well as an organic and functional approach to designs of chests and consoles. His aesthetic had numerous counterparts in the work of contemporary artists. In discussing Holtkamp's design of the organ in the chapel at M.I.T., Ferguson draws a significant comparison between the organ builder's aesthetic creed and that of the famed architect, Frank Lloyd Wright. Initially Holtkamp's doctrines were formulated as a reaction to the abuses in design perpetrated by American builders of the preceding generation. These doctrines, at one time considered radical, eventually found their way into the mainstream of the "American classic" school of organ building. It is not by accident that today's popular and conservative builders of electro-pneumatic, unencased organs have borrowed heavily from Holtkamp's concepts. Very few, unfortunately, have approached the visual elegance and purposefulness of Holtkamp's best designs.

The most immediate contrast between a typical Holtkamp organ of the late fifties and an organ built by one of today's idealistic builders is visual. The fields of free-standing, unencased pipes typical of Holtkamp's designs have given way to the revival of the organ case. The functional and frequently decorative case serves to blend and focus tone and to place the various divisions of the organ in proper spatial relationship. This concept would have been an anathema to Holtkamp, who once expressed the desire to do his own mixing of sound

without encumbrance from the organ itself. What Holtkamp sought to correct was the prevalent American custom of burying organs in chambers. Organs were forced to speak through walls, around corners, over ceilings, and through virtually any obstacles conceived of by architects and organ salesmen. In his well-intentioned effort to bring the organ into the room in which it was to sound, Holtkamp made a complete break from the past, apparently making no distinction between a reflective case and an organ chamber.

Ferguson speaks of Holtkamp's predilection for relatively small organs of the highest musical quality. One unfortunate vestige of America's dark age of organ building is a propensity for overbuilding organs in relation to sizes of rooms. Holtkamp's integrity regarding the proper musical function of an instrument in a given situation is a lesson still unheeded by certain builders, organ committees, and, too frequently, organists themselves.

Had Ferguson attempted to relate Holtkamp's work to the present scene in American organ building, Holtkamp's position as a pioneer would have been all the more apparent. There is a radicalism today, comparable in spirit to that of Walter Holtkamp, represented by such builders as Brombaugh, Fisk, Noack, and Taylor, who have drawn systematically from historical practices. Following Holtkamp's spirit of adventure, these idealistic builders provide a vital challenge to the *status quo*. Just as Holtkamp's instruments gave birth to a new approach to playing the organ, today's "new wave" instruments are requiring the performer to come to grips with questions of style and technique that relate to the historically based instrument.

An important issue arises from Holtkamp's insistence upon a national style of organ building. In what other area of instrument making has nationalism been a primary concern in the United States? It would be difficult, if not impossible, to point to an American school of piano building, recorder making, or violin construction. Most modern instruments draw on ideals that inevitably have their origins in European traditions. Holtkamp's interests in European traditions were limited. Only late in his career did he travel for the purpose of studying historic instruments. It is significant, despite a vastly different approach to building, that Holtkamp accidentally approached historical ideals—a fact which did not escape the attention of such

authorities as Dirk Flentrop and Albert Schweitzer. Although one can only speculate on what Holtkamp's reactions might be to today's aesthetic, it is interesting to note that the present Holtkamp firm, under the direction of Walter Holtkamp, Jr., has built a few encased instruments with tracker action along with numerous organs in the older style.

Ferguson points out that Holtkamp built a few small tracker action organs in the late thirties, nearly three decades before any other American builder would consider taking such a risk. Except in his late instruments, Holtkamp also made use of key-channel (slider) windchests, more commonly associated with tracker action. His early experimentation with tracker action was not revived during the postwar years. In explaining Holtkamp's unwillingness to follow the trend toward tracker action in the late fifties, Ferguson suggests age and success as the factors discouraging new ventures. After all, Holtkamp had finally achieved the vindication and recognition he had sought for so many years. Today's idealistic builders seem to be unanimous in their appreciation of Walter Holtkamp's idealism, which continues to be an inspiration in spirit if not substance. It is most appropriate that John Ferguson has made it possible to look at Walter Holtkamp's philosophy in a perspective possible only some twenty years after Holtkamp's death.

ROBERT CLARK

Arend Jan Gierveld. *Het Nederlandse huisorgel in de 17de en 18de eeuw*. Vereniging voor Nederlandse muziekgeschiedenis, 1977. 501 pp.; 102 black-and-white plates. Hfl 100.

This weighty volume was written to satisfy requirements for the Doctorate of Letters at the University of Utrecht; the degree was awarded in 1977, and the author's thesis adviser was Dr. M. A. Vente. It is the first work to offer an overview of the development and the variety of the domestic organ in the Netherlands from 1600 to about 1820; it lays a solid foundation on which all further work in this field will gratefully build.

