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ORNITHOLOGICAL BIOGRAPHY.

W. Macmillan

ORNITHOLOGICAL BIOGRAPHY,

OR AN ACCOUNT OF THE HABITS OF THE

BIRDS OF THE UNITED STATES OF AMERICA,

ACCOMPANIED BY DESCRIPTIONS OF THE OBJECTS REPRESENTED
IN THE WORK ENTITLED

BIRDS OF AMERICA,

TOGETHER WITH AN ACCOUNT OF THE DIGESTIVE ORGANS OF MANY
OF THE SPECIES, ILLUSTRATED BY ENGRAVINGS ON WOOD.

BY JOHN JAMES AUDUBON, F.R.S.S.L.&E.

FELLOW OF THE LINNEAN AND ZOOLOGICAL SOCIETIES OF LONDON; MEMBER OF THE LYCEUM OF NEW YORK, OF THE NATURAL HISTORY SOCIETY OF PARIS, THE WERNERIAN NATURAL HISTORY SOCIETY OF EDINBURGH; HONORARY MEMBER OF THE SOCIETY OF NATURAL HISTORY OF MANCHESTER, AND OF THE SCOTTISH ACADEMY OF PAINTING, SCULPTURE, AND ARCHITECTURE; MEMBER OF THE AMERICAN PHILOSOPHICAL SOCIETY, OF THE ACADEMY OF NATURAL SCIENCES AT PHILADELPHIA, OF THE NATURAL HISTORY SOCIETIES OF BOSTON, OF CHARLESTON IN SOUTH CAROLINA, THE QUEBEC LITERARY AND HISTORICAL SOCIETY, THE ORNITHOLOGICAL SOCIETY OF LONDON, &c. &c.

VOL. IV.



EDINBURGH :

ADAM & CHARLES BLACK, EDINBURGH;

LONGMAN, ORME, BROWN, GREEN & LONGMANS, LONDON; R. HAVELL,
ENGRAVER, 77. OXFORD STREET, LONDON; ALEXANDER HILL,
EDINBURGH; AND GEORGE SMITH, LIVERPOOL.

MDCCCXXXVIII.

PRINTED BY NEILL AND CO., OLD FISHMARKET, EDINBURGH.

INTRODUCTION.

THREE years have nearly elapsed since I had the pleasure of presenting you with the third volume of my "Ornithological Biography," and about twelve since the first fasciculus of my "Illustrations of the Birds of America" was submitted to your inspection. This work, comprising four hundred and thirty-five plates, and one thousand and sixty-five figures, was finished on the 20th of June 1838, without the continuity of its execution having been broken for a single day, and the numbers having been delivered with exemplary regularity; for all which I am indebted to my friend and Engraver, Mr ROBERT HAVELL. Once more surrounded by all the members of my dear family, enjoying the countenance of numerous friends who have never deserted me, and possessing a competent share of all that can render life agreeable, I look up with gratitude to the Supreme Being, and feel that I am happy.

The adventures and vicissitudes which have fallen to my lot, instead of tending to diminish the fervid enthusiasm of my nature, have imparted a toughness to my bodily constitution, naturally strong, and to my mind, naturally buoyant, an elasticity, such as to assure me that, though somewhat old,

and considerably denuded in the frontal region, I could yet perform on foot a journey of any length, were I sure that I should thereby add materially to our knowledge of the ever-interesting creatures which have for so long a time occupied my thoughts by day, and filled my dreams with pleasant images. Nay, Reader, had I a new lease of life presented to me, I should chuse for it the very occupations in which I have been engaged.

And, Reader, the life which I have led has been in some respects a singular one. Think of a person intent on such pursuits as mine have been, aroused at early dawn from his rude couch on the alder-fringed brook of some northern valley, or in the midst of some yet unexplored forest of the west, or perhaps on the soft and warm sands of the Florida shores, and listening to the pleasing melodies of songsters innumerable, saluting the magnificent orb from whose radiant influence the creatures of many worlds receive life and light. Refreshed and reinvigorated by healthful rest, he starts upon his feet, gathers up his store of curiosities, buckles on his knapsack, shoulders his trusty firelock, says a kind word to his faithful dog, and recommences his pursuit of zoological knowledge. Now the morning is spent, and a squirrel or a trout afford him a repast. Should the day be warm, he reposes for a time under the shade of some tree. The woodland choristers again burst forth into song, and he starts anew, to wander wherever his fancy may direct him, or the objects of his search may lead him in pursuit. When evening approaches, and the birds are seen betaking themselves to their retreats, he looks for some place of safety, erects his shed of green boughs, kindles his fire, prepares his meal, and as the

Widgeon or Blue-winged Teal, or perhaps the breast of a Turkey, or a steak of venison, sends its delicious perfumes abroad, he enters into his parchment-bound journal the remarkable incidents and facts that have occurred in the course of the day. Darkness has now drawn her sable curtain over the scene, his repast is finished, and kneeling on the earth he raises his soul to Heaven, grateful for the protection that has been granted to him and the sense of the Divine presence in this solitary place. Then wishing a cordial good night to all the dear friends at home, THE AMERICAN WOODSMAN wraps himself up in his blanket, and closing his eyes, soon falls into that comfortable sleep which never fails him on such occasions.

Since I last parted from you, my exertions have been unremitting, and my rambles extended as far as circumstances allowed, for I have been ever anxious to render the fourth and concluding volume of my Illustrations as worthy of your approbation as I could. Whether I have added to our knowledge of the birds which constantly reside within the limits of the United States and their Territories, or periodically visit us from the South, it is yours to say. That I have left undone much that might have been accomplished by an abler student of Nature, is doubtless quite true; but that any would have prosecuted the study of our numerous feathered denizens with more good will or more sincere desire to obtain facts and rectify errors, would, I think, be difficult to prove. If my "Birds of America," and "Ornithological Biography," are looked upon by you as having contributed in some degree to the improvement of our knowledge of these my favourite objects of observation, and as likely to stimulate other and perhaps more suc-

cessful students to perfect it, I shall rest satisfied with my labours.

Having hitherto given you some account of the occurrences that have taken place during the time intervening between the appearance of one volume and that of another, I again resume the subject, hoping that what I have now to say may prove not less interesting to a friend like you. When I last left Edinburgh, I proceeded to London, full of the desire to revisit my native land before concluding my work. It was my wish to cross the Continent of America, gaze on the majestic wilds of the Rocky Mountains, wander along the green valleys of the Oregon, and search the shores of the Pacific Ocean and a portion of North California; but circumstances denied me the pleasure anticipated. However, here we are on the way to the metropolis of England; we have already passed through Newcastle, York, Leeds, and Manchester, and are just about to alight in the Main Street of Sheffield. The gentleman who meets me at the coach door, is JOHN HEPENSTALL, Esq., well known to me by correspondence, but not personally until now. Arrived here according to appointment, we shake hands, and in a few minutes are beneath his most hospitable roof, and in the midst of his family and friends. The expectations which we had formed, so far from being disappointed, were more than gratified, for this sincere and honourable man is distinguished, not less by liberality of sentiment than by a generosity commensurate with the goodness of his heart. In these respects every member of his family is a counterpart of himself; and, such being our hosts, you may judge how agreeable to us was our stay in Sheffield. It was while enjoying the hospitality of this excellent friend, that we

became acquainted with EBENEZER ELLIOT, Esq. and subsequently with JONATHAN BRAMMELL, Esq. from whom we have since received many acts of kindness. Stopping afterwards at Derby, we saw our relations there, and on arriving in London were kindly welcomed by my brother-in-law, ALEXANDER GORDON, Esq., and soon established ourselves in a house in Wimpole Street.

I now again enjoyed the society of our numerous friends, and had the pleasure of seeing my work proceed apace. One day Mr ROBERT HAVELL informed me, that a gentleman, a Fellow of the Royal Society, residing not far from us, in the same street, had subscribed for the Birds of America. The gentleman called to see me; my wife and myself, were introduced to his lady, and the several members of his amiable family, and our intimacy and friendship have ever since increased. This excellent friend of mine is a surgeon of the highest merit. Long before I left England for America, he took charge of my wife's precarious health; and when we parted at the coach that took my son, JOHN WOODHOUSE, and myself, to Portsmouth, he promised to watch over her. When I again reached my house in Wimpole Street, after an absence of a year, he was the first friend to greet me with a cordial welcome. Were I to mention the many occasions on which he has aided me by his advice and superior knowledge of the world, you would be pleased to find so much disinterestedness in human nature. His professional aid too, valuable as it has proved to us, and productive of much inconvenience to him, has been rendered without reward, for I could never succeed in inducing him to consider us his patients, although for upwards of two years he never passed a day without seeing my

wife. But why should I say more? This fine specimen of human nature, eminent for every virtue, this kind and generous friend, is BENJAMIN PHILLIPS, Esq.

Having been long anxious to introduce into America several species of European birds, which I thought might thrive with us, I purchased about an hundred individuals of that delightful songster, the Sky Lark, fifty Starlings, and several Jays and Wood Pigeons, intending to set them loose in the Western States. Putting them in ample cages, accompanied with a store of food for the voyage, I had them sent on board in the London Docks; but on our reaching Portsmouth by land, we heard that the weather had been very bad in the Channel, and that our birds had suffered severely. The news, to my vexation, proved true; many of the birds had died; and, although our passage to New York was pleasant as well as speedy, very few were landed, so that my hopes were entirely disappointed.

On the 1st of August 1836, we went on board the fine American Packet Ship, the *Gladiator*, commanded by THOMAS BRITTON, Esq. and proceeded on our voyage, which proved agreeable. On arriving at New York, we soon reached the house of my good friend and brother-in-law NICHOLAS BERTHOUD, Esq. Leaving my son there, I proceeded almost immediately to Boston, where, under the roof of my generous friend Dr GEORGE C. SHATTUCK, I enjoyed life for a while. My friend Dr GEORGE PARKMAN was absent, and I missed him much. Here, through the kindness of Dr SHATTUCK, I procured two subscribers, and formed acquaintance with THOMAS M. BREWER, Esq., from whom I have received many valuable services, which you will find mentioned in the proper places. Pushing on to

Salem I formed some acquaintances there, and procured several subscribers; then returned to Boston, and, as fortune would have it, heard of the arrival of THOMAS NUTTALL, Esq., the well-known zoologist, botanist, and mineralogist, who had performed a journey over the Rocky Mountains to the Pacific Ocean, accompanied by our mutual friend JOHN KIRK TOWNSEND, Esq., M. D. Mr NUTTALL generously gave me of his ornithological treasures all that was new, and inscribed in my journal the observations which he had made respecting the habits and distribution of all the new and rare species which were unknown to me. All this information you will find in the different articles to which it refers, and you will allow that while it proves his zeal for the furtherance of science, it manifests the generosity of his noble nature.

Dr TOWNSEND'S collection was at Philadelphia; my anxiety to examine his specimens was extreme; and I therefore, bidding farewell to my Boston friends, hurried off to New York, where, in a week, I added eighteen names to my list of subscribers, in obtaining which I was materially aided by my brother-in-law. Once more my son and I reached Philadelphia, where at once we placed ourselves under the roof of my ever staunch and true friend RICHARD HARLAN, Esq., M. D., with whom we remained several weeks. Soon after my arrival, I called on my learned friend Dr CHARLES PICKERING, formed the desired acquaintance of an enthusiastic young ornithologist, JAMES TRUDEAU, Esq., and met my firm friend EDWARD HARRIS, Esq. Having obtained access to the collection sent by Dr TOWNSEND, I turned over and over the new and rare species; but he was absent at Fort Vancouver, on the shores of the Columbia River; THOMAS NUTTALL had not yet come

from Boston, and loud murmurs were uttered by the *soi-disant* friends of science, who objected to my seeing, much less portraying and describing those valuable relics of birds, many of which had not yet been introduced into our Fauna. The traveller's appetite is much increased by the knowledge of the distance which he has to tramp before he can obtain a meal ; and with me the desire of obtaining the specimens in question increased in proportion to the difficulties that presented themselves. Having ascertained the names of the persons best able or most willing to assist me on this occasion, and aided by THOMAS NUTTALL, who had now arrived, Drs PICKERING, HARLAN, S. G. MORTON, Secretary to the Academy of Natural Sciences, M'MURTRIE, TRUDEAU, and above all my friend EDWARD HARRIS, who offered to pay for them with the view of presenting them to me, I at length succeeded. It was agreed that I might *purchase duplicates, provided* the specific names agreed upon by Mr NUTTALL and myself were published in Dr TOWNSEND'S name. This latter part of the affair was perfectly congenial to my feelings, as I have seldom cared much about priority in the naming of species. I therefore paid for the skins which I received, and have now published such as proved to be new, according to my promise. But, let me assure you, Reader, that seldom, if ever in my life, have I felt more disgusted with the conduct of any opponents of mine, than I was with the unfriendly boasters of their zeal for the advancement of ornithological science, who at the time existed in the fair city of Philadelphia.

From Philadelphia I bent my course toward Baltimore, where I spent a few days. Before leaving the former city, my good friend EDWARD HARRIS had promised to join us at

Charleston, for the purpose of accompanying us along the western coast of the Floridas, and the Gulf of Mexico, at least as far as Galveston Island in Texas. On reaching the city of Washington, I presented myself to the Honourable LEVI WOODBURY, Secretary of the Treasury of the United States, a gentleman of learning, long friendly towards me, who at once assured me that he would, if possible, grant me one of our Revenue Cutters, for my intended voyage. The war, which was at that time raging between the Seminole Indians and the citizens of Florida tended strongly to frustrate my wishes, as every disposable vessel of the class under the Secretary of the Treasury was engaged on the coast of the Peninsula. I called on President ANDREW JACKSON, from whom, since 1819, I have received peculiar facilities, and who assured me of his wish to grant my request. My son and I dined with him on that day *sans façon*, both of us in the undress best suited to practical students of nature. And here I may inform you, that I have seldom eaten of a better Wild Turkey than the one which graced his table, and which had been procured not many miles distant from our centre of political intercourse. I also had the pleasure of seeing my excellent friend, Colonel J. J. ABERT, of the U. S. Topographical Department, the Honourable J. R. POINSETT, and the Secretary of the Navy, to whom I then recommended several American naturalists as worthy of being engaged on any naval expedition of discovery.

We now proceeded towards Charleston in South Carolina, travelling the latter part of the way on one of the most extraordinary rail-roads in the world, and reached in safety the house of my worthy friend the Reverend JOHN BACHMAN, D. D.

It was indeed a happy meeting ! Here I opened the box containing Dr TOWNSEND'S precious series of birds, and while waiting the arrival of Mr HARRIS, drew upwards of seventy figures of the species which I had procured at Philadelphia, assisted in the finishing of the plants, branches of trees, and flowers, which accompany these figures, by my friend's sister-in-law Miss M. MARTIN, to whom I now again offer my most sincere thanks. While here I received the agreeable intelligence of my having been elected a Member of the Ornithological Society of London.

EDWARD HARRIS joined me, but the Revenue Cutter had not made its appearance ; and time becoming precious, on account of the approach of spring, we bid adieu to all at Charleston, and pushed for New Orleans, where, I was informed by Government letters, I should meet with a vessel. On reaching Augusta in Georgia, I called on Dr WRAY, who promised to forward to me a number of plants for my noble friend Lord RAVENSWORTH, who has received them in good order. After several days of severe travelling, we arrived at Montgomery in Alabama, and meeting there with a steam-boat bound to Mobile, secured our passage. Next day we arrived there, and spent two days in examining the neighbourhood ; after which we proceeded to Pensacola, where I felt proud to find a harbour commodious enough to contain a fleet sufficient to repel the attacks of any naval force brought against the United States. Here I made the long-sought-for acquaintance of Mr INNERARITY, to whom I had letters from my friend ALEXANDER GORDON, Esq., and who introduced us to all who were likely to forward our views. The next morning he accompanied us on board the United States' frigate, the

Constellation, and presented us to Commodore DALLAS, to whom I had letters of introduction from our government. This polite and gallant officer received us all with great kindness, and, after reading my letters, assured me that as soon as a cutter could be spared, it should be at my service, and that the information would be transmitted to me through the medium of the Collector of Customs at Mobile or New Orleans. After searching the country around Pensacola, we returned to Mobile, and proceeded to New Orleans in a steamer, by way of the great lakes.

Having previously received the most pressing invitation from my friend JAMES GRIMSHAW, Esq., my son and I went at once to his house, where we were treated with all the kindness to be expected from a true English gentleman. I had the pleasure of renewing my acquaintance with Ex-Governor ROMAN, and several members of his most amiable family, among whom was Mr ZARINGUE. From that gentleman I received much valuable information respecting some of our birds, as well as from my long-known acquaintance, the great sportsman Mr LOUIS ADAM. Here also I for the last time met with good M. LE SUEUR, well known to the world of science as a zoologist of great merit, and with whom I first became acquainted at Philadelphia in 1824. He, alas! is now no more.

Having called on Mr BREEDLOVE, Collector of Customs for New Orleans, and presented to him my letters from the Honourable LEVI WOODBURY, he at once assured me that the Revenue Cutter the Campbell, would be at my disposal in a very few days. But the service, or other circumstances, did not allow the arrival of that vessel at New Orleans until late in March,

and at a time when, apprehensive that our intended voyage might be frustrated, we were all "crest-fallen." Time, however, passed on, and one morning I was gladdened by being called upon by the Commander of the *Campbell*, and still more upon recognising in him the Lieutenant and Pilot of the *Marion*, or *Lady of the Green Mantle*, so frequently mentioned in the former volumes of these Ornithological Biographs. I knew that *NAPOLEON COSTE* was a true sea-fowl. He assured me of the excellence of his vessel, and gay and happy were we all when we removed on board the tight little sea-boat, of scarcely more than sixty tons burden. Proceeding down the *Mississippi*, we sailed through its south-west Pass, where we were joined by a vessel of eight tons, as a tender for our excursions along the shores. It was commanded by Captain *WILLIAM TAYLOR*, now, I believe, a Commodore in the Texian service, a gentleman who has seen much of the world, an excellent companion, and a good hunter and fisher.

Of our various excursions, whether by water or by land, between the mouths of the *Mississippi* and the point at which we returned, a detailed account would prove tedious and fatiguing; for what interest can there be in the relation of our wading through mud for whole days, exposed to the scorching heat, and continually annoyed by myriads of insects? We reached the Bay of *Galveston* on the 24th of April 1837, and ransacked not only the island of that name, but all those in that celebrated inlet of the Mexican Gulf, which we thought worthy of our attention. It was a curious circumstance to me, that, being on board of the first American armed vessel in the United States' Service that had entered the Bay, the fort of *Galveston* returned the salute of twenty-six fires from the

great gun of the Campbell ; and almost equally so when I received a visit from the Secretary of the Navy of the infant Republic of Texas, with a written invitation to proceed to the seat of Government, the newly founded city of Houston, distant from our anchorage about eighty miles. Toward this place the Campbell proceeded about twenty miles, when, meeting with a bar, on which there is not more than about four feet of water at full tide, she again came to anchor. At this place, which is called Red-Fish Bar, on the 9th of May, my friend EDWARD HARRIS, Captain COSTE, and five sailors took the gig, while the Crusader, our tender, took the Secretary of the Texian Navy, M. FISHER, Esq., a Mr WARD, my son, and myself. We crossed a large but shallow bay with a fair wind, and proceeding rapidly, passed the lately founded town of New Washington, and soon afterwards several plantations, the sight of all which afforded us much pleasure, as contrasted with the low salt-marshes and flat lands along the shores of the Mexican Bay, among which we had so long wandered. About noon we entered Buffalo Bayou, near the mouth of the San Jacinto River, almost opposite the celebrated battle-ground. Ducks of various species, Ibises, Wild Turkeys, and many other birds, were seen in great numbers, and we proceeded smoothly over the then turbid waters of the Bayou, until we reached a comfortable house, where we spent the night, after previously examining several miles of the country around.

The Secretary of the Texian Navy being anxious to reach the seat of his government, we started in the gig of the Campbell, although the rain, which had commenced in the night, was falling in torrents, and the waters of the Bayou, which

the day before were still, now rushed at a rapid rate toward the Gulf. About two o'clock in the afternoon, we reached Houston, completely drenched, and were soon afterwards introduced to the President General HOUSTON, who received us kindly, and offered us horses and men to assist us in our researches. The town was crowded with hundreds of Indians, only a few of whom were sober. Although here and there groups of great interest to the painter might be seen, their howlings and gesticulations were by no means pleasing. The beautiful level plain on the margin of which Houston is situated, was covered with water ankle deep. Having seen all that was thought interesting, and offered the President as well as all the officers of his Staff my best thanks, we returned to our yawl, and floating on the accumulated waters, flew as it were down the stream. Several days were afterwards spent in rambling as much as possible over the country, and among other places, we visited the battle-ground of San Jacinto, where we saw scattered the remains of numerous individuals destroyed in that bloody fray.

On our way towards "Red-Fish Bar," we stopped two days at the hospitable mansion of Colonel JAMES MORGAN, who received us in the most friendly manner. This spot, possessing a fine extent of woodland, surrounded by vast prairies, ornamented with numerous detached groves, reminded us of some of the beautiful parks of England. There, among other rarities, we procured a fine specimen of the climbing Rattle-snake with *recurved* fangs, which, along with several others of the same kind, is now in my possession.

On the 18th of May, we bade adieu to the Texas, amid the salutes of the several armed Texian vessels at Galveston, and

were soon on the broad waters of the Gulf of Mexico. We had as passenger Mr CRAWFORD, the British Consul at Tampico ; and after a pleasant voyage, anchored on the 24th within the south-west Pass of the Mississippi. After visiting Captain TAYLOR and his family at the Balize, we were towed by a steamer to New Orleans, where we arrived on the 27th. Here I had the gratification of meeting with my youngest brother-in-law, WILLIAM G. BAKEWELL, Esq. of Louisville, Kentucky, as well as with his amiable wife, neither of whom I had seen for several years.

The commercial revolution which had taken place during our absence, prompted us to proceed at once to the eastward, and bidding farewell to our friends, I and my son set out for Charleston by way of Mobile, whence we crossed the country in a cart with the United States' mail-bags, whereon, in lieu of downy beds and pillows, our bones rested in cramped positions during the night, whilst by day we had ample opportunities of walking over miserable roads, through an almost uncultivated country, and with very indifferent fare. On reaching Montgomery, however, we met with a good coach, and moved more rapidly toward our destination.

My friend EDWARD HARRIS had parted from us, at New Orleans, and gone up the Mississippi to secure for me a collection of preserved Reptiles and other objects ; but, after a more pleasant journey than ours, by way of Mobile, Pensacola, and the level country between the latter and Augusta in Georgia, joined us again at the house of our friend Dr BACHMAN, where we arrived on the 5th of June. And here, good-natured Reader, let me say to you, that the friendship which had so long subsisted between that reverend gentleman and

myself, became still more cemented by the marriage of his eldest daughter to my youngest son.

In the course of our long journeys through woods and over plains, and of our sinuous sailings along the many bays, creeks or bayous, which we visited on this expedition, notwithstanding all our exertions and constant anxiety, we did not discover a single bird not previously known. However, the enterprise proved exceedingly interesting to my companions and myself, and I trust its results will be found to possess some value in your eyes also, for, as you will perceive, it has enabled me to speak with more confidence on the migratory movements of a good number of species which visit us from southern climes during the breeding season. It also enables me to define more accurately than I could otherwise have done, the geographical distribution of most of those which at various times make their appearance in the different sections of the United States, and other portions of North America.

Leaving Charleston, we reached Norfolk by a steamer, after a short passage of thirty-eight hours, and proceeded at once to Washington, where I presented myself to the President of the United States, MARTIN VAN BUREN, to whom I had letters from my amiable and celebrated friend, WASHINGTON IRVING, Esq., and offered my best thanks to the heads of the several departments, and my various friends. We then passed rapidly through Baltimore and Philadelphia, my wish being to reach New York as soon as possible. There I remained a fortnight, while my son and daughter-in-law visited the Falls of Niagara. They having returned, we embarked, on the 16th of July 1837, on board the American packet-ship,

the England, commanded by ROBERT WAITE, Esq., for Liverpool, where, seventeen days after, we were safely landed. Here we quickly paid our respects to the RATHBONES, the CHORLEYS, and other friends, to whom bidding adieu at the same time, we proceeded to join my family in London, where, on the 7th of August, we once more met all together.

I found the publication of the "Birds of America" in a satisfactory state of progression, but received the disagreeable intelligence that a great number of my British patrons had discontinued their subscriptions, and that most of those who still received the numbers as they came out, were desirous of seeing the work finished in Eighty Numbers, as I had at first anticipated. On this account, I found myself obliged to introduce, and in some instances to crowd, a number of species into one and the same plate, in order to try to meet the wishes of those who had by their subscriptions in some measure assisted me in the publication of that work. This, however, I did in such a manner as seemed best to accord with the affinities of the species. But, Reader, Dr TOWNSEND meantime returned to Philadelphia, after an absence of about four years, and with a second collection, containing several rare and new birds, which, after meeting with the same difficulties as on the former occasion, in consequence of the opposition of various enlightened persons at Philadelphia, although Dr TOWNSEND was extremely desirous that every thing new or rare belonging to our Fauna should be given to me, I received only a few weeks before closing the engraving of my plates. A few others did not reach me until several days after. What was I to do? Why, Reader, to publish them to be sure; for this I should have done, to the best of my power, even if every subscriber in

Europe had refused to take them. What! said I, shall the last volume of the "Birds of America" be now closed, at a time when new species are in my hands? No! And in spite of threats from this quarter and that, that such and such persons would discontinue their subscriptions (which indeed they have done, and refused to take the few numbers that would have rendered their copies complete), my wish to do all that was in my power has been accomplished:—All Dr TOWNSEND'S species, as well as some received through different channels, have been published. To that enthusiastic naturalist and excellent friend I am also deeply indebted for the valuable notes which he has forwarded to me through my friend EDWARD HARRIS.

I had the gratification of receiving at London a diploma from the Literary and Historical Society of Quebec; and since then have been favoured with a list of the birds which have been observed in the environs of that city, by WILLIAM SHEPPARD, Esq., his lady, and son, for which I offer them my most sincere thanks. I am also much indebted to the members of the Council of the Zoological Society of London, who have never ceased to furnish me with whatever American specimens their valuable museum contains, allowing me to take them to my house. I am farther indebted to my excellent and generous friend Professor J. T. HENSLow of Cambridge for the continuance of his most kind services to me. Nor must I here omit mentioning the efficient aid I have received from THOMAS DURHAM WEIR, Esq. of Boghead, in the county of Linlithgow, and Mr MACDUFF CARFRAE, Preserver of Animals in Edinburgh, who have kindly procured for me many speci-

mens of British birds for comparison with such of our American species as seemed to be identical.

For several years past I have felt a great desire to place before the world an account of the digestive organs of our various birds. With this view I have, at a great expense, obtained specimens preserved entire in spirits. In collecting them I have received the most effectual aid from several of my American friends, residing in different parts of the country; and in particular from the Rev. Dr BACHMAN of Charleston in South Carolina, Colonel THEODORE ANDERSON of Baltimore, Dr RICHARD HARLAN of Philadelphia, Dr THOMAS M. BREWER of Boston in Massachusetts, THOMAS M'CULLOCH, Esq. of Pictou in Nova Scotia; ALEXANDER GORDON, Esq. of London, who wrote to Havannah for Flamingoes; JEAN CHARTRAND, Esq. who sent me a pair of these birds from Matanzas in Cuba; and from Captain NAPOLEON COSTE of the United States' Revenue Service. Besides the valuable contributions of these friends, to whom my warmest thanks are due, a vast number of specimens were procured by the members of my several parties, in Labrador, in Texas, and in various parts of the United States, as well as many purchased from Mr WARD of New York. An account of the digestive organs and trachea of these, generally concise, but occasionally of considerable length, you will find under the articles to which they refer, in the present volume. These anatomical descriptions, as well as the sketches by which they are sometimes illustrated, have been executed by my learned friend WILLIAM MACGILLIVRAY, who in the most agreeable manner consented to undertake the labour, by no means small, of such a task, and to whom those who are interested in the progress of Ornithological science, as well as myself, must

therefore feel indebted. These details I had resolved to present to you, because I have thought that no perfect knowledge of the affinities of species can be obtained until their internal organization is known. I believe the time to be fast approaching when much of the results obtained from the inspection of the exterior alone will be laid aside : when museums filled with stuffed skins will be considered insufficient to afford a knowledge of birds ; and when the student will go forth not only to observe the habits and haunts of animals, but to procure specimens of them to be carefully dissected.

When I commenced the present volume, I expected that it should contain descriptions of all the species represented in the fourth volume of my *Illustrations* ; but, on proceeding, I found that, even without Episodes, which I have been obliged to exclude, in order to make room for anatomical notices, of more interest to the scientific reader, I could not include more than the usual number of one hundred species. In the fifth and concluding volume, the printing of which has already begun, you will find Descriptions of upwards of a hundred species, many of which are new to science, together with Lists illustrative of the geographical distribution of birds, an Appendix containing additions and corrections, and, finally, a Synopsis of the Birds of North America, methodically arranged, with generic and specific characters.

