A GUIDE TO AUDUBON'S *BIRDS OF AMERICA*

A Concordance Containing Current Names of the Birds,
Plate Names with Descriptions of Plate Variants,
a Description of the Bien Edition,
and Corresponding Indexes

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HISTORY OF *THE BIRDS OF AMERICA* DOUBLE ELEPHANT FOLIO BY JOHN JAMES AUDUBON, 1827–1838

JOHN JAMES AUDUBON was born April 26, 1785, at Les Cayes in the French colony of Saint-Domingue (now Haiti) and died January 27, 1851, at Minnie's Land, his estate on the Hudson River just north of what were then the limits of New York City. He was the son of a French naval officer, Jean Audubon, and his mistress, Jeanne Rabine, who died shortly after giving birth to John James. When the little boy was six years old, his father took him home to France, where he was lovingly raised by his father's tolerant wife, Anne Moynet Audubon.

In 1803, young Audubon went to the United States, and in 1808, he married Lucy Bakewell. They had two sons, Victor Gifford, born in 1809, and John Woodhouse, born in 1812. Two daughters died in infancy.

In 1820, after various failed attempts to succeed in business, Audubon settled down to his life's ambition, to paint every bird in the "United States and its Territories," as he defined his own boundaries. Although he did not succeed in capturing every bird, the enormity of what he accomplished is staggering in its size and beauty. Audubon's plan was to have prints made from his paintings, which he would sell on a subscription basis.

In 1824, therefore, Audubon made his way to Philadelphia, carrying his paintings with him in the hope of finding someone who would create prints from his work. The late ornithologist Alexander Wilson was greatly revered by Philadelphia's scientific community, and their fear that Audubon's paintings might rival or even surpass those of Wilson caused them to give Audubon the cold shoulder. He could find no one willing to undertake the project of etching the copper plates and pulling and coloring the prints.

Finally, in 1826, Audubon had managed to accumulate enough money to go to Great Britain, where he was more successful. He first employed W. H. Lizars of Edinburgh, Scotland, who etched the first ten copper plates from which prints were pulled and colored in 1826 and 1827. Then there was a strike in Lizars' studio, and Audubon turned to Robert Havell, Senior, of London. Havell felt he

was too old to undertake such a vast project, and in June of 1827 the work was entrusted to his son, Robert Havell, Junior, although the father did work on some of the early plates. After the senior Havell's death in 1831, his son dropped the "Junior" from his name. Havell finished the job in June of 1838.

The completed work is known as "the double elephant folio" or DEF edition of *The Birds of America* by John James Audubon. The term "double elephant" refers to the large size of the paper. Each print is an etching printed in black on white paper and then hand-colored by Havell's staff of watercolorists. Today some of the folios exist in their entirety, but many have been broken up and the prints sold separately. There are a few prints that were never colored; they remain just as they came off the copper plate. As heretofore mentioned, the plates were etched, not engraved, with the addition of aquatint and an occasional engraved line. (See "Havell's Technique," below, for further details of the creation of the plates and prints.)

Audubon made 433 paintings for *The Birds of America*. He executed most of these images expressly to be reproduced as etchings and not as finished works of art, although some of them were. He frequently wrote the name of the bird directly on the painting, and also wrote directions to Havell, such as the dimensions of the bird. Audubon worked primarily in watercolor, but usually employed other media as well, such as pencil, pastel, oil paint, gouache, chalk, and ink. For a detailed discussion of his working methods, please see Reba Fishman Snyder's excellent essay "Complexity in Creation: A Detailed Look at the Watercolors for *The Birds of America*" in *The Watercolors for The Birds of America*, edited by Annette Blaugrund and Theodore E. Stebbins, Jr.

For such an enormous project, under constant pressure of time, it was essential that Audubon have assistants who would help him with backgrounds. Joseph Roberts Mason, a gifted young teenager, joined Audubon in 1820 for a trip down the Mississippi River, and stayed with him in Louisiana until the summer of 1822. The Swiss George Lehman, later a prominent artist and lithographer in Philadelphia, worked for Audubon in the East in 1829, and again on the trip to Florida in 1831–1832. Maria Martin, the Reverend John Bachman's sister-in-law, met Audubon in Charleston in 1831, and from then on sent him delicate drawings of flowers and insects that he incorporated into his paintings. In addition to these three, Audubon received help from his sons, John Woodhouse and Victor Gifford, and from Robert Havell. Havell did a great deal of the work, as Audubon often sent him incomplete paintings with instructions about how he wished them to be finished. If a painting is dated during the period an assistant was with Audubon, one is tempted to jump to the conclusion that the assistant painted the background, but this is not always the case. As for Havell, one can easily see what he did by comparing the original painting to the finished print.

The New-York Historical Society owns all the original paintings, with the exception of two that are now lost. Each original painting was arbitrarily

assigned a number, and hereafter each painting will be referred to as "O.P." plus its assigned number. It should be noted that O.P. numbers do not correspond to the plate numbers. The two lost paintings are the Blue-gray Gnatcatcher that was painted for Plate LXXXIV, and the Black-throated Blue Warbler painted for Plate CLV. Do not confuse the latter with another painting of the Black-throated Blue Warbler, O.P. 426, which was painted for Plate CXLVIII.

From the 433 original paintings, 435 plates were made. There are two more plates than paintings because on two occasions Havell made two plates from the birds in one painting. O.P. 186 was split into Plates CCCXCIII and CCCXCV, and O.P. 327 was split into Plates CCCXCIX and CCCXIV.

The prints were issued in eighty-seven parts of five prints each, each part to have one large print, one medium print, and three small ones, of which one would be a previously undescribed species. Each print is marked with its individual number in Roman numerals (some variants are marked in Arabic numerals), and its part number in Arabic numerals. The first 352 prints depict one species each, with the exception of Plate CXLI, which depicts two. Plate CCCLIII shows three species, and from then on there are more and more multi-specied plates. One plate has ten birds representing six species. Audubon was feeling the pressure to get the job done, and putting several species in one painting moved him more quickly towards completion.

Havell finished the first hundred copper plates late in 1830, the second hundred early in 1834, the third hundred early in 1836, and the last 135 plates in the spring of 1838. One might think that an early painting would be among the first to be etched, but this was not always the case. For example, the Blue-winged Teal, painted in 1821, was not etched until late 1834, along with the third group of one hundred plates (Plate CCCXIII).