The book consists for the largest part of an alphabetical catalog of builders who made house-organs in or for the Netherlands, and a list of extant anonymous Dutch house-organs. Descriptions of over four hundred instruments which still exist or are known to have existed are included under their respective makers' names, while more than a hundred photographs provide an invaluable visual supplement. The catalog includes builders of whom no work is extant as well as those from whose workshops examples are known, and it is supported by reference to archives, secondary sources, and recordings. The photographs show the instruments in a great variety of poses: in their customary disguise as cabinets, open for business, and in details of keyboards, woodwork, pipes, and action. The photographs are also conveniently keyed to the catalog in which the instruments are described.

The author's researches have unearthed hundreds of advertisements for house-organs in seventeenth-, eighteenth-, and nineteenth-century newspapers. He gives these in their entirety, filling over forty pages with very small print, and offering as much proof as one could wish of the vitality of the market for these instruments. Some of the ads will make your mouth water: for example, one from the *Amsterdamsche courant*, 29 April 1732, in which Schnitger's widow offers for sale two positive organs, one with eight and the other with six registers.

Of particular interest to the builder of historical instruments are the inventories of the workshops of two important builders, Mittereither (1800) and Strumphler (1810). The drawings of keyboard endblocks from several instruments by a number of builders may be useful for the identification of anonymous instruments which may yet come to light. Detailed pipe scales are given for seventeen signed instruments.

Composed on the basis of the information described above is the sixty-page description and history of the Dutch house-organ which opens the work and which is summarized in English, Dutch, and German. In this part of the dissertation the author distinguishes the various sorts of domestic organs and discusses their characteristics, their development, and the various schools of builders. He also considers the social background and its influence on the remarkable rise and fall of the instrument, deals with its musical function, compares

the Dutch instrument with its foreign analogues, and describes the wind system, action, and pipework of the instrument. The reader need not fear the Dutch language, for not only the summaries but also the fairly compact and systematic presentation, with now and then a list of numbered conclusions in the text, make the whole quite usable. (This section is also supported by copious footnotes.)

It should be clear from the above what one can expect to find in the book, but it may also be in order here to mention a few things that one can expect not to find. There is no subject index to help readers in their search for specific information on pipe scales, for example, or wind pressure, or pipe material. There is also no index of places—only of names—so that if one wants to look up the instrument purchased some years ago by the University of California, Berkeley, but can't remember the name of the builder, one is simply out of luck. A carefully compiled and complete list of *errata* is also missing: a sheet with some errors is included, but, unlike the errors themselves, the list stops halfway through the English summary, omitting the advertisements, the inventories, the tables of scales, the bibliography, and the index. (Are the scales printed more accurately than the summary? One fears the worst.)

Simultaneously with the publication of the dissertation, a recording was released under the title "Het nieuwe Hollandse speelhuys." Compositions by Colizzi, Radecker, Ruppe, Groneman (important names in Dutch musical history), and Mozart are performed by Gert Oost and Jaap Spigt on five house-organs and harpsichord. The record cannot be recommended to a wide public, since not only the music (mostly) but also the performances are terribly dull. And after hearing the combination of harpsichord and house-organ, one is not surprised to learn that there is very little historical evidence for its use; there is equally little musical justification, if one may judge from this record. In fact, the harpsichord obscures the sounds of the organs on the recording, making it much less useful for the specialist than it might otherwise have been. More useful is an older recording entitled "Die Kleinorgel" (Telefunken SAWT 9409B), which, however, is not restricted to the Dutch house-organ.

My criticism of "Het nieuwe Hollandse speelhuys" should of course not be taken to reflect adversely on the quality of Gierveld's work. On

the contrary, one can only hope that the book will find a wide circle of users, and that we may in the future welcome equally valuable works on chamber organs of other regions, for which Gierveld's book can serve as a most useful model.

DALE CARR

Robert E. Eliason. *Early American Brass Makers*. Brass Research Series, no. 10. Nashville: The Brass Press, 1979. 56 pp.; numerous black-and-white plates. $6.00.

Lovers of brass band music have to concede that the current haven for such music is the United Kingdom and that the British have surely and purposely developed the brass band to amazing heights. A parallel brass band movement during the nineteenth century in America had the makings of such development but fizzled out near the end of the century owing to renewed interest in the mixed wind-brass type of band. A study of the American brass band is most interesting, and Robert Eliason here tells us about four of our early brass instrument makers who helped shape the movement and supply the needs of early American bandsmen. Their products show great inventiveness, fortunately unhampered by various traditions that sometimes hindered European makers, and their craftsmanship was often superb even though they may have been to some extent self-taught.

It is fortunate that Dr. Eliason has taken the trouble to investigate the careers of such makers as Thomas Paine, J. L. Allen, E. G. Wright, and Isaac Fiske. He has described their lives and work in a very entertaining way, and I must say that I find those matters often more interesting than much of the repertoire their customers played.

One criticism I might venture concerns photography or, rather, the fitting of an object with proper accessories for its photograph. On page 40, for example, a Fiske helicon cornet is displayed without its detachable tuning shank, and a mouthpiece is simply inserted in its place. When photographs are supplied by uncontrollable sources (private collectors, other museums, etc.), one has to publish them as they are. But this instrument is apparently in the author's museum,

and it might have been better simply to show the instrument without accessories if the original ones are missing, rather than to picture it with an inappropriate one.