JOHN J. AUDUBON.

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CANVASS-BACK DUCK.

FULIGULA VALISNERIANA, STEPHENS.

PLATE CCCI. MALE AND FEMALE.

THE range of the celebrated Duck with the history of which I commence the fourth volume of my Biographs, may be considered as limited on the one hand by the mouths of the Mississippi, and on the other by the Hudson or North River. Beyond the latter it is rarely seen at any season on our eastern coasts ; and this circumstance, conjoined with its being now and then observed on the upper waters of our Western Districts, and its breeding in great numbers on the borders of Bear River, which flows into the salt lake of Timpanajoz in upper California, as well as in the marshes and along the banks of streams in many parts of the Rocky Mountains, induces me to believe that the individuals of this species, instead of proceeding along the shores, pass overland towards their breeding grounds, however far northward they may be situated. According to Dr RICHARDSON, it breeds in all parts of the Fur-Countries, from the 50th parallel to their most northern limits.

While in our Atlantic Districts, it is found in much greater numbers on the Chesapeake and the streams that flow into it, than any where else. Indeed it is not more than twenty years since its regular appearance and sojourn on the waters of the Southern States has been observed or at least acknowledged. Although at New Orleans, where it goes by the name of *Canard Cheval*, it has been known to the oldest duck-shooters now alive, from their earliest recollection, it is not more than about fifteen years since it began to rise, from a very low price to two dollars the pair, at which it sold during my visit in March 1837.

This enhancement of its value I look upon as having arisen from the preference given to it by the epicures of our Middle Districts, who have strangely lauded it as superior to every other duck in the world. This alleged pre-eminence has indeed become so deeply impressed on the minds of many of our Southern, that they have on various occasions procured the transportation of numbers of Canvass-backs from Baltimore to Charleston in South Carolina, and even to Savannah in Georgia, although this species is by no means uncommon within a few miles of the latter city, as well as on the Great Santee River. I well remember that on my pointing out to a friend, now alas dead, several dozens of these birds in the market of Savannah, he would scarcely believe that I was not mistaken, and assured me that they were looked upon as being poor, dry, and very fishy, in short not half so good as Mallards, or Blue-winged Teals. With this I cordially agreed, for there, at that season, they are not better than represented.

I found this species in considerable numbers on and about the numerous inlets and rivers of East Florida; but did not see a single individual on the Gulf of St Lawrence, along the coast of Labrador, or on that of Newfoundland.

It arrives in the neighbourhood of New Orleans from the 20th of October to the end of December, coming in flocks of eight or twelve, probably the members of a single family, and, unlike many other species, keeping in small groups during winter. At the approach of spring however they flock together, and about the first of April depart in large bodies. During their stay, they are wont to alight on wet prairies and muddy ponds in all open places, feeding on the seeds of various plants, of which may be particularized the wild oat and the water lily.

According to ALEXANDER WILSON, who first described this species, their arrival in autumn in the Middle Districts takes place about the 15th of October; but more recent writers say, that "unless the weather to the north has been severe, the Canvass-back rarely appears till the middle of November." With this I fully agree, being convinced that their journeys to and from their breeding places are performed across the country. Were this perfectly ascertained, it would prove that this species, unlike most other ducks, instead of removing farther southward in autumn and winter, takes what may be called a lateral march toward our Eastern Districts, in which it remains until the weather has become too cold for its constitution, when it is

forced a second time to migrate, and betake itself to warmer parts of the country, where it continues during the rest of the winter.

The flight of this species, although resembling that of our larger sea-ducks in having the appearance of being rather laboured, is strong, rapid, at times very elevated, and well sustained. It swims deeply, especially when under apprehension of danger, and this probably the better to enable it to escape by diving, at which it is almost as expert as our sea or diving ducks. But although its speed on the water is considerable, it moves rather heavily on land. Its food varies, according to the season and locality. The plant named *Valisneria*, on which it is said to feed when on the head waters of the Chesapeake, is not found equally abundant in other parts, and even there is at times so reduced in quantity, that this duck and several other species which are equally fond of it, are obliged to have recourse to fishes, tadpoles, water-lizards, leeches, snails, and mollusca, as well as such seeds as they can meet with; all which have been in greater or less quantity found in their stomach.

Nothing is known of its manners during the breeding season; and we are equally ignorant of the changes of plumage which, like other species, it may undergo at that period.

As I have not had very good opportunities of making myself acquainted with the modes in which the Canvass-backs are obtained for the markets, I here present an account of duck-shooting on the waters of the Chesapeake, published some years ago in the "Cabinet of Natural History," and of which a copy has been transmitted to me by its author, Dr J. J. SHARPLESS, of Philadelphia, to whom, for this and other marks of attention, I offer my best thanks.

"The Chesapeake Bay, with its tributary streams, has, from its discovery, been known as the greatest resort of water-fowl in the United States. This has depended on the profusion of their food, which is accessible on the immense flats or shoals that are found near the mouth of the Susquehanna, along the entire length of North-East and Elk Rivers, and on the shores of the bay and connecting streams, as far south as York and James Rivers.

"The quantity of fowl of late years has been decidedly less than in times gone by; and I have met with persons who have assured me that the number has decreased one-half in the last fifteen years. This change has arisen, most probably, from the vast increase in their de-

struction, from the greater number of persons who now make a business or pleasure of this sport, as well as the constant disturbance they meet with on many of their feeding grounds, which induces them to distribute themselves more widely, and forsake their usual haunts.

“As early as the first and second weeks in October, the smaller ducks, as the Buffel-head, *Anas Albeola*; South-southerly, *A. glacialis*; and the Ruddy or Heavy-tailed Duck, *A. rubidus*, begin to shew themselves in the upper part of the bay; and by the last of the month, the Black-head, *A. Marila*; Widgeon or Bald-pate, *A. Americana*; Red-head, *A. Ferina*; and the Goose, *A. Canadensis*, appear, and rapidly distribute themselves down the bay. The Canvass-back, *A. Valisneria*, and the Swan, *Cygnus Americanus*, rarely, unless the weather to the north has been severe, appear in quantities till the middle of November. All these fowl, when first arrived, are thin and tasteless, from their privation during their migration, and perhaps preparatory arrangements, and require some days at least of undisturbed repose, to give them that peculiar flavour for which some of them are so celebrated. During the low tides succeeding their arrival, the birds sit on the flats far from the shores, and rarely rise to the wing unless disturbed; but when the spring-tides render the water too deep for feeding, they commence their career, and pass down the bay in the morning, and return in the evening. Most of these fowl feed on the same grass, which grows abundantly on the shallows in the bay and adjacent waters, and has been called duck-grass, *Valisneria Americana*. It grows from six to eighteen inches in length, and is readily pulled up by the root. Persons who have closely observed these ducks while feeding, say that the Canvass-back and Black-head dive and pull the grass from the ground, and feed on the roots, and that the Red-head and Bald-pate then consume the leaves. Indeed, although the Bald-pate is a much smaller bird than the Canvass-back, it has been seen to rob the latter, immediately on its return from under the water, of all its spoil.

“All these larger ducks are found together when feeding, but separate when on the wing. That they feed on the same grass, is evident from the similarity of flavour; and those most accustomed to the article have a difficulty in deciding on the kind of duck from the taste. Indeed, the Bald-pate is generally preferred by residents.

“By the middle of December, particularly if the weather has been a little severe, the fowl of every kind have become so fat, that I have

seen Canvass-backs burst open in the breast in falling on the water ; and spending less time in feeding, they pass up and down the bay from river to river, in their morning and evening flights, giving, at certain localities, great opportunities for destruction. They pursue, even in their short passages, very much the order of their migratory movements, flying in a line, or baseless triangle ; and when the wind blows on the *points* which may lie on their course, the sportsman has great chances of success. These points or courses of the ducks are materially affected by the winds, for they avoid, if possible, an approach to the shore ; but when a strong breeze sets them on these projections of the land, they are compelled to pass within shot, and often over the land itself.

“ In the Susquehanna and Elk rivers, there are few of these points for shooting, and there success depends on approaching them while on their feeding grounds. After leaving the eastern point at the mouth of the Susquehanna and Turkey Point, the western side of the Elk River, which are both moderately good for flying shooting, the first place of much celebrity is the *Narrows*, between Spesutic Island and the western shore. These narrows are about three miles in length, and from three to five hundred yards in breadth. By the middle of November, the Canvass-backs in particular, begin to feed in this passage, and the entrance and outlet, as well as many intermediate spots, become very successful stations. A few miles further down the western shore is Taylor’s Island, which is situated at the mouth of the Rumney, and Abbey Island at the mouth of Bush River, which are both celebrated for ducks, as well as swans and geese. These are the most northerly points where large fowl are met with, and projecting out between deep coves, where immense numbers of these birds feed, they possess great advantages. The south point of Bush River, or Legoe’s Point, and Robbin’s and Rickett’s Points near Gunpowder River, are fruitful localities. Immediately at the mouth of this river is situated Carroll’s Island, which has long been known as a great shooting ground, and is in the rentage of a company at a high rate. Maxwell’s Point, as well as some others up this and other rivers, and even further down the bay, are good places, but less celebrated than those I have mentioned. Most of these points are let out as shooting grounds to companies and individuals, and they are esteemed so valuable that intruders are severely treated.

“ It has been ascertained that disturbing the fowl on the feeding flats

is followed in most cases by their forsaking those haunts, and seeking others; hence, in the rivers leading to the bay near flying points, they are never annoyed by boat-shooting, either by night or day, and although the discharge of guns from the shore may arouse them for a time, they soon return; whereas a boat or sail in chase a few times, will make them forsake a favourite spot for days.

“From the great number of ducks that are seen in all directions, one would suppose that there could be no doubt of success at any one of the points in the course of flight; but whilst they have such correct vision as to distance, and wide range of space, unless attending circumstances are favourable, a sportsman may be days without a promising shot. From the western side of the bay, and it is there the best grounds are found, the southerly winds are the most favourable; and, if a high tide is attended by a smart frost and mild south wind, or even calm morning, the number of birds set in motion becomes inconceivable, and they approach the points so closely, that even a moderately good shot can procure from fifty to one hundred ducks a-day. This has often occurred, and I have seen eight fat Canvass-backs killed at one discharge into a flock, from a small gun.

“To a stranger visiting these waters, the innumerable ducks, feeding in beds of thousands, or filling the air with their careering, with the great numbers of beautiful white swans resting near the shores, like banks of driven snow, might induce him to suppose that the facilities for their destruction were equal to their profusion, and that with so large an object in view, a sportsman could scarcely miss his aim. But, when he considers the great thickness of their covering, the velocity of their flight, the rapidity and duration of their diving, and the great influence that circumstances of wind and weather have on the chances of success, it becomes a matter of wonder how so many are destroyed.

“The usual mode of taking these birds has been, till recently, by shooting them from the points during their flight, or from the land or boats, on their feeding grounds, or by *toling*, as it is strangely termed, an operation by which the ducks are sometimes induced to approach within a few feet of the shore, from a distance often of several hundred yards. A spot is usually selected where the birds have not been much disturbed, and where they feed at three or four hundred yards from, and can approach to within forty or fifty yards of the shore, as they

will never come nearer than they can swim freely. The higher the tides, and the calmer the day, the better, for they feed closer to the shores and see more distinctly. Most persons on these waters have a race of small white or liver-coloured dogs, which they familiarly call the *toler* breed, but which appear to be the ordinary poodle. These dogs are extremely playful, and are taught to run up and down the shore, in sight of the ducks, either by the motion of the hand, or by throwing chips from side to side. They soon become perfectly acquainted with their business, and as they discover the ducks approaching them, make their jumps less high till they almost crawl on the ground, to prevent the birds discovering what the object of their curiosity may be. This disposition to examine rarities has been taken advantage of by using a red or black handkerchief by day, and a white one by night in toling, or even by gently plashing the water on the shore. The nearest ducks soon notice the strange appearance, raise their heads, gaze intently for a moment, and then push for the shore, followed by the rest. On many occasions, I have seen thousands of them swimming in a solid mass direct to the object; and by removing the dog farther into the grass, they have been brought within fifteen feet of the bank. When they have approached to about thirty or forty yards, their curiosity is generally satisfied, and after swimming up and down for a few seconds, they retrograde to their former station. The moment to shoot is while they present their sides, and forty or fifty ducks have often been killed by a small gun. The Black-heads toll the most readily, then the Red-heads, next the Canvass-backs, and the Bald-pates rarely. This also is the ratio of their approach to the points in flying, although, if the Canvass-back has determined on his direction, few circumstances will change his course. The total absence of cover or precaution against exposure to sight, or even a large fire, will not turn these birds aside on such occasions. In flying-shooting, the Bald-pates are a great nuisance, for they are so shy that they not only avoid the points themselves, but by their whistling and confusion of flight at such times, alarm others.

“Simple as it may appear to shoot with success into a solid mass of ducks sitting on the water at forty or fifty yards’ distance, yet when you recollect that you are placed nearly level with the surface, the object opposed to you, even though composed of hundreds of individuals, may be in appearance but a few feet in width. To give, therefore, the best

promise of success, old duckers recommend that the *nearest* duck should be in perfect relief above the sight, whatever the size of the column, to avoid the common result of over-shooting. The correctness of this principle I saw illustrated in an instance in which I had toled to within a space of from forty to seventy yards off the shore, a bed of certainly hundreds of ducks. Twenty yards beyond the outside birds of the dense mass, were five Black-heads, one of which was alone killed out of the whole number, by a deliberate aim into the *middle* of the large flock from a rest, by a heavy well-proved duck-gun.

“ Before I leave the subject of *sitting-shooting*, I will mention an occurrence that took place in Bush River, a few years since. A man whose house was situated near the bank, on rising early one morning, observed that the river had frozen, except an open space of ten or twelve feet in diameter, about eighty yards from the shore, nearly opposite his house. The spot was full of ducks, and with a heavy gun he fired into it. Many were killed, and those that flew soon returned, and were again and again shot at, till, fearful that he was injuring those already his own, he ceased the massacre, and brought on shore ninety-two ducks, most of which were Canvass-backs.

“ To prevent the dogs, whilst toling, from running in, they are not allowed to go into the water to bring out the ducks, but another breed of large dogs of the Newfoundland and water-spaniel mixture are employed. These animals, whilst toling is in progression, or at a point, take apparently as much interest in success as the sportsman himself. During a flight, their eyes are incessantly occupied in watching the direction from whence the birds come; and I have frequently seen them indicate by their manner, the approach of a flock so distant that the human eye would have overlooked it. As the ducks come on, the dog lies down, but still closely observing them, and the moment the discharge occurs, jumps up to see the effect. If a duck falls dead, they plunge to bring it; but many of them wait to see *how* he falls, and whither he swims, and they seem to be as aware as the gunner, of the improbability of capture, and will not make the attempt, knowing from experience that a bird merely winged will generally save himself by swimming and diving. These dogs usually bring one duck at a time out of the water; but a real Newfoundland, who was with me and my company this autumn, was seen on several occasions to swim twenty yards further, and take a second in the mouth to carry on shore. The

indefatigability and ambition of these animals are remarkable, and a gentleman informed me he had known his dog bring, in the space of one hour, twenty Canvass-backs and three Swans from the water, when the weather was so severe that the animal was covered with icicles, and to prevent his freezing he took his great-coat to envelope him. Some dogs will dive a considerable distance after a duck, but a crippled Canvass-back or Black-head, will swim so far under the water, that they can rarely be caught by the dog; and it often has been observed, that the moment one of these ducks, if merely winged, reaches the surface, he passes under, and however calm, cannot be seen again. To give an idea of the extreme rapidity with which a duck can dive, I will relate an occurrence which was noticed by myself, and a similar one was observed by another of the party the same day. A male South-southerly was shot at in the water by a percussion-gun, and after escaping the shot by diving, commenced his flight. When about forty yards from the boat, he had acquired an elevation of a foot or more from the surface. A second percussion-gun was discharged, and he dived from the wing at the flash, and though the spot of entrance was covered by the shot, soon rose unharmed and flew.

“Canvass-backs, when wounded on the streams near the bay, instantly direct their course for it, and there nestle among the grass on the shores till cured, or destroyed by eagles, hawks, gulls, foxes, or other vermin, that are constantly on the search. If a dead Canvass-back be not soon secured, it becomes a prey to the gulls, which rarely touch any other kind. I have seen severe contests take place between crippled Canvass-backs and Gulls; and although a pounce or two generally prevents further resistance, sometimes they are driven off. If the bird is remarkably savoury, the gull makes such a noise, that others are soon collected, when possession is determined by courage or strength.

“Another mode of taking Ducks consists in placing gilling-nets under water on the feeding-grounds, and when they dive for food, their head and wings become entangled in the meshes, and they are drowned. This plan, though successful at first, soon drives the bird from these places; and in some cases, a few applications have entirely prevented their return for some weeks. Paddling upon them in the night or day produces the same effect, and although practised to some extent on Bush River is highly disapproved of by persons shooting from points. For the last three years a man has been occupied on this stream with

a gun of great size, fixed on a swivel in a boat, and the destruction of game on their feeding-flats has been immense ; but so unpopular is the plan, that many schemes have been privately proposed of destroying his boat and gun, and he has been fired at with balls so often that his expeditions are at present confined to the night. Sailing with a stiff breeze upon the geese and swans, or throwing rifle-balls from the shore into their beds, is sometimes successful.

“ Moonlight shooting has not been a general practice, but as these birds are in motion during light nights, they could readily be brought within range by “ honking” them when flying. This sound is very perfectly imitated at Egg Harbour ; and I have seen geese drawn at a right angle from their course by this note. They can indeed be made to hover over the spot, and if a captive bird was employed, the success would become certain.

“ Notwithstanding the apparent facilities that are offered of success, the amusement of duck-shooting is probably one of the most exposing to cold and wet, and those who undertake its enjoyment without a courage “ screwed to the sticking-point,” will soon discover that “ to one good a thousand ills oppose.” It is indeed no parlour sport, for after creeping through mud and mire, often for hundreds of yards, to be at last disappointed, and stand exposed on points to the “ pelting rain or more than freezing cold,” for hours, without even the promise of a shot, would try the patience of even FRANKLIN’S “ glorious nibbler.” It is, however, replete with excitement and charm, and to one who can enter on the pleasure, with a system formed for polar cold, and a spirit to endure “ the weary toil of many a stormy day,” it will yield a harvest of health and delight, that the “ roamer of the woods” can rarely enjoy.”

Although this far-famed bird was named by its discoverer after the plant *Valisneria Americana*, on which it partially feeds when on fresh-water, its subsistence is by no means dependent upon that species, which indeed is not extensively distributed, but is chiefly derived from the grass-wrack or Eel-grass, *Zostera marina*, which is very abundant on the shallows and flats along the whole sea-coast. Its flesh seems to me not generally much superior to that of the Pochard or Red-head, which often mingles in the same flocks ; and both species are very frequently promiscuously sold in the markets as Canvass-backs.

In the Plate are represented two Males and a Female. In the back

ground is a view of Baltimore, which I have had great pleasure in introducing, on account of the hospitality which I have there experienced, and the generosity of its inhabitants, who, on the occasion of a quantity of my plates having been destroyed by the mob during an outburst of political feeling, indemnified me for the loss.

FULIGULA VALISNERIA, *Bonap.* Synops. of Birds of the United States, p. 392.

ANAS VALISNERIA, *Wils.* Amer. Ornith, vol. viii. p. 103. pl. 70. fig. 5.

FULIGULA VALISNERIA, *Richards. and Swains.* Fauna Bor. Amer. iv. Part II. p. 450.

CANVASS-BACKED DUCK, *Nuttall,* Manual, vol. ii. p. 430.

Adult Male. Plate CCCI. Fig. 1, 2.

Bill as long as the head, deeper than broad at the base, the margins parallel, slightly dilated towards the end, which is rounded, the frontal angles rather narrow and pointed. Upper mandible with the dorsal line at first straight and declinate, then slightly concave, direct for a short space near the tip, where it is incurved, the ridge broad and concave at the base, narrowed at the middle, enlarged and convex at the end, the sides nearly erect and concave at the base, becoming anteriorly more and more declinate and convex, the edges curved upwards, with about 50 lamellæ, the unguis small and oblong. Nostrils submedial, linear-oblong, rather large, pervious, near the ridge, in an oblong depression covered with soft membrane. Lower mandible flattened, being but slightly convex, with the angle very long and rather narrow, the dorsal line very short and straight, the erect edges with about 55 inferior and 105 superior lamellæ, the unguis obovato-elliptical.

Head rather large, compressed, convex above. Eyes small. Neck of moderate length, rather thick. Body full, depressed. Wings small. Feet very short, strong, placed rather far behind; tarsus very short, compressed, anteriorly with narrow scutella continuous with those of the middle toe, and having another series commencing half-way down and continuous with those of the outer toe, the rest reticulated with angular scales. Hind toe small, with an inner expanded margin or web; middle toe nearly double the length of the tarsus, outer a little shorter. Claws small, compressed, that of the first toe very small and curved, of the third toe larger and more expanded than the rest.

Plumage dense, soft, blended. Feathers of the upper part of the

head small and rather compact, of the rest of the head and neck small, blended, and glossy. Wings shortish, narrow, pointed; primary quills strong, tapering, the first longest, the second almost as long, the rest rapidly diminishing; secondary quills broad and rounded, the inner elongated and tapering. Tail very short, much rounded, or wedge-shaped, of fourteen feathers.

Bill black, with a tinge of green. Iris bright carmine. Upper part of the head, and a space along the base of the bill dusky; a small transverse band of white on what is called the chin; the rest of the head, and the neck all round, for more than half its length, of a rich brownish-red. A broad belt of brownish-black occupies the lower part of the neck, and the fore part of the body, of which the posterior part is of the same colour, more extended on the back than under the tail. Back and scapulars white or greyish-white, very minutely traversed by undulating black lines; wing-coverts similar but darker. Alular feathers greyish-brown. Primary quills brownish-black, tinged with grey towards the base; the shaft brown. Secondaries ash-grey, whitish, and undulated with dark grey towards the end; five of them also having a narrow stripe of black along their outer margin. Tail brownish-grey, towards the end ash-grey. The lower parts white, the sides and abdomen marked with fine undulating grey lines, of which there are faint traces on most of the other feathers. The feet are greyish-blue tinged with yellow.

Length to end of tail 22 inches, to end of wings 20, to end of claws 25; extent of wings 33; wing, from flexure, $9\frac{3}{4}$; tail $2\frac{1}{2}$; bill along the back, measured from the tip of the frontal process to the end of the unguis, 3; lower mandible along the edge $2\frac{7}{8}$; tarsus $1\frac{3}{4}$; first toe $\frac{6}{8}$, its claw $\frac{5}{8}$; middle toe $2\frac{1}{8}$, its claw $\frac{5}{8}$; outer toe scarcely shorter; inner, $\frac{7}{8}$ shorter. Weight $3\frac{3}{4}$ lb.

Adult Female. Plate CCCI. Fig. 2.

The Female has the bill coloured as in the male; the iris reddish-brown; the feet lead-grey; the upper parts greyish-brown; the top of the head darker, its anterior part light reddish; the chin whitish; the neck greyish-brown, as are the sides and abdomen; the breast white; wing-coverts brownish-grey; primary quills greyish-brown, dusky at the end; secondary quills ash-grey, five of the inner with an external black margin, the innermost greyish-brown like the

back, and with some of the scapulars faintly undulated with darker. Tail greyish-brown, paler at the end; axillars and smaller under wing-coverts white, as in the male.

Length to end of tail, $20\frac{1}{4}$ inches, to end of wings $18\frac{1}{2}$, to end of claws, $23\frac{1}{4}$; extent of wings, $30\frac{3}{4}$: wing from flexure, $9\frac{1}{4}$. Weigh $2\frac{3}{4}$ lb.

This species is very closely allied to the Pochard, or Red-headed Duck, *Fuligula Ferina*, but is much larger, and differs in having the bill proportionally higher at the base, and less dilated towards the end. The colours are also generally similar, but present differences. The upper parts of the Canvass-back are much whiter than those of the Pochard; the head of the former is dusky above, of the latter uniform with the neck; and the white spot on the chin is wanting in the Pochard.

The Digestive and Respiratory Organs of a male shot near Baltimore present the following characters.

The upper mandible is broadly and deeply concave. The tongue, which is thick and fleshy, as in other ducks, is $2\frac{2}{12}$ inches long, its sides parallel, slightly sloping, and furnished with two series of bristly filaments; its base with numerous straight conical papillæ directed backwards, its upper surface marked with a broad median groove, the lower flat, its extremity formed by a thin semi-circular appendage, a quarter of an inch in length. The œsophagus passes along the right side of the neck, for six inches has a diameter of $\frac{5}{12}$, then dilates to $\frac{9}{12}$, so as to form a slight crop, again contracts as it enters the thorax, and in terminating forms the proventriculus, which is $1\frac{3}{4}$ inches in length, with oblong glandules, generally a twelfth of an inch in length. The stomach is a very large and powerful gizzard, of a broadly elliptical form, with extremely thick lateral muscles, the left being $\frac{11}{12}$ in thickness, the right $\frac{9}{12}$, the tendons large and strong. The transverse diameter of the gizzard is $2\frac{1}{12}$ inches, the longitudinal, from the cardiac orifice to the bulge of the inferior muscle, $2\frac{1}{12}$. Its cuticular lining is of very dense texture, and rugous; the grinding plates opposite the lateral muscles about half a twelfth thick, and slightly rugous. The intestine, which is 5 feet 9 inches in length, first forms in the usual manner the duodenal fold, at the distance of 5 inches from the pylorus, encloses the pancreas, receives the biliary ducts, and passing under the right lobe

of the liver, proceeds backward beneath the kidneys, is convoluted in several large folds, and finally from above the stomach, passes in a direct course to the anus. Its coats are thick, its inner surface villous, and its diameter is considerable, being in the first part of the duodenum $\frac{9}{12}$, then for two feet from $\frac{5}{12}$ to $\frac{4}{12}$, enlarged again to $\frac{6}{12}$, and so continuing to the rectum, which is 6 inches long, $\frac{1}{2}$ inch in diameter, and ends in an enlargement or cloaca, about an inch in diameter. The cœca, which commence at the distance of 6 inches from the anus, are 8 inches long, slender, $\frac{2}{12}$ in diameter for 3 inches, afterwards about $\frac{3}{12}$, with the extremity obtuse. The œsophagus and stomach contained young shoots of *Zostera marina*, and in the latter were numerous particles of quartz.

The trachea, when moderately extended, measures 10 inches in length, and is furnished with strong lateral or contractor muscles, a pair of cleido-tracheal, and a pair of more slender sterno-tracheal. Its diameter at the upper part is $4\frac{1}{2}$ twelfths, it gradually contracts to $3\frac{1}{2}$ twelfths, enlarges to $4\frac{1}{2}$ twelfths, and at the distance of $7\frac{1}{4}$ inches from the upper extremity, forms a dilatation about an inch in length, and $\frac{7}{12}$ in its greatest diameter, but composed of distinct rings, then contracts to $\frac{5}{12}$, and ends in a bony and membranous expansion, forming on the left side an irregular thin disk, convex towards the right, and flattened towards the left where it is membranous. The expansions of the trachea are thus similar to those of the Red-breasted Merganser, but of less extent; the rings are of equal breadth on both sides, but alternately overlap each other, one side being partially concealed by the corresponding sides of those above and below it, while the other stands exposed. The lower larynx is formed of ten united rings, together with the bony and membranous expansion described. The tracheal rings, rather broad and osseous, are 118; the half-rings of the bronchi about 16.

DUSKY DUCK.

ANAS OBSCURA, GMEL.

PLATE CCCII. MALE AND FEMALE.

THIS species, which is known in all parts of the United States by the name of "Black Duck," extends its migrations from the Straits of Belle Isle, on the coast of Labrador, to the province of Texas. Strange as the fact may appear, it breeds in both these countries, as well as in many of the intermediate districts. On the 10th of May 1833, I found it breeding along the marshy edges of inland pools, near the Bay of Fundy, and, on Whitehead Island in the same bay, saw several young birds of the same species, which, although apparently not more than a week old, were extremely active both on land and in the water. On the 30th of April 1837, my son discovered a nest on Galveston Island, in Texas. It was formed of grass and feathers, the eggs eight in number, lying on the former, surrounded with the down and some feathers of the bird, to the height of about three inches. The internal diameter of the nest was about six inches, and its walls were nearly three in thickness. The female was sitting, but flew off in silence as he approached. The situation selected was a clump of tall slender grass, on a rather sandy ridge, more than a hundred yards from the nearest water, but surrounded by partially dried salt-marshes. On the same island, in the course of several successive days, we saw many of these ducks, which, by their actions, shewed that they also had nests. I may here state my belief, that the Gadwall, Blue-winged Teal, Green-winged Teal, Mallard, American Widgeon, and Spoon-billed Duck, all breed in that country, as I observed them there late in May, when they were evidently paired. How far this fact may harmonize with the theories of writers respecting the migration of birds in general, is more than I can at present stop to consider. I have found the Black Duck breeding on lakes near the Mississippi, as far up as its confluence with the Ohio, as well as in Pennsylvania and New Jersey; and every one acquainted with its habits will tell you, that it rears its young in all the Eastern States intervening between that last mentioned and the St

Lawrence, and is of not less frequent occurrence along the margins of all our great lakes. It is even found on the Columbia River, and on the streams of the Rocky Mountains; but as Dr RICHARDSON has not mentioned his having observed it in Hudson's Bay or farther north, we may suppose that it does not visit those countries.