It is impossible to say how many complete double elephant folios were produced, but a fair estimate would be between 175 and 200. The author has carried on an extensive correspondence here and abroad, following up leads to those believed to be owners of complete double elephant folios, and as a result there are records, as of this writing, of 120 complete copies in the world. It seems safe to say there are more whose owners keep their existence a closely guarded secret.

An example of a "lost" copy coming to light occurred recently. The total number of known copies was thought to be 119, when the Marquis of Bute offered a copy for sale at Christie's in New York in March of 2000. It turned out to be the copy originally ordered by subscriber George Lamb Fox, which was last heard of in 1909, and which had been listed as lost—but which we now know had been in the care of the Bute family for ninety-one years. Thus in a wink the total of known copies went from 119 to 120.

Furthermore, there were incomplete copies, caused by subscribers canceling their orders before completion, and, in addition, various odds and ends: extra prints struck off by Havell that the Audubons gave away as gifts, for example.

One could order the complete folio bound in four volumes, or one could order it unbound, leaving the purchaser free to have it bound as he wished.

Audubon's portrayal of birds in natural positions in their native habitats was an important breakaway from the stiff drawings of stuffed birds that until then had illustrated ornithological works. Audubon was determined to paint each bird life-size. In the case of the larger species, this took some doing. For example, note the way the head and neck of the Roseate Spoonbill (Plate CCCXXI) are bent down in a feeding position, a clever way to fit this large bird onto the paper.

While Havell was etching the plates in London, Audubon was either in America working on more paintings for *The Birds of America*, or in London working with Havell; but wherever he or his two sons were, all three were constantly seeking subscribers to *The Birds of America*. Audubon was in London in the spring of 1838, finishing the last of the paintings, including the Flamingo, CCCXXXI, for which he used as a model a skin whose arrival from America he had been anxiously awaiting for some time. Havell finished etching the last plate on June 16, 1838; the prints were pulled and colored; last-minute details were attended to; and the job was done.

Following the completion of the double elephant folio, there were two more editions of *The Birds of America*. First came the royal octavo edition. Audubon had long wanted a small, inexpensive edition that would appeal to those not able to afford the double elephant folio. Work was carried out in Philadelphia under the direction of the lithographer John T. Bowen, beginning in 1839. The size of the octavo sheets was about 10½ x 6½ inches. The first edition was completed in 1844, and many more editions of this popular book followed during the rest of the century.

After the success of the royal octavo came the Bien edition. After Audubon's death in 1851, his son John Woodhouse Audubon conceived of producing a replica of the double elephant folio by means of chromolithography. A contract was signed with Julius Bien, an eminent, well-known chromolithographer in New York. The size was 39 x 26½ inches, comparable to the double elephant's 39½ x 26½ inches. After only 105 prints had been completed, reproducing 150 of the Havell originals by doubling up some smaller plates on the large sheets, the project collapsed due to John Woodhouse's lack of funds and the advent of the Civil War.

MODELS

Audubon's need for birds to serve as models was constant. He was noted for the way he would wire a dead bird and shape it into a realistic position, and it was his custom to paint birds within days, even hours, of collecting them. Because of this, Audubon preferred to work from his own specimens whenever possible. Although he collected most of the birds himself, many came from other sources:

a. Audubon's friends, knowing his needs, would ship birds to him, or if they were with him, would collect alongside him.
b. Audubon never went to the Far West, and almost all his paintings of western species were modeled from skins collected by naturalists Thomas Nuttall and John Kirk Townsend, who accompanied the expedition led by Captain Nathaniel Wyeth to Oregon. Nuttall and Townsend did most of their collecting along the Columbia River. Nuttall returned to the East first, and Audubon purchased many skins from him in Philadelphia in October of 1836. Townsend did not return to Philadelphia until December, 1837. Edward Harris, Audubon's devoted friend, purchased skins from Townsend and sent them to Audubon, who was in England. They arrived in time for Audubon to include them in *The Birds of America*.
c. Audubon was in England from August 1837 until the completion of *The Birds of America* in July 1838. During that time he had permission from the Museum of the Zoological Society of London to borrow any skins he wanted, and he took full advantage of this offer. He was also loaned skins by John Gould, the renowned bird artist, and by Capt. James Clark Ross, famous for his Antarctic voyage, and nephew of the celebrated Arctic explorer, Sir John Ross.

ORNITHOLOGICAL BIOGRAPHY

Audubon had been working intermittently for some time on the text to accompany *The Birds of America* when he settled down to an intensive burst of writing to undertake the job seriously in Edinburgh in 1830. His devoted wife, Lucy, was at hand to smooth out his English as he wrote, but he knew he needed help to be sure of the accuracy of the scientific details (not his strong point). With great good fortune, he secured the services of William MacGillivray, a professor at Edinburgh University and, incidentally, a friend of Charles Darwin.

Had Audubon included the text with *The Birds of America* folio, he would have been required under the British Copyright Act of 1709 to deposit a copy in each of nine libraries in the United Kingdom. This would have been an intolerable expense. Therefore, he arranged to have the text published separately in five volumes under the title *Ornithological Biography*. In it, the birds in each of the 435 plates are described, interspersed with colorful anecdotes describing Audubon's adventures in America. Since there was no such copyright requirement for purely pictorial works, no copyright copies of *The Birds of America* were ever deposited.

The first volume of *Ornithological Biography* was published by Adam Black of Edinburgh in 1831. All five volumes were completed by 1839.

TRACKING PAINTING, PLATE, AND BIRD

Keeping track of painting, plate, and bird is confusing and complicated for several basic reasons:

1. *Differences between original painting and resulting plate*

Havell was a fine artist in his own right and at times Audubon gave him a free hand. Audubon sometimes sent paintings of birds with no background, trusting Havell to supply one, which he often did very well. If Havell did not like the way Audubon had arranged the birds, he would rearrange them for a more pleasing effect. If he thought there were too many birds in a painting, he would put some of them in other plates that he felt could be filled out. For clarification of the most complicated of these situations, please consult the charts of paintings and plates in Appendix C.