I am sensitive to this matter in that museums often have problems in finding or selecting proper accessories for display. For example, should eighteenth-century double-reed instruments be shown with no reeds so that they will not appear inauthentic to the specialist, or should they be supplied with some reasonably appropriate reeds so that the general viewer can learn how they work and appear when complete? For a museum display catering to the public, perhaps the latter is best until really proper accessories can be located or reconstructed. But for a publication that may be consulted by both specialists and the general public, I would suggest that photos show only what remains of an object and that missing parts be mentioned in the captions.

A couple of other technicalities remain to be mentioned. Several of the E-flat soprano, four-valve instruments are described as being in E flat and F because the fourth valve does, in fact, ascend a whole tone. But it is doubtful that when the fourth valve was in play the instrument was considered as being in F and used for extended passages, since the other three valve slides would then be too long for many notes. In the *Brass Band School* of 1853 by Allen Dodsworth, F and even high A-flat instruments are included in the list of soprano brass (without details), but Dodsworth is fairly clear in describing the ascending fourth valve as an alternate fingering-tuning aid and not as a sort of transposing device.

An additional error is, I suspect, one made some 129 years ago. On page 23, a Firth & Pond advertisement reproduced from an 1852 *Musical World & N.Y. Musical Times* shows proper instrumentation for brass bands of eight, ten, and twelve players; it lists the expected categories (with numbers of players for each) of what was surely meant to be (from treble to bass) E-flat soprano, B-flat alto, E-flat tenor, B-flat baritone, B-flat bass, and E-flat contrabass, but which instead reads E-flat soprano, E-flat tenor, E-flat alto, and the others as above. This must surely be a nineteenth-century typo, especially regarding the "E-flat alto," even if the list purposely placed the tenor, because of its octave-lead role, directly after the soprano.

Technicalities aside, Robert Eliason describes these important American craftsmen in such an informative and entertaining way that one wishes it were possible to go back and visit their shops. A short time ago, Dr. Eliason composed an equally interesting study of another American instrument-making firm, Samuel Graves & Company, which is available from the Henry Ford Museum in Dearborn, Michigan. I look forward to more publications of this type.

ROBERT E. SHELDON

Laurence Libin. *Musical Instruments in the Metropolitan Museum.* Foreword by Philippe de Montebello. New York: The Metropolitan Museum of Art, 1978. 48 pp. plus a 7-in. LP recording. $3.00.

Laurence Libin. *A Checklist of European Harps.* New York: The Metropolitan Museum of Art, 1979. iv, 16 pp. $1.00.

William L. Monical. *A Checklist of Viole da gamba (Viols).* Preface by Laurence Libin. New York: The Metropolitan Museum of Art, 1979. viii, 20 pp. $1.00.

Joyce Smar, Michaelene Gorney, and Jane Vial. *Musical Instruments.* Foreword by Roger Mandle. Toledo, Ohio: The Toledo Museum of Art, 1978. Vol. 20, no. 4, of the Toledo Museum of Art's *Museum News.* 29 pp. No price given.

Musical instruments, after having a Cinderella status in most museums for many years, are at long last coming to be recognized as works of art. Only a handful of the some four thousand instruments in the magnificent collection at New York's Metropolitan Museum of Art were on display prior to the opening in 1971 of the André Mertens Galleries for Musical Instruments, but since then thousands of visitors have been able to view and hear recordings of a representative selection of the instruments. About eight hundred instruments are now on permanent exhibit. Serving as an introduction to the collection, and nicely reflecting the amazing breadth of its holdings from all over the world, is the handsomely produced booklet *Musical Instruments in*

the Metropolitan Museum. In his authoritative text, Laurence Libin discusses the characteristics of the several broad categories of instrument type, acoustics, and symbolism involved in the design of instruments from various cultures. The bulk of the booklet consists of superb photographs, sixteen of them in color, by the Metropolitan Museum's photography studio and Rudy Muller. Accompanied by commentary, these depict rare and unique specimens from North America, Oceania, Africa, Islam, Central Asia, Eastern Asia, and Southeast Asia, as well as European instruments from the Middle Ages through the mid-nineteenth century. This booklet will be of value to anyone interested in musical instruments, and the splendid photographs will be of interest to specialists as well. Adding to the appeal of this publication is a seven-inch LP recording of eight selections played on instruments from the collection: a 1540 Venetian virginal, a 1666 Zenti harpsichord, a Kirkman harpsichord and German porcelain flute from the late eighteenth century, a mid-nineteenth-century barrel organ, a 1691 Stradivari violin, a 1720 Christofori piano (which I found especially pleasing in sound), two early eighteenth-century Denner oboes, and a 1790 Schmidt piano.