On arriving in Labrador, on the 17th June 1833, we found the Dusky Ducks in the act of incubation, but for nearly a month after, met with no young birds, which induced me to suppose that this species does not reach that country at so early a period as many others, but lingers behind so as to be nearly four weeks later than some of them. At the end of four weeks after our arrival, all the females we met with had young broods, which they led about the fresh-water ponds, and along their margins, either in search of food, or to secure them from danger. None of these broods exceeded seven or eight in number, and, at this early period of their life, we found them covered with long soft down of a deep brown colour. When alarmed they would dive with great celerity several times in succession, but soon became fatigued, made for the shore, ran a few feet from the water, and squatted among the grass, where they were easily caught either by some of our party, or by the Gulls, which are constantly on the look-out for such dainty food. At other times, as soon as the mother apprehends danger, she calls her young around her, when the little things form themselves into a line in her wake, and carefully follow her in all her movements. If a Hawk or a Gull make a plunge towards them, she utters a loud cry of alarm, and then runs as it were along the surface of the water, when the young dive as quick as lightning, and do not rise again until they find themselves among the weeds or the rocks along the shores. When they thus dive, they separate and pursue different directions, and on reaching the land lie close among the herbage until assured, by the well-known voice of their parent, that the danger is over. If they have often been disturbed in one pond, their anxious mother leads them overland to another; but she never, I believe, conducts them to the open sea, until they are able to fly. The young grow with remarkable rapidity, for, by the middle of August, they almost equal their parents in size; and their apprehension of danger keeps pace with their growth, for at the period of their southward migration, which takes place in the beginning of September, they are as wild and as cunning as the oldest and most experienced of their species. Each brood migrates

separately ; and the old males, which abandoned the females when incubation commenced, set out in groups of eight or ten. Indeed, it is not common to see birds of this species assemble in such flocks as their relatives the Mallards, although they at times associate with almost all the fresh-water Ducks.

The males, on leaving the females, join together in small bands, and retire into the interior of the marshes, where they remain until their moult is completed. My young friend COOLEIDGE brought me a pair shot on the 4th of July, in Labrador, in so ragged a state that very few feathers remained even on the wings. On his approaching them, they skimmed over the surface of the water with such rapidity, that when shot at they seemed as if flying away. On examining these individuals I found them to be sterile, and I am of opinion that those which are prolific moult at a later period, nature thus giving more protracted vigour to those which have charge of a young brood. I think, Reader, you will be of the same opinion, when I have told you, that on the 5th of July I found some which had young, and which were still in full plumage, and others, that were broodless, almost destitute of feathers.

As many of the nests found in Labrador differed from the one mentioned above, I will give you an account of them. In several instances, we found them imbedded in the deep moss, at the distance of a few feet or yards from the water. They were composed of a great quantity of dry grass and other vegetable substances ; and the eggs were always placed directly on this bed without the intervention of the down and feathers, which, however, surrounded them, and which, as I observed, the bird always uses to cover them when she is about to leave the nest for a time. Should she be deprived of her eggs, she goes in search of a male, and lays another set ; but unless a robbery of this kind happens, she raises only a single brood in the season. But although this is the case in Labrador, I was assured that this species rears two broods yearly in Texas, although, having been but a short time in that country, I cannot vouch for the truth of this assertion. The eggs are two inches and a quarter in length, one inch and five-eighths in breadth, shaped like those of the domestic fowl, with a smooth surface, and of a uniform yellowish-white colour, like that of ivory tarnished by long exposure. The young, like those of the Mallard, acquire the full beauty of their spring plumage before the season of reproduction

commences, but exhibit none of the curious changes which that species undergoes.

Although the Dusky Duck is often seen on salt-water bays or inlets, it resembles the Mallard in its habits, being fond of swampy marshes, rice-fields, and the shady margins of our rivers, during the whole of its stay in such portions of the Southern States as it is known to breed in. They are equally voracious, and may sometimes be seen with their crops so protruded as to destroy the natural elegance of their form. They devour, with the greatest eagerness, water-lizards, young frogs and toads, tadpoles, all sorts of insects, acorns, beech-nuts, and every kind of grain that they can obtain. They also, at times, seize on small quadrupeds, gobble up earth-worms and leeches, and when in salt water, feed on shell-fish. When on the water, they often procure their food by immersing their head and neck, and, like the Mallard, sift the produce of muddy pools. Like that species also, they will descend in a spiral manner from on high, to alight under an oak or a beech, when they have discovered the mast to be abundant.

Shy and vigilant, they are with difficulty approached by the gunner, unless under cover or on horseback, or in what sportsmen call floats, or shallow boats made for the purpose of procuring water-fowl. They are, however, easily caught in traps set on the margins of the waters to which they resort, and baited with Indian corn, rice, or other grain. They may also be enticed to wheel round, and even alight, by imitating their notes, which, in both sexes, seem to me almost precisely to resemble those of the Mallard. From that species, indeed, they scarcely differ in external form, excepting in wanting the curiously recurved feathers of the tail, which Nature, as if clearly to distinguish the two species, had purposely omitted in them.

The flight of this Duck, which, in as far as I know, is peculiar to America, is powerful, rapid, and as sustained as that of the Mallard. While travelling by day they may be distinguished from that species by the whiteness of their lower wing-coverts, which form a strong contrast to the deep tints of the rest of their plumage, and which I have attempted to represent in the figure of the female bird in my plate. Their progress through the air, when at full speed, must, I think, be at the rate of more than a mile in a minute, or about seventy miles in an hour. When about to alight, they descend with double rapidity, causing a strong rustling sound by the weight of their compact body and the

rapid movements of their pointed wings. When alarmed by a shot or otherwise, they rise off their feet by a single powerful spring, fly directly upwards for eight or ten yards, and then proceed in a straight line. Now, if you are an expert hand, is the moment to touch your trigger, and if you delay, be sure your shot will fall short.

As it is attached to particular feeding grounds, and returns to them until greatly molested, you may, by secreting yourself within shooting distance, anticipate a good result; for even although shot at, it will reappear several times in succession in the course of a few hours, unless it has been wounded. The gunners in the vicinity of Boston, in Massachusetts, who kill great numbers of these birds, on account of the high price obtained for them in the fine market of that beautiful and hospitable city, procure them in the following manner:—They keep live decoy-ducks of the Mallard kind, which they take with them in their floats or boats. On arriving at a place which they know to be suitable, they push or haul their boat into some small nook, and conceal it among the grass or rushes. Then they place their decoys, one in front of their ambush, the rest on either side, each having a line attached to one of its feet, with a stone at the other end, by which it is kept as if riding at anchor. One of the birds is retained in the boat, where the gunner lies concealed, and in cold weather amply covered with thick and heavy clothing. No sooner is all in order, than the decoy-ducks, should some wild birds appear, sound their loud call-notes, anxious as they feel to be delivered from their sad bondage. Should this fail to produce the desired effect of drawing the wild ducks near, the poor bird in the boat is pinched on the rump, when it immediately calls aloud; those at anchor respond, and the joint clamour attracts the travellers, who now check their onward speed, wheel several times over the spot, and at last alight. The gunner seldom waits long for a shot, and often kills fifteen or twenty of the Black Ducks at a single discharge of his huge piece, which is not unfrequently charged with as much as a quarter of a pound of powder and three quarters of a pound of shot!

The Black Ducks generally appear in the sound of Long Island in September or October, but in very cold weather proceed southward; while those which breed in Texas, as I have been informed, remain there all the year. At their first arrival they betake themselves to the fresh-water ponds, and soon become fat, when they afford excel-

lent eating; but when the ponds are covered with ice, and they are forced to betake themselves to estuaries or inlets of the sea, their flesh becomes less juicy and assumes a fishy flavour. During continued frost they collect into larger bodies than at any other time, a flock once alighted seeming to attract others, until at last hundreds of them meet, especially in the dawn and towards sunset. The larger the flock however, the more difficult it is to approach it, for many sentinels are seen on the look-out, while the rest are asleep or feeding along the shores. Unlike the "Sea Ducks," this species does not ride at anchor, as it were, during its hours of repose.

My friend, the Reverend Dr JOHN BACHMAN, assures me that this bird, which some years ago was rather scarce in South Carolina, is now becoming quite abundant in that state, where, during autumn and winter, it resorts to the rice fields. After feeding a few weeks on the seeds it becomes fat, juicy, and tender. He adds that the farther inland, the more plentifully does it occur, which may be owing to the many steamers that ply on the rivers along the sea coast, where very few are to be seen. They are however followed in their retreats, and shot in great numbers, so that the markets of Charleston are now amply supplied with them. He also informs me that he has known hybrid broods produced by a male of this species and the common domestic duck; and that he had three of these hybrid females, the eggs of all of which were productive. The young birds were larger than either of their parents, but although they laid eggs in the course of the following spring, not one of these proved impregnated. He further states that he procured three nests of the Dusky Duck in the State of New York.

The young of this species, in the early part of autumn, afford delicious eating, and, in my estimation, are much superior in this respect to the more celebrated Canvass-back Duck. That the species should not before now have been brought into a state of perfect domestication, only indicates our reluctance unnecessarily to augment the comforts which have been so bountifully accorded by Nature to the inhabitants of our happy country. In our eastern markets the price of these birds is from a dollar to a dollar and fifty cents the pair. They are dearer at New Orleans, but much cheaper in the States of Ohio and Kentucky, where they are still more abundant. Their feathers are elastic, and as valuable as those of any other species.

I have represented a pair of these birds procured in the full perfection of their plumage.

ANAS OBSCURA, *Lath.* Synops. iii. p. 545.—*Ch. Bonaparte*, Synopsis of Birds of the United States, p. 384.

DUSKY DUCK, *ANAS OBSCURA*, *Wils.* Amer. Ornith. vol. viii. p. 141. pl. 72. fig. 5.

DUSKY DUCK, *Nuttall*, Manual, vol. ii. p. 392.

Adult Male. Plate CCCII. Fig. 1.

Bill about the length of the head, higher than broad at the base, depressed and widened towards the end, rounded at the tip. Upper mandible with the dorsal line sloping and a little concave, the ridge at the base broad and flat, towards the end broadly convex, as are the sides, the edges soft and thin, the marginal lamellæ about forty on each side; the unguis obovate, curved, abrupt at the end. Nasal groove elliptical, sub-basal, filled by the soft membrane of the bill; nostrils sub-basal, placed near the ridge, longitudinal, elliptical, pervious. Lower mandible slightly curved upwards, flattened, with the angle very long, narrow, and rather pointed, the lamellæ about sixty.

Head of moderate size, oblong, compressed; neck rather long and slender; body full, depressed. Feet short, stout, placed a little behind the centre of the body; legs bare a little above the joint; tarsus short, a little compressed, anteriorly with small scutella, externally of which is a series continuous with those of the outer toe, laterally and behind with reticulated angular scales. Hind toe extremely small, with a very narrow membrane; third toe longest, fourth a little shorter, but longer than the second; the scutella of the second and third oblique, of the outer transverse; the three anterior toes connected by reticulated membranes, the outer with a thick margin, the inner with the margin extended into a slightly lobed web. Claws small, arched, compressed, rather obtuse, that of the middle toe much larger, with a dilated, thin edge.

Plumage dense, soft, and elastic; on the head and neck the feathers linear-oblong, on the other parts in general broad and rounded. Wings of moderate breadth and length, acute; primaries narrow and tapering, the second longest, the first very little shorter; secondaries broad, curved inwards, the inner elongated and tapering. Tail short, much rounded, of eighteen acute feathers, none of which are reserved.

Bill yellowish-green, the unguis dusky. Iris dark brown. Feet orange-red, the webs dusky. The upper part of the head is glossy brownish-black, the feathers margined with light brown; the sides of the head and a band over the eye are light greyish-brown, with longitudinal dusky streaks; the middle of the neck is similar, but more dusky. The general colour is blackish-brown, a little paler beneath, all the feathers margined with pale reddish-brown. The wing-coverts are greyish-dusky, with a faint tinge of green; the ends of the secondary coverts velvet-black. Primaries and their coverts blackish-brown, with the shafts brown; secondaries darker; the speculum is green, blue, violet, or amethyst purple, according to the light in which it is viewed, bounded by velvet-black, the feathers also tipped with a narrow line of white. The whole under surface of the wing, and the axillaries, white.

Length to end of tail $24\frac{1}{2}$ inches, to end of claws 26; extent of wings $38\frac{1}{2}$; bill $2\frac{4}{12}$ along the back; wing from flexure $11\frac{1}{2}$; tail $4\frac{4}{12}$; tarsus $1\frac{8}{12}$; middle toe $2\frac{5}{12}$, its claw $\frac{4}{12}$; first toe $\frac{5}{12}$, its claw $\frac{2}{12}$. Weight 3 lb.

Adult Female. Plate CCCII. Fig. 2.

The female, which is somewhat smaller, resembles the male in colour, but is more brown, and has the speculum of the same tints, but without the white terminal line.

Length to end of tail 22 inches, to end of wings $21\frac{1}{4}$, to end of claws 22; wing from flexure $10\frac{1}{2}$; extent of wings $34\frac{1}{4}$; tarsus 2, middle toe and claw $2\frac{1}{2}$; hind toe and claw $\frac{5}{12}$.

In this species, the number of feathers in the tail is eighteen, although it has been represented as sixteen. In form and proportions the Dusky Duck is very closely allied to the Mallard. The following account of the digestive and respiratory organs is obtained from the examination of an adult male.

On the upper mandible are 43 lamellæ; on the lower, 85 in the upper, and 56 in the lower series. The tongue is $1\frac{1}{12}$ inch long, with the sides parallel and furnished with a double row of filaments, numerous small conical papillæ at the base, a median groove on the upper surface, and a thin rounded appendage, a twelfth and a half in length at the tip. The aperture of the glottis is $7\frac{1}{12}$ long, with very nume-

rous minute papillæ behind. The œsophagus 12 inches long, of a uniform diameter of $\frac{4}{12}$, until near the lower part of the neck, where it enlarges to $\frac{8}{12}$, again contracts as it enters the thorax, ending in the proventriculus, which is $1\frac{1}{4}$ long, with numerous oblong glandules, about a twelfth in length. Gizzard obliquely elliptical, $2\frac{1}{4}$ inches across, $1\frac{8}{14}$ in length, its lateral muscles extremely large, the left $\frac{10}{12}$ in thickness, the right $\frac{9}{12}$; their tendons large and strong; the lower muscle moderately thick; the cuticular lining firm and rugous, the grinding surfaces nearly smooth. The intestine, which is 5 feet $7\frac{1}{2}$ inches long, is slender and nearly uniform in diameter, measuring $\frac{4}{12}$ across in the duodenal portion, $\frac{3}{12}$ in the rest of its extent; the rectum $3\frac{1}{2}$ inches long, dilated into a globular cloaca 1 inch in length, and of nearly the same diameter. The cæca are $6\frac{1}{4}$ long, $\frac{1\frac{1}{2}}{12}$ in diameter for 2 inches of their length, enlarged to $\frac{3}{12}$ in the rest of their extent, and terminating in an obtuse extremity.

The trachea, moderately extended, is 10 inches long. Its lateral or contractor muscles are strong, and it is furnished with a pair of cleido tracheals, and a pair of sterno-tracheals. The number of rings is 136, besides 12 united rings forming a large inferior larynx, which has a transversely oblong bony expansion, forming on the left side a bulging and rounded sac. There are 28 bronchial half rings on the right side, 26 on the left.

BARTRAMIAN SANDPIPER.

TOTANUS BARTRAMIUS, TEMM.

PLATE CCCIII. MALE AND FEMALE.

THE Bartramian Sandpiper is the most truly terrestrial of its tribe with which I am acquainted. It is even more inclined, at all seasons, to keep away from the water, than the Kildeer Plover, which may often be seen wading in shallow pools, or searching along the sandy or muddy margins of the shores of the sea, or of fresh-water lakes and streams. Although not unfrequently met with in the vicinity of such places, it never ventures to wade into them; and yet the form and length of its legs and feet would naturally induce a person not acquainted with its habits to consider it as a wading bird.

The dry upland plains of those sections of Louisiana called Opelousas and Attacapas, are amply peopled with this species in early spring, as well as in autumn. They arrive there from the vast prairies of Texas and Mexico, where they spend the winter, in the beginning of March, or about the period of the first appearance of the Martins, *Hirundo purpurea*, and return about the first of August. They are equally abundant on all the western prairies on either side of the Missouri, where, however, they arrive about a month later than in Louisiana, whence they disperse over the United States, reaching the middle districts early in May, and the State of Maine by the middle of that month, or about the same period at which they are seen in Indiana, Kentucky, and Ohio. Some proceed as far north as the plains adjoining the Saskatchewan River, where Dr RICHARDSON met with this species in the month of May.

It has been supposed that the Bartramian Sandpiper never forms large flocks, but this is not correct, for in the neighbourhood of New Orleans, where it is called the "Papabote," it usually arrives in great bands in spring, and is met with on the open plains and large grassy savannahs, where it generally remains about two weeks, though sometimes individuals may be seen as late as the 15th of May. I have observed the same circumstances on our western prairies, but have thought that they were afterwards obliged to separate into small flocks, or even into

pairs, as soon as they are ready to seek proper places for breeding in, for I have seldom found more than two pairs with nests or young in the same field or piece of ground. On their first arrival, they are generally thin, but on their return southward, in the beginning of August, when they tarry in Louisiana until the first of October, they are fat and juicy. I have observed, that in spring, when they are poor, they are usually much less shy than in autumn, when they are exceedingly wary and difficult of approach; but this general observation is not without exceptions, and the difference, I think, depends on the nature of the localities in which they happen to be found at either period. When on newly ploughed fields, which they are fond of frequenting, they see a person at a greater distance than when they are searching for food among the slender grasses of the plains. I have also thought that the size of the flocks may depend upon similar contingencies, for this bird is by no means fond of the society of man.

Like the Spotted Sandpiper, *Totanus macularius*, they not unfrequently alight on fences, trees, and out-houses; but whether in such situations or on the ground, they seldom settle without raising both wings upright to their full extent, and uttering their loud and prolonged, but pleasing notes. They run with great activity, stop suddenly, and vibrate their body once or twice. When earnestly followed by the sportsman, they lower their heads in the manner of WILSON'S Plover, and the species called the Piping, and run off rapidly, or squat, according to the urgency of the occasion. At other times, they partially extend their wings, run a few steps as if about to fly, and then cunningly move off sideways, and conceal themselves among the grass, or behind a clod. You are not unfrequently rendered aware of your being within sight of them, by unexpectedly hearing their plaintive and mellow notes, a circumstance, however, which I always concluded to be indicative of the wariness of their disposition, for although you have just heard those well-known cries, yet, on searching for the bird, you nowhere see it, for the cunning creature has slipped away and hid itself. When wounded in the wing, they run to a great distance, and are rarely found.

Like all experienced travellers, they appear to accommodate themselves to circumstances as regards their food, for in Louisiana, they feed on cantharides and other coleopterous insects; in Massachusetts on grasshoppers, on which my friend NUTTALL says, they soon grow very

fat ; in the Carolinas on crickets and other insects, as well as the seeds of the crab-grass, *Digitaria sanguinaria* ; and in the barrens of Kentucky they often pick the strawberries. Those which feed much on cantharides, require to be very carefully cleaned, otherwise persons eating them are liable to suffer severely. Several gentlemen of New Orleans have assured me, that they have seen persons at dinner obliged to leave the room at once, under such circumstances, which cannot well be described here. When flavoured with the ripe strawberries, on which they have fed, their flesh is truly delicious.

This species performs its migrations by night as well as by day. Its flight is rather swift and well sustained. While travelling, it generally flies so high as to be beyond reach of the gun : but if the weather be cloudy, or if it blow hard, it flies lower, and may easily be shot. It generally proceeds in straggling bands, and moves along with continuous easy beats of the wings, but sails, as it were, when about to alight, as well as during the love season.

As long ago as 1805 and 1806, I observed this species breeding in the meadows and green-fields of my plantation of Millgrove, near the banks of Perkioming Creek. Since then, I have known of its rearing broods in different parts of Pennsylvania, in the State of New York, and in various districts to the eastward as far as the confines of Maine ; but I did not find it in Newfoundland or Labrador ; and I have reason to believe that it does not breed to the south of Maryland.

My friend, the Rev. Dr BACHMAN, has informed me that the Bartramian Sandpiper makes its appearance in South Carolina about the 15th of July, the hottest period of the year, in considerable numbers, betakes itself at once to the high grassy lands, and there remains about a month. He considers it to be then on its return from the north, and states that it is very fat and affords delicious food. His manner of shooting them is, to ride in a chair or gig over the fields which they frequent, or along the roads in their neighbourhood, by which means they can be approached near enough to enable the sportsman to shoot with almost a certainty of success, as the bird rises out of the grass. If one attempts to get near them on foot, they rise at too great a distance, then sweep in circles over the spot, and alight a considerable way off. They are seldom met with there in flocks of more than four or five individuals.

I have found the eggs of this bird laid on the bare earth, in a hollow

scooped out to the depth of about an inch and a half, near the roots of a tuft of rank grass, in the middle of a meadow, and seen some nests of the same species formed of loosely arranged grasses, and placed almost beneath low bushes growing on poor elevated ridges, furnished with a scanty vegetation. I have also heard my esteemed young friend, JOHN TRUDEAU, state that he had discovered one on a high part of the bank of the Delaware River. When disturbed while on its nest, but unobserved, it runs thirty or forty yards, and then flies off as if severely wounded. Should it have young, its attempts to decoy you away are quite enough to induce you to desist from harassing it. The eggs measure an inch and five and a half eighths, by an inch and a quarter in their greatest breadth. In form they resemble those of *Totanus macularius*, being broadly rounded at one end, and rather pointed at the other; their surface smooth; their ground colour dull greyish-yellow, with numerous spots of light purple and reddish-brown. They are placed in the nest in the same manner as those of the Spotted Sandpiper, that is, with the smaller ends together, which is also the case with those of the Tell-tale Godwit, Wilson's Plover, and the Kildeer Plover. The young, which run about immediately after exclusion, grow rapidly, and in about a month are able to use their wings, after which, they and their parents gradually, and according to the temperature of the season, move southward.

In Massachusetts, and to the eastward of that state, this species is best known by the name of "Upland Plover," and in some other districts it is named the Field Plover. The drawing from which the plate was engraved was taken from individuals shot near Bayou Sara, in the State of Mississippi.

TOTANUS BARTRAMIUS, *Ch. Bonap.*, Synopsis of Birds of the United States, p. 262.

TRINGA BARTRAMIA, *Wils. Amer. Ornith.* vol. vii. p. 63. pl. 59. fig. 2.

BARTRAMIAN TATLER, *Nuttall*, Manual, vol. ii. p. 169.

TOTANUS BARTRAMIUS, *Richards. and Swains.* Fauna Bor. Amer. vol. ii. p. 391.

Adult Male. Plate CCCIII. Fig. 1.

Bill a little longer than the head, slender, straight, slightly deflected at the end. Upper mandible with the dorsal line straight, the ridge convex, the sides grooved beyond the middle, afterwards convex, the edges inflected, the tips a little deflected, and tapering to an obtuse

point. Nostrils sub-basal, lateral, linear, pervious, nearer the edge than the dorsal line. Lower mandible, with the angle very narrow and elongated, beyond it the outline slightly convex, the sides sloping outwards and concave until the middle, afterwards flattened, the edges sharp, the point very narrow.

Head rather small, convex above, compressed. Neck of moderate length, slender. Body rather slender. Feet long and slender; tibia bare for about half its length, scutellate before and behind; tarsus long, slender, having before and behind numerous scutella, the narrow lateral spaces with very small oblong scales. Toes slender, the first very short, the second much shorter than the fourth, the third and fourth connected at the base by a web; the scutella numerous; claws small, compressed, slightly arched, rather blunt.

Plumage soft, on the neck and lower parts, blended; on the upper rather distinct. Wings rather long, acute, narrow; primaries tapering, and rounded, the first longest, the second a little shorter, the rest rapidly graduated; secondaries obliquely rounded, the inner elongated and tapering. Tail of moderate length, much rounded, of twelve rather narrow feathers.

Bill yellowish-green, the tip dusky, the edges towards the base yellow. Iris dark hazel. Legs and tarsi light yellowish-grey, toes rather darker, claws brownish-black. Upper part of the head dark brown, with a median pale yellowish-brown line, the margins of the feathers also of that colour, which prevails along the sides of the head and the back of the neck, which are streaked with dusky; the eye surrounded with yellowish-white. Throat yellowish white, without spots; fore-part and sides of the neck, with a portion of the breast and sides of the body, cream-coloured, with dusky lines, which gradually become arrow-shaped on the breast, forming a double transverse band; the feathers on the sides barred; the rest of the lower parts yellowish-white, the lower tail-coverts rich cream-coloured. Axillar feathers and lower wing-coverts white, banded with brownish-black. On the upper parts the feathers are dark brown, glossed with green, with rich cream-coloured margins; the rump darker. On the margins of the scapulars, within the pale edge, is a series of dusky spots, which towards the end become continuous. Alula, primary coverts, and primary quills, blackish-brown, the inner webs crossed by white bands, until about an inch from the end, the shaft of the first quill white, those of the rest dusky.

Secondaries greyish-brown, their outer margins pale brown, with dusky spots; the inner darker. The two middle feathers of the tail are dark olive, tinged with grey, transversely barred with black, the last bar arrow-shaped, the margins light cream-colour: the next feather on each side lighter, and tinged with yellowish-red; the rest gradually lighter, the outer white, all barred with black.

Length to end of tail $12\frac{1}{4}$ inches, to end of wings $11\frac{1}{8}$, to end of claws $13\frac{1}{2}$; extent of wings 22; wing from flexure 7; tail $3\frac{3}{4}$; bare part of tibia $\frac{9}{10}$; tarsus $1\frac{1}{2}$, first toe $\frac{4}{12}$, its claw $1\frac{1}{2}$; middle-toe 1, its claw $\frac{2}{12}$; bill along the ridge $1\frac{2}{12}$; along the edge of lower mandible $1\frac{3}{12}$. Weight 6 oz.

Female. Plate CCCIII. Fig. 2.

The female is a little larger, and weighs 7 oz., but resembles the male in colour. The individual of which the weight is here given was very fat, but I have never met with any that weighed three-fourths of a pound, as described by WILSON!

Length to end of tail 13 inches, to end of claws 14, extent of wings $22\frac{3}{4}$.

In an adult bird of this species, the tongue measures seven-twelfths of an inch in length, and is sagittate at the base, with conical papillæ, of which the outermost is much larger, then contracted, being deeper than broad, and tapering to a very acute compressed point. Aperture of the glottis $\frac{2}{12}$ long, with numerous papillæ behind, the middle two largest. The œsophagus is $5\frac{1}{4}$ inches long, of uniform diameter, measuring about $\frac{3}{2}$ across, and passing along the right side of the neck, along with the trachea. Proventriculus oblong, $\frac{8}{12}$ in diameter, its glandules extremely numerous, oblong, half a twelfth in length. The stomach is a strong gizzard of an oblong form; an inch and a twelfth long, nine-twelfths in breadth, its lateral muscles of moderate thickness, the right $\frac{2}{12}$, the left $\frac{5}{12}$, the central tendons oblong, $\frac{5}{12}$ in diameter. The cuticular lining is tough, of moderate thickness, longitudinally rugous, the grinding plates scarcely thicker than the rest. The intestine is 18 inches long, its diameter generally $\frac{5}{12}$. The rectum $2\frac{1}{4}$ inches long; the cæca $2\frac{2}{12}$, very slender, their greatest diameter being only $\frac{1}{12}$; the cloaca globular, about $\frac{1}{2}$ inch in diameter. The stomach was filled with remains of grasshoppers, of a deep red colour, with which the

inner coat was tinged, together with the head of a *Libellula*. No gravel or other hard substances.

The trachea moderately extended is $3\frac{1}{2}$ inches long, its transverse diameter $\frac{2}{12}$, diminishing to $\frac{1}{12}$. The rings are unossified and extremely thin, 105 in number; the contractor or lateral muscles feeble; the inferior larynx simple, with a single pair of tracheali-bronchiales, and the usual sterno-tracheales; the bronchi of about 15 half-rings.