2. *The nomenclature of the birds*

The names of birds in Audubon's time were often different from those used today. Known today by one approved name, a species in Audubon's day could have been identified by several different names, depending on the locale and the disparate views of various ornithologists. Audubon's genius was as a portrayer of birds; as a formal ornithologist, he had his limitations. The group in Philadelphia who revered Wilson and resented Audubon's appearance on the scene gave him an unwarranted bad time, but their criticism of his rather cavalier attitude in naming what he thought were new species without paying enough attention to published data had some justification. However, to give Audubon his due, it must be noted that ornithology was in its infancy then, and there was only fragmentary knowledge of the different forms within a species. Audubon himself was the discoverer of many new species, but he could be fooled into claiming a bird as a new species when it was actually a female, an immature, or a color morph of an already-known species. Nevertheless, of the ninety birds Audubon considered new to science, thirty-seven proved to be valid new forms recognized to this day; twenty-five of them are full species, and the rest subspecies. Of these, fourteen of the species and many of the subspecies are portrayed in *The Birds of America*. Considering that until Audubon went to England he worked in a virtual vacuum, with hardly any literature and no fellow ornithologists to consult, his is a remarkable record. Audubon sometimes wrote what he thought was the name of the bird directly on the painting. If he was in error, as he could be, the error might or might not be caught before the legend was engraved for the plate. As for modern nomenclature, advances in the knowledge of what constitutes a genus and a species have been rapid in recent years, causing bewildering changes in birds' names, often to the despair of birdwatchers.

The authority used here is the most recent *Check-list* of the American Ornithologists' Union, the 1998 seventh edition. If a bird is commonly known by a name other than that approved by the American Ornithologists' Union, it

is listed with a cross-reference. For example: Swan, Whistling—see Swan, Tundra. Today, the correct way to write out the name of a species is as follows:

Barn Swallow,	*Hirundo*	*rustica*	Linnaeus
[Common Name]	[Genus, italicized and capitalized]	[species, italicized but not capitalized]	[describer]

If the genus is unchanged since it was determined by the describer, the describer's name is written out plainly, e.g., Linnaeus. If the genus has been changed, the describer's name is in parentheses, e.g., (Linnaeus). In less formal references, the describer's name is often eliminated. Do not confuse the describer with the discoverer. John Doe might have spotted a new bird in the United States in the 18th century, collected it, and sent it to Linnaeus in Sweden. If Linnaeus agreed that it was indeed a new species, he would name it, classify it, and publish his findings. Thus, John Doe is the discoverer, but Linnaeus is the describer.

As mentioned above, ornithology was in its infancy in Audubon's day, and the rules of nomenclature were not as widely known, nor were they always agreed upon. In this work, when the name on the plate or on the original painting is mentioned, it is written just as found, even though it may seem to be an error or a misspelling by present-day standards. On o.p. 183 (Plate CCCCXXXIII), for example, Audubon wrote "Robbin," not "Robin." When Audubon wrote the name of a bird, he sometimes capitalized the species name and sometimes did not, and he sometimes named the describer and sometimes did not. The scientific name of the bird on the legend of the plate was usually engraved in all capital letters; thus, when the name of a bird on the plate legend is referred to in this work, the scientific name will be written in capital letters and not in italics, as is the rule today.

So it can be seen that one species in *The Birds of America* can be associated with myriad names: its current name; other names by which it has been known; the name on the plate legend; other names on the plate legends of variants; different names for one species when it appears in more than one plate; and the name Audubon wrote on the painting. This confusion can be sorted out by referring to the three indices following the DEF Plate Descriptions:

1) Index of Current Names. The names of all of the species in *The Birds of America* cross-indexed to their names as they appear in the plate legends. Listed as is customary in ornithological indices.
2) Index of DEF Plate Names. The names of all the species in *The Birds of America* as they appear in the plate legends cross-indexed to their current names. Listed alphabetically—Spotted Grosbeak—not Grosbeak, Spotted.
3) Index of Original Painting Names. The names of the species as Audubon wrote them on the paintings cross-indexed to current names and plate names.

3. *Audubon's naming of species*
Among the paintings Audubon took to England were many that he believed represented new species. Some were and some were not. Audubon did not name these birds until after he arrived in England, and then he named many of them for new friends there to whom he was grateful for their kindness to him, a stranger in their country. Among these were Thomas Bewick, John George Children, Robert Havell, the Rev. John Henslow, William MacGillivray, the Rathbone family, J. Prideaux Selby, Lord Stanley (later Earl of Derby), and William Swainson. Audubon also named species for his friends in other countries, such as Dr. Richard Harlan and Edward Harris in America, and Baron Georges Cuvier in France. (To learn more about these individuals and the birds that were named for them, please see Appendix A.) Unfortunately, as it turned out, most of the birds were not new species at all, but had been previously identified and named by others.

4. *Variant Plates*
Sometimes after a plate had been etched and prints pulled, Audubon would decide that the legend was in error. The legend would then be re-engraved and more prints pulled. This could happen two, three, and even four times. These different pulls are called variants. One finds variants in the first hundred plates where the plate number is in Arabic rather than the customary Roman numerals, as well as numerous changes in the plate legends. In late June of 1830, as Havell was finishing the first one hundred plates in London, Audubon attended an exhibition of his prints in Birmingham. Afterwards he wrote to Havell to complain of the "faults" in the plate legends, adding: "Your letter Engraver must be dismissed or become considerably more careful and in fact must now correct his past errors." This criticism no doubt reflects Audubon's own growing knowledge of ornithological terminology, garnered through his friendships with British naturalists such as William Swainson, John George Children, and William MacGillivray. From the early days of the project, Children gave Audubon friendly advice about scientific matters and also supervised the ongoing work in Havell's shop whenever Audubon was in America; and a few months after Audubon's critical letter to Havell in 1830, MacGillivray agreed to help Audubon with *Ornithological Biography*. Their collaboration continued until the text was completed in 1839, and certainly extended to the nomenclature of the birds in the double elephant folio as well. In March of 1831, Audubon wrote a detailed letter to Havell specifying the format for the numbering of parts and plates, as well as for the plate legends, and, indeed, although further variants are found throughout *The Birds of America*, the legends appear to become much more uniform and consistent after Plate CI at the beginning of the second volume. In this work, variants are listed under the plate number.