The checklists of European harps and viols in the Metropolitan Museum are aimed at specialists and include descriptive data and measurements. *A Checklist of European Harps* describes twelve harps without mechanism, nine with manual mechanism, nine pedal harps, three chromatically strung harps, and two harp-lyres. Seven are shown in photographs. The collection of viols at the Metropolitan's Department of Musical Instruments includes ten instruments dating from the seventeenth through the mid-nineteenth centuries. All are illustrated and described in detail in *A Checklist of Viole da gamba (Viols).*

The Toledo (Ohio) Museum of Art has no formal collection of musical instruments, but it does have five keyboard instruments in playing condition: an octavina by Giorgio da Trento, Rome, 1594; a pianoforte by Johann Andreas Stein, 1784; a handsome Dutch bureau organ by Johann Strumphler, ca. 1785; a piano by R. Nunns, Clark and Company, New York, 1830–31; and an organ made by the Skinner Organ Company, New York, 1927. All but the latter are illustrated in the booklet *Musical Instruments*, together with photo-

graphs of a sixteenth-century chitarrone and an unusual English pagoda clock, ca. 1780, which contains a miniature spring-driven pipe organ. Lacking other instruments in their holdings, the Toledo Museum authors use twenty-four examples of visual art featuring various string, woodwind, brass, percussion, and keyboard instruments. Their commentary is generally informed, except for the description of the range of a tabor pipe as being "about five notes" and the labeling of the Italian octavina as a virginal rather than a spinet. This booklet should help increase readers' awareness of musical instruments portrayed in paintings.

DALE HIGBEE

Ian McCombie. *The Piano Handbook*. New York: Charles Scribner's Sons, 1980. 176 pp.; 32 black-and-white plates. $12.50.

Ian McCombie's *Piano Handbook* is a broad survey of a little-known craft, piano technology—half science, half art, partly modern, partly centuries old. Concerned with the nature and workings of the piano as they pertain to maintenance, tuning, and repair, the *Handbook* is primarily designed for the musician and the amateur piano tuner, although the author does not state so directly. It should be made clear that this volume is entirely elementary and basic in its technique and purpose.

The work, divided into two sections, "Basic Piano Information" and "Piano Tuning and Repair," offers seventeen fact-filled chapters which outline the fundamentals of the piano and piano servicing. Photographs and exploded-view diagrams facilitate the reader's understanding of the function of the instrument and the procedures being described.

An introductory overview presents a brief history of the piano's origins and proceeds through the developments of iron framing and improved methods of making music wire that led to the evolution of the modern piano.

The following three chapters are by far the most immediately useful and informative to both the musician and the amateur piano

tuner: they are concerned with buying a piano, judging its tone, and maintaining a new instrument. Six rules are given for the purchase of a piano, old or new. All the points discussed are well founded and sound, and there is no evidence of prejudice either for or against a particular brand name or model of instrument on the part of the author. Comparisons of the general dimensions of both upright and grand models are given in both inches and centimeters.

Included in the chapter on buying a piano are rather detailed guidelines for appraising a used instrument. Here, the lay reader may first begin to stumble as technical and physical characteristics of the piano are outlined before specific nomenclature has been introduced and defined. There are no diagrams or plates in this chapter, and a reader new to the field will need to flip to the glossary or search out a diagram in another chapter. However confusing these guidelines may be to the uninitiated, the information is again excellent.

Judging piano tone can be a very personal process, but this too has its rules. Various aspects of tone quality are explained, such as the relationship of a string's length to the thickness and tension required for a given pitch, hammer density, and the effects of location and environment on tone. Though the author describes his own concept of tone quality, he nevertheless provides readers with a greater understanding of what they are hearing and what they should listen for.

The fifth chapter, "The Upright Action," finally gives diagrams and descriptions of the function of the piano's action. The actions described, however, are typical of foreign makers, and the common American upright action is not represented. Although accurate, some of the explanations are confusing because of awkward wording. A list of steps for adjusting the action for proper and efficient operation is given, but specific instructions for making the adjustments are not provided. This applies to the chapter concerned with grand piano action as well, although here both foreign and American designs are represented. No brands—popular though they may be—that require specialized servicing are mentioned. Indeed, throughout the entire book, no specific attention is paid to any particular brand of instrument.

The second section of *The Piano Handbook*, "Piano Tuning and Repair," is intended for use as a textbook; the author refers to the

reader as "student," and the bulk of the text is written on a fairly advanced technical level. The first part of this section is concerned with the basic equipment and tools required for tuning, what to listen for, and the step-by-step procedures and methods for tuning a keyboard instrument. The equal temperament described—an F temperament—and the tuning techniques outlined are standard and are commonly used by professional tuner-technicians.

The final chapters of the book cover the overhauling of a piano in a workshop, including hammer and key repairs, restringing, cleaning, soundboard and bridge repairs, voicing, and upright and grand action regulation. Again it must be stated that the information is basic and the work is a general survey. In the chapters dealing with repair, the format is not that of symptom/diagnosis/treatment, as might be expected; rather, the author deals primarily with treatment. Many of the repair procedures discussed are basic, but there are several that are more advanced than those usually covered in books of an introductory nature. The advanced repairs are presented without words of caution, and there are numerous instances in which giving a little more detail (such as specifying which type of glue to use rather than merely stating "glue") would make all the difference in the quality and success of a repair attempted by an amateur. Generally the information is accurate, however, and no particularly controversial methods are described, even if details are lacking. The same is true of the chapters dealing with upright and grand action regulation as well as the final chapter on the reconditioning of player pianos.