This individual presented a very remarkable accumulation of fat over the abdominal and pectoral muscles, and especially about the furcula.

TURNSTONE.

STREPSILAS INTERPRES, ILLIGER.

PLATE CCCIV. ADULT IN SUMMER AND WINTER.

THIS bird, which, in its full vernal dress, is one of the most beautiful of its family, is found along the southern coasts of the United States during winter, from North Carolina to the mouth of the Sabine River, in considerable numbers, although perhaps as many travel at that season into Texas and Mexico, where I observed it on its journey eastward, from the beginning of April to the end of May 1837. I procured many specimens in the course of my rambles along the shores of the Florida Keys, and in the neighbourhood of St Augustine, and have met with it in May and June, as well as in September and October, in almost every part of our maritime shores, from Maine to Maryland. On the coast of Labrador I looked for it in vain, although Dr RICHARDSON mentions their arrival at their breeding quarters on the shores of Hudson's Bay and the Arctic Sea up to the seventy-fifth parallel.

In spring the Turnstone is rarely met with in flocks exceeding five or six individuals, but often associates with other species, such as the Knot, the Red-backed Sandpiper, and the *Tringa subarquata*. Towards the end of autumn, however, they collect into large flocks, and so continue during the winter. I have never seen it on the margins of rivers or lakes, but always on the shores of the sea, although it prefers those of the extensive inlets so numerous on our coasts. At times it rambles to considerable distances from the beach, for I have found it on rocky islands thirty miles from the mainland; and on two occasions, whilst crossing the Atlantic, I saw several flocks near the Great Banks flying swiftly, and rather close to the water around the ships, after which they shot off toward the south-west, and in a few minutes were out of sight. It seems to be a hardy bird, for some of them remain in our Eastern Districts until severe frost prevails. Having seen some, in the beginning of June, and in superb plumage, on the high grounds of the Island of Grand Mannan, in the Bay of Fundy, I supposed that they bred there, although none of my party succeeded in discovering their nests. Indeed the young, as I

have been informed, are obtained there, and along the coast of Maine, in the latter part of July.

I have found this bird much more shy when in company with other species than when in flocks by itself, when it appears to suspect no danger from man. Many instances of this seeming inattention have occurred to me, among others the following:—When I was on the island of Galveston in Texas, my friend EDWARD HARRIS, my son, and some others of our party, had shot four deer, which the sailors had brought to our little camp near the shore. Feeling myself rather fatigued, I did not return to the bushes with the rest, who went in search of more venison for our numerous crew, but proposed, with the assistance of one of the sailors, to skin the deer. After each animal was stripped of its hide, and deprived of its head and feet, which were thrown away, the sailor and I took it to the water and washed it. To my surprise, I observed four Turnstones directly in our way to the water. They merely ran to a little distance out of our course, and on our returning, came back immediately to the same place; this they did four different times, and, after we were done, they remained busily engaged in searching for food. None of them was more than fifteen or twenty yards distant, and I was delighted to see the ingenuity with which they turned over the oyster-shells, clods of mud, and other small bodies left exposed by the retiring tide. Whenever the object was not too large, the bird bent its legs to half their length, placed its bill beneath it, and with a sudden quick jerk of the head pushed it off, when it quickly picked up the food which was thus exposed to view, and walked deliberately to the next shell to perform the same operation. In several instances, when the clusters of oyster-shells or clods of mud were too heavy to be removed in the ordinary way, they would use not only the bill and head, but also the breast, pushing the object with all their strength, and reminding me of the labour which I have undergone in turning over a large turtle. Among the sea-weeds that had been cast on the shore, they used only the bill, tossing the garbage from side to side, with a dexterity extremely pleasant to behold. In this manner, I saw these four Turnstones examine almost every part of the shore along a space of from thirty to forty yards; after which I drove them away, that our hunters might not kill them on their return.

On another occasion, when in company with Mr HARRIS, and on the same island I witnessed the ~~same~~ pleasing proceeding, several

Turnstones being engaged in searching for food in precisely the same manner. At other times, and especially when in the neighbourhood of St Augustine, in East Florida, I used to amuse myself with watching these birds on the racoon-oyster banks, using my glass for the purpose. I observed that they would search for such oysters as had been killed by the heat of the sun, and pick out their flesh precisely in the manner of our Common Oyster-catcher, *Hæmatopus palliatus*, while they would strike at such small bivalves as had thin shells, and break them, as I afterwards ascertained, by walking to the spot. While on the Florida coast, near Cape Sable, I shot one in the month of May, that had its stomach filled with those beautiful shells, which, on account of their resemblance to grains of rice, are commonly named rice-shells.

I have always looked upon the Turnstone, while at its avocations, as a species very nearly allied to the Oyster-catcher; and, although it certainly differs in some particulars, were I to place it in a position determined by its affinities, I should remove it at once from the *Tringa* family. Its mode of searching for food around pebbles and other objects, the comparative strength of its legs, its retiring disposition, and its loud whistling notes while on wing, will, I think, prove at some period that what I have ventured to advance may be in accordance with the only true system, by which I mean Nature's own system, could one be so fortunate as to understand it.

While this species remains in the United States, although its residence is protracted to many months, very few individuals are met with in as complete plumage as the one represented in my plate with the wings fully extended; for out of a vast number of specimens procured from the beginning of March to the end of May, or from August to May, I have scarcely found two to correspond precisely in their markings. For this reason, no doubt exists in my mind that this species, as well as the Knot and several others, loses its rich summer plumage soon after the breeding season, when the oldest become scarcely distinguishable from the young. In the spring months, however, I have observed that they gradually improve in beauty, and acquire full-coloured feathers in patches on the upper and lower surfaces of the body, in the same manner as the Knot, the Red-breasted Snipe, the Godwits, and several other species. According to Mr HEWITSON, the eggs are four in number, rather suddenly pointed towards the smaller end, generally an inch and four and a half eighths in length, an inch and one and a half

eighths in their greatest breadth, their ground colour pale yellowish-green, marked with irregular patches and streaks of brownish-red, and a few lines of black.

My drawing of the Turnstones represented in the plate was made at Philadelphia, in the end of May 1824; and the beautiful specimen exhibited in the act of flying, I procured near Camden, while in the agreeable company of my talented friend LE SUEUR, who, alas! is now no more.

I have not observed any remarkable difference in the plumage of the sexes at any season of the year. The males I have generally found to be somewhat larger than the females, which, as is well known, is not the case in the *Tringa* family.

My worthy friend, Dr BACHMAN, once had a bird of this species alive. It had recovered from a slight wound in the wing, when he presented it to a lady, a friend of his and mine, who fed it on boiled rice, and bread soaked in milk, of both of which it was very fond. It continued in a state of captivity upwards of a year, but was at last killed by accident. It had become perfectly gentle, would eat from the hand of its kind mistress, frequently bathed in a basin placed near it for the purpose, and never attempted to escape, although left quite at liberty to do so.

TRINGA INTERPRES, *Linn. Syst. Nat.* vol. i. p. 248.—*Lath. Ind. Orn.* vol. ii. p. 738.

TRINGA MORINELLA, *Linn. Syst. Nat.* vol. i. p. 249.

TURNSTONE, TRINGA INTERPRES, *Wils. Amer. Ornith.* vol. vii. p. 32. pl. 57. fig. 1.

STREPSILAS COLLARIS, *Temm. Man. d'Ornith.* part ii. p. 553.

STREPSILAS INTERPRES, *Ch. Bonap. Synopsis of Birds of the United States*, 299.

TURNSTONE OR SEA-DOTTEREL, *Nuttall, Manual*, vol. ii. p. 30.

Adult Male in Summer. Plate CCCIV. Fig. 1.

Bill a little shorter than the head, rather stout, compressed, tapering, straightish, being recurvate in a slight degree. Upper mandible with the dorsal line very slightly concave, the nasal groove extending to the middle, the sides beyond it sloping, the tip depressed and blunted. Nostrils sub-basal linear-oblong, pervious. Lower mandible with the angle short, the dorsal line ascending and slightly convex, the sides convex, the edges sharp, the tip depressed and blunted.

Head small, ovate; eyes of moderate size. Neck of ordinary length.

Body rather full. Feet of moderate length, stout; tibia bare at the lower part, and covered with reticulated scales; tarsus roundish, with numerous broad anterior scutella; toes four, the first very small, and placed higher than the rest; the anterior toes free to the base, distinctly margined on both edges, the inner toe a little shorter than the outer, the third or middle toe considerably longer; claws rather small, arcuate, compressed, blunted.

Plumage full, soft, rather dense, and glossy; feathers on the hind neck blended, and rather narrow, on the other parts ovate. Wings long, pointed, of moderate breadth: primaries with strong shafts, rather broad, narrowed towards the end, the first longest, the rest rapidly decreasing; outer secondaries incurved, obliquely rounded; inner elongated, one of them extending to half an inch of the tip of the longest primary, when the wing is closed. Tail rather short, slightly rounded, of twelve moderately broad, rounded feathers.

Bill black. Iris hazel. Feet deep orange red, claws black. Plumage variegated with white, black, brown, and red. Upper parts of the head and nape streaked with black and reddish-white; a broad band of white crosses the forehead, passes over the eyes, and down the sides of the neck, the hind-part of which is reddish-white faintly mottled with dusky; a frontal band of black curves downwards before the eye, enclosing a white patch on the lore, and meeting another black band glossed with blue, which proceeds down the neck, from the base of the lower mandible, enlarging behind the ear, covering the whole anterior part of the neck, and passing along the shoulder over the scapulars; the throat, hind part of the back, the outer scapulars, upper tail-coverts, and the under parts of the body and wings, white. Anterior smaller wing-coverts dusky, the rest bright chestnut or brownish-orange, as are the outer webs of the inner tertiaries; alula, primary coverts, outer secondary coverts and quills blackish-brown, their inner webs becoming white towards the base; a broad band of white extends across the wing, including the bases of the primary quills, excepting the outer four, and the ends of the secondary coverts; the shafts of the primaries white. Tail white, with a broad blackish-brown bar towards the end, broader in the middle, the tips white. A dusky band crosses the rump.

Length to end of tail 9 inches, to end of wings $8\frac{3}{8}$, to end of claws 10; extent of wings $18\frac{3}{8}$; along the ridge $9\frac{1}{2}$, along the edge of lower mandible $\frac{11}{12}$; wing from flexure $6\frac{1}{12}$; tail $2\frac{4}{12}$; tarsus $\frac{1}{12}$; hind toe

$\frac{2\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{2}{1\frac{1}{2}}$; middle toe $\frac{10}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$. Average weight of three specimens $3\frac{2}{3}$ oz.

Male in winter. Plate CCCIV. Fig. 2.

In winter, the throat, lower parts, middle of the back, upper tail-coverts, and band across the wing, are white, as in summer; the tail, and quills, are also similarly coloured, but the inner secondaries are destitute of red, of which there are no traces on the upper parts, they being of a dark greyish-brown colour, the feathers tipped or margined with paler; the outer edges of the outer scapulars, and some of the smaller wing-coverts, white; on the sides and fore part of the neck the feathers blackish, with white shafts.

Individuals vary much according to age and sex, as well in size as in colour, scarcely two in summer plumage being found exactly similar.

In a male bird, the tongue is $\frac{6\frac{1}{2}}{1\frac{1}{2}}$ of an inch in length, sagittate and papillate at the base, concave above, narrow, and tapering to the point. The œsophagus is $4\frac{1}{4}$ inches long, inclines to the right, is rather narrow, and uniform, its diameter $\frac{4\frac{1}{2}}{1\frac{1}{2}}$. Proventriculus oblong, $\frac{8}{1\frac{1}{2}}$ in length, $\frac{5}{1\frac{1}{2}}$ in breadth, its glandules cylindrical. Stomach oblong, $\frac{1\frac{1}{2}}{1\frac{1}{2}}$ in length, its cuticular lining very tough and hard, with broad longitudinal rugæ, its lateral muscles moderately large. Intestine $17\frac{1}{2}$ inches long, slender, varying in diameter from $\frac{2\frac{1}{2}}{1\frac{1}{2}}$ to $\frac{1\frac{1}{2}}{1\frac{1}{2}}$; rectum $1\frac{1}{2}$; cæca $1\frac{8}{1\frac{1}{2}}$, $\frac{1\frac{1}{2}}{1\frac{1}{2}}$ in diameter at the commencement, $\frac{2}{1\frac{1}{2}}$ toward the end; cloaca globular.

The trachea is $3\frac{1}{4}$ inches long, $2\frac{1}{1\frac{1}{2}}$ in breadth, contracts to $\frac{1}{1\frac{1}{2}}$; its lateral muscles very thin; sterno-tracheal slender, a pair of tracheo-bronchial muscles. The rings are very thin and unossified, 104 in number. Bronchi of moderate length, with about 15 half rings.

In a female, the œsophagus is $4\frac{1}{4}$ inches long, the intestine 18. In both individuals, the stomach contained fragments of shells, and claws of very small crabs: which were also found in the intestine, although there more comminuted.

PURPLE GALLINULE.

GALLINULA MARTINICA, LATH.

PLATE CCCV. MALE.

READER, although you may think it strange, I candidly assure you that I have experienced a thousand times more pleasure while looking at the Purple Gallinule flirting its tail while gaily moving over the broad leaves of the water-lily, than I have ever done while silently sitting in the corner of a crowded apartment, gazing on the flutterings of gaudy fans and the wavings of flowing plumes. Would that I were once more extended on some green grassy couch, in my native Louisiana, or that I lay concealed under some beautiful tree, overhanging the dark bayou, on whose waters the bird of beauty is wont to display its graceful movements, and the rich hues of its glossy plumage! Methinks I now see the charming creature gliding sylph-like over the leaves that cover the lake, with the aid of her lengthened toes, so admirably adapted for the purpose, and seeking the mate, who, devotedly attached as he is, has absented himself, perhaps in search of some secluded spot in which to place their nest. Now he comes, gracefully dividing the waters of the tranquil pool, his frontal crest glowing with the brightest azure. Look at his wings, how elegantly they are spread and obliquely raised; see how his expanded tail strikes the water; and mark the movements of his head, which is alternately thrown backward and forward, as if he were congratulating his mate on their happy meeting. Now both birds walk along clinging to the stems and blades, their voices clearly disclosing their mutual feelings of delight, and they retire to some concealed place on the nearest shore, where we lose sight of them for a time.

Now, side by side, they look for the most secure spot among the tall rushes that border the lake, and there they will soon form a nest, removed alike from danger to be dreaded from the inhabitants of the land as of the water. On the thick mass of withered leaves are deposited the precious eggs, from which in time emerge the dusky younglings, that presently betake themselves to the water, over which

they wander, guided by their affectionate parent, until it becomes expedient for the party to disperse.

The Purple Gallinule is a constant resident in the United States, although peculiar to their southern districts, where I have met with it at all seasons. It is in the Floridas, the lower parts of Alabama, and among the broad marshes bordering the Gulf of Mexico, in Lower Louisiana, that I have observed its habits. Beyond the Carolinas eastward, it is only met with as an accidental straggler. It never, I believe, ascends the Mississippi beyond Memphis, where indeed it is but rarely seen; but between Natchez and the mouths of the great river, it is abundant on all the retired bayous and small lakes. The southern portions of Georgia are also furnished with it; but in South Carolina it is rare. Proceeding southwestward along the Gulf of Mexico, I have found it as far as Texas, where it breeds, as well as in Louisiana, where I observed it coming from the south in May 1837.

Having studied the habits of this bird under every advantage in Louisiana, and especially in the neighbourhood of New Orleans, and the mouths of the Mississippi, I will now, good Reader, place before you the results of my observation. In the summer months, the Purple Gallinules remove with their broods to the prairies or large savannahs bordering the bayous or lakes on which they have bred, and remain in those places, which are generally covered with thick and tall grass, until the beginning of September, when the vegetation having been dried up by the intense heat and drought, neither food nor sufficient concealment can be obtained. The young birds usually abandon these plains first, and while the colour of their plumage is still green, instead of purplish-blue, which tint, however, is assumed before the return of spring. During all this while, its notes are as frequently heard as during the breeding season. They resemble the delicate whistling sounds of the Blue-winged Teal during its residence with us. At this season also its flesh is best, although it never equals that of the Fresh-water Marsh-hen, *Rallus elegans*, or of the Sora Rail, *Rallus carolinus*.

On the approach of winter, all the Purple Gallinules leave the savannahs, and betake themselves to the immediate vicinity of ponds, bayous, or rivers, where through experience they become shy, vigilant, and cunning. They seldom remove from one place to another, or travel at all, unless by night, although in sequestered parts they feed both on land and on the water by day.

The Purple Gallinule breeds at a remarkably early period of the year. I have found young birds in their jetty down clothing in February, and they have been observed in the same month by the keepers of the lighthouse at the south-west Pass of the Mississippi, at Key West, and in other places. The parent birds are sometimes so very intent on saving their young, as to suffer themselves to be caught. At this period their calls are almost incessantly heard during the whole night, and are elicited during the day by any musical or remarkable noise. The nest is generally placed among a kind of rushes that are green at all seasons, round, very pithy, rarely more than five feet high, and grow more along the margins of ponds than in the water itself. The birds gather many of them, and fasten them at the height of two or three feet, and there the nest is placed. It is composed of the most delicate rushes, whether green or withered, and is quite as substantial as that of the Common Gallinule, flattish, having an internal diameter of eight or ten inches, while the entire breadth is about fifteen. The eggs, which are from five to seven, rarely more, are very similar to those of the Common Gallinule, being of a light greyish-yellow, spotted with blackish-brown. The young are at first quite black, and covered with down. They are fully fledged by the first of June, when, as I have said, they and their parents remove to the wet savannahs in the neighbourhood.

The jerking motions of the tail of this bird, whenever it is disturbed, or attracted by any remarkable object, are very quick, and so often repeated as to have a curious appearance. It runs with great speed, and dives with equal address, often moving off under water with nothing but the bill above. The lightness and ease with which it walks on the floating plants are surprising, for in proceeding they scarcely produce any perceptible disturbance of the water. When swimming in full security, they move buoyantly and gracefully, throwing the head forward at every propelling motion of the feet. The flight of this species is less swift than that of the Common Gallinule, or of the Rails, unless when it is travelling far, when it flies high, and advances in a direct course by continued flappings; but when it is in its breeding or feeding grounds, its flight is slow and short, seldom exceeding thirty or forty yards, and with the legs hanging down; and it alights among the herbage with its wings spread upwards in the manner of the Rails. It often alights

on the low branches of trees and bushes growing over the water, and walks lightly and gracefully over them.

It is seldom that more than one Purple Gallinule is shot at a time, unless in the beginning of the love season, when the male and female are apt to swim or walk close together. The male at this period is said to be able to inflate the frontal plate while strutting, but I have never been fortunate enough to observe this.

The Purple Gallinule not unfrequently alights on ships at sea. While at the Island of Galveston, on the 26th of April, I was offered several live individuals by the officers of the Boston frigate, which they had caught on board. My friend JOHN BACHMAN once received three specimens that had been caught three hundred miles from land, one of them having come through the cabin window. He also obtained from the Hon. Mr POINSET a fine specimen caught on board, on the Santee River, in South Carolina, in May. It is easily kept alive if fed with bread soaked in milk; and on this food I have known several that remained in good health for years. In Louisiana, where it is called *Rale Bleu*, its flesh is not held in much estimation, but is used by the negroes for making gombo.

My friend BACHMAN considers this species as rather scarce in South Carolina and Georgia, but states that it breeds there, as he has occasionally observed pairs on the head waters or preserves of rice plantations during summer, but never met with any in winter. The extreme limit of its range eastward is the neighbourhood of Boston, where a few individuals have been procured.

I think I may safely tell you that the figure of the Purple Gallinule exhibited in the plate, is the first ever published from a drawing taken from Nature!

FULICA MARTINICA, *Linn. Syst. Nat.* vol. i. p. 259.

GALLINULA MARTINICA, *Lath. Ind. Ornith.* p. 769.—*Ch. Bonaparte, Synops.* p. 336.

GALLINULA PORPHYRIO, *Wils. Amer. Ornith.* vol. ix. p. 67. pl. 73. fig. 2.

PURPLE GALLINULE, *Nuttall, Manual,* vol. ii. p. 221.

Adult Male in Spring. Plate CCCV.

Bill as long as the head, nearly straight, stout, deep, compressed, tapering. Upper mandible with a soft ovate plate at the base extending over a great part of the head, the dorsal line beyond this plate straight-

ish and slightly declinate as far as the middle, then arcuato-declinate, the ridge gradually narrowed until over the nostrils, afterwards considerably widened, the sides nearly erect, the edges sharp, the notch obsolete. Nasal groove extending nearly to the middle of the bill, broad; nostrils sub-medial, lateral, oblong, direct, pervious. Lower mandible with the angle rather long and narrow, the sides nearly erect and slightly concave, the dorsal line beyond the angle ascending, straight, the edges sharp and direct, the tip narrowed, rather sharp.

Head small, oblong, compressed. Eyes of moderate size. Body much compressed. Feet large, long; tibia bare a considerable way above the joint, and reticulated; tarsus long, stout, compressed, anteriorly covered with very broad scutella, laterally and posteriorly with two series of broad scutella, between which on the posterior edge is a series of very minute scales; hind toe comparatively small, middle toe longest, and much longer than the tarsus, fourth longer than second; toes free, slender, compressed, with numerous broad scutella above, obliquely flattened beneath, marginate; claws very long, slender, slightly arched, much compressed, tapering to a very acute point.

Plumage blended, firm, glossy, the feathers ovato-oblong, broad at the end. Wings rather long, broad, rather concave; ovula large: primaries incurvate, broad, third longest, second a twelfth of an inch shorter, fourth two-twelfths shorter than second, which exceeds the first by eleven-twelfths; secondaries broad and grounded. Tail short, much rounded, of twelve rather weak, rounded feathers, which but slightly exceed the lower coverts.

Frontal plate ultramarine blue; bill bright carmine, tipped with bright yellow. Iris bright carmine; margins of eyelids white. Tarsi, toes, and claws bright yellow. Head, fore part of neck, and breast rich purplish-blue; abdomen and feathers of legs dusky; sides green; lower wing-coverts light green; sides of the neck light purplish-blue, shaded into verdigris and brownish-green above; the fore part of the back verdigris-green, shaded with olivaceous; the hind part and upper tail-coverts olivaceous; the coverts and outer webs of the quills greenish-blue, the inner webs clove-brown; tail-feathers olivaceous.

Length to end of tail $13\frac{1}{2}$ inches, to end of wings $13\frac{1}{2}$, to end of claws 18; extent of wings $21\frac{1}{2}$; bill along the ridge, including frontal plate 2; edge of lower mandible $1\frac{1}{4}$; tarsus $2\frac{1}{4}$; hind toe 1, its claw $\frac{1}{2}$; middle toe $2\frac{4}{8}$, its claw $\frac{1}{2}$.

Weight of one individual $7\frac{1}{2}$ oz., of another $8\frac{1}{2}$, both males ; of a fourth 7 oz. ; of a fifth $5\frac{1}{2}$; and of a sixth only $4\frac{1}{2}$.

The female is somewhat smaller, but similar to the male, the frontal plate is less extended, and the tints of the plumage a little less vivid.

The young are at first covered with black down. When fledged they are olivaceous on the upper parts, dull purple beneath ; the bill dull green. After the first moult, the bill is light carmine, greenish-yellow at the end, the head dark purple ; the plumage coloured as above described, but less brilliant, the tarsi and toes greenish-yellow.

In a male bird, the tongue is 10 twelfths of an inch long, sagittate at the base, with conical papillæ, of which the outer are larger, slightly concave above, horny towards the end, which is thin, rather obtuse, and lacerated. On the middle line of the roof of the mouth anteriorly is a row of large blunt papillæ, behind which are two rows ; aperture of posterior nares linear. Œsophagus 7 inches long, of moderate width, its greatest diameter, at the lower part of the neck, where it is a little dilated, 8 twelfths. Proventriculus $1\frac{2}{2}$ long ; its glandules $1\frac{1}{2}$ long. Stomach a large and powerful gizzard, broadly elliptical, $1\frac{1}{2}$ inch long, $1\frac{5}{2}$ broad, its lateral muscles large, the tendons covering nearly their whole surface, the left muscles $\frac{1}{4}$ inch thick, the right $\frac{5}{2}$, the cuticular lining moderately rugous. Intestine 21 inches long, from $\frac{5}{2}$ to $\frac{3}{2}$ in diameter. Rectum $2\frac{3}{4}$ inches ; cæca 2, their diameter $\frac{3}{2}$ towards the end.

Trachea, moderately extended, $5\frac{1}{2}$ inches long, its greatest breadth $3\frac{1}{2}$, its least $1\frac{1}{2}$. Its rings 130, very slender, unossified, collapsed, and owing to their narrowness in the middle line before and behind, seeming as if broken there ; bronchi with 15 half-rings. The contractor muscles moderate, the sterno-tracheal slender ; a pair of muscles on the lower larynx, from the lower rings of the trachea to the membrane over the first bronchial ring.

In the mouth was a small frog, in the pharynx two, in the œsophagus two more, a large piece of root, numerous fragments of insects, and a leach, the frogs $2\frac{1}{2}$ inches long. In the gizzard were seeds, and fragments of white fleshy roots.

GREAT NORTHERN DIVER OR LOON.

 *COLYMBUS GLACIALIS*, LINN.

PLATE CCCVI. ADULT MALE AND YOUNG MALE.

THE LOON, as this interesting species of Diver is generally called in the United States, is a strong, active, and vigilant bird. When it has acquired its perfect plumage, which is not altered in colour at any successive moult, it is really a beautiful creature; and the student of Nature who has opportunities of observing its habits, cannot fail to derive much pleasure from watching it as it pursues its avocations. View it as it buoyantly swims over the heaving billows of the Atlantic, or as it glides along deeply immersed, when apprehensive of danger, on the placid lake, on the grassy islet of which its nest is placed; calculate, if you can, the speed of its flight, as it shoots across the sky; mark the many plunges it performs in quest of its finny food, or in eluding its enemies; list to the loud and plaintive notes which it issues, either to announce its safety to its mate, or to invite some traveller of its race to alight, and find repose and food; follow the anxious and careful mother-bird, as she leads about her precious charge; and you will not count your labour lost, for you will have watched the ways of one of the wondrous creations of unlimited Power and unerring Wisdom. You will find pleasure too in admiring the glossy tints of its head and neck, and the singular regularity of the unnumbered spots by which its dusky back and wings are checkered.

I have met with the Great Diver, in winter, on all the water-courses of the United States, whence, however, it departs when the cold becomes extreme, and the surface is converted into an impenetrable sheet of ice. I have seen it also along the whole of our Atlantic coast, from Maine to the extremity of Florida, and from thence to the mouths of the Mississippi, and the shores of Texas, about Galveston Island, where some individuals in the plumage characteristic of the second moult, were observed in the course of my late expedition, in the month of April 1837. Indeed, as is the case with most other species of migrating birds, the young remove farther south than the old indi-

viduals, which are better able to withstand the cold and tempests of the wintry season.

The migratory movements of this bird seem to be differently managed in the spring and autumn. In the latter case, a great number of young Loons are seen to alight on the head waters of our great streams, on which, without much exertion, being aided by the current, they float along, diving at intervals in pursuit of the numerous fishes, as they proceed toward milder climes. The few old birds which, at a later date, appear on the same water-courses, frequently take to wing, and shorten their way by flying at a considerable elevation directly across the great bends or peninsulas. These modes of travelling are also adopted by those which advance along the Atlantic coasts, where, indeed, the birds have the double advantage of meeting with food and obtaining repose, on the rivers and on the sea. I think, however, that this maritime course is followed only by such of the Loons as have bred in the more immediate vicinity of the coast. But whether you are in the interior, or on the coast, it is seldom that you see at a time more than one Loon travelling at this season; whereas, in spring, they proceed in pairs, the male taking the lead, as is easily ascertained by observing that the bird in the rear is the smallest.