PLATE LEGENDS

Most legends are below the picture and have the information about the birds centered below the image, although in some of the early plates they may be to the left, the right, or even above the image. Most commonly there is an English name, a scientific name, sometimes a describer's name, and sometimes numbers to indicate males, females, and immatures. In some cases there is information about the flora or a descriptive line such as "View of Baltimore." On the lower left is the credit line to Audubon, which may read "Drawn from Nature by J. J. Audubon, F.R.S. F.L.S." or "Drawn from Nature & Published by John J. Audubon, F.R.S. F.L.S." "F.R.S." stands for "Fellow of the Royal Society" and "F.L.S." for "Fellow of the Linnaean Society." One also sees other letters representing other societies to which Audubon was elected. On the lower right is the credit line to Havell, and it usually reads "Engraved, Printed & Coloured by R. Havell," often followed by a date and sometimes by "London" before the date. As noted before, the 435 plates were issued in eighty-seven parts of five each. The part number, in Arabic numerals, is placed in the upper left corner of the plate. The plate number, in Roman numerals (except for early variants in the first hundred prints, which use Arabic numerals), is in the upper right corner. Not all legends are exactly as described above, especially not in the first ten plates. Because of the complexities of the transfer of these ten plates from Lizars to Havell, details of their legends are discussed separately in the following section.

THE FIRST TEN PLATES

There are two to four variants of each of the first ten plates, on which one can find one or more of the following lines: "Engraved by W. H. Lizars, Edin^{r}."; "Retouched by R. Havell, Junr."; "Printed & Coloured by R. Havell, Senr."; "Engraved, Printed & Coloured by R. Havell, Junr."

Plates I through X were originally etched, printed, and colored by William H. Lizars of Edinburgh. A few early pulls from these plates have both part and plate number in Roman numerals; some variants have only a plate number and omit the part number. The legend is marked: "Engraved by W. H. Lizars, Edin^{r}." The author has never seen prints of Plate VII or Plate X so marked without the addition of a Havell credit line. Some do exist, perhaps; or it is possible that Lizars never pulled prints from these plates.

Before Lizars could commence work on the third part, Plates XI to XV, the colorists in his studio went on strike and all work ceased. Audubon had grown unhappy about the quality of the colorists' work, so the strike was fortuitous in that it brought matters to a head, forcing him to make the change that led him to the Havells of London. Although the senior Havell printed and colored some of the early prints etched by Lizars and the later ones etched by his son Robert Jr., most of the enormous task soon fell entirely to the younger Havell.

Audubon turned the plates made by Lizars over to the Havells, who used them to make more prints. The Havells also colored prints Lizars had pulled but not finished. Some of the prints the Havells pulled were from the plates just as Lizars left them, but others were from the plates after the younger Havell had "retouched" them. Lizars did not use aquatint, and the "retouching" Havell did was to add this process, producing subtle shading. There is a widely-held belief that Havell added aquatint to all ten of Lizars' plates, but in fact he only did so to Plates I, II, VI, and VII. In later variants of Plates III, IV, V, and X, Lizars' name was left off the legend entirely. It was not a very gracious thing to do, and Lizars, justifiably, was highly annoyed.

Two plates require special comment:

> Plate III, Prothonotary Warbler: There is an often-told story that when Audubon was considering Havell, Havell engraved Plate III as a sample of his work even though Lizars had already done it, and that Audubon was so pleased with it, he hired Havell on the spot. The closest inspection of a Lizars III next to a Havell III gives no indication that two plates were involved. Both come from the Lizars plate. So the old story seems to be a legend that has been repeated and embroidered over the years with no evidence to support it. In the many, many books in which this story is repeated, Plate III is always the one mentioned, except for one book that says it was the Baltimore Oriole, Plate XII. It may well be that Audubon was especially pleased with Havell's work on Plate XII, but there can be no question of comparison with a Lizars plate in that case.
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> Plate VI, Hen Turkey: Variant 3 is marked "Engraved by W. H. Lizars Edin^{r}." with no mention of Havell, but in this variant, it is clear that Havell had added aquatint and the snail in the corner to the plate before the prints were made. It would seem that "Retouched by R. Havell, Junr." was left off the legend by mistake, an error that was corrected in the later Variant 4.

PAPER SIZE AND WATERMARKS

The original "double elephant folio" edition of *The Birds of America* takes its name from the size of the paper. The *Oxford English Dictionary* defines "elephant" as a size of drawing and cartridge paper 28 x 23 inches and "double elephant" as a similar paper 40 x 26½ inches. (Note that "double elephant" is not twice the size of "elephant.") The paper Havell used was 39½ x 26½ inches and, while not exactly the double elephant size as defined in the *Oxford English Dictionary*, it was close enough to be described as such. Audubon, in the prospectus announcing *The Birds of America*, wrote in the particulars: "The size of the Work will be double Elephant Folio and printed on the finest drawing paper."

James Whatman was a well-known papermaker in the late 18th century. By Audubon's time Whatman was gone from the scene. He had sold half of his company, together with rights to the watermark "J. Whatman/Turkey Mill,"

to a family called Hollingsworth, and he had sold the other half with rights to the watermark "J. Whatman" to a man called Balston. The two firms became leading papermakers and were great rivals. Not only did Havell use their paper for *The Birds of America*, but Audubon also used it for his paintings.

The paper watermarked "J Whatman/1827 [to 1838]" is of a heavier weight, with the watermark located a few inches from the edge of the paper. The paper watermarked "J Whatman/Turkey Mill/1827 [to 1838]" is lighter, with the watermark located closer to the edge of the paper. According to Stephen Massey, former head of Christie's North America Book Department and an expert who has probably examined more sets of Audubon's double elephant folio than any present authority, the J. Whatman paper generally retains its whiteness, while the J. Whatman/Turkey Mill paper tends to yellow.

A watermark has a figurative design, while a countermark contains just the name or initials of the papermaker, sometimes with a date. So, strictly speaking, both Whatman papers are countermarked, but it seems simpler here to go with the familiar usage of the term "watermark."

Prints were pulled from the plates as the orders came in. Thus, one can see prints of the Wild Turkey, Plate 1, with watermark dates as early as 1828 and as late as 1834. It is tempting to date the pulling of all the prints by the watermark date on the paper, but this may not always be an accurate criterion. Imagine a scene in Havell's studio in 1832: Havell is pulling prints on paper watermarked 1832. He gets to the bottom of the pile and finds a few sheets of paper left over from 1828, which he then uses. As a general rule, however, the watermark date is a fairly good indication of the date the print was pulled.