Following the main body of the text, a detailed and useful glossary appears. The first of three appendices lists piano manufacturers that are owned by other companies and grades selected firms for excellence. The second specifies the diameters of music wire and pin sizes used in pianos, and the third consists of metric conversion tables. The concluding index is well organized and quite thorough.

Though *The Piano Handbook* does not seek to break fresh ground in the field of piano technology, the author takes his work seriously and presents information in short, concise paragraphs. One drawback is that the book does not read smoothly and occasionally lacks continuity; it also contains little in the way of wit or humor. Still, the book is, for the most part, interesting and informative. Though it is

aimed at the musician and amateur piano tuner, this is not to say that a specialist would not benefit from it. But most of all it will serve well as an introduction to the skills required of piano tuner-technicians and as an avenue for musicians' understanding of the machine they control with their fingertips.

ANDRIS K. CHAPIN

Owen Jorgensen. *The Equal-beating Temperaments: A Handbook for Tuning Harpsichords and Forte-Pianos, with Tuning Techniques and Tables of Fifteen Historical Temperaments*. Raleigh, N.C.: The Sunbury Press, 1981. 36 pp. $4.50 (paperback).

Herbert Anton Kellner. *The Tuning of My Harpsichord*. Schriftenreihe Das Musikinstrument, vol. 18. Frankfurt am Main: Verlag Das Musikinstrument, 1980. 54 pp. DM22 (paperback).

It must be admitted at the outset by the reviewer that he expressed publicly the wish that expert piano tuner and authority on historical tunings Owen Jorgensen write a brief practical method on the historical keyboard tunings, based on his voluminous *Tuning the Historical Temperaments by Ear* (Marquette: The Northern Michigan University Press, 1977). This Jorgensen has now done in *The Equal-beating Temperaments*; but how regrettable that, aside from the excellent section on tuning techniques, which all early keyboardists should consult, the result cannot be recommended, least of all to the novice tuner. With the exception noted, the booklet is little more than a curiosity, mingling as it does so much misinformation and confusion with genuine information, and providing no way of distinguishing between them.

Jorgensen's thesis is that musicians of old tuned keyboard instruments by the equal-beating method, which is the determination of the pitch of a given note within a desired temperament by equalizing the beats of two specific intervals, both of which include the note in question. This method offers a very precise tuning tool that can aid in

tuning accuracy and consistency. But there are serious limitations, as for example:

1. Equal-beating intervals (e.g., major thirds) on different pitch levels do not sound equal in quality, as the author claims on page 8. If the word "quality" is to have meaning in this context, it needs to be defined in a useful and unambiguous way: when two intervals, such as our major thirds, are exactly the same size, they will be "identical in quality," to use Jorgensen's phrase. In that case, if they are anything other than absolutely pure, their beat speeds cannot be equal.
2. A pure third from *c'* to *e'* can be divided quite accurately with a *d'* placed by adjusting the thirds *b flat–d'* and *d'–f' sharp* / *g' flat* to beat equally, the *b flat* and *g' flat* having already been tuned in a series of pure fifths down from C, as Jorgensen does on pages 23 and 25 and elsewhere. It is another matter, however, to temper two common-tone fifths by equal beats. If one equalizes the beats of the fifth *d–a* and the fourth *d–g*, as Jorgensen does on page 16 and elsewhere, the result is a substantially poorer fifth *d–a* than the resulting fifth *G–d*. This may not make so much difference in the unequal temperaments (e.g., Kirnberger, Werckmeister), but it is quite unacceptable as a basis for tuning quarter-comma meantone, which requires a smooth array of tempered fifths, as nearly equal in size as possible.

Thus, in spite of its precision, the equal-beating method can give undesirably (and consistently) sloppy results; it is ironic that results closer to the theoretical ideal can be obtained in the second example above by adjusting the fourth *d–g* to beat "just a bit faster" (ideally one-third faster) than the fifth *d–a*, which is just as easy to do as equalizing the beat rate. This is certainly one reason that, although theorists presented vast arrays of mathematically precise temperaments and monochord divisions, actual practical tuning instructions (the few that history has left us[1]) tend to be quite vague and suggestive —for example, the instruction to tune "all Fifths as flat as the Ear will

1. For a discussion of such instructions, see George Sargent, "Eighteenth-Century Tuning Directions: Precise Intervallic Determination," *The Music Review* 30 (1969): 27–34.

permit" (Prelleur, *The Modern Musick-Master*, 1731). Reliance on a mechanical counting of beats, however precise, will not necessarily yield practical solutions. Though perfect theoretical accuracy is unobtainable and probably undesirable, Jorgensen's remark that "the equal-beating methods are more musical than the theoretically correct methods" seems to me entirely without warrant, even if one has any idea what he means here by "musical." When musicians tune, they will certainly try to equalize the quality, and thus the size, of intervals; if they succeed, the beat rates will be unequal.