Although its wings are rather small, its flight is strong and rapid, so that it is enabled to traverse a large extent of country on wing. When travelling, or even when only raised from its nest, it moves through the air with all the swiftness of the other species of its tribe, generally passing directly from one point to another, however distant it may be. Its long transits are at times performed at so great an elevation, that its form can scarcely be distinguished, and yet, even then, in calm weather, the noise of its wings striking the air comes distinctly on your ear. I have seen them thus, on their way towards Labrador, passing over the head waters of the Bay of Fundy, to cross the Gulf of St Lawrence. Whenever it chances to alight on the water, in the course of its long journeys, it almost immediately dives, as if to taste the water, and judge whether it contains food suited to its appetite. On emerging, and after having somewhat raised the fore part of its body, shaken its wings; and by a strong shiver rearranged its plumage, it emits its loud echoing call-note, to induce, perchance, some traveller of its tribe to alight for awhile, that they may communicate to each other their experience of the past, or their hopes of the future. There

is an absurd notion, entertained by persons unacquainted with the nature of this bird, that its plaintive cries are a sure indication of violent storms. Sailors, in particular, are ever apt to consider these call-notes as portentous. In the course of a voyage from Charleston to the Florida Keys, in May 1832, I several times saw and heard Loons travelling eastward; but, notwithstanding all the dire forebodings of the crew, who believed that a hurricane was at hand, our passage was exceedingly pleasant. Although I have heard the notes of the Loon in rainy and blowy weather, yet I never heard them so frequent or so loud, both by day and by night, as on the Ohio, during that delightful and peculiarly American autumnal season called the Indian Summer; when, although not so much as a cloud was seen for weeks, I have frequently observed the passing birds checking their flight, or heard the murmuring plash which they produced on alighting upon the placid water, to rest and refresh themselves.

Another strange notion, not deserving of credit, although you will find it gravely announced in books, is that, when the Loon is breeding, it will dart down suddenly from the air, and alight securely in its nest. I have never witnessed such a procedure, although I have closely watched, from under cover, at least twenty pairs. On such occasions I have seen the incubating bird pass over the dear spot several times in succession, gradually rounding and descending so as at last to alight obliquely on the water, which it always did at a considerable distance from the nest, and did not approach it until after glancing around and listening attentively, as if to assure itself that it was not watched, when it would swim to the shore, and resume its office.

The Loon breeds in various parts of the United States, from Maryland to Maine. I have ascertained that it nestles in the former of these States, on the Susquehannah river, as well as in the districts between Kentucky and Canada, and on our great lakes. Dr RICHARDSON states that it is found breeding as far north as the 70th degree of latitude. The situation and form of the nest differ according to circumstances. Some of those which breed in the State of Maine, place it on the hillocks of weeds and mud prepared by the musk-rat, on the edges of the lakes, or at some distance from them among the rushes. Other nests, found on the head-waters of the Wabash River, were situated on the mud, amid the rank weeds, more than ten yards from the water. Authors have said that only one pair breed on a lake; but I have found

three pairs, with their nests, on a pond not exceeding a quarter of a mile in length, in the State of Maine. One that I saw after the young had left it, on Cayuga Lake, in 1824, was almost afloat, and rudely attached to the rushes, more than forty yards from the land, though its base was laid on the bottom, the water being eight or nine inches deep. Others examined in Labrador were placed on dry land, several yards from the water, and raised to the height of nearly a foot above the decayed moss on which they were laid. But, in cases when the nest was found at any distance from the water, we discovered a well-beaten path leading to it, and very much resembling those made by the Beaver, to which the hunters give the name of "crawls." The nest, wherever placed, is bulky, and formed of the vegetable substances found in the immediate vicinity, such as fresh or withered grasses and herbaceous plants. The internal part, or the true nest, which is rarely less than a foot, and is sometimes fifteen inches, in diameter, is raised upon the external or inferior mass, to the height of seven or eight inches. Such was one found on the 5th July 1835, in Labrador, and which was placed within three yards of the edge of a considerable pond of limpid water, supposed to have been produced by the melting of the snow, and upwards of a mile distant from the sea. Of the many nests which I have examined, I have found more containing three than two eggs, and I am confident that the former number is that which more frequently occurs, although many European, and some American writers, who probably never saw a nest of this bird, allege the contrary. The eggs average three inches and three quarters in length, by two inches and a quarter in their greatest breadth, and thus are considerably elongated, being particularly narrowed from the bulge to the smaller end, which is rather pointed. They are of a dull greenish-ochry tint, rather indistinctly marked with spots of dark umber, which are more numerous toward the larger extremity. The weight of two of these eggs, containing young nearly ready to emerge, was ten ounces and a half. In Maine the Loon lays fully a month earlier than in Labrador, and about the same period as on the Wabash.

On approaching the female while sitting on her eggs, I assured myself that she incubates with her body laid flat upon them, in the same way as the Domestic Duck, and that, on perceiving the intruder, she squats close, and so remains until he is almost over her, when she springs up with great force, and makes at once for the water, in a

scrambling and sliding manner, pushing herself along the ground. On gaining the water, she dives at once, emerges at a great distance, and very rarely suffers herself to be approached within gunshot. Sometimes they swim so deeply immersed as scarcely to be perceptible, and keep as much as possible among the rushes and other water plants. When the eggs are on the eve of being hatched, the mother, when disturbed, often cries loudly and dismally for some time, but seldom flies off. At other times, when I found the eggs to have been recently laid, the bird, on reaching the water, and diving, swam lightly, flapping its wings, drank once or twice, and moved about at a respectful distance. On such occasions, should you persist in watching it, it rises on wing and flies off. Should you not mark the spot in which the nest is, but leave it to go in pursuit of the bird, you may search for hours before finding it, for the path leading from the water to it is generally covered over by the herbage. Once while approaching a spot in which I knew a Loon to be engaged in forming her nest, I was disappointed at not finding her at work: her keen sense of hearing had apprised her of my purpose, and cunningly must she have slipped away, for, on finding her absent, although I had not heard any noise, I happened to look toward the water, and there she was, gliding off in the quiet manner usual on such occasions.

The young of the Loon are covered at birth with a kind of black stiff down, and in a day or two after are led to the water by their mother. They swim and dive extremely well even at this early stage of their existence, and after being fed by regurgitation for about a fortnight, receive portions of fish, aquatic insects, and small reptiles, until they are able to maintain themselves. During this period, grey feathers appear among the down of the back and belly, and the black quill-feathers of the wings and tail gradually elongate. They are generally very fat, and so clumsy as to be easily caught on land, if their retreat to the water be cut off. But should you miss your opportunity, and the birds succeed in gaining the liquid element, into which they drop like so many Terrapins, you will be astonished to see them as it were run over the water with extreme celerity, leaving behind them a distinct furrow. This power of traversing the surface of the water is possessed not only by the young and old of this species, but by all other kinds of swimmers, including even Gallinules and Coots. When

the young are well able to fly, the mother entices them to remove from the pond or lake on which they have been bred, and leads them on wing to the nearest part of the sea, after which she leaves them to shift for themselves. Now and then, after this period, the end of August or beginning of September, I have still seen the young of a brood, two or three in number, continuing together until they were induced to travel southward, when they generally set out singly.

Having given you a figure of a young bird, taken in October 1819 from a specimen obtained on the Ohio, I will not here trouble you with its description, but merely state that the young undergo their first moult in December, when they are seen singularly patched with portions of new plumage beautifully speckled with white, on a bed of almost uniform ash-brown. I was told, while in the State of Maine, that if the young were caught soon after being hatched, and before they had been in the water, they would, if thrown into it, immediately follow a paddled canoe anywhere ; but, as I have not myself made the experiment, I cannot speak of this as a fact.

Although it has been generally asserted that Loons cannot walk or run in an efficient manner, I feel assured that on emergency the case is very different. An instance which occurred to my youngest son, JOHN WOODHOUSE, who accompanied me to Labrador, may here be related. One day, when he was in pursuit of some King Ducks, a Loon chanced to fly immediately over him within-shooting distance of his enormous double-barrelled gun. The moment was propitious, and on firing he was glad to see the bird fall broken-winged on the bare granitic rocks. As if perfectly aware of its danger, it immediately rose erect on its feet, and inclining its body slightly forward, ran off, stumbled, rose again, and getting along in this manner actually reached the water before my son, who is by no means slow of foot. The space traversed was fully an hundred yards, and the water to an equal distance was not more than ankle-deep. The bird and its pursuer ran swiftly through the water, and just as both reached a sudden break about four feet in depth, the Loon, which had been wounded elsewhere than in the wing, expired and floated at the disposal of its enemy, who brought it on board the Ripley ; when I entered this anecdote in my journal.

These birds are so very strong and hardy that some of the old ones remain in Maine and Massachusetts until all the fresh waters are

frozen, first leaving the quiet lakes and ponds, then the slow streams, and lastly the turbulent pools below waterfalls, which latter they do not quit until they are overhung by icicles and deserted of fish. On the other hand, this species returns northward at a later period than most others that breed in high latitudes. I have witnessed the arrival of some on the coast of Labrador, after they had crossed the Gulf of St Lawrence, as late as the 20th of June, after which they had scarcely four months to seek out a breeding place, lay their eggs, hatch and rear their young, and with them remove southward, before the rigour of winter commenced.

The Great Northern Diver is a heavy-bodied bird, and generally swims rather deep in the water, more especially if apprehensive of immediate danger, when scarcely more than two inches in height of its back can be seen above the surface. As its body is more flattened than that of the Cormorant, this circumstance might seem to favour the action in question; but other species less depressed exhibit the same peculiarity; and I have thought that in all of these the internal structure alone can account for this peculiar faculty.

With the exception of that most expert of all divers, the Anhinga, and the Great Auk, the Loon is perhaps the most accomplished. Whether it be fishing in deep water amid rolling billows, or engaged in eluding its foes, it disappears beneath the surface so suddenly, remains so long in the water, and rises at so extraordinary a distance, often in a direction quite the reverse of that supposed to be followed by it, that your eyes become wearied in searching for it, and you renounce the wish of procuring it out of sheer vexation. At least, this has very frequently happened to me; nay, I have at times abandoned the chase when the bird was so severely wounded as to be obliged to dive immediately beside my boat, and had it not died of exhaustion and floated near enough to be seized by me, I felt as if I could not have pulled my oars any longer, and was willing to admit that I was outdone by a Loon.

In Labrador, where these birds were abundant, my son JOHN one day shot at one on wing, which fell upon the water to appearance quite dead, and remained on its back motionless until we had leisurely rowed to it, when a sailor put out his hand to take it up. The Loon, however, to our surprise, suddenly sprung up, and dived, and while we stood amazed, watching its appearance, we saw it come up at the dis-

tance of about an hundred yards, shake its head, and disgorge a quantity of fish mixed with blood; on which it dived again, and seemed lost to us. We rowed however to the spot in all haste, and the moment it rose, sent another shot after it, which terminated its career. On examining it afterwards, we found it quite riddled by the heavy shot.

If ever so slightly wounded, the Loon prefers diving to flying off, and all your endeavours to kill it are almost sure to prove unavailing. You may shoot at it under such circumstances, but you will lose both your time and your ammunition. Its keenness of sight defies the best percussion-locked gun, for it is generally deep in the water before the shot reaches the spot where it has been. When fatigued with diving in the ordinary manner, it will sink backwards, like a Grebe or a Frog, make for some concealed spot among the rushes, and there lie until your eyes ache with searching, and your stomach admonishes you of the propriety of retiring.

Loons are now and then caught in fishermen's nets, and are soon drowned. I have also caught them with hooks fastened to lines laid across the Ohio, but on no such occasion have I taken the bird alive. A method of shooting these birds, which I have often practised, and which was several times successfully employed by our Labrador party, may here be related. On seeing a Loon on the water, at whatever distance, the sportsman immediately places himself under the nearest cover on the shore, and remains there as carefully concealed as possible. A few minutes are allowed to pass, to give the wary and sharp-sighted bird all due confidence; during which time the gun, charged with large shot, is laid in a convenient position. The gunner then takes his cap or pocket-handkerchief, which if brightly coloured is so much the better, and raising it in one hand, waves it three or four times, and then suddenly conceals it. The bird commonly detects the signal at once, and, probably imagining the object thus exhibited to be one of its own species, gradually advances, emitting its love-notes, which resemble a coarse laugh, as it proceeds. The sportsman imitates these notes, making them loud and yet somewhat mellow, waving his cap or kerchief at the same time, and this he continues to do at intervals. The Loon, in order to arrive more quickly, dives, perhaps rises within fifty yards of him, and calling less loudly, advances with considerable caution. He shews the signal less frequently, imitates the notes of

the bird more faintly, and carefully keeps himself concealed, until the Loon, having approached within twenty or even ten paces, dives and on emerging raises itself up to shake its wings, when off goes the shot, and the deluded bird floats dead on the water. Many species of Ducks are procured in nearly the same manner. The male Turkey, in the gobbling season, and the Stag in autumn, may also be drawn within shot by the same means. I once "tolled" two Loons with my hat from a distance of nearly half a mile, and although they were at one time so near to me that I could clearly perceive the colour of their eyes, I had no sure opportunity of firing at them, as it was in the pairing season, and they never once dived, or raised their wings to flap them, so that, knowing the extreme agility with which they disappear when they have seen a gun snap, I judged it useless to shoot. Until my visit to Labrador I had supposed, agreeably to the common belief, that the Loons always repose at night on the water, which, however, I have since assured myself they rarely if ever do.

Colonel MONTAGU, than whom none has written more correctly on the habits of the birds of Great Britain, having procured a wounded Loon, placed it in a pond, and observed the manner in which it made its way under the surface of the water. "In swimming and diving," he remarks, "only the legs are used and not the wings, as in the Guillemot and Auk tribes, and by their position so far behind, and their little deviation from the line of the body, the bird is enabled to propel itself in the water with great velocity, in a straight line, as well as turn with astonishing quickness." This I have no doubt was the case with the individual observed; but that this is not the usual mode of proceeding of the species is equally true. Having myself seen Loons pass and repass under boats, at the distance of several feet from the surface, and propel themselves both with their feet, and their half-extended wings, I am inclined to believe that when not wounded, and when pursuing their prey, they usually employ all the limbs.

My friend THOMAS NUTTALL, who kept one for some time, gives the following account of its manners while in his possession. "A young bird of this kind which I obtained in the Salt Marsh at Chelsea Beach, and transferred to a fish-pond, made a good deal of plaint, and would sometimes wander out of his more natural element, and hide and bask in the grass. On these occasions he lay very still until nearly approached, and then slid into the pond and uttered his usual plaint.

When out at a distance he made the same cautious efforts to hide, and would commonly defend himself in great anger, by darting at the intruder, and striking powerfully with his dagger-like bill. This bird, with a pink-coloured iris-like albinos, appeared to suffer from the glare of broad day-light, and was inclined to hide from its effects, but became very active towards the dusk of the evening. The pupil of the eye in this individual, like that of nocturnal animals, appeared indeed dilatable; and the one in question often put down his head and eyes into the water to observe the situation of his prey. This bird was a most expert and indefatigable diver, and remained down sometimes for several minutes, often swimming under water, and as it were flying with the velocity of an arrow in the air. Though at length inclining to become docile, and shewing no alarm when visited, it constantly betrayed its wandering habits, and every night was found to have waddled to some hiding place, where it seemed to prefer hunger to the loss of liberty, and never could be restrained from exercising its instinct to move onwards to some secure or more suitable asylum."

The same valued friend has corroborated the result of my observations respecting the number of eggs usually laid by this species, by stating as follows: "About the 11th of June, through the kindness of Dr J. W. HARRIS, I received three eggs, which had been taken from the nest of a Loon, made in a hummock, or elevated grassy hillock, at Sebago Pond, in New Hampshire."

The range of this species is immense. It occurs on the waters that fall into the Pacific Ocean, and has been observed on the Columbia River. In the Fur Countries it is plentiful; and, as I have already stated, it breeds in many parts of the United States. It is found equally in Europe, and the northern parts of Asia. In all these countries it moves southward on the approach of winter, and returns when the mild weather commences in spring.

Unlike the Cormorant, the Loon usually swallows its food under the water, unless when it happens to bring up a shell-fish or a crustaceous animal, which it munches for a while before it swallows it. Fishes of numerous kinds, aquatic insects, water-lizards, frogs, and leeches, have been found by me in its stomach, in which there is also generally much coarse gravel, and sometimes the roots of fresh-water plants.

Although the flesh of the Loon is not very palatable, being tough,

rank, and dark coloured, I have seen it much relished by many lovers of good-living, especially at Boston, where it was not unfrequently served almost raw at the table of the house where I boarded.

A female bird particularly examined by me presented the following appearances. From the point of the bill to the end of the tail it measured 34 inches; to the claws 41; the extended wings were 71; the bill measured 5 inches along the gape; the breadth of the body was 8 inches, its depth only four; the wings were 2 inches shorter than the tail; and the weight was 10 lb. 11 oz. avoirdupois. The first primary was longest. The trachea, which was even and flattened, being in diameter about $\frac{5}{8}$ of an inch by $\frac{1}{2}$ inch, was 16 inches long. The eggs were numerous. The gizzard was moderate, and contained many large pebbles. The intestines were 7 feet long, and about the same size as a Swan's quill. Every bone and sinew was strong and tough. The tongue resembled in shape and size that of the Ivory-billed Woodpecker. The bones of the wing and leg were almost solid, the cavity for the marrow being very small. All the bones of this specimen were presented to Mr THOMAS ALLIS, of the Friend's Retreat, near York.

My friend Captain JAMES CLARK ROSS, of the Royal Navy of England, once placed at my disposal a specimen of the Loon procured in a very high latitude, and which, having closely inspected it, I found to differ from the one represented in the plate, only in having the point of the bill slightly elevated or recurved, and of a fine yellow tint. Dr RICHARDSON informed me that, on one of his arduous northern journeys, he saw a very large and handsomely crested Diver, which, although somewhat prematurely, I propose honouring with the name of *Colymbus Richardsons*.

COLYMBUS GLACIALIS, *Linn. Syst. Nat.* vol. i. p. 221. Adult.—*Lath. Ind. Ornith.* p. 799.

COLYMBUS IMMER, *Linn. Syst. Nat.* vol. i. p. 222. Young.—*Lath. Ind. Ornith.* p. 800.

COLYMBUS GLACIALIS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 420.

GREAT NORTHERN DIVER OR LOON, *Wils. Amer. Ornith.* vol. ix. pl. 74, fig. 3.

COLYMBUS GLACIALIS, *Richards. and Swains. Fauna Bor. Amer.* vol. ii. p. 474.

LOON, OR GREAT NORTHERN DIVER, *Nuttall, Manual*, vol. ii. p. 513.

Adult Male. Plate CCCVI. Fig. 1.

Bill as long as the head, straight, stout, much compressed, tapering

to a point. Upper mandible with the dorsal line descending and slightly convex towards the end, the ridge convex, narrowed towards the point, the sides convex beyond the nostrils, the edges sharp and considerably inflected, the tip narrow and sharpish. Nasal groove short, nostrils basal, linear, direct, pervious. Lower mandible with the angle extremely narrow, and extending beyond the middle, the dorsal line straight and sloping upwards to the point, the ridge convex and narrow, the edges sharp and involute; the tip attenuated.

Head of moderate size, oblong, narrowed before. Neck rather long and thick. Eyes of moderate size. Body elongated, much depressed, of an elliptical form viewed from above. Wings small. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated angular scales; hind toe extremely small, connected with the second by a very small membrane; the anterior toes united by articulated membranes, the fourth or outer longest, the third a little shorter, the second considerably shorter than the third, all covered above with very numerous narrow scutella, the second toe with a free two-lobed membrane; claws very small, depressed, blunt.

Plumage short and dense; of the head and neck very short, and blended; of the lower parts blended, short, with slight gloss; of the upper compact, glossy; the feathers in general oblong, those of the upper parts with the extremity abrupt. Wings proportionally very small and narrow, curved; primaries strong, tapering, the first longest, the second almost as long, the rest rapidly graduated; secondaries broad, and rounded. Tail extremely short, rounded, of twenty feathers.

Bill black. Iris deep bright red. Feet, tarsi, and toes, of a livid greyish-blue, their inner sides tinged with pale yellowish flesh-colour; claws black, lighter at the base; webs brownish-black, lighter in the middle. Head and neck dark greenish-blue, with purple reflections. On the throat a small transverse patch of white, longitudinally striated with dusky; about the middle of the neck, two large patches of the same, separated in front to the distance of an inch, behind continuous, but when the feathers are laid close, appearing as if separated by a longitudinal dark band about half an inch in breadth. The under parts glossy white, excepting the feathers on the sides under the wing, which are black, each with two, three, or four elliptical white spots, a faint

dusky band across the vent, the lower tail-coverts, which are brownish-black tipped with white, and the axillar feathers and larger wing-coverts, which have a dusky streak along the middle. The sides of the neck at its lower part are longitudinally streaked with black and white, there being two oblong spots of the latter on each feather towards the end. The upper parts are glossy black, variegated with spots of white in regular transverse slightly-curved lines having the convexity backwards. These spots vary in form and size, being small and roundish towards the neck and sides, larger and somewhat four-sided along the middle of the back: largest and rectangular on the scapulars, very small and roundish on the hind part of the back and tail-coverts. The upper part of the wing is similar, with smallish spots; the alula and quill brownish-black, a few of the inner secondaries only having two white spots at their extremity. Tail brownish-black, paler at the tip.

	Adult Male.	Adult Male.	Young.
Length to the end of tail,	32 $\frac{7}{8}$	36	31 $\frac{1}{4}$
..... claws,	39 $\frac{1}{4}$	40 $\frac{1}{2}$	36
..... wings,	31 $\frac{1}{4}$	—	29 $\frac{3}{4}$
..... carpal joint,	16 $\frac{3}{4}$	—	16 $\frac{1}{4}$
Extent of wings,	57 $\frac{1}{2}$	52	54 $\frac{1}{2}$
Wing from flexure,	15 $\frac{1}{2}$	—	14 $\frac{1}{4}$
Depth of body,	—	6	—
Breadth,	—	9 $\frac{1}{2}$	—
Bill along the ridge,	—	3 $\frac{1}{2}$	—
Gape-line,	—	4 $\frac{1}{2}$	—
Tarsus,	—	3 $\frac{5}{8}$	—
Hind toe,	—	9 $\frac{1}{2}$	—
Its claw,	—	$\frac{2}{12}$	—
Outer toe and claw,	—	4 $\frac{1}{2}$	—
Middle toe,	—	4 $\frac{1}{4}$	—
Inner, ...	—	3 $\frac{9}{12}$	—
Tail,	—	29 $\frac{1}{12}$	—
Wing from flexure,	—	14 $\frac{1}{2}$	—
Weight,	8 $\frac{5}{4}$	8 $\frac{1}{2}$	9

The female is generally smaller, but in all other respects resembles the male. Weight 10 lb. 11 oz.

Young in winter. Plate CCCVI. Fig. 2.

Bill pale yellowish-green, the ridge and tip of the upper mandible dusky. Iris brown. Feet dusky externally, pale yellowish flesh-colour internally, webs dusky, but yellow in the middle. Claws yellowish-brown. All the upper parts are of a uniform dark greyish-brown, each feather margined with lighter, the lower parts white; the sides of the neck at the lower part whitish, streaked with dusky; the sides dusky, without spots.

Towards spring the eye assumes a redder tint, and the plumage of the upper parts gradually becomes spotted with white; and when the moult is completed about the end of summer, the plumage is as in the adult, although the tints are improved at each successive moult for several years.

A fine male killed at Boston, 34 inches in length, with an alar extent of 56, presents the following characters. There is a general layer of subcutaneous adipose tissue, and the skin is very tenacious. The external aperture of the ear roundish, very small, having a diameter of only 2 lines. The tongue is 2 inches 1 line in length, fleshy, as high as broad, slightly concave and longitudinally grooved above, tapering to a horny point. On the palate are 6 rows of papillæ; the posterior aperture of the nares is linear $2\frac{1}{2}$ inches in length. The aperture of the glottis is $\frac{1}{2}$ an inch long, with numerous papillæ along its sides and behind. The pharynx is extremely dilatible, as is the œsophagus, which is 17 inches long, passes along the right side of the neck, together with the trachea, and when distended has an average diameter of $2\frac{1}{2}$ inches, but on entering the thorax contracts to $1\frac{1}{2}$. The structure of the œsophagus in birds may be very conveniently examined in this species, the different layers being remarkably developed in it. Properly speaking, it has only two coats,—the outer muscular, its external layer composed of transverse or circular fibres, the internal of equally distinct longitudinal fibres, which are not straight, but irregularly undulated. The inner, or mucous coat, when contracted falls into longitudinal plaits. The proventriculus is $2\frac{3}{4}$ inches long, the glandules large, roundish, simple, and disposed in a continuous belt. Over this part, the transverse muscular fibres are remarkably developed. The right lobe of the liver is $5\frac{3}{4}$ inches long, the left lobe $5\frac{1}{2}$. The heart is very large, of a broadly conical form, 3

inches long, $2\frac{5}{4}$ inches in breadth. The stomach is three inches long, $2\frac{1}{2}$ in breadth, of an elliptical form, a little compressed; its lateral muscles 9 lines in thickness, and composed of strong large fasciculi; the tendons $1\frac{1}{2}$ inch in diameter; the cuticular lining thick, its upper and lower parts marked with strong longitudinal ridges having numerous transverse fissures; the grinding surfaces irregularly wrinkle, with a deep fissure down the middle of each. The pylorus is 8 lines in diameter when distended, and is destitute of valve, but has a strong prominent rim. In the stomach were remains of fishes, and some pebbles, chiefly quartz, the largest 4 lines long. The intestine measures 6 feet 6 inches in length, and varies in diameter from 8 to 6 lines. The rectum is $3\frac{1}{2}$ inches long, the cloaca extremely large, forming a cavity about 3 inches in diameter. The cæca are $1\frac{5}{4}$ inch long, cylindrical, rounded at the extremity; one of them 7 lines, the other 9 lines, in diameter.

The trachea, when moderately extended, measures $13\frac{1}{2}$ inches in length, inconsiderably depressed, its transverse diameter at the upper part $9\frac{1}{2}$ lines, at the lower $6\frac{1}{2}$ lines; the rings cartilaginous, of moderate breadth, uniform, with a contraction in the middle before and behind, their number 134, the four lowest united. The bronchi are composed of about 20 narrow cartilaginous half rings. The contractor muscles are very broad but thin, their fibres irregularly disposed in front; they become thicker and narrower toward the lower part, and are continued beyond the sterno-tracheal muscles, which come off from the 20th ring from the inferior larynx, to the membrane between the last tracheal and first bronchial ring.

BLUE HERON.

ARDEA CERULEA, LINN.

PLATE CCCVII. ADULT MALE AND YOUNG.

ALONG with a few other Herons, this is, comparatively speaking, confined within narrow limits along our southern coast in winter. It occurs, however, in most parts of the Floridas, where it is a constant resident, and whence, at the approach of summer, vast multitudes are seen proceeding northward, in search of suitable places in which they may rear their young in security. Many, however, go southward, beyond the limits of the United States, and proceed coastwise to Texas and Mexico to spend the winter, especially the younger birds, when still in that singular white plumage which differs so much from that of the young of every other known species of this genus, except that of the Reddish Egret (*A. rufescens*). At New Orleans, where it arrives at the same period, both from Mexico and the Floridas, its first appearance in spring is about the beginning of March; at which time also multitudes leave the Floridas on their way eastward, to settle in Georgia, the Carolinas, and other States farther east, as far as Long Island in that of New York. Beyond this, I believe, no birds of the species have been met with. They rarely, if ever, proceed far inland, or leave the shores of our large rivers and estuaries. On the Mississippi, the swamps and lakes on the borders of which are so well adapted to the habits of these birds, few individuals are ever seen above Natchez. About the beginning of September, by which time the young are able to shift for themselves, they return southward.

When in the Floridas, during winter, I observed that the Blue Herons associated with other species, particularly the White Heron, *Ardea alba*, and the Louisiana Heron, *Ardea Ludoviciana*, all of which were in the habit of roosting together in the thick evergreen low bushes that cover the central parts of the islands along the coast. Their passage to and from their feeding places, is as regular as the rising and setting of the sun, and, unless frequently disturbed, they

betake themselves every night to the same locality, and almost to the same spot. In the morning, they rise with one accord from the roosts on which they have been standing all night on one leg, the other drawn up among the feathers of the abdomen, their neck retracted, and their head and bill buried beneath their scapulars. On emerging from their retreats, they at once proceed to some distant place in search of food, and spend the day principally on the head waters of the rivers, and the fresh-water lakes of the interior, giving a decided preference to the soft mud banks, where small crabs or fiddlers are abundant, on which they feed greedily, when the inland ponds have been dried up, and consequently no longer supply them with such fishes as they are wont to feed upon.

There, and at this season, Reader, you may see this graceful Heron, quietly and in silence walking along the margins of the water, with an elegance and grace which can never fail to please you. Each regularly-timed step is lightly measured, while the keen eye of the bird seeks for and watches the equally cautious movements of the objects towards which it advances with all imaginable care. When at a proper distance, it darts forth its bill with astonishing celerity, to pierce and secure its prey; and this it does with so much precision, that, while watching some at a distance with a glass, I rarely observed an instance of failure. If fish is plentiful, on the shallows near the shore, when it has caught one, it immediately swallows it, and runs briskly through the water, striking here and there, and thus capturing several in succession. Two or three dashes of this sort, afford sufficient nourishment for several hours, and when the bird has obtained enough it retires to some quiet place, and remains there in an attitude of repose until its hunger returns. During this period of rest, however, it is as watchful as ever, and on hearing the least noise, or perceiving the slightest appearance of danger, spreads its wings, and flies off to some other place, sometimes to a very distant one. About an hour before sunset, they are again seen anxiously searching for food. When at length satisfied, they rise simultaneously from all parts of the marsh, or shore, arrange themselves into loose bodies, and ascending to the height of fifty or sixty yards in the air, fly in a straight course towards their roosting place. I saw very few of these birds during the winter, on or near the river St John in Florida; but on several occasions met

with some on small ponds in the pine barrens, at a considerable distance from any large stream, whither they had been attracted by the great number of frogs.