The areas on the paper actually occupied by the plate marks differ. Over eight of the largest and most impressive plates, such as the Osprey, take up almost the entire sheet. Over a third are about 19 x 12 inches, the most common size. The remainder are various sizes between these two, with a few slightly smaller. Some are greater in height than width, and some are the reverse.

When folios were first broken up and the plates sold separately, the prints were often trimmed down to a suitable border for framing. No one dreamed in those days how valuable Audubons would become, and very little care was taken. Trimming was done carelessly, and legends, plate numbers, and part numbers were often partially or wholly cut off. Often cut off, too, was the watermark, especially in the case of paper watermarked "J Whatman/Turkey Mill," where the watermark was closer to the edge of the paper. The print itself in some instances was glued onto cardboard that was not acid-free, with disastrous results. Happily, conservators can rescue many of these, but time is of the essence and work should commence immediately.

HAVELL'S TECHNIQUE

Robert Havell, Jr. was much more than a simple technician responsible for etching the copper plates for the double elephant folio of *The Birds of America*.

He was a genius, in the very first ranks of the superb etchers and engravers of the day, whose great skills are widely recognized even today. Havell was an accomplished artist, with a discerning eye for composition. To really understand how much he contributed to *The Birds of America*, one must compare Audubon's original paintings to Havell's finished plates. While in no way denigrating Audubon's artistry, Havell should be regarded as far more than a subordinate artisan, and recognition should be given to the superb technical skills, artistic expertise, and organizational acumen of this splendid man, whose steadfast attention and supervision of the work at hand made possible *The Birds of America*.

Of all this author's research into *The Birds of America*, the matter of Havell's technique has proven to be the most intriguing. The term "engraving" in its loosest sense can be a catchall for any process whereby a print is pulled from an incised metal plate. The proper term is "intaglio," which covers many different processes: engraving (in its strict sense), etching, aquatint, mezzotint, drypoint, stipple, and others.

To create an engraving, the artist incises the image directly onto a metal plate, preferably copper, with a tool called a burin. The plate is then inked, wiped clean so that only the ink in the incised lines remains, and the paper is pressed to the plate to receive a transfer of the image.

To create an etching, the artist covers the plate with a ground composed of wax and resinous substances and then draws on this ground with a sharp tool down to, but not into, the plate. When the plate is dipped into an acid bath, the acid bites into the lines on the plate exposed by the artist. The plate is then cleaned, inked, wiped so only the ink in the etched lines remains, and the paper pressed to the plate to receive the image.

Aquatinting is a form of etching, but the term is misleading because the process has nothing to do with water or tinting. The term comes from the nitric acid (aqua fortis) which is used to bite into the plate. Some believe that the term arose because the results of aquatinting are reminiscent of the brushed-in shadings of watercolors (aquarelles), but the first explanation is correct. Lizars did not use aquatint on the first ten plates, and much of the retouching that Havell did to these plates was the addition of this process.

To create an aquatint, the metal plate is covered with a rosin dust, which is then heated so that it bubbles and then hardens into a congestion of minute particles of rosin, each one surrounded by the exposed metal, the whole making a porous surface. The area not to be aquatinted is stopped out, and the plate is then immersed in an acid bath where the acid eats away at the exposed surface of the plate. The artist then removes the plate, stops out more areas with varnish, and returns the plate to the bath where the acid bites deeper into the remaining exposed surface. The rosin dust ground is transparent, so the artist can see what has been done and thus be guided. This can be done as many times as the artist wishes. When the aquatint is used in conjunction with

other processes, it is done last. When a print is pulled from such a plate, it will have subtle shadings from palest gray to black.

The prints of the double elephant folio are customarily referred to as engravings primarily because of the line below the image that reads, "Engraved, Printed, and Coloured by R. Havell." In the 18th and 19th centuries, the word "engraving" was used in its loosest sense and covered a number of the intaglio processes already described. All evidence points to the fact that etching was Havell's primary process, with the secondary addition of aquatint. Possibly he occasionally engraved a line when it suited a particular detail, and the legends were engraved. Careful examination of the prints in a double elephant folio reveals that the lines tend to be blunt-ended, with the rather imprecise edges (caused by the action of the acid) that are typical of etching. In contrast, the engraved line is usually characterized by a tapered end and smoothly curved, clean edges created by the burin. (For further details, the reader is referred to Bamber Gascoigne's *How to Identify Prints*.) A second opinion comes from Mr. J. G. Studholme, chairman of the firm of Editions Alecto in London, which recently published prints pulled from six original Havell plates. He reports that without question the plates were etched with the addition of aquatint. He mentions in particular that the "v" shape of an engraved line is very distinctive and that there was no evidence of engraving on the images on the plates.

Before starting work on a clean plate, the image must somehow be put on the plate to guide the artist. There are several methods, but it is not known which one Havell used. It is thought that he must have traced directly from Audubon's paintings so carefully that no hint of the operation shows. It is possible that he then followed a method in which the tracing paper is dampened, laid face down on the plate (thus taking care of the reverse), and paper and plate run through the press. The damp paper is then peeled off, leaving the graphite of the tracing pencil on the plate. All of this is pure speculation. No one knows for certain exactly how Havell accomplished this task.

Havell employed a special man who engraved the letters of the legends, the plate numbers, and the part numbers. He did beautiful work, as one can see, but Audubon complained regularly about his errors.

It would not have been possible for Havell to complete 435 plates by himself between 1827 and 1838, as there simply was not enough time. So we must assume that he had assistants, but the consistent quality of the work also allows us to assume that he kept a close watch over every plate.

When Havell emigrated to America in 1839, he had all 435 copper plates shipped over and consigned to "Mr. Hall's store" in New York. Many were ruined in an 1845 fire. It is thought that about 350 survived, which were then stored on the Audubon estate. Over the years some of the plates were dispersed; a few are extant today in institutions such as Yale University and the American Museum of Natural History in New York. In 1871, Lucy Audubon,

desperate for money, sold the remainder for scrap metal to the Ansonia Brass and Copper Co. Thanks to the alertness of a young boy, about a quarter of the remaining plates were saved from the melting pot at the last minute. William E. Dodge, the president of the company, took an interest in the plates and gave them to individuals and such institutions as the American Museum of Natural History and the Smithsonian. In a letter in the archives of the Smithsonian Institution, dated April 23, 1884, and addressed to Spencer Fullerton Baird, Secretary of the Institution, Mr. Dodge stated that before giving the plates away, he had them cleaned, made perfectly flat, faced with nickel to preserve them, and the engraved (or etched) lines filled in with gold bronze. About eighty-five plates survive today.