What, too, are we to make of statements such as "the ratio of a just major third is 5 to 4, often written as 1.25" (when the latter figure does not explicitly indicate a ratio at all), or "tempered intervals sound unstable, and they pulsate"? The deliberate mistuning of unisons in some organ stops does not disturb the stability of that interval. In meantone, the beating of the tempered fifths softens the triads and seems to contribute to their particular beauty; no one would claim, however, that those fifths are "unstable." Jorgensen may intend to call attention to the unpleasantness of intervals mistuned to such a degree that their beat rates are very fast, in the neighborhood of 20–35 beats per second. And what of the statement that "no compromising [of just intervals] was done until the late fifteenth century, when a few just intervals were tempered very cautiously"? Or, "Pythagorean tuning was used from the beginning of keyboard instruments through the Renaissance"? Generalizations such as the latter two do little good unless the author can support them with some real evidence.

The question of so-called "wolf" intervals is another one in which Jorgensen hinders, rather than assists, the musician. On page 6, in referring to the diminished-fourth interval G sharp–C in meantone or just intonations, he claims that "this interval was called a wolf because it howled or beat so rapidly that it could not be used in musical performance." The use of the diminished fourth is in fact so common in keyboard music of the era in which meantone was favored that no examples need be cited. In his previous book Jorgensen did acknowledge this: "In the sixteenth, seventeenth, and eighteenth century composers often utilized the wolf sounds of meantone temperament for dramatic, tragic, comic, or other special effects. Therefore, when

performing compositions which obviously contain this spirit, the wolf interval should purposely not be avoided" (*Tuning the Historical Temperaments by Ear*, p. 117).

Generally the term "wolf" is and has been accepted as a description of the tuning discrepancy at the loose ends of the sequences of tuned intervals in a non-cyclic temperament; this is historically E flat–G sharp, whether taken in just, meantone, or Pythagorean disposition of the twelve keyboard notes. There is no sense in the indiscriminate condemnation of intervals such as augmented seconds and diminished fourths as "wolves" because they sound rough in a particular temperament; one rather should rejoice that they sound like the dissonances they are.

The temperaments and tunings Jorgensen has included will be of varying value for the musician. Unfortunately, he makes very few useful suggestions as to style, era, or repertoire appropriate to a particular tuning. The Agricola tuning (p. 13) will be useful only for those few pieces pointed out elsewhere[2] in which it is desirable to have pure major thirds on D, A, E, and B (the rest of the major thirds are Pythagorean). In the Grammateus temperament (p. 14), the most commonly used major thirds, those on C, G, and F, are Pythagorean (that is, half again as much too wide as major thirds in equal temperament), and it is difficult to see how their grating sound might have "[satisfied] the requirements of early composers such as John Bull," as Jorgensen suggests. Grammateus's temperament, a perfect theoretical construction in its symmetry and logic, is quite useless for any real music. (Incidentally, the first word in the fourth line of the description of this temperament, "meantones," should read "mean semitones.")

In reproducing Jorgensen's versions of the unequal or irregular temperaments (often called cyclic or circulating temperaments, though these two categories technically include equal temperament also),[3] I

2. Namely, the Faenza Codex repertory and pieces in the Buxheim organ book; see Mark Lindley, "Pythagorean Intonation," *The New Grove Dictionary of Music and Musicians*, vol. 15, pp. 486–87.

3. Jorgensen's attempt to justify "well-temperament" as a technical term by apparently relying on a phrase in the full title of Werckmeister's 1691 treatise, *Musicalische Temperatur*, is misinformed. The phrase quoted by Jorgensen, "wol temperirt

found them mostly very satisfactory, especially the one-sixth comma Thomas Young and the roughly one-fifth comma "Common Model" temperaments (pp. 27 and 29). Two errors should be noted on page 22: the Aron-Neidhardt temperament (also known as Kirnberger III) divides the comma into four, not five, parts, and the comma in question, referred to in footnote 14, is not the ditonic but the syntonic comma. As a practical suggestion, I recommend tuning the frequently used intervals *b flat–d'* and d'*–f' sharp*, which Jorgensen relies on again and again in his tuning schemes, in the octave below middle C (an octave lower than indicated), since the beats, being twice as slow, are much easier to hear there. In the Kirnberger temperament (p. 23), there is no reason for the inclusion of the hard-to-tune pure minor third, an interval Jorgensen requires to be tuned nowhere else in his book. An identical tuning result will be obtained much more easily by tuning a pure major third from *f* up to *a*, or, even easier, a pure fifth from *e'* down to *a*.