The flight of the Blue Heron is rather swifter than that of the Egret, *Ardea candidissima*, and considerably more so than that of the Great Blue Heron, *Ardea Herodias*, but very similar to that of the Louisiana Heron, *Ardea Ludoviciana*. When the bird is travelling, the motion is performed by flappings in quick succession, which rapidly propel it in a direct line, until it is about to alight, when it descends in circular sailings of considerable extent towards the spot selected. During strong adverse winds, they fly low, and in a continuous line, passing at the necessary distance from the shores to avoid danger, whether at an early or a late hour of the day. I recollect that once, on such an occasion, when, on the 15th of March, I was in company with my friend JOHN BACHMAN, I saw a large flock about sunset arising from across the river, and circling over a large pond, eight miles distant from Charleston. So cautious were they, that although the flock was composed of several hundred individuals, we could not manage to get so much as a chance of killing one. I have been surprised to see how soon the Blue Herons become shy after reaching the districts to which they remove for the purpose of breeding from their great rendezvous the Floridas, where I never experienced any difficulty in procuring as many as I wished. In Louisiana, on the other hand, I have found them equally vigilant on their first arrival. On several occasions, when I had placed myself under cover, to shoot at some, while on their way to their roosts or to their feeding grounds, I found it necessary to shift from one place to another, for if one of them had been fired at and had fallen in a particular place, all that were in its company took care not to pass again near it, but when coming up diverged several hundred yards, and increased their speed until past, when they would assume their more leisurely flappings. In South Carolina, where they are very shy on their arrival, I have seen them fly off on hearing the very distant report of a gun, and alight on the tops of the tallest trees, where they would congregate in hundreds, and whence they would again fly off on the least apprehension of danger. But when once these Herons have chosen a place to nestle in, or reached one in which they bred the preceding year, they become so tame as to allow you to shoot as many as you are disposed to have.

While on Cayo Island, in the Gulf of Mexico, on the 10th of April 1837, I observed large flocks of the Blue and Green Herons, *Ardea coerulea* and *A. virescens*, arriving from the westward about the middle of the day. They flew at a considerable height, and came down like so many hawks, to alight on the low bushes growing around the sequestered ponds; and this without any other noise than the rustling of their wings as they glided through the air towards the spot on which they at once alighted. There they remained until sunset, when they all flew off, so that none were seen there next day. This shews that although these species migrate both by day and night, they are quite diurnal during the period of their residence in any section of the country which they may have chosen for a season. It is more than probable that it has been from want of personal knowledge of the habits of these birds, that authors have asserted that all Herons are nocturnally inclined. This certainly is by no means the case, although they find it advantageous to travel by night during their migrations, which is a remarkable circumstance as opposed to their ordinary habits. In the instance above mentioned, I found the birds remarkably gentle, which was probably owing to fatigue.

The Blue Heron breeds earlier or later according to the temperature of the district to which it resorts for that purpose, and therefore earlier in Florida, where, however, considerable numbers remain, during the whole year than in other parts of the United States. Thus I have found them in the southern parts of that country, sitting on their eggs, on the 1st of March, fully a month earlier than in the vicinity of Bayou Sara, on the Mississippi, where they are as much in advance of those which betake themselves, in very small numbers indeed, to our Middle Districts, in which they rarely begin to breed before the fifteenth of May.

The situations which they choose for their nests are exceedingly varied. I have found them sitting on their eggs on the Florida Keys, and on the islands in the Bay of Galveston, in Texas, in nests placed amidst and upon the most tangled cactuses, so abundant on those curious isles, on the latter of which the climbing Rattlesnake often gorges itself with the eggs of this and other species of Heron, as well as with their unfledged young. In the Lower parts of Louisiana, it breeds on low bushes of the water-willow, as it also does in South Carolina; whereas, on the islands on the coast of New Jersey, and

even on the mainland of that State, it places its nest on the branches of the cedar and other suitable trees. Wherever you find its breeding place, you may expect to see other birds in company with it, for like all other species, excepting perhaps the Louisiana Heron, it rarely objects to admit into its society the Night Heron, the Yellow-crowned Heron, or the White Egret.

The heronries of the southern portions of the United States are often of such extraordinary size as to astonish the passing traveller. I confess that I myself might have been as sceptical on this point as some who, having been accustomed to find in all places the Heron to be a solitary bird, cannot be prevailed on to believe the contrary, had I not seen with my own eyes the vast multitudes of individuals of different species breeding together in peace in certain favourable localities. Such persons may be excused from giving that credit to my account of the Passenger Pigeon which posterity will, I trust, accord to it.

The nest of the Blue Heron, wherever situated, is loosely formed of dry sticks, sometimes intermixed with green leaves of various trees, and with grass or moss, according as these materials happen to be plentiful in the neighbourhood. It is nearly flat, and can scarcely be said to have a regular lining. Sometimes you see a solitary nest fixed on a cactus, a bush, or a tree; but a little beyond this you may observe from six to ten, placed almost as closely together as you would have put them had you measured out the space necessary for containing them. Some are seen low over the water, while others are placed high; for, like the rest of its tribe, this species is rather fond of placing its tenement over or near the liquid element.

The eggs are usually three, rarely four; and I have never found a nest of this species containing five eggs, as is stated by WILSON, who, probably found a nest of the Green Heron containing that number among others of the present species. They measure an inch and three quarters in length, by an inch and a quarter in breadth, being about the size of those of *Ardea candidissima*, though rather more elongated, and precisely of the same colour.

The young bird is at first almost destitute of feathers, but scantily covered with yellowish-white down. When fully fledged, its bill and legs are greenish-black, and its plumage pure white, or slightly

tinged with cream-colour, the tips of the three outer primaries light greyish-blue. Of this colour the bird remains until the breeding season, when, however, some individuals exhibit a few straggling pale blue feathers. When they have entered on their second year, these young birds become spotted with deeper blue on some parts of the body, or on the head and neck, thus appearing singularly patched with that colour and pure white, the former increasing with the age of the bird in so remarkable a manner, that you may see specimens of these birds with portions even of the pendant feathers of their head or shoulders so marked. And these are produced by *full moultings*, by which I mean the unexpected appearance, as it were, of feathers growing out of the skin of the bird coloured entirely blue, as is the case in many of our land birds. In all these stages of plumage, and from the first spring after birth, the young birds breed with others, as is equally the case with *Ardea rufescens*. You may see a pure white individual paired with one of a full blue colour, or with one patched with blue and white. The young, after leaving their parents, remain separate from the old birds until the next breeding season. At no period can the young of this species be confounded with, or mistaken for that of the *Ardea candidissima*, by a person really acquainted with these birds, for the Blue Heron is not only larger than the latter, but the very colour of its feet and legs is perfectly distinctive. Indeed, during the time when the young Blue Heron is quite white (excepting on the tips of the outer primaries), it would be easier to confound it with the young of the Reddish Egret, *Ardea rufescens*, than with that of any other, were the feathers of its hind head and neck of the same curious curled appearance as those of that species.

My friend JOHN BACHMAN informs me, that in South Carolina, this species not unfrequently breeds in the company of the Louisiana Heron, the nests and eggs of which, he adds, are very similar. He has specimens of these birds in all the different stages which I have described. At New Orleans, the Blue Herons, during the transition of their plumage from white to blue, are called "Egrettes folles," or foolish Egrets, on account of their unusual tameness. My friend BACHMAN and I, shot, on the 6th and 9th of April, several specimens spotted with blue feathers, and having their crests and trains similarly mixed, although of full length; but in most of the specimens obtained,

the white was still prevalent. I have shot some in Louisiana, in autumn, in the same curious dress.

This species, though larger than the Snowy Heron, *Ardea candidissima*, is considerably inferior to it in courage; and I was much amused as well as surprised, when at Galveston Bay, on the 24th of April 1837, to see one of that species alight near a Purple Heron, attack it, and pursue it as far as I could follow them with my eyes. When the Blue Herons are on the sea-coast they not unfrequently repose on the large mud or sand bars, at some distance from the adjacent marshes; but they generally prefer roosting on trees or bushes, when there are any in their neighbourhood. The Creoles of Louisiana not unfrequently eat the flesh of this species, and although they by no means consider it equal to that of the Night Heron, some of them have assured me that it is not bad food. Like other birds of this family, they become larger with age, and the male is usually somewhat superior in size to the female; but, with this exception, no difference can be perceived in the external appearance of the sexes.

ARDEA CÆRULEA *Linn. Syst. Nat.* vol. 1. p. 238.—*Lath. Ind. Ornith.* vol. ii. p. 689.

ARDEA CÆRULEA, *Ch. Bonaparte, Synopsis*, p. 300.

BLUE HERON, ARDEA CÆRULEA, *Wils. Amer. Ornith.* vol. vii. p. 117. pl. 62. fig. 3.

Adult.

BLUE HERON, *Nuttall, Manual*, vol. ii. p. 58.

Adult Male in full plumage. Plate CCCVI. Fig. 1.

Bill much longer than the head, rather slender, very slightly decurved, compressed, tapering to a point. Upper mandible with the dorsal line nearly straight for two-thirds of its length, then slightly decurved, the ridge convex, broad at the base, gradually narrowed to the point; a groove from the base to near the end, the sides convex beneath, the edges thin and sharp, with a slight notch close to the tips. Nostrils basal, linear, longitudinal, with a membrane above and behind. Lower mandible with the angle extremely narrow and elongated, the dorsal line beyond it ascending and almost straight, the sides sloping outwards, and flattened, the edges sharp and slightly inflected, the tip acuminate.

Head rather small, oblong, compressed. Neck very long and slender. Body slender and compressed. Feet very long; tibia elongated,

its lower half bare, very slender, covered all round with angular scales, of which the posterior are large; tarsus elongated, slender, compressed, anteriorly covered with numerous broad scutella, laterally and behind with angular scales. Toes long, slender, with numerous broad scutella above, flattened and reticularly granulate beneath. Claws rather long, arched, compressed, acute, that of hind toe much larger and more curved, the inner edge of that of the third finely and regularly pectinate.

Space between the bill and eye, and around the latter, bare. Plumage soft, thin, and blended. Feathers of the upper and hind part of the head very long, linear, with loose barbs; of the sides of the neck loose and inclined obliquely backwards, of its lower part much elongated, narrow, and tapering to a point; of the middle of the back extremely long, linear, acuminate, their tips projecting about five inches beyond the tail. Wings long, and very broad; primaries broad, tapering, and rounded, the first, second and third almost equal, the latter being only a twelfth of an inch longer; secondaries broad and rounded; some of the inner only half an inch shorter than the longest primary, when the wing is closed. Tail very short, small, even, of twelve rather weak feathers.

Bill ultramarine blue at the base, gradually shaded into black towards the point; the bare space between it and the eye, as well as the edges of the eyelids, ultramarine. Iris pale yellow. Legs, tarsi, toes, and claws, black. Head and neck of a rich deep purple, inclining to vinaceous; the lower part of the neck and all the other parts deep greyish-blue, the edges of the feathers lighter.

Length to end of tail $24\frac{1}{2}$ inches, to end of wings 25, to end of elongated dorsal feathers $26\frac{1}{2}$, to end of claws $30\frac{3}{4}$; wing from flexure $11\frac{1}{2}$; tail $4\frac{2}{12}$; extent of wings 42; bill along the ridge $3\frac{4}{12}$, along the edge of lower mandible 4; bare part of tibia $2\frac{2}{12}$; tarsus $3\frac{5}{12}$; first toe $\frac{1}{12}$, its claw $\frac{9}{12}$; middle toe $2\frac{1}{4}$, its claw $\frac{7}{12}$. Weight 1 lb.

The female is similar to the male, but smaller. Weight 11 oz.

The young are at first sparsely covered with yellowish-white down. When a fortnight old, the bill is yellow, with the tips greenish-black; the feet greenish-yellow, the claws dusky, with the tips greyish-yellow. The general colour of the plumage is pure white, but the down which tips the feathers of the head is brownish-white; two of the alular feathers are tinged with dull bluish-grey, and the outer seven or eight primaries are broadly margined on both sides to the length of about an

inch and a half with the same colour of a deeper tint, the extreme tip white.

When fully fledged, the bare parts at the base of the bill, and the basal half of the upper mandible, are light greenish-blue, the rest black; the lower mandible yellow, with a patch of black, an inch and a quarter in length on each side at the end. Legs, tarsi, and toes greenish-blue, the sides yellowish; claws dusky. The feathers of the head are slightly elongated; those of the back are also elongated, but much broader and shorter than in the adult. The feathers on the upper part of the head are of a faint bluish-grey; and the alular feathers and eight outer primaries are tinged with the same colour. At this period, the length to the end of the tail is 22 inches, to end of claws $28\frac{1}{2}$; bill along the ridge $2\frac{7}{8}$; wing from flexure 11; tail $4\frac{9}{12}$.

In November, when the moult is advanced. The bill is black, dull blue at the base. The feet are nearly black, as are the claws. The occipital feathers are now two inches and a half in length, and some of the dorsal feathers extend as far as the tips of the wings; those of the lower part of the neck have also a length of about three inches. The general colour of the plumage is white; the upper part of the head, the hind neck, back, anterior edge of the wing, and outer primaries at the end, of a faint bluish-grey tint; some of the elongated feathers of the back darker.

Length to end of tail 22 inches; to end of claws $29\frac{1}{2}$; bill 3; wing from flexure $11\frac{1}{4}$.

A year old. Bill nearly as in the adult; feet bluish-black, the plumage is white, with the upper parts pale greyish-blue as in November, but the whole interspersed with numerous feathers of a deep greyish-blue, similar to that of the adult; the primaries and tail being still white.

Length to end of tail $23\frac{1}{4}$; extent of wings $32\frac{1}{2}$; bill $3\frac{1}{8}$. Weight 9 oz.

At the age of a year the bird propagates, so that individuals in the white, mottled, or blue plumage, may be seen breeding together.

When only a few weeks old, the serrature of the claw of the middle toe is scarcely perceptible, exhibiting merely faint indications of points upon a very slight margin. This margin enlarges, and when the bird is completely fledged the serratures are perfectly formed.

In this bird, as in most other Herons, the crura of the lower mandible are thin, flexible, and elastic, the angle filled by an elastic membrane covered by the skin. The tongue is 1 inch long, sagittate at the base, tapering to a point. The roof of the mouth has a median prominent ridge, and two lateral lines; the palate is convex; the posterior aperture of the nares 10 lines in length. The pharynx may be dilated to $1\frac{1}{2}$ inch; the œsophagus, which is 12 inches long, is when dilated 10 lines in diameter at its upper part, and gradually contracts to 7 lines; at the curvature of the neck it lies directly behind, having passed down on the left side, along with the trachea. Its walls are extremely thin, contrasting in this respect with the œsophagus of the Great Northern Diver and other swimming piscivorous birds. The proventriculus is 1 inch long, its glandules cylindrical, and extremely slender. The stomach seems as if it merely formed a basal sac to the œsophagus, its muscles being extremely thin, its tendons circular and half an inch in diameter; cuticular lining soft. The intestine is long and very narrow, 5 feet 10 inches in length, 2 lines in diameter at the upper part, $1\frac{1}{2}$ near the rectum, which is $2\frac{3}{4}$ inches long, with a diameter of $4\frac{1}{2}$ lines, and terminates in a nipple-like cœcum, projecting 3 lines beyond the entrance of the small intestine, but having no appearance of the two lateral appendages usually called cœca. In this respect, the Blue Heron agrees with others of the same family. The cloaca is about an inch in length and breadth.

The trachea, when extended, is $8\frac{3}{4}$ inches long. The rings 170 in number, are osseous and circular, so that the organ preserves its cylindrical form under all circumstances. They are, like those of all Herons, of equal breadth on both sides, not broad on one side and narrow on the other, as has been represented. The contractor muscles are very slender, as are the sterno-tracheal; the former send down a slip on each side to the first bronchial ring. The diameter of the trachea is 2 lines at the upper part, $1\frac{1}{2}$ at the lower. The bronchi are short, wide, conical, of about 13 half rings.

The right lobe of the liver is $2\frac{1}{4}$ inches long, the left lobe $1\frac{1}{2}$; the heart $1\frac{1}{4}$ in length, 8 lines broad, of an oblong conical form. The stomach contained remains of insects and crustaceous animals, together with a few seeds.

TELL-TALE GODWIT.*TOTANUS MELANOLEUCUS*, VIEILL.

PLATE CCCVIII. MALE AND FEMALE.

It is my opinion that they who have given so much importance to the cry of this bird, as to believe it to be mainly instrumental in ensuring the safety of other species, and in particular of Ducks, have called in the aid of their imagination to increase the interest of what requires no such illustration. A person unacquainted with this Godwit would believe, on reading its history as recorded in books, that the safety of these birds depends on the friendly warning of their long-billed and long-tongued neighbour. And yet it is at no season more noisy or more vigilant than the Kildeer Plover, nor ever half so much so as the Semipalmated species, the reiterated vociferations of which are so annoying. It is true that the Tell-tale is quite loquacious enough; nay, you, Reader, and I, may admit that it is a cunning and watchful bird, ever willing to admonish you or me, or any other person whom it may observe advancing towards it with no good intent, that it has all along watched us. But then, when one has observed the habits of this bird for a considerable time, in different situations, and when no other feathered creatures are in sight, he will be convinced that the Tell-tale merely intends by its cries to preserve itself, and not generously to warn others of their danger. So you may safely banish from your mind the apprehension, which the reading of books may have caused, that duck-shooting in the marshes of our Middle Districts, is as hopeless a pursuit as "a wild goose chase."

The Tell-tale Godwit has a great range in the United States, where, indeed, I have found it in almost every district, and at all seasons. It spends the winter along the shores of our estuaries, rivers, and ponds, and in the rice-fields, from Maryland to Mexico. It is abundant then in South Carolina, the Floridas, and along the shores of the Gulf of Mexico, as far as Texas, where I found it in considerable numbers and paired, in the months of April and May, along with the Yellow-shank Snipe, *Totanus flavipes*. It is also met with in spring and autumn over the whole interior of the country, and I have

found it quite abundant at those seasons along the entire length of the Mississippi, Ohio, and Missouri rivers, as well as on the Arkansas. They congregate in great numbers in the inland marshes of Florida, and along its rivers, during the winter. I found them near Eastport, in the State of Maine, on the 11th of May 1833; and on the coast of Labrador, on the 18th of June of the same year. In Newfoundland, on the 11th of August, the young were equal in size to their parents, and being extremely fat, tender, and juicy, afforded excellent eating. In general, however, these birds are thin and have a fishy taste.

In the State of Maine and the province of New Brunswick, the Tell-tale is known by the name of "Humility," which, however, is an appellation that ill accords with its vociferous habits. The Creoles of New Orleans call it "Clou-clou;" and were these syllables rapidly enunciated from two to five times in succession, the sounds would have some resemblance to the usual notes of the species.

When these Godwits arrive in the vicinity of New Orleans about the middle of March, they appear in considerable flocks. They retire, however, in the beginning of May, and return about the first of July, from which time they continue there until the end of autumn, some indeed remaining all winter. It seems, that at the period of their disappearance at New Orleans, they retire to the vast marshes near the sea-shore, and there breed, for I have found them abundant near the passes or mouths of the Mississippi in pairs, on the first of April, when the air is warmer than in the interior. They are said to breed in the marshes along the coast of New Jersey, where, according to Wilson, they arrive early in April, and continue until November. It is a curious fact that the Tell-tale Godwit, as well as some other birds of similar habits, is of very rare occurrence along the shores of Massachusetts and Maine. This, however, seems to be accounted for by the absence there of the large spongy marshes, to which these birds are fond of resorting.

Although found in the vicinity of both salt and fresh water, at all seasons, it usually prefers the latter, and the spots which appear to be best adapted to its nature are ponds of which the water is shallow and the shores muddy, so that they can walk and wade at ease upon them. Wherever such ponds occur, whether in plantations or in the interior of forests, or on extensive savannahs or prairies, there you will find them actively employed, wading so far into the water as to

seem as if they were swimming. If just alighted after ever so short a flight, they hold their wings upright for a considerable time, as if doubtful of not having obtained good footing. Closing their wings, they then move nimbly about the pool, and are seen catching small fishes, insects, worms, or snails, which they do with rapidity and a considerable degree of grace, for their steps are light, and the balancing or vibratory motion of their body, while their head is gently moved backwards and forwards, is very pleasing to the eye.

I have often observed these birds on large logs floating on the Mississippi, and moving gently with the current, and this sometimes in company with the Snowy Heron, *Ardea candidissima*, or the American Crow, *Corvus Americanus*. In such situations, they procure shrimps and the fry of fishes. In autumn, they are extremely prone to betake themselves to the margins of our most sequestered lakes in the interior of Louisiana and Kentucky, where the summer heat has left exposed great flats of soft sandy mud abounding with food suited to their appetite, and where they are much less likely to be disturbed than when on the marshes on the sea-shore, or on the margins of rivers. When they have been some time in the salt-marshes, and have eaten indiscriminately small shell-fish, worms, and fry, they acquire a disagreeable fishy taste, and being at the same time time less fat, are scarcely fit for the table. They are social birds, and frequently mingle with other waders, as well as with the smaller ducks, such as the Blue-winged and Green-winged Teals. In the salt-marshes they associate with Curlews, Willets, and other species, with which they live in peace, and on the watchfulness of which they depend quite as much as on their own.

The flight of the Tell-tale Godwit, or "Great Yellow-Shank," as it is generally named in the Western Country, is swift, at times elevated, and, when necessary, sustained. They pass through the air with their necks and legs stretched to their full length, and roam over the places which they select several times before they alight, emitting their well-known and easily imitated whistling notes, should any suspicious object be in sight, or if they are anxious to receive the answer of some of their own tribe that have already alighted. At such times, any person who can imitate their cries can easily check their flight, and in a few moments induce them to pass or to alight within shooting distance. This I have not unfrequently succeeded in doing,

when they were, at the commencement of my calls, almost half a mile distant. Nay, I have sometimes seen them so gentle, that on my killing several in a flock, the rest would only remove a few yards.

I have always found that the cries of this bird were louder and more frequent during the period of its breeding, when scarcely any birds were in the vicinity. I therefore conclude that its cries are then more intended to draw you from the spot where its nest is concealed, than for any other purpose, as on such occasions the bird either moves off on foot, or flies away and alights at a short distance from the place where its treasure lies.

When in Labrador, I found these birds breeding, two or three pairs together, in the delightful quiet valleys bounded by rugged hills of considerable height, and watered by limpid brooks. These valleys exhibit, in June and July, the richest verdure, luxuriant grasses of various species growing here and there in separate beds many yards in extent, while the intervening spaces, which are comparatively bare, are of that boggy nature so congenial to the habits of these species. In one of those pleasing retreats my son found a pair of Tell-tales, in the month of June, both of which were procured. The female was found to contain a full-formed egg, and some more of the size of peas. The eggs are four, pyriform, $2\frac{1}{4}$ inches long, $1\frac{1}{8}$ in their greatest breadth, pale greenish-yellow, marked with blotches of umber and pale purplish-grey.

The plumage of this bird has a very different appearance in autumn and winter from that which it presents at the approach of the breeding season. This has led some students of Nature in the United States to suppose, that there exist two nearly allied species; but this, I am confident, is not the case. The female is larger than the male, but only in a slight degree.

Dr RICHARDSON has found this species on the Saskatchewan and Dr TOWNSEND on the Columbia River.

TOTANUS MELANOLEUCUS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 324.
TELL-TALE GODWIT OR SNIPE, *Scolopax vociferus*, *Wils.* Amer. Ornith. vol. vii.
p. 57, pl. 58, fig. 5.

TELL-TALE, OR GREATER YELLOW-SHANKS, *Nuttall*, Manual, vol. ii. p. 148.

TOTANUS VOCIFERUS, TELL-TALE, *Richards. and Swains.* Faun. Bor. Amer. vol. ii.
p. 389.

Adult male. Plate CCCVIII. Fig 1.

Bill much longer than the head, very slender, subcylindrical, straight, flexible, compressed at the base, the point rather depressed and obtuse. Upper mandible with the dorsal line straight, the ridge convex, broader at the base beyond the nostrils blended with the sides, which are convex, the edges thick, with a groove running their whole length, the tip slightly deflected. Lower mandible with the angle very long and narrow, the dorsal line straight, the sides convex, with a slight groove in their basal half, the sides convex, the edges grooved longitudinally, the tip narrow. Nasal groove long and narrow, extending to nearly half the length of the bill; nostrils basal, linear, direct, pervious.

Head of moderate size, oblong, compressed, eyes large. Neck rather long and slender. Body slender. Feet very long and slender; tibia bare for half its length, scutellate before and behind, tarsus compressed, also scutellate before and behind; hind toe very small and elevated; fore toes of moderate length, very slender, connected at the base by webs, of which the outer is larger; second or inner toe considerably shorter than fourth, which is in a similar degree exceeded by the third; all covered with numerous scutella above, flattened beneath, and marginate. Claws small, slightly arched, much compressed, rather obtuse, that of the middle toe much larger, with the inner edge dilated.

Plumage soft and blended, on the fore part of the head very short. Wings long, narrow, pointed; primaries narrow and tapering, first longest, second a little shorter, the rest rapidly graduated; secondaries short, broad, incurved, obliquely rounded, the inner elongated and tapering. Tail short, doubly emarginate in a slight degree, of twelve rounded feathers.

Bill black, tinged with bluish-grey at the base. Iris dark brown. Feet bright yellow, claws brownish-black. Upper part of the head, lores, cheeks, and the neck all round, excepting the throat, streaked with brownish-black, on a white ground, tinged with grey on the head and hind neck; the throat, breast, and abdomen, are pure white, the sides and lower tail-coverts barred with brownish-black, as are the axillar feathers and lower wing-coverts, the lower surface of the primaries light grey, their shafts white. The upper parts generally are black, glossed with green, each feather margined with white triangular spots. The hind part of the rump and the upper tail-coverts white, barred with dusky. The anterior smaller wing-coverts, alula,

primary coverts, and primary quills, brownish-black, without spots; shaft of first primary white, of the rest brown. Tail-feathers white, with numerous bands of dark greyish-brown, the middle six feathers more or less of a light brownish-grey toward the end, the bars not extending over their central part, their tips white. Length to end of tail 14 inches, to end of wings 14, to end of claws 16; extent of wings $24\frac{5}{4}$; bill along the ridge $2\frac{5}{12}$, along the edge of the lower mandible $2\frac{5}{12}$, wing from flexure $8\frac{2}{2}$; tail $3\frac{8}{2}$; bare part of tibia $1\frac{1}{2}$; tarsus $2\frac{5}{2}$; hind toe and claw $\frac{4}{12}$; middle toe and claw $1\frac{8}{12}$. Weight 6 oz.

Adult Female. Plate CCCVIII. Fig. 2.

The female resembles the male.

Length to end of tail $13\frac{5}{4}$, to end of wings $14\frac{1}{2}$, to end of claws $17\frac{5}{4}$; extent of wings $25\frac{1}{2}$. Weight $6\frac{1}{2}$ oz.

Both sexes become darker on the upper parts, at the approach of spring. This dark colour disappears after their autumnal moult.

The tongue is $1\frac{2}{2}$ inch in length, slender, sagittate and papillate at the base, triangular, tapering to a fine point. On the roof of the mouth are two rows of large blunt papillæ directed backwards; the edges of the mandibles are thick and grooved; the posterior aperture of the nares linear, $\frac{9}{12}$ long. The œsophagus, $6\frac{5}{4}$ inches in length, passes along the right side of the neck, and has a diameter of $\frac{5}{12}$ of an inch in its upper part, but is dilated to $\frac{5}{2}$ before it enters the thorax. The proventriculus is oblong, $\frac{8}{12}$ in length, its glandules oblong. The stomach is oblong, $1\frac{2}{2}$ inch in length, $\frac{8}{12}$ in breadth, its lateral muscles of moderate size, the tendons $\frac{5}{12}$ in diameter, the cuticular lining hard, with large longitudinal rugæ, and of a deep red colour. The intestine 2 feet 8 inches long, varying in diameter from $\frac{2\frac{1}{2}}{12}$ to $\frac{2}{12}$. The rectum $1\frac{9}{12}$ inch long; the cæca 4 inches $\frac{5}{12}$ long, of an oblong form, with the extremity rounded, their diameter $\frac{1\frac{1}{2}}{12}$.