COLOR

After the plates were inked in black and plates and paper sent through the press, the prints were turned over to the colorists, who were supplied with the finest watercolors, some breathtaking in their beauty and brilliance. Occasionally Audubon would complain about a slightly muddy effect caused by painting over the black lines, which would not have occurred had he been able to afford the *à la poupée* process in which the plate itself is inked in color. All the prints pulled from the plates made by Lizars and Havell were hand-colored by a staff of artists; at the height of production, this staff must have been quite large. Audubon frequently complained about the inaccurate and variable coloring of the prints, although the majority are remarkably uniform, especially for work done by different individuals. Occasionally, however, one does find prints with striking and apparently unnatural coloring, and sometimes one finds considerable color variation between prints of the same bird. For instance, the prints of the Wild Turkey (Plate I) in the two double elephant folios at Yale University are astonishingly diverse: one is brilliantly colored, with touches of vivid yellow, blue, and orange; and the other is quite subdued, with subtle browns and dark reds. A number of birds in the Yale copies, in the double elephant folio at the American Museum of Natural History in New York, and in Robert Havell's copy at Trinity College, Hartford, Connecticut, exhibit glowing shades of magenta, violent pink, and bright orange in bird legs and bills, as well as other legs and bills in lovely clear blues and greens. The Havell copy has perhaps the most subtle and true-to-life colors in general, but all copies consulted by the author show variants with unusual coloring. For example, every copy shows the male White-winged Scoter (Velvet Duck) in Plate CCXLVII with one distinctly salmon-colored leg and one leg in the dramatic color sometimes called Schiaparelli pink. Another interesting example is the Ruffed Grouse in Plate XLI. The tips of the ruff feathers of this bird are black, as Audubon correctly portrayed them in his original painting (O.P. 227), and in many of the prints the feathers are also correctly tinted black. However, there are a number of prints in which the ruff has been tinted a velvety blue

color, similar to the neck feathers of a peacock. Although an error, it is beautiful; nonetheless it seems that some of Audubon's complaints about the colorists were quite justified.

BINDINGS OF THE DOUBLE ELEPHANT FOLIO

In a letter to the eminent ornithologist Charles Lucien Bonaparte, dated November 8, 1834, Audubon wrote: "Hering is my binder." This is the only reference to Hering or to any binder among Audubon's letters, but, as will be seen, Hering did indeed bind for Audubon.

Charles Ernst Christian Hering, 1763–1815, was a German immigrant who established a bindery in London in 1794. The business thrived under his leadership, with orders from the great English bibliophiles and even royal patronage.

During the period that Havell was publishing *The Birds of America* in London, 1828–38, Hering's bindery was headed up by three of Charles Sr.'s sons: first by Charles Jr., who died in 1831; then by James, who died in 1836; and, finally, by Henry, the last Hering to be associated with the firm, although it did continue under other owners until 1874.

Audubon offered copies of the double elephant folio in three formats: loose sheets (mailed to subscribers as they were finished), full bound (full leather), or half bound (leather spine and boards). Due to the circumstances of the moment and to changes in the rate of exchange (between $4.44 and $4.80 to the pound), the cost of copies differed at various times. The original quote for a copy in loose sheets was $1000. In a letter written in 1838, Audubon quoted prices of $870 for a copy in loose sheets, $950 for a half bound, and $1070 for a full bound. One can find other figures as well.

In 1990–92, rubbings were taken from the bindings of copies suspected of having been bound by Hering. The rubbings were forwarded to Dr. Miriam Foote, eminent authority on binders and bindings at the British Museum in London. Through Dr. Foote's painstaking research, seven copies were identified as having been bound by Hering, with many also having the Hering stamp. (The Havell copy at Trinity College is one of these.) Undoubtedly there are more not yet identified. This is Hering's stamp:

BOUND BY HERING
9 Newman St.

Subscribers ordering their copies bound may have had a say as to the design, color, lettering, etc., of the binding, as the copies differ.

Almost all of the copies ordered in loose sheets were privately bound, either by the original owners or by subsequent owners. Among the many identified binders of these copies one finds such well-known names as MacKenzie, Charles Tuckett, John Wright, Joseph Zaehnsdorf, and Robert Rivière.

NUMBER OF SPECIES IN *The Birds of America*

To arrive at an accurate count of the number of species in *The Birds of America* double elephant folio can be a very tricky business indeed. After careful checking, one arrives at an accurate count only to find a month or two later that the American Ornithologists' Union has split one of the species into three species or has lumped two of the species into one. As of this writing, the number of species in *The Birds of America* double elephant folio is 443. One might also add to this number the five "Birds of Mystery" (described and painted by Audubon, but never identified, and now impossible to identify definitively; perhaps hybrids); and one hybrid bird (Plate CCCXXXVIII) correctly identified by Audubon only after the actual publication of the double elephant folio, for a total of 449. If one wishes to arrive at a total number of the species described and/or painted by Audubon in his lifetime, matters become quite complicated indeed. First, one must consider the seventeen additional species Audubon painted for the octavo that were not in the double elephant folio; then there are the twenty-five additional birds described (but never painted) in *Ornithological Biography*. Fifteen of these descriptions were based, for the most part, on western skins supplied by John Kirk Townsend after his return from the Wyeth expedition; another ten were based almost entirely on Townsend's observations alone.

Reconciling these numbers with the most current data from the American Ornithologists Union is a daunting task. The A.O.U. is a highly respected scientific organization, recognized by ornithologists as the guardian of the correct identification of members of the avian world. As their research reveals more and more data on the relationship between species, subspecies, genera, and even higher taxonomies, the data constantly changes. Now that they have DNA as a new tool, one can expect even more dramatic changes in the future, resulting in still more changes in the number of species painted and/or described by Audubon.