The most puzzling interpretation of a historical temperament in the book is the one called "Rameau-Rousseau-Hall" by the author (pp. 19–20), and, even though it has three footnotes, there is no explanation of how it was derived (it is also not to be found in Jorgensen's previous book). Its relationship to Rameau's modified meantone, one of a collection of temperaments commonly known as *tempérament ordinaire*, is clear. Regrettably, Jorgensen's temperament is virtually useless: the four excessively widened fifths from C down to A flat ruin the major thirds in the flat keys (Couperin's and Rameau's beloved B-flat major is spoiled by a major third a comma wide, besides the

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stimmen," means "to tune in a well-tempered way"; "stimmen" is a verb, not a noun, and "wol temperirt" is adverbial. Let's hear no more of Jorgensen's illegitimate term; plenty of legitimate ones exist, and there is no need to add further corruption, thinly disguised as technical jargon, to the English language. Interestingly, the German term for equal temperament, "gleichschwebende Temperatur," means "equal-beating temperament," not in the sense of numerically equal beats, but rather equal proportion. Jorgensen's misconstruction of "equal," as suggested above, seems to me the crux of his fallacy. An elegant, clear, thorough, and musical treatment of the sometimes exasperating subject under discussion here can be found in the book *Intervals, Scales, and Temperaments* by Ll. S. Lloyd and Hugh Boyle, now in a second edition (New York: St. Martin's Press, 1978).

wide fifth; E flat is much worse), and the excessive purity of the sharp keys is no compensation.

Much better are the versions given by Klop[4] as "Rameau" (though he gives no tuning instructions) and Lindley[5] as *tempérament ordinaire*. Murray Barbour has quite a different interpretation of Rameau's (intentionally?) ambivalent temperament instructions,[6] and his "Rameau temperament" nicely but subtly favors the flat keys. It is easy to tune: set the standard quarter-comma fifths, *g–d'*, *a–e'*, *c'–g'*, and *d'–a'*, comprised in the pure major third *c'–e'*, and, continuing as if one were tuning meantone, set *f*, *b flat*, and *b natural* as pure thirds from *a*, *d'*, and *g*, respectively. (Or, simply tune a string of quarter-comma fifths from B flat through B, seven in all, as nearly as possible equal in size.) Then tune three pure fifths: B–F sharp, F sharp–C sharp, and C sharp–G sharp. The remaining tone, D sharp/E flat should first be tuned pure to G sharp a fifth below, and then raised until the common-tone fifths G sharp–D sharp and E flat–B flat are each wider than pure by the same quite noticeable amount (ideally E flat–B flat will beat half again as fast as the G sharp–D sharp immediately below it).

In *The Tuning of My Harpsichord*, Dr. Herbert Anton Kellner offers us a worthwhile addition to the growing number of books on tuning and temperament: an English translation of his 1976 booklet, *Wie stimme ich selbst mein Cembalo?* The translation seems to be his own; though it reads like a translation, it is generally clear, even if the occasional teutonicism slips by (p. 15: "For the musical usage of this harmonic scale already the fifth is prohibitive"; p. 40: "Walther was 1704 a student of Werckmeister"), and a few sentences may not make sense in any language (p. 28: "The basic method above is applied in the mean-tone temperament infinitely often in practice"). A crucial

4. G. Klop, *Harpsichord Tuning* (Garderen: Werkplaats voor clavecimbelbouw, 1974), p. 17.

5. Mark Lindley, "Instructions for the Clavier Diversely Tempered," *Early Music* 5 (1977): 22–23.

6. J. Murray Barbour, *Tuning and Temperament: A Historical Survey* (1951; reprint ed., New York: Da Capo Press, 1972), p. 135. In his *Nouveau système de musique théorique* (Paris, 1726), Rameau clearly states that the narrowing of the fifths is to begin with B flat, an instruction followed only by Barbour.

sentence in the tuning instructions should be corrected, however; on page 41, the phrase following the comma in the third line from the bottom should read, "such that it beats at six times the rate of the well-tempered fifth B–f° sharp."

In this booklet, and in a series of related articles (listed by the author in a bibliographical section on pp. 52–54), Kellner contends that he has discovered "the well-tempered tuning of Johann Sebastian Bach." His methods of reconstruction are largely those of numerical manipulation, and this is no place to evaluate them—indeed, the author himself wisely excludes them from the book in question here. Since there is no direct evidence of Bach's preferences in tuning, any so-called "Bach temperament" must be conjectural. Kellner's temperament, a modification of the one-fifth-comma unequal variety, is quite a good one, though perhaps not as good for Bach as the one-sixth-comma unequal temperaments of Young/Vallotti, or of John Barnes (which was derived specifically for the music of Bach by a shrewd and musical analysis of Bach's use of certain intervals in the first book of the *Well-tempered Clavier*).[7] Kellner's tuning method, while ingenious, produces a C-major triad much too nearly pure, in both the fifth and the third, to be plausible for Bach; surprisingly, and inappropriately, it is purer than the C major of Werckmeister III. Compared to music by his predecessors, or even by a contemporary like Handel, much of Bach's music has the harmonic restlessness of that of much later composers, suggesting a temperament nearer equal —that is, with wider major thirds—than the common Kirnberger or Werckmeister models, or Kellner's "Bach temperament"—at least to this writer's ear.