In another individual, the œsophagus is $6\frac{1}{2}$ inches long; the stomach $1\frac{9}{12}$; the intestine 2 feet 3 inches; the rectum $1\frac{9}{12}$, the cæca $4\frac{1}{12}$, their diameter $\frac{1\frac{1}{2}}{12}$.

The trachea, $4\frac{8}{12}$ inches long, $\frac{2\frac{1}{2}}{12}$ in diameter above, $\frac{2}{12}$ below; of 120 unossified rings; its contractor muscles feeble, the sterno-tracheal moderate; a single pair of inferior laryngeal; the bronchial rings about 15.

COMMON TERN.

STERNA HIRUNDO, LINN.

PLATE CCCIX. ADULT.

ALTHOUGH the Prince of MUSIGNANO has thought that the bird named the Common Tern in America, differs from that bearing the same name in Europe, and has in consequence changed its appellation to that of Wilson's Tern, I am of opinion that no difference exists between the Common Terns of the two Continents. The cry of both is besides precisely similar, so that with me there is no doubt whatever as to their identity. Experience has shewn me that the markings or white spots on the primary quills of Gulls, at one time assumed as a criterion by which species might be distinguished, cannot in the least be depended on, varying, as they always do, in individuals of the same species, at almost each successive moult. Then why, Reader, should not Terns exhibit analogous changes? The fact is, they do so; and it is almost impossible, on closely inspecting a dozen or more specimens procured at the same period, in either country, to find two individuals exactly corresponding in every particular. Some have the bill almost entirely black, while others have it more or less red and black, and tipped with yellow. The length of the tail-feathers, that of the tarsus, and the size of the inter-digital membranes, are all found to differ in some degree, if minutely compared. If species are to be founded on such slight differences, an ample field is open to those who are ambitious of being discoverers. At all events, I cannot help remarking here, that it seems to me improper to impose new names on objects, until it is proved by undeniable facts that they present permanent differences.

I have observed this species along the Atlantic coast of North America, from Galveston Island in Texas to the Straits of Belle Isle on the coast of Labrador, both in spring and in early autumn. But when on the islands in Galveston Bay, in the month of April, I saw only a few arriving there from the west; whereas, in the beginning of May great numbers arrived there from the east, settled at once, and commenced breeding. I felt convinced that the numbers which came

from the direction of the Floridas were much greater than those which arrived from the westward, and judged it probable that vast numbers had at the same time left the Peninsula on their way northward. Should other travellers observe the same or similar phenomena at the season mentioned, it will be proved that this species does not extend its autumnal migration so far as several others, which I observed arriving at Galveston Island from the south-west, for example, the Least Tern, *Sterna minuta*, the Cayenne Tern, *St. cayana*, and the Black Tern, *St. nigra*.

The Common Tern commences breeding on the coast of our Middle Districts about the 5th of May. On my voyage to Labrador, I found its eggs on the islands in the Gulf of St Lawrence, and especially on the Magdalene Islands, which I visited on the 11th of that month. On the 18th I saw them in great abundance in the neighbourhood of American Harbour, on the coast of Labrador, where thousands of Terns were plunging headlong after shrimps all round us. In that country, their eggs were deposited among the short grass, and the places which they occupied were but slightly scratched; whereas on the Magdalene Islands, where they breed on sandy ridges, slight hollows were scooped out, as is generally the case along the eastern coast of the United States. Their sojourn in Labrador is of short duration; and when we were at Newfoundland, on the 14th of August, multitudes were already passing southward. At the same period considerable numbers pass by an inland route from the Canadas, and all our great lakes, travelling along the Ohio and Mississippi. While residing at Henderson, and afterwards at Cincinnati, I had ample opportunities of watching their movements in the month of September. And yet, you will think it strange, that, during their vernal migration, I never saw one ascend any of these rivers or the streams connected with them. Perhaps the inferior temperature of the waters, compared with those of the ocean, in the early spring months, may induce them to abandon their route at that season. In autumn, on the contrary, when these rivers are heated and reduced in size, the Terns may find in them an abundant supply of the fry of various fishes. It would thus appear, being corroborated by other observations which I have made relative to migration, that species whose range is extensive, are determined in their movements by a genial temperature and an abundant supply of food.

With an easy and buoyant flight, the Tern visits the whole of our indented coasts, with the intention of procuring food, or of rearing its young, amidst all the comforts and enjoyments which kind Nature has provided for it. Full of agreeable sensations, the mated pair glide along side by side, as gaily as ever glided bridegroom and bride. The air is warm, the sky of the purest azure, and in every nook the glittering fry tempts them to satiate their appetite. Here, dancing in the sunshine, with noisy mirth, the vast congregation spreads over the sandy shores, where, from immemorial time, the species has taken up its temporary abode. They all alight, and with minced steps, and tails carefully raised so as not to be injured by the sand, the different pairs move about, renew their caresses, and scoop out a little cavity in the soil. If you come again in a few days, you will find the place covered with eggs. There they lie, three in each hollow, beautifully spotted and pointed; and as they receive heat enough from the sun, the birds have left them until evening. But not absent are they from the cherished spot, for they have seen you, and now they all fly up screaming. Although unable to drive you away, they seem most anxiously to urge your departure by every entreaty they can devise; just as you would do, were your family endangered by some creature as much stronger than yourself as you are superior to them. Humanity fills your heart, you feel for them as a parent feels, and you willingly abandon the place. The eggs are soon hatched; the young in due time follow their parents, who, not considering their pleasant labour ended when they are able to fly, feed them on wing in the manner of swallows, until they are quite capable of procuring their subsistence themselves. So soon as this is the case, the young birds fly off in bands, to seek on distant shores, and in sunny climes, the plentiful food which the ocean yields.

The nest of the Common Tern is, as I have said, a mere hollow made in the loose sand of some island or mainland beach, scantily tufted with wiry grass, or strewed with sea-weeds. Their eggs never exceed three in number; their average length is 1 inch $5\frac{1}{2}$ eighths, their breadth $1\frac{1}{4}$ inch. They vary greatly in their markings, as is the case with those of all the smaller species of this family; but their ground colour is generally pale yellowish-green, blotched and spotted with brownish-black and purplish-grey or neutral tint.

The young, which are fed with small fishes, shrimps, and insects,

separate from the old birds when fully fledged, and do not again associate with them until the following spring, when both are found breeding in the same places. It seems quite curious to see these young birds in winter, during boisterous weather, throwing themselves into the remotest parts of estuaries, and even visiting salt-water ponds at some distance from the sea, as I have often seen them do at Charleston, in South Carolina, when accompanied by my friend the Rev. Dr BACHMAN. Their plumage is then so very different from that of the old birds, that one might readily believe them to be of another species, did he not observe that their mode of flying and their notes are the same. Not less strange is it, that on such occasions none of the old birds are to be seen in the place, they having remained, braving the fury of the tempest, on the outer harbours. In the beginning of winter, young birds also sometimes ascend the Mississippi as far as Natchez; and in the same manner betake themselves to all the large lakes bordering the Gulf of Mexico. There, as well as elsewhere, you see them plunge into the water, and instantaneously secure their prey, rise as quickly, and dash into another spot hard by, whenever food happens to be abundant.

I have many times seen the Common Tern suddenly fly up and come close over a man or a dog, without the least apparent provocation, indeed when far distant from its nest, and then pass and repass repeatedly within a few yards, emitting a plaintive cry, as if its eggs or young were in the immediate vicinity. At other times, when the birds were yet distant from their young, and carrying fish in their bills, they would, on seeing a man, round to, drop their food, and perform the same evolutions. I, however, know nothing more remarkable of this species of Tern, than that it should breed, as I know from personal observation to be the case, along the whole of our Atlantic coast, in suitable places, from Texas to Labrador.

When travelling in stormy weather, they skim over the surface of the water, moving rapidly and close together; whereas in fine weather, they rise high, and proceed in a straggling manner. Now and then I have seen them alight among Tringas of different species, as well as among Razor-billed Shearwaters, on outward sand beaches.

STERNA HIRUNDO, *Linn.* Syst. Nat., vol. i. p. 227.—*Lath.* Ind. Ornith., vol. ii. p. 807.
—*Ch. Bonaparte*, Synopsis of Birds of the United States, 354.—*Richards. and Swains.* Fauna Bor. Amer. vol. ii. p. 412.

GREAT TERN, STERNA HIRUNDO, *Wils.* Amer. Ornith., vol. viii. p. 76, pl. 60, fig. 1.
GREAT OR COMMON TERN, *Nuttall*, Manual, vol. ii. p. 271.

Adult Male. Plate CCCIX.

Bill about the same length as the head, rather slender, compressed, nearly straight, tapering to a narrow point. Upper mandible with the dorsal line slightly arched, the ridge rather broad and convex at the base, narrow towards the end, the sides sloping, convex towards the end, the edges sharp and inflected, the tip very slender. Nasal groove rather long, and with a faint groove and ridge extending obliquely to the edge of the mandible; nostrils sub-basal, linear, direct, pervious. Lower mandible with the angle very narrow, extending beyond the middle, the dorsal line straight, the sides ascending and convex, the edges sharp and inflected, the tip very acute.

Head of moderate size, oblong; neck of moderate length; body very slender. Feet very small; tibia bare for a considerable space; tarsus very short, slender, compressed, covered anteriorly with twenty-two small scutella, laterally and behind with reticular scales; toes very small, slender, the first extremely small, the third longest, the fourth considerably shorter, the second shorter than the fourth in the same proportion; the anterior toes connected by reticulated webs, which are deeply concave at their margin. Claws arched, compressed, that of the hind toe smallest, of the middle by much the largest, and having the inner edge thin and dilated.

Plumage soft, close, blended, very short on the fore part of the head; the feathers, in general, broad and rounded; wings very long, narrow, and pointed; primary quills tapering to a rounded point, slightly curved inwards, the first longest, the rest rapidly graduated; secondary quills short, broad incurved, obliquely rounded, the inner more tapering. Tail long, very deeply forked, of twelve feathers, of which the outer are tapering, the middle short and rounded.

Bill bright coral-red, black towards the end, the tip light yellow; inside of mouth reddish-orange; eye hazel. Feet coral-red, lighter than the bill; claws brownish-black. Upper part of the head, and the hind neck half-way down, deep black, the anterior part tinged with brown, the posterior with blue. The sides of the head, the fore

neck, and all the lower parts, white, with a slight tinge of greyish-blue on the breast. Back, scapulars, and wings, light greyish-blue, the edges of the wings, the rump, and upper tail-coverts, white, slightly tinged with grey. First primary, with the outer web deep black, the shaft white, on the inner web a greyish-black band running along the shaft, narrow at the base, and widening so as to occupy the whole breadth of the web for an inch at the end, where it is hoary. The next five have the outer web, and a varying portion of the inner, in nearly their whole length hoary, but at the same time with a dusky shade, which becomes more apparent at the ends; the rest of the quills are like the back, but margined and tipped with white. Tail-feathers with the inner webs white, the outer webs of the colour of the back, paler on the middle feathers, gradually deepening outwards, and on the outer feathers dark or blackish-grey.

Length to end of tail 16 inches, to the fork of the tail 11, to end of wings $15\frac{3}{8}$, to end of claws $11\frac{1}{4}$; extent of wings $31\frac{1}{2}$; wing from flexure $11\frac{3}{12}$; tail to end of lateral feathers $7\frac{1}{12}$, to fork $3\frac{1}{12}$; bare part of tibia $\frac{6}{12}$; tarsus $\frac{10}{12}$; hind toe and claw $\frac{3}{12}$, middle toe and claw $1\frac{1}{12}$. Weight 5 oz.

The female is similar to the male, but rather smaller. In some instances I have seen a small portion of the forehead white.

Length to end of tail 15 inches, to the fork $11\frac{1}{2}$, to end of wings $15\frac{1}{4}$, to end of claws 11; extent of wings $30\frac{1}{4}$; wing from flexure $10\frac{3}{4}$. Weight 5 oz.

The young in their first plumage, have the bill dull greenish-black, with the tip yellowish; the feet greenish-yellow.

In winter, the bill is black, with the base pale orange, and the tip yellowish; the feet orange-yellow. The colours are as in the adult, the forehead white, the rest of the head dusky, the upper parts having the feathers slightly margined with lighter.

Length to end of tail $12\frac{3}{4}$, to the fork 11; to end of wings 14, to end of claws $10\frac{1}{2}$; extent of wings $29\frac{1}{4}$; wing from flexure $8\frac{1}{4}$.

America and British specimens present no essential differences when compared in considerable numbers. The outer web of the lateral tail-feather is blackish-grey, and the inner webs of the tail-feathers are white in all the specimens collected for comparison. The tarsus in American specimens varies in length from 9 to $10\frac{1}{2}$ twelfths, and the

claw of the middle toe from $2\frac{1}{2}$ to $4\frac{1}{2}$ twelfths; but similar differences are observed in the British birds.

The tongue is $1\frac{4}{12}$ inch long, sagittate and papillate at the base, very slender, tapering, the point slit, the upper surface a little concave, the lower horny towards the end. Aperture of posterior nares linear, 9 twelfths long. Palate with a middle and two lateral ridges. Œsophagus 6 inches long, extremely wide, its average diameter on the neck 7 twelfths, within the thorax 11 twelfths. The stomach is muscular, 1 inch long, the lateral muscles not distinguishable, the fasciculi of fibres being disposed as in the rapacious birds; the central tendinous spaces 3 twelfths in diameter; the cuticular lining strong, with broad longitudinal rugæ. The contents of the stomach, fishes. The proventriculus 1 inch long. Intestine 1 foot 7 inches long, of moderate diameter, convoluted, varying from $2\frac{5}{4}$ twelfths to $2\frac{1}{2}$ twelfths. Rectum 1 inch long. Cæca 5 twelfths long, with a diameter of $\frac{5}{4}$ of a twelfth.

The trachea is $3\frac{1}{4}$ inches long, $2\frac{1}{2}$ twelfths in breadth above, $1\frac{1}{2}$ twelfth below; its rings 103, feeble and unossified; the lateral muscles extremely slender; there are sterno-tracheal muscles, but none besides. Bronchial half-rings about 18.

SPOTTED SANDPIPER.

TOTANUS MACULARIUS, TEMM.

PLATE CCCX. MALE AND FEMALE.

IN the course of my last journey in search of information respecting the birds which at one season or other are found within the limits of the United States, I observed so vast a number of them in Texas, that I almost concluded that more than two-thirds of our species occur there. Among them I observed the beautiful bird now before you.

The Spotted Sandpiper has a wonderfully extensive range, for I have met with it not only in most parts of the United States, but also on the shores of Labrador, where, on the 17th June 1833, I found it breeding. On the 29th of July, the young were fully fledged, and scampering over the rocks about us, amid the putrid and drying cod-fish. In that country it breeds later by three months than in Texas; for on the head waters of Buffalo Bayou, about sixty miles from the margin of the Mexican Gulf, I saw broods already well grown on the 5th of May 1837. On the same day of the same month in 1832, a similar occurrence happened on an island near Indian Key, on the south-east coast of Florida. In Newfoundland, on the other hand, the young were just fully fledged on the 11th of August 1833. It appears strange that none were observed by Dr RICHARDSON on the shores of Hudson's Bay, or in the interior of that country. They are quite abundant along the margins of the Mississippi, the Ohio, and their tributaries, where they remain until driven off by the cold, and return about the beginning of April, at which period the Purple Martin also makes its appearance. In our Middle Districts, they arrive a fortnight later. On the Island of Jestico, in the Gulf of St Lawrence, about twenty pairs had nests and eggs on the 11th of June; and the air was filled with the pleasing sound of their voices while we remained there. The nests were placed among the tall slender grass that covered the southern part of the island. They were more bulky and more neatly constructed than any that I have examined southward of the Gulf of St Lawrence; and yet they were not to be compared with those found in Labrador, where, in every instance they were concealed under ledges of rocks extend-

ing for several feet over them, so that I probably should not have observed them, had not the birds flown off as I was passing. These nests were made of dry moss, raised to the height of from six to nine inches, and well finished within with slender grasses and feathers of the Eider Duck. As usual however, the eggs were always four, when the bird was sitting. They measure an inch and a quarter in length, by an inch at their thickest part, so that they have a shortish and bulky appearance, though they run almost to a point. They are smooth, and handsomely marked with blotches of deep brown and others of a lighter tint, on a greyish-yellow ground, the spots being larger and closer towards the rounded end. Both sexes incubate, and remain with their brood until the time of their departure.

My learned friend THOMAS NUTTALL has described the manners of this species as observed in the neighbourhood of Boston, with so much truth and accuracy, that I cannot do better than present you with his account of it, the more especially, that in so doing, I have an opportunity of expressing the high opinion I entertain of his talents and varied accomplishments. "The Peet Weet is one of the most familiar and common of all the New England marsh birds, arriving along our river shores, and low meadows, about the beginning of May, from their mild or tropical winter quarters in Mexico. As soon as it arrives on the coast, small roving flocks are seen, at various times of the day, coursing rapidly along the borders of our tide-water streams, flying swiftly and rather low, in circular sweeps along the meanders of the rock or river, and occasionally crossing from side to side, in rather a sportive and cheerful mien, than as the needy foragers they appear at the close of the autumn. While flying out in these wide circuits, agitated by superior feelings to those of hunger and necessity, we hear the shores re-echo the shrill and rapid whistle of 'weet, 'weet, 'weet, 'weet, and usually closing the note with something like a warble, as they approach their companions on the strand. The cry then varies to 'peet, 'weet, 'weet, 'weet, beginning high and gradually declining into a somewhat plaintive tone. As the season advances, our little lively marine wanderers often trace the streams some distance into the interior, resting usually in fresh meadows among the grass, sometimes even near the house, and I have seen their eggs laid in a strawberry bed; and the young and old, pleased with their allowed protection, familiarly fed, and probed the margin of the adjoining duck-pond, for their usual fare of worms

and insects. They have the very frequent habit of balancing or wagging the tail, in which even the young join as soon as they are fledged. From the middle to the close of May, the pairs, seceding from their companions, seek out a place for their nest, which is always in a dry open field of grass or grain, sometimes in the seclusion and shade of a field of maize, but most commonly in a dry pasture, contiguous to the sea shore; and in some of the solitary and small sea islands, several pairs sometimes nestle near to each other, in the immediate vicinity of the noisy nurseries of the quailing Terns. On being flushed from her eggs, the female goes off without uttering any complaint; but when surprised with her young, she practises all the arts of dissimulation common to many other birds, fluttering in the path, as if badly wounded, and generally proceeds in this way so far as to deceive a dog, and cause it to overlook the brood, for whose protection these instinctive arts are practised; nor are the young without their artful instinct, for on hearing the reiterated cries of their parents, they scatter about, and squatting still in the withered grass, almost exactly their colour, it is with careful search very difficult to discover them, so that in nine times out of ten, they would be overlooked, and only be endangered by the tread, which they would endure sooner than betray their cautious retreat.

“ At a later period the shores and marshes resound with the quick, clear, and oft-repeated note of peet weet, peet weet, followed up by a plaintive call on the young, of peet, peet, peet? peet? If this is not answered by the scattered brood, a reiterated 'weet, 'weet, 'weet, 'wait, 'wait, is heard, the voice dropping on the final syllables. The whole marsh and the shores at times echo to this loud, lively, and solicitous call of the affectionate parents for their brood. The cry, of course, is most frequent toward evening, when the little family, separated by the necessity of scattering themselves over the ground in quest of food, are again desirous of reassembling to roost. The young, as soon as hatched, run about the grass, and utter from the first a weak plaintive peep, at length more frequent and audible; and an imitation of the whistle of peet weet, is almost sure to meet with an answer from the sympathizing broods, which now throng our marshes. When the note appears to be answered, the parents hurry, and repeat their call with great quickness. Young and old, previous to their departure, frequent the sea shores, like most of the species, but never associate with

other kinds, nor become gregarious, living always in families till the time of their departure, which usually occurs about the middle of October."

My esteemed friend THOMAS MACCULLOCH of Pictou, Nova Scotia, having transmitted to me a curious account of the attachment of one of these birds to her eggs, I here insert it with pleasure. "Being on an excursion to the Hardwood Heights, which rise to the west of Pictou, my attention was attracted by the warble of a little bird, which appeared to me entirely new, and which proceeded from a small thicket a short way off. Whilst crossing an intervening meadow, I accidentally raised a Spotted Sandpiper from its nest, and having marked the spot I hastened forwards; but the shyness of the object of my pursuit rendered all my efforts unavailing, and returning to the nest which I had just left, I expected to find it still unoccupied; but the Sandpiper had again resumed her place, and left it with great reluctance, on my near approach. The nest contained four eggs, which I determined to remove on my return at night, and for the purpose of preventing the bird sitting again upon them, I placed a number of stones in a slanting position over the nest, and so close that it was impossible for the bird to get into it. On my return in the evening, however, I observed the little creature rise from beside the stones apparently in greater trepidation than ever, and more anxious to draw me away by the exhibition of all those little arts which they practise for this purpose. On examining the spot I was very much surprised to find that the poor thing had not only hollowed out a new nest, but had actually succeeded in abstracting two eggs from the other nest. How the bird had contrived to remove the eggs I cannot conceive, as the stones remained unaltered. This attachment to its nest and eggs appeared to me more singular as the bird had just commenced incubation, the eggs exhibiting very little appearance of the young."

In addition to the observations of THOMAS NUTTALL, I must inform you that this species is often observed to alight on the branches of trees hanging over water-courses, on which they walk deliberately, and with their usual delicate elegance of gait, and balancing of both body and tail. They are also wont to alight more frequently on the rails and stakes of fences, or on walls. I have seen them on the tops of hay-stacks, where they seemed to be engaged in pursuing insects. On several occasions I have found their nests in orchards of both peach and apple trees, at a considerable distance from water, the

use of which, indeed, they do not appear to require much during the progress of incubation, or the first weeks after hatching their young, when I have seen them rambling in search of food over large open fields of sweet potatoes and other vegetables, in the neighbourhood of some of our cities.

While these birds are flying, in the love season, the points of their wings are considerably bent down, and they propel themselves by strong and decided beats, supporting themselves afterwards by slow tremulous motions of their pinions, to the distance of some yards, when they repeat the strong beats, and thus continue until they realight, uttering all the while their well-known notes, so accurately described by my friend NUTTALL.

In the autumnal months, along the shores of La Belle Riviere, I have often with much delight watched the movements of these birds, when I have been surprised to see the pertinacity with which, after the first frosts, they would pursue their migration down the stream, for on attempting to make them fly the other way, they would rise, sometimes to the height of twenty yards, and flying over head or along the river, proceed downwards, although at any other time they would exhibit no such propensity. They run along the shores, and through shallow water, with great nimbleness; and while courting, the male struts before the female, with depressed wings, spreading out his tail and trailing it along the ground, in the manner of the Migratory and Rufous Thrushes.

The young become very fat in autumn, and afford delicious eating, for as they feed much on worms, aquatic insects, and small mollusca, their flesh seldom has a fishy taste. The male and female are alike, and almost equal in size. The young differ from the old until the approach of winter, when, with the exception of their being rather smaller, no difference can be perceived.

This species occurs also in Europe, and a few individuals have been shot in England.

TOTANUS MACULARIUS, *Temm. Man. d'Ornith. part ii. p. 656.*—*Ch. Bonaparte, Synopsis of Birds of United States, p. 325.*

SPOTTED SANDPIPER, TRINGA MACULARIA, *Wils. Amer. Ornith. pl. 59. fig. 1.*

SPOTTED TATLER or PEET WEET, *Nuttall, Manual, vol. ii. p. 162.*

Adult Male. Plate CCCX. Fig. 1.

Bill a little longer than the head, very slender, subcylindrical, straight, flexible, compressed, the point rather obtuse. Upper mandible with the dorsal line straight, the ridge convex, broader at the base, slightly depressed towards the end, the sides sloping, towards the end convex, the edges sharp, the tip slightly deflected. Nasal groove extending over three-fourths of the length of the bill; nostrils basal, linear, pervious. Lower mandible with the angle very long and extremely narrow, the dorsal line straight, the sides grooved at the base, convex towards the end.

Head small, oblong. Eyes rather large. Neck of moderate length. Body rather slender. Feet rather long and slender; tibia bare nearly half its length, scutellate before and behind; tarsus also scutellate before and behind; hind toe very small and elevated; fore toes rather long, very slender, connected by basal webs, of which the outer is much larger; second toe considerably shorter than fourth; all flat beneath, and marginate. Claws small, slightly arched, much compressed, rather sharp, that of the middle toe much larger, with the inner edge considerably dilated.

Plumage very soft, blended, on the fore part of the head very short. Wings long, narrow, pointed; primaries rather narrow and tapering, first longest, the rest rapidly graduated; secondaries short, broad, incurved, obliquely rounded, the inner elongated and tapering. Tail of moderate length, much rounded, of twelve rounded feathers.

Bill greenish-olive above, yellow beneath, the point of both mandibles black. Eye hazel. Feet pale yellowish flesh-colour, claws black. All the upper parts shining deep brownish-olive, the head longitudinally streaked, the back transversely barred, with black. A line from the bill to the eye and beyond it white, another beneath it dusky. All the lower parts white, marked with numerous brownish-black spots, smaller on the throat, largest and roundish on the breast and sides. Axillary feathers pure white, lower wing-coverts white mottled with dusky. Quills brownish-black, glossed with green, the elongated in-

ner secondaries like the back ; the primaries slightly tipped with white, the secondaries, excepting the inner, more distinctly so, the white forming on them a conspicuous band. Four middle tail-feathers like the back, with a band of black at the end, the tip white ; the next pair on each side similar, with the white tip larger ; the next barred with dusky on the outer web ; the lateral feather with the outer web white similarly barred.

Length to end of tail 8 inches, to end of wings $7\frac{1}{2}$, to end of claws $8\frac{1}{2}$; extent of wings $13\frac{3}{4}$; wing from flexure $4\frac{7}{8}$; tail 2 ; bill along the ridge 1 ; tarsus $\frac{10\frac{1}{2}}{1\frac{1}{2}}$; hind toe and claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; middle toe and claw $1\frac{1}{2}$.

Female. Plate CCCX. Fig. 2.

There is hardly any difference between the sexes.

The young in winter have the bill black at the end, dusky olive above, yellow beneath ; the feet yellowish flesh-colour. The lower parts are brownish-white, without spots ; the upper of the same brownish-olive as in the adult, but the head and hind neck destitute of streaks, and the rest with narrower and more numerous dusky bars.

The tongue is 10 twelfths long, slender, tapering to a point, grooved above, sagittate and papillate at the base. The roof of the mouth with a single row of papillæ, posteriorly divided into two series. Œsophagus 3 inches and 8 twelfths long, its diameter 2 twelfths, and nearly uniform. Proventriculus $\frac{1}{2}$ inch long, $3\frac{1}{2}$ twelfths in diameter. Stomach elliptical, $8\frac{1}{2}$ twelfths long, $6\frac{1}{2}$ twelfths in breadth ; its lateral muscles strong, the tendinous spaces oblong ; the cuticular lining with large longitudinal rugæ, and of a deep red colour. The contents of the stomach in this individual were remains of marine insects, and quartz sand. Intestine 10 inches long, its diameter varying from $1\frac{1}{2}$ twelfth to 1 twelfth ; it enlarges near the rectum to 2 twelfths. Rectum 1 inch and 1 twelfth ; cœca 1 inch and 1 twelfth, their diameter $\frac{3}{4}$ of a twelfth.

The trachea is 2 inches and 8 twelfths long, its diameter from 2 twelfths to 1 twelfth ; its rings 105, feeble and unossified. The lateral muscles extremely feeble ; sterno-tracheals moderate ; a single pair of inferior laryngeal muscles.

AMERICAN WHITE PELICAN.

PELECANUS AMERICANUS.

PLATE CCCXI. ADULT MALE.

I FEEL great pleasure, good Reader, in assuring you, that our White Pelican, which has hitherto been considered the same as that found in Europe, is quite different. In consequence of this discovery, I have honoured it with the name of my beloved country, over the mighty streams of which, may this splendid bird wander free and unmolested to the most distant times, as it has already done from the misty ages of unknown antiquity.

In Dr RICHARDSON'S Introduction to the second volume of the Fauna Boreali-Americana, we are informed, that the *Pelecanus Onocrotalus* (which is the bird now named *P. Americanus*) flies in dense flocks all the summer in the fur countries. At page 472, the same intrepid traveller says, that "Pelicans are numerous in the interior of the fur countries up to the sixty-first parallel; but they seldom come within two hundred miles of Hudson's Bay. They deposit their eggs usually on rocky islands, on the brink of cascades, where they can scarcely be approached; but they are otherwise by no means shy birds." My learned friend also speaks of the "long thin bony process seen on the upper mandible of the bill of this species;" and although neither he nor Mr SWAINSON pointed out the actual differences otherwise existing between this and the European species, he states that no such appearance has been described as occurring on the bills of the White Pelicans of the old Continent.