FOREIGN BIRDS

In Audubon's prospectus for *The Birds of America*, the lead reads, "Birds of America from drawings made during a residence of upwards of twenty-five years in the United States and its territories." When Audubon arrived in this country in 1803, there were seventeen states, and by the time *The Birds of America* was finished in 1838, there were twenty-seven. In the intervening years, all the rest of what would become the continental forty-eight states was a vast hodge-podge that was constantly changing. Parts were territories; some of it was under foreign flags; and much of it was unknown wilderness. Audubon roamed all over the eastern part of this area, collecting and painting. For the western parts, he relied on skins that were sent to him or that he purchased. He made a collecting trip by sea from Maine to Labrador, with stops at Newfoundland, Nova Scotia, and New Brunswick, and also an unproductive trip along the Gulf coast to Texas. These are the lands from whence came the

birds in *The Birds of America*. (Those readers wishing more precise information about the distribution of any species may refer to the A.O.U. *Check-list* or a current bird guide.)

There are a number of instances of birds in the double elephant folio that were not native to these areas and that should not have been included in *The Birds of America*. They are here listed by current name, followed by the name Audubon used enclosed in parentheses:

Black-throated Magpie-Jay. (Columbia Jay.)
Plate XCVI. Mexico.
Audubon believed that the skins from which he painted these birds had been collected on the Columbia River, but this is not true.

Black-throated Mango. (Mangrove Humming Bird.)
Plate CLXXXIV. Panama and South America.
The skins of these birds were given to Audubon, but the reputed localities of their collection were undoubtedly incorrect.

Great Crested Grebe. (Crested Grebe.)
Plate CCXCII. Old world species.
Audubon painted this bird from preserved specimens in London in the mistaken belief that he had seen the bird in Ohio.

Light-mantled Albatross. (Dusky Albatros.)
Plate CCCCVII. Subantarctic islands.
Audubon was told that the skin of this bird had been collected on the Columbia River, but it had not. One can only surmise that the skin reached the West Coast on a ship that had been in the Antarctic.

Crested Bobwhite. (Thick-legged Partridge.)
Plate CCCCXXIII. Central America and northern South America.
Audubon drew this bird from a specimen in the Museum of the Zoological Society of London.

Little Owl. (Little night Owl.)
Plate CCCCXXXII. Europe.
Audubon erroneously believed his skin of this bird had been collected in Nova Scotia. It is strictly European.

In addition to the birds listed above, the inclusion of the following species is questionable:

Common Greenshank. (Greenshank.)
Plate CCLXIX. Eurasia.
Audubon's report of a Florida sighting is regarded by the American Ornithologists' Union as dubious.

Hooded Siskin. (Black-headed Siskin.)
Plate CCCXCIV. South America.
Audubon collected this bird in Kentucky, but it is regarded as an escape.

Trudeau's Tern. (Trudeau's Tern.)
Plate CCCCIX. Chile and Argentina.
Audubon believed his skin of this bird had been collected in New Jersey, but the American Ornithologists' Union regards this as highly questionable.

EXTINCT BIRDS

Carolina Parakeet. Plate XXVI.
Passenger Pigeon. Plate LXII.
Labrador Duck. Plate CCCXXXII.
Great Auk. Plate CCCXLI.

BIRDS NEAR EXTINCTION

Ivory-billed Woodpecker. Plate LXVI. (Probably extinct.)
Bachman's Warbler. Plate CLXXXV.
Eskimo Curlew. Plate CCVIII. (Probably extinct.)
Whooping Crane. Plate CCXXVI. (Recovering but endangered.)
California Condor. Plate CCCCXXVI.

BIRDS OF MYSTERY (Probably hybrids or mutations.)

Cuvier's Kinglet. Plate LV.
Carbonated Warbler. Plate LX.
Townsend's Bunting. Plate CCCC.
Blue Mountain Warbler. Plate CCCCXXXIV.
Small-headed Flycatcher. Plate CCCCXXXIV.

MISNUMBERING

There are only three instances of a plate's being misnumbered in the double elephant folio, an incredibly small figure when one considers the size of the project:

1. Although most plates of the Tree Swallow are correctly engraved XCVIII, there is a variant engraved 100. The true C is the Marsh Hen, with a variant marked 98.
2. The plate of Wilson's Phalarope was wrongly engraved CCLVI. It should have been CCLIV. The true CCLVI is the Reddish Egret.
3. Although most plates of Leach's Storm-Petrel are correctly labeled CCLX, there is a variant labeled CCXL. The true CCXL is the Roseate Tern.

SAME BIRD IN TWO PLATES

There are two instances where the same painting of a bird appears in two different plates:

1. The flying Bluebird at the top of Plate CXIII was added by Havell to Plate XXXVI, which depicts two Cooper's Hawks.
2. The Wilson's Plover on the right in Plate CCIX was added by Havell to the two Purple Sandpipers in Plate CCLXXXIV.

BIRDS AUDUBON DID NOT PAINT

Audubon's plan was to paint every species in America, by which he meant what became the continental United States. Although he did not succeed, the number of species he did paint was remarkable, especially since ornithology was in its infancy in his time.

The majority of the species were native to the eastern part of the country where he roamed and painted. Audubon never went west until after *The Birds of America* was finished, so for western species he relied on skins sent to him by his friends; the majority came from Nuttall and Townsend. The results were notable, but did not begin to cover the western avian population. It is a shame Audubon was never able to roam over the west as he did the east: imagine how he might have portrayed some of the area's most colorful and interesting species, such as the Greater Roadrunner *Geococcyx californianus*, the Pyrrhuloxia *Cardinalis sinuatus*, or the many brilliantly colored western hummingbirds.

Some of the eastern species Audubon did not paint

Audubon painted most of the eastern species a capable birdwatcher of the time would have observed. Some of the species he missed deserve comment:

Groove-billed Ani. *Crotophaga sulcirostris*.
Smooth-billed Ani. *Crotophaga ani*.
Snail Kite. *Rostrhamus sociabilis*.
One would think Audubon would have collected these while on his Florida trips, but, unfortunately, he missed them.

Caspian Tern. *Sterna caspia*.
Audubon did such a good job covering the terns, it seems curious he missed the Caspian.

Mourning Warbler. *Oporornis philadelphia*.
Audubon missed this species because, quite understandably, he confused it with the MacGillivray's Warbler, *Oporornis tolmiei*.

Species present today but not in Audubon's time

Over the years, various species have been introduced into the United States or migrated on their own. Four of these that had not yet arrived in Audubon's time but are common today are:

European Starling. *Sturnus vulgaris*. Introduced in 1890.

House Sparrow. *Passer domesticus*. Introduced in 1850.