The remaining temperaments presented by Kellner are familiar ones: quarter-comma meantone, Kirnberger III, Werckmeister III, and equal, all of which are available in a number of other sources. Kellner takes up meantone first, evidently on historical grounds, but in my experience it is too difficult a temperament to begin with, since the tempered fifths should all be the same size, as already noted—quite a demanding task for the novice tuner; in the unequal temperaments, a slight skewing of the tempered fifths will not seriously dam-

7. John Barnes, "Bach's Keyboard Temperament," *Early Music* 7 (1979): 236.

age the result. In addition, meantone cannot be set until the tuner has mastered the pure major third.

Kellner's meantone presentation includes a nice feature, a reproduction of Praetorius's steps for tuning meantone temperament from the second volume of the *Syntagma musicum* (1619). An interesting curiosity of this is the antepenultimate step, which indicates that a quarter-comma fifth is to be tuned between "*b flat* and *d sharp*," followed by a check for a pure major third between "*d sharp* and *g*." These are the note names Praetorius himself uses, and it is interesting to speculate on their significance, if any.[8]

There is an interesting feature in Kellner's presentation of the Werckmeister III temperament too: he tunes eight pure fifths in a cycle from C around the flat side to E (really F flat). The resulting C–F flat is equal to the interval of a pure major third (C–E) minus a schisma (2 cents); he then divides C–F flat in the usual way into four equally small fifths, which he calls "Werckmeister fifths" since they are a half schisma smaller than the quarter-comma fifths (which he calls "meantone fifths") of meantone or Kirnberger III. Kellner unfortunately does not explain this terminology, nor the fact that by a neat trick he has divided the ditonic comma here rather than the syntonic. (In this respect Kellner's tuning scheme for Werckmeister III differs from the other modern versions familiar to the reviewer.) Kellner also is not clear about whether this tuning scheme is his own, or comes from Werckmeister's own tuning instructions.

In so well organized, and purportedly systematic, a book as this one, defects do tend to stand out, and I list here the major ones I encountered: the two commas, syntonic (a measure of discrepancy

8. Evidence in the music has convinced me that E flat was frequently tolerated and perhaps even enjoyed as a substitute for the leading-tone D sharp in meantone (even though the E flat seems at first much too sharp to our ears), especially in the Italian and English keyboard repertoire. Examples of the cadential use of D sharp, where it is momentarily touched on (and could be disguised with an ornament), are not uncommon in the music of Byrd, Tomkins, and Frescobaldi, for example. A case of a possibly deliberate coloristic use of E flat in lieu of D sharp can be found in the familiar "Under the Linden Green" variations of Sweelinck, meas. 65 (Jan Pieterszoon Sweelinck, *Ausgewählte Werke für Orgel und Klavier*, ed. Diethard Hellmann [New York: C. F. Peters Corporation, 1957], 1: 74). This may be a question of personal taste; I find any other tuning for the written D sharp in this passage much less charming.

between cycles of pure fifths and pure thirds), and ditonic (a corresponding measure of discrepancy in cycles of pure fifths and pure octaves), are never treated adequately, nor is their common difference, the schisma; and yet all temperament theory, including Kellner's own rather protracted explanations, depends on a clear understanding of what they represent. Nor is the difference between the diatonic and chromatic semitone made clear, crucial as that difference is, for musical reasons, in meantone—this despite the pages of figures and tables. In addition to a clear identification of the two semitones, it would be helpful to add them to the table of important intervals on page 33: meantone chromatic semitone, 76 cents; meantone diatonic semitone, 117 cents.[9] The table might also include the Pythagorean semitone, or limma (perfect fourth minus a Pythagorean major third), ratio 256/243 (90 cents). Finally, an obscure reference might be clarified: the leftover fifth, F sharp–D flat, in Kirnberger III, created by tuning pure fifths outwards in both directions from the two tones of the pure third C–E, down to D flat and up to F sharp, respectively, is one schisma smaller than pure. Without explanation or definition, Kellner calls this (p. 34) an "equally tempered fifth." What he means, but does not say, is that it is virtually identical in size with a fifth in *twelve-tone* equal temperament. Is it pure coincidence that twelve schismas make up almost precisely a ditonic comma, the excess of twelve pure fifths over seven octaves?

DOUGLAS LEEDY

9. In case anyone cares about the ratios of these intervals, they are $25/(16\sqrt[4]{5})$ and $8/(5\sqrt[4]{5})$, respectively. Kellner's ratios for the mean tone and meantone minor third are printed incorrectly: they should read $\sqrt{5}/2$ and $4\sqrt[4]{5^3}5$, in that order. Music theorists with pocket calculators might like to know that if they have a frequency ratio r of an interval (r>1), they can compute its value in cents—very handy for comparing interval sizes—by means of the formula: $I_{cents} = 1731.234 \ln r$. (If the ratio is read in string lengths, as on a monochord, the string-length ratio should be inverted to obtain the frequency ratio.)