Cattle Egret. *Bubulcus ibis*. Spread to the new world in 1870; to Florida in 1940.

Ring-necked Pheasant. *Phasianus colchicus*. Introduced in California in 1857; released in large numbers in Oregon in 1880.

THE COMPOSITE PLATES

As the publication of *The Birds of America* was drawing to a close, Audubon, with the help of William McGillivray, issued a small volume called *Synopsis of The Birds of America*, in which the birds are listed in systematic order. Audubon and two close friends, Dr. Benjamin Phillips of London and Edward Harris of New Jersey, decided to have their copies of *The Birds of America* arranged in this systematic order, rather than by plate number as was usually the custom.

By this time, Audubon's ornithological knowledge was greatly improved, and so he decided to order the thirteen composite plates that he felt would correct past mistakes and come nearer to his wish to depict the male, female, and immature of each species on the same plate, although the inclusion of the immatures was not accomplished in every case.

The Hooded Warblers are a good case in point. Plate CX portrays a pair of birds he correctly identified as Hooded Warblers, but he did not recognize the bird in Plate IX as an immature of the same species. Thinking he had discovered a new species, he named it Selby's Flycatcher. Now, the error recognized, he ordered new prints of Plate CX into which the immature in Plate IX was incorporated. The original legend and number of the major Plate CX were unchanged, which might seem curious unless one is aware that these thirteen plates were specifically for the Audubon-Phillips-Harris copies. Audubon felt that with their knowledge they did not need to be instructed by a change in the legend. In addition, the specifics were in the *Synopsis*.

In working on these composites, Havell did no further etching on the plate. He simply stopped out a space on the major plate to make room for the overprinting of the bird from the minor plate. In two cases, two birds were added. Havell then brought it all together by drawing and coloring directly on the print, adding leaves, branches, and sometimes, background.

Six prints were pulled from each of the thirteen plates. The three best examples were inserted into the Audubon-Phillips-Harris copies, each laid directly behind the original print of the same number. The remaining thirty-nine went

into Havell's stockpile. A few have been found here and there in copies of *The Birds of America* (the Farnum copy at Yale University has a Composite Plate CCXXX, for example), and it may be that there are more still unrecognized, but the three copies—Audubon's, Phillips', and Harris'—are the only ones that had all thirteen. The Audubon and Phillips copies are safe in the United States. There is no trace of the Harris copy. Incomplete evidence suggests it was broken up.

For a detailed list describing the changes made in each of the thirteen composite plates, as well as a table for quick reference, please see Appendix B.

VALUES

The value of copies of *The Birds of America* double elephant folio has risen to unprecedented heights in recent years, as has the value of individual prints from copies that have been broken up. A detailed report of amounts paid would be out of date weeks, even days, after being written, so it must be understood that the purpose of this passage is to give a broad overview of what has happened to the values since *The Birds of America* was published, 1827–1838, and was priced by Audubon at $1000.

For many years an owner wishing to sell his complete copy could realize more by breaking it up and selling the prints one by one than if he sold the copy as a whole. For example, in 1981 a complete copy sold for $900,000, while at nearly the same time a copy broken up and sold print by print realized $1,770,110. Then the value of a complete copy began to rise. In 1984, a complete copy went for $1,540,000; in 1989, $3,096,000; in 1992, $4,070,000; and in 1993, $3,275,000. For seven years there was no sale of a complete copy, until in 2000 the copy formerly belonging to the Marquis of Bute realized $8,802,500. Two factors contributed to this astonishing figure: complete copies that are not in institutions are becoming increasingly rare, and those individuals who have them seem to want to keep them; and at the time of the sale the country was enjoying a period of great prosperity.

Prices for individual prints have increased at a commensurate rate; but, as mentioned above, any examples would be out of date almost as soon as they were given. It should also be noted that the condition of any individual print complicates its estimated value, as do numerous variables in the marketplace. Indeed, the same is true for copies of the complete work.

RESTRIKES AND REPRODUCTIONS

Restrikes

Restrikes are prints pulled from original incised copper plates or stones without the artist's supervision or approval—usually after the artist's death. An example of this would be the prints pulled from six original Havell copper plates owned by the American Museum of Natural History and executed by Editions Alecto, Ltd., London, in 1985.

Havell inked his copper plates in black and after the prints were pulled, they

were turned over to his staff of colorists. In this case, Alecto inked the plates in color, a process called *à la poupée*. Because so much of the color is laid on in the printing, the work of the colorists is greatly reduced, and what they do add is clearer and more luminous, as the slightly muddy effect caused by painting over black is eliminated. It is possible Havell would have used this process had Audubon been able to afford it.

Reproductions

With the highly sophisticated modern photography available today, it is possible to make extremely faithful copies of an original double elephant folio edition of *The Birds of America*, as demonstrated by two of the best examples: the Abbeville edition and the Amsterdam edition.

All reproductions can be identified by Audubon experts. The Abbeville paper, for example, is watermarked with the insignia and names of the National Audubon Society and the Abbeville Press. The fact remains, however, that viewed from the front, the reproduction is exactly like the original, which makes identification difficult for an uninformed or unwary buyer, especially if the print is framed. This author has long believed that there should be a small, unobtrusive line in a lower corner of the front of a reproduction identifying it as such, but admits she has lost the battle.

Recently reproductions made by the digital process (also called "stochastic lithography") have begun to appear. After the original image has been scanned and digitized, the software employed allows the computer to create its own screen by picking up the tonal values of the original and laying down a random scatter of pixels (hence the name: "stochastic" is a mathematical term meaning "random"). As a result, the printed image retains a natural flow of brush or pencil.

When one looks at a photographic reproduction through a print loupe, the tiny colored dots one sees betray its origin. When using a print loupe on a digital, all one sees are the feathery brush strokes of the original. Of course, these digitals make it even harder for an unwary buyer to tell the original from the copy.

The entire subject of restrikes and reproductions of *The Birds of America* since the creation of the Havell and Bien editions is exhaustively treated in William Steiner's forthcoming book, *Audubon Art Prints—A Collector's Guide*. Another excellent source of information is Robert Braun's article, "Identifying Audubon Bird Prints: Originals, States, Editions, Restrikes, and Facsimiles and Reproductions" in *Imprint*, the Journal of the American Historical Print Collectors Society. The interested reader is referred to these works for further information.