When, somewhat more than thirty years ago, I first removed to Kentucky, Pelicans of this species were frequently seen by me on the sand-bars of the Ohio, and on the rock-bound waters of the rapids of that majestic river, situated, as you well know, between Louisville and Shippingport. Nay when, a few years afterwards, I established myself at Henderson, the White Pelicans were so abundant that I often killed several at a shot, on a well known sand-bar, which protects Canoe Creek Island. During those delightful days of my early manhood, how often have I watched them with delight! Methinks in-

deed, Reader, those days have returned to me, as if to enable me the better once more to read the scattered notes contained in my often-searched journals.

Ranged along the margins of the sand-bar, in broken array, stand a hundred heavy-bodied Pelicans. Gorgeous tints, all autumnal, enrich the foliage of every tree around, the reflection of which, like fragments of the rainbow, seems to fill the very depths of the placid and almost sleeping waters of the Ohio. The subdued and ruddy beams of the orb of day assure me that the Indian summer has commenced, that happy season of unrivalled loveliness and serenity, symbolic of autumnal life, which to every enthusiastic lover of nature must be the purest and calmest period of his career. Pluming themselves, the gorged Pelicans patiently wait the return of hunger. Should one chance to gape, all, as if by sympathy, in succession open their long and broad mandibles, yawning lazily and ludicrously. Now, the whole length of their largest quills is passed through the bill, until at length their apparel is as beautifully trimmed as if the party were to figure at a rout. But mark, the red beams of the setting sun tinge the tall tops of the forest trees; the birds experience the cravings of hunger, and to satisfy them they must now labour. Clumsily do they rise on their columnar legs, and heavily waddle to the water. But now, how changed do they seem! Lightly do they float, as they marshal themselves, and extend their line, and now their broad paddle-like feet propel them onwards. In yonder nook, the small fry are dancing in the quiet water, perhaps in their own manner bidding farewell to the orb of day, perhaps seeking something for their supper. Thousands there are, all gay, and the very manner of their mirth, causing the waters to sparkle, invites their foes to advance toward the shoal. And now the Pelicans, aware of the faculties of their scaly prey, at once spread out their broad wings, press closely forward with powerful strokes of their feet, drive the little fishes toward the shallow shore, and then, with their enormous pouches spread like so many bag-nets, scoop them out and devour them in thousands.

How strange it is, Reader, that birds of this species should be found breeding in the Fur Countries, at about the same period when they are to be found on the waters of the inland bays of the Mexican Gulf! On the 2d of April 1837, I met with these birds in abundance at

the south-west entrance or mouth of the Mississippi, and afterwards saw them in the course of the same season, in almost every inlet, bay, or river, as I advanced toward Texas, where I found some of them in the Bay of Galveston, on the 1st of May. Nay, while on the Island of Grande Terre, I was assured by Mr ANDRY, a sugar-planter, who has resided there for some years, that he had observed White Pelicans along the shores every month of the year. Can it be, that in this species of bird, as in many others, barren individuals should remain in sections of countries altogether forsaken by those which are reproductive? The latter, we know, travel to the Rocky Mountains and the Fur Countries of the north, and there breed. Or do some of these birds, as well as of certain species of our ducks, remain and reproduce in those southern localities, induced to do so by some organic or instinctive peculiarity? Ah, Reader, how little do we yet know of the wonderful combinations of Nature's arrangements, to render every individual of her creation comfortable and happy under all the circumstances in which they may be placed!

My friend JOHN BACHMAN, in a note to me, says that "this bird is now more rare on our coast than it was thirty years ago; for I have heard it stated that it formerly bred on the sand banks of our Bird Islands. I saw a flock on the Bird Banks off Bull's Island, on the 1st day of July 1814, when I procured two full-plumaged old birds, and was under the impression that they had laid eggs on one of those banks, but the latter had the day previous to my visit been overflowed by a spring tide, accompanied with heavy wind."

A single pair of our White Pelicans were procured not far from Philadelphia, on the Delaware or Schuylkill, ten or twelve years ago. These were the only birds of this kind that, I believe, were ever observed in our Middle Districts, where even the Brown Pelican, *Pelecanus fuscus*, is never seen. Nor have I heard that an individual of either species has ever been met with on any part of the shores of our Eastern States. From these facts, it may be concluded that the White Pelicans reach the Fur Countries of Hudson's Bay by inland journeys, and mostly by passing along our great western rivers in the spring months, as they are also wont to do, though with less rapid movements, in autumn.

Reader, I have thought a thousand times perhaps that the present state of migration of many of our birds, is in a manner artificial, and

that a portion of the myriads of Ducks, Geese, and other kinds, which leave our Southern Districts every spring for higher latitudes, were formerly in the habit of remaining and breeding in every section of the country that was found to be favourable for that purpose. It seems to me that it is now on account of the difficulties they meet with, from the constantly increasing numbers of our hostile species, that these creatures are urged to proceed towards wild and uninhabited parts of the world, where they find that security from molestation necessary to enable them to rear their innocent progeny, but which is now denied them in countries once their own.

The White American Pelican never descends from on wing upon its prey, as is the habit of the Brown Pelican; and, although on many occasions it fishes in the manner above described, it varies its mode according to circumstances, such as a feeling of security, or the accidental meeting with shoals of fishes in such shallows as the birds can well compass. They never dive for their food, but only thrust their head into the waters as far as their neck can reach, and withdraw it as soon as they have caught something, or have missed it, for their head is seldom out of sight more than half a minute at a time. When they are upon rivers, they usually feed along the margin of the water, though, I believe, mostly in swimming depth, when they proceed with greater celerity than when on the sand. While thus swimming, you see their necks extended, with their upper mandible only above the water, the lower being laterally extended, and ready to receive whatever fish or other food may chance to come into the net-like apparatus attached to it.

As this species is often seen along the sea shores searching for food, as well as on fresh water, I will give you a description of its manners there. While on the Island of Baratavia in April 1837, I one afternoon observed a number of White Pelicans in company with a flock of the Brown species, all at work, searching for food, the Brown in the manner already described, the White in the following. They all swam against the wind and current, with their wings partially extended, and the neck stretched out, the upper mandible alone appearing above the surface, while the lower must have been used as a scoop-net, as I saw it raised from time to time, and brought to meet the upper, when the whole bill immediately fell to a perpendicular position, the water was allowed to run out, and the bill being again raised up-

wards, the fish was swallowed. After thus swimming for about an hundred yards in an extended line, and parallel to each other, they would rise on wing, wheel about, and realight at the place where their fishing had commenced, when they would repeat the same actions. They kept farther from the shore than the Brown Pelicans, and in deeper water, though at times one of the latter would dive after fish close to some of them, without their shewing the least degree of enmity towards each other. I continued watching them more than an hour, concealed among a large quantity of drifted logs, until their fishing was finished, when they all, White and Brown together, flew off to the lee of another island, no doubt to spend the night there, for these birds are altogether diurnal. When gorged, they retire to the shores, to small islands in bays or rivers, or sit on logs floating in shallow water, at a good distance from the beach; in all which situations they are prone to lie down, or stand closely together.

Being anxious, when on my last expedition, to procure several specimens of these birds for the purpose of presenting you with an account of their anatomical structure, I requested all on board our vessel to shoot them on all occasions; but no birds having been procured, I was obliged to set out with a "select party" for the purpose. Having heard some of the sailors say that large flocks of White Pelicans had been seen on the inner islets of Baratavia Bay, within the island called Grande Terre, we had a boat manned, and my friend EDWARD HARRIS, my son, and myself, went off in search of them. After a while we saw large flocks of these birds on some grounded logs, but found that it was no easy matter to get near them, on account of the shallowness of the bay, the water being scarcely two feet in depth for upwards of half a mile about us. Quietly, and with all possible care, we neared a flock; and strange it was for me to be once more within shooting distance of White Pelicans. It would no doubt be a very interesting sight to you, were you to mark the gravity and sedateness of some hundreds of these Pelicans, closely huddled together on a heap of stranded logs, or a small bank of racoon oysters. They were lying on their breasts, but as we neared them they all arose deliberately to their full height. Some, gently sliding from the logs, swam off towards the nearest flock, as unapprehensive of danger as if they had been a mile distant. But now their bright eyes were distinctly visible to us, our guns,

charged with buckshot, were in readiness, and my son was lying in the bow of the boat waiting for the signal. "Fire!"—The report is instantly heard, the affrighted birds spread their wings and hurry away, leaving behind three of their companions floating on the water. Another shot from a different gun brought down a fourth from on wing; and as a few were scampering off wounded, we gave chase, and soon placed all our prizes in the after sheets. About a quarter of a mile farther on, we killed two, and pursued several that were severely wounded in the wing, but they escaped, for they swam off so rapidly that we could not propel our boat with sufficient force amidst the tortuous shallows. The Pelicans appeared tame, if not almost stupid; and at one place, where there were about sixty on an immense log, could we have gone twenty yards nearer, we might have killed eight or ten at a single discharge. But we had already a full cargo, and therefore returned to the vessel, on the decks of which the wounded birds were allowed to roam at large. We found these Pelicans hard to kill, and some which were perforated with buckshot did not expire until eight or ten minutes after they were fired at. A wonderful instance of this tenacity of life was to be seen on board a schooner then at anchor in the harbour. A Pelican had been grazed on the hind part of the head with an ounce ball from a musket, and yet five days afterwards it was apparently convalescent, and had become quite gentle. When wounded, they swim rather sluggishly, and do not attempt to dive, or even to bite, like the Brown Pelicans, although they are twice as large, and proportionally stronger. After being shot at, they are perfectly silent, but when alighted they utter a hollow guttural sound somewhat resembling that produced by blowing through the bung-hole of a cask.

The White Pelicans appear almost inactive during the greater part of the day, fishing only soon after sunrise, and again about an hour before sunset; though at times the whole flock will mount high in the air, and perform extended gyrations in the manner of the Hooping Crane, Wood Ibis, and Vultures. These movements are probably performed for the purpose of assisting their digestion, and of airing themselves, in the higher and cooler regions of the atmosphere. Whilst on the ground, they at times spread their wings to the breeze, or to the rays of the sun; but this act is much more rarely performed by them than by the Brown Pelicans. When walking, they seem exceedingly awkward, and like many cowardly individuals of our own

species, are apt to snap at objects which they appear to know perfectly to be so far superior to them as to disdain taking notice of them. Their usual manner of flight is precisely similar to that of our Brown species. It is said by authors that the White Pelican can alight on trees; but I have never seen a single instance of its doing so. I am of opinion that the ridge projecting from the upper mandible increases in size as the bird grows older, and that it uses that apparatus as a means of defence or of attack, when engaged with its rivals in the love-season.

The number of small fishes destroyed by a single bird of this species may appear to you, as it did to me, quite extraordinary. While I was at General HERNANDEZ'S plantation in East Florida, one of them chanced to pass close over the house of my generous host, and was brought dead to the ground. It was not a mature bird; but apparently about eighteen months old. On opening it, we found in its stomach several hundreds of fishes, of the size of what are usually called minnows. Among the many which I have at different times examined, I never found one containing fishes as large as those commonly swallowed by the Brown species, which, in my opinion, is more likely to secure a large fish by plunging upon it from on wing, than a bird which must swim after its prey.

This beautiful species,—for, Reader, it is truly beautiful, and you would say so were you to pick it up in all the natural cleanness of its plumage, from the surface of the water,—carries its crest broadly expanded, as if divided into two parts from the centre of the head. The brightness of its eyes seemed to me to rival that of the purest diamond; and in the love season, or the spring of the year, the orange-red colour of its legs and feet, as well as of the pouch and bill, is wonderfully enriched, being as represented in my plate, while during the autumnal months these parts are pale. Its flesh is rank, fishy, and nauseous, and therefore quite unfit for food, unless in cases of extreme necessity. The idea that these birds are easily caught when gorged with fish, is quite incorrect, for when approached, on such an occasion, they throw up their food, as Vultures are wont to do.

I regret exceedingly that I cannot say any thing respecting their nests, eggs, or young, as I have not been in the countries in which they are said to breed.

PELECANUS AMERICANUS.

Adult Male. Plate CCCXI.

Bill a little more than thrice the length of the head, rather slender, almost straight, depressed. Upper mandible linear, depressed, convex at the base, gradually flattened and a little enlarged to near the end, when it again narrows, and terminates in a hooked point. The ridge is broad and convex at the base, becomes gradually narrowed and flattened beyond the middle, is elevated into a thin crest about an inch high, of a fibrous structure, and about three inches in length (in some specimens as much as five inches) which is continued forwards of less elevation to the extent of an inch farther. The ridge of the mandible is then narrow and flat, and terminates in the unguis, which is oblong, slightly carinate above, curved, obtuse, concave beneath. The edges are very sharp and a little involute; the lower surface of the mandible has a median slender sharp ridge, on each side of which, at the distance of a quarter of an inch is a stronger ridge having a groove in its whole length; the sides then slope upwards to the incurved margin, and in this latter space is received the edge of the other mandible. Lower mandible having its crura separated, very slender, elastic, and meeting only at the very extremity, so that the angle or interspace may be described as extremely long, occupying in fact the whole length of the bill excepting four-twelfths of an inch at the end; for two-thirds of its length from the base, the lower mandible is broader than the upper, which is owing to the crura lying obliquely, but beyond the crest it is narrower; the extremely short dorsal line ascending, convex, the edges inflected, sharp, and longitudinally grooved. To the lower mandible, in place of the skin or membrane filling up the angle in most other birds, is appended a vast sac seven inches in depth opposite the base of the bill, and extending down the throat about eight inches, so that its length from the tip of the lower mandible is twenty-one and a half inches. It is formed of the skin, which is thin, transparent, elastic, rugous, highly vascular, and capable of being expanded like a net, supported by the elastic mandibles to the breadth of nine and a half inches.

Head small, oblong; neck long, stout; body full, rather flattened. Feet short and very stout; tibia bare at its lower part, covered all round with small scales; tarsus short, very stout, compressed, covered all round with hexagonal scales, of which the anterior are much larger;

toes in the same plane, all connected by reticulated webs, the first shortest, the second an inch shorter than the fourth, which is considerably longer than the third, scaly at the base, scutellate over the rest of their extent. Claws short, strong, curved, rather blunt, that of the middle toe with a sharp pectinate inner edge.

Feathers of the head and neck exceedingly small, slender, and of a downy texture, those on the fore part of the head a little more compact; on the nape they are elongated, acuminate, and form a longitudinal narrow crest, which runs down the back of the neck. The feathers in general are lanceolate, acuminate, and of moderately dense texture; those at the junction of the neck and breast anteriorly are stiffer and more elongated. Wings very long, rather narrow, rounded; the humerus and cubitus very long in proportion; primaries much curved; secondaries rather narrow, also incurved toward the end, the inner extending when the wing is closed far beyond the tips of the primaries. Tail short, broad, rounded, of *twenty-four* feathers, which are broad and abruptly acuminate.

Bill bare, space about the eye, and feet, rich bright yellow, becoming brighter before their departure for their breeding grounds; claws yellowish-brown; tip of the bill brighter than the rest. Iris white, in younger birds dusky. The general colour of the plumage is pure white; the crest, the elongated feathers on the fore part of the breast, and those near the edge of the cubitus, pale yellow. The alula, primary coverts, and primary quills, black, the shafts white, becoming brownish-black, toward the end. The inner ten secondaries are white, the rest black, more or less tipped with greyish-white, their bases white, that colour more extended on the inner than the outer, the shafts of all the quills white beneath, those of the secondaries tinged with grey.

Dimensions of an old male. Length to end of tail $61\frac{3}{4}$ inches, to end of wing $61\frac{3}{4}$, to end of claws $66\frac{3}{4}$, from the point of the bill to the carpal joint 40; extent of wings 103; wing from flexure $24\frac{1}{2}$; length of cubitus 15; tail $6\frac{1}{4}$; bill along the ridge $13\frac{3}{4}$, along the edge of lower mandible 15; breadth of lower mandible at the base 2; bare part of tibia 1; tarsus $4\frac{8}{12}$; middle toe $4\frac{1}{2}$, its claw $\frac{5}{8}$; outer toe $4\frac{1}{2}$, its claw $\frac{8}{12}$; inner toe 3, its claw $\frac{7}{12}$; hind toe $1\frac{3}{4}$, its claw $\frac{8}{12}$. Weight $17\frac{1}{2}$ lb.

The female is rather less, and in as far as I am warranted by the

examination of several individuals in stating, is destitute of the horny crest of the upper mandible.

A male, shot near Grande Terre, in the Gulf of Mexico, examined. The skin is very thin, but the subcutaneous cellular tissue is extremely developed, forming a thick reticular layer over the whole body. The internal cells are also of vast size, the right hepatic being $4\frac{1}{2}$ inches long, the right abdominal $4\frac{1}{2}$ by 4; the left abdominal $5\frac{1}{2}$ by 4; the clavicular cell is not formed by a single cavity, but of numberless cellules, like those of the subcutaneous tissue. The heart *n* is triangular, pointed, 3 inches long, 2 inches and 10 twelfths in breadth; the aorta branches at the base, as in other birds, sending off the two trunks which separate into the subclavian and carotid. The lobes of the liver are extremely unequal, the right, *o*, being 4 inches in length, and $2\frac{1}{4}$ in breadth, while the left, *p*, is only 2 inches long, and $1\frac{1}{4}$ inch broad.

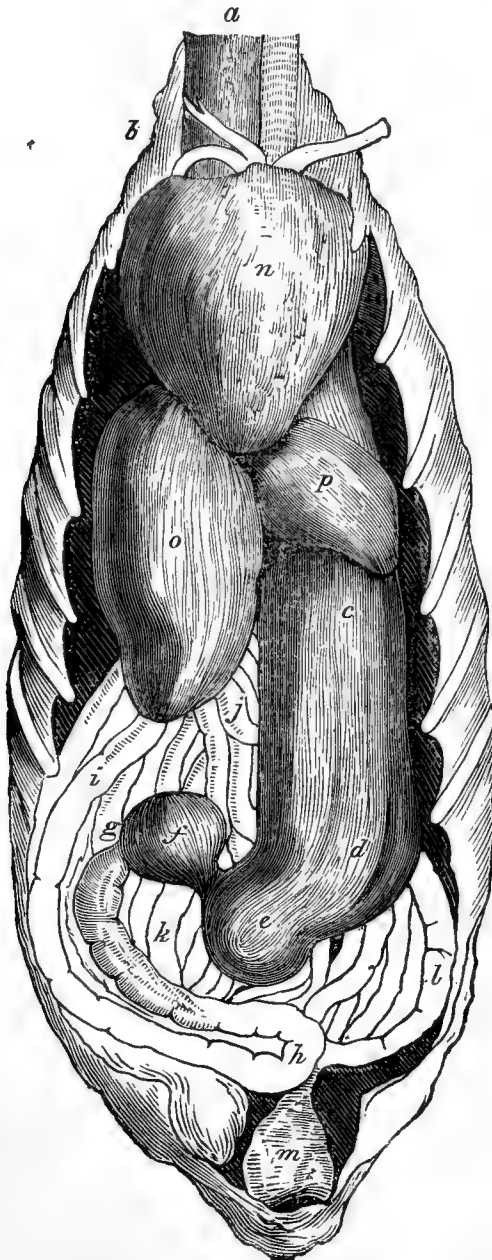
The mandibles are entirely covered with skin, of which the subcutaneous tissue is wanting, the cutis condensed, and the cuticle in large irregular longitudinal plates, leaving the surface somewhat rough and scaly. The crest-like excrescence on the ridge of the upper mandible is not formed of bone, nor otherwise connected with the osseous surface, which is smooth and continuous beneath it, than by being placed upon it, like any other part of the skin, and when softened by immersion in a liquid may be bent a little to either side. It is composed internally of erect slender plates of a fibrous texture, externally of horny fibres, which are erect on the sides, and longitudinal on the broadened ridge; these fibres being continuous with the cutis and cuticle. The skin of the mandible is continuous with that of the pouch, of which the structure is as follows. Externally there is a layer of cuticle, beneath which is the cutis, extremely thin, and with the cuticle thrown into longitudinal rugæ when contracted. The internal surface is also of cuticle, and beneath it is a layer of cutis. Between these two very thin layers of skin, is interposed an equally thin layer, composed of two sets of very slender muscular fibres, separated from each other, and running in two opposite directions. The outer fibres run in fasciculi from the lower and inner edge of the mandible; those from its base pass downwards, those arising more anteriorly pass gradu-

ally more forwards, and spreading out, reach the middle line of the pouch. The inner fibres have the same origin, and pass in a contrary direction, backwards and inwards. From the hyoid bone to the junction of the two crura of the mandible, which takes place almost at the very tip, there extends a thin band of longitudinal muscular fibres, in the centre of which is a cord of elastic tissue. By means of this apparatus, the sac is contracted, so as to occupy little space. When the bill is opened, the crura of the lower mandible separate from each other to a considerable extent, by the action of the muscles inserted into their base, this depending upon their oblique position, and the sac is expanded. The upper mandible is capable of being moved to a considerable extent.

Below the anterior angle of the eye is a small sac about 5 twelfths of an inch in length, with an external aperture of 2 twelfths, and filled with a pulpy substance. The nostrils are linear, about 3 twelfths of an inch long, and quite concealed by the wrinkles of the skin. The aperture of the posterior nares 8 twelfths. The tongue is an extremely small, papilliform body, $3\frac{1}{2}$ twelfths of an inch long, and 1 twelfth in diameter. The aperture of the glottis is linear, 8 twelfths in length, destitute of papillæ behind.

The pharynx is about $2\frac{1}{2}$ inches in breadth. The œsophagus *a*, at the commencement, or opposite the tongue, has a diameter of about 6 inches, and contracts until the middle of the neck, where it is 3 inches in width; at its entrance into the thorax at *b* it contracts to $1\frac{1}{2}$ inch, but is dilatable to 3 inches; at this part, its inner coat is thrown into very prominent longitudinal rugæ. The structure of the œsophagus is similar to that of the Loon already described, but its muscular coat is much thinner. On entering the thorax, it again expands to a diameter of 3 inches. Its length from the glottis, exclusive of the proventriculus, is 2 feet. The proventriculus, *cd*, when not extended, has a diameter of 2 inches, its length being 4 inches and 8 twelfths. It is marked internally with six longitudinal broad ridges, about half an inch in breadth, and separated by grooves; and its cuticular lining is $1\frac{1}{2}$ twelfths thick, of a compact but soft texture, elevated into tortuous reticulated ridges. The glandules, which are cylindrical, the largest 3 twelfths of an inch long, $\frac{1}{2}$ twelfth in diameter, form a complete elongated belt. The muscular coat is also very thick. its inner

layer composed of transverse, its outer of longitudinal fibres, and the greatest thickness of the walls of the proventriculus is about $4\frac{1}{2}$ twelfths of an inch. The stomach, *e*, properly so called, is extremely small, being of a roundish, compressed form, $1\frac{1}{4}$ inches in length, and of the same breadth; its muscular coat composed of slender fasciculi, and not presenting a distinction into lateral and inferior muscles, its



inner coat smooth. Appended to it on the right side is a sac *f*, of a roundish form, $1\frac{1}{2}$ inch in length, and $1\frac{1}{2}$ in breadth, joining it by a contraction, of which the diameter is $\frac{1}{2}$ inch, and opening directly into

the proventriculus, as well as into the stomach; its walls thin, its inner surface smooth, with numerous mucous crypts irregularly disposed. The pylorus, *g*, is exceedingly small, $1\frac{1}{2}$ twelfths in diameter, with a thickened margin.

The duodenum *g, h, i*, passes backwards and upwards to the length of $6\frac{1}{2}$ inches, returns upon itself enclosing the pancreas, receives the biliary ducts at the distance of 14 inches from the pylorus. The gall-bladder is oblong, 2 inches long, and 10 twelfths broad. The intestine then forms numerous convolutions, *j, k, l*, occupying the whole abdomen, and lying in part over the stomach and proventriculus. Its entire length is 10 feet 10 inches. Its diameter varies little, it being at the upper part 5 twelfths of an inch, towards the rectum $3\frac{1}{2}$ twelfths. The rectum is $5\frac{1}{2}$ inches long, including the cloaca, *m*, which is globular, and about $2\frac{1}{2}$ inches in diameter. The cœca are 1 inch and 1 twelfth in length, 4 twelfths in diameter, cylindrical, rounded at the end. The muscular coat of the intestine is very strong, the inner vilous.

One of the testes is 1 inch long, the other $1\frac{1}{2}$; their form oblong. In the proventriculus and stomach is a vast accumulation of small lumbrici, about $1\frac{1}{4}$ inch in length, and amounting to about 1000.

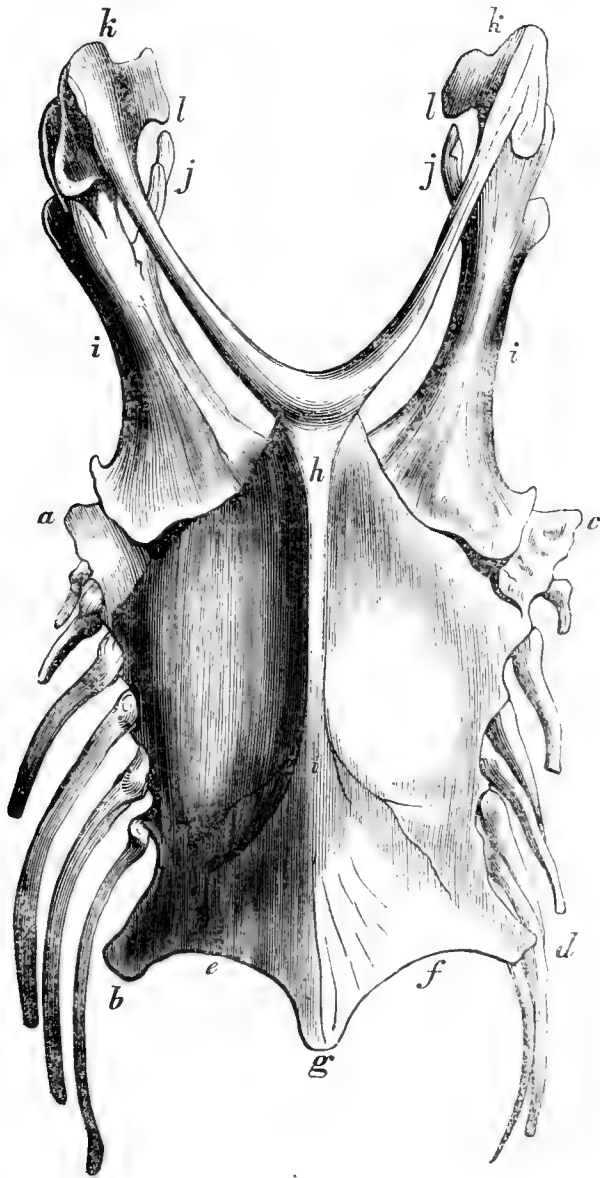
The trachea is 1 foot 10 inches long, a little flattened, $\frac{1}{2}$ inch in diameter throughout, but a little narrower about the middle; the rings 160, not ossified, excepting the lower. The contractor muscles are very small; as are the sterno-tracheal; and the inferior larynx is destitute of muscles. The bronchi are large, 5 twelfths in diameter, of 25 half rings.

The upper mandible is hollow in its whole extent; but the lateral spaces intervening between the edges of the median bone or ridge and the margins, are filled with a beautiful net-work of bony spiculæ. The two superior maxillary branches of the fifth pair of nerves, which are very large, being about 1 twelfth of an inch in diameter at the base, run close together along the median line, sending off branches at intervals, and extending to the end of the mandible. The lower mandible is also hollow, and similarly reticulated. The inferior maxillary branch, having entered on the inner side at the base, runs in like manner along its whole length, and is of the same thickness; by an aperture on the outer side near the base, it sends off a branch almost as

thick, which runs within the membrane of the gular sac, parallel to the mandible, and about half an inch distant from it, sending off branches at intervals. The sac is plentifully supplied with bloodvessels.

The nasal cavity is of an oblong form, 1 inch and 5 twelfths in length, passing obliquely backwards and upwards from the aperture of the posterior nares, and opening externally by curving forwards; its greatest diameter 5 twelfths, in its lower third 3 twelfths, and so continuing until it expands into the inferior slit-like aperture, which is 8 twelfths long. The cavity of the nose is thus small, and the olfactory nerve, which passes out from the anterior part of the brain, is a slender filament, about $\frac{1}{5}$ of a twelfth in diameter. It runs at first through a bony tube, then passes along the bony septum of the orbits, in contact for a short space with the superior maxillary nerve of the fifth pair, which at its commencement makes a great curve upwards, and crosses the orbit to enter the maxillary cavity, which has no communication with the olfactory. Fig. 2 represents the sternum viewed from before. It is remarkable chiefly for its great breadth and convexity. Its sides, *a, b, c, d*, are nearly parallel; its posterior margin broad, with two shallow notches, *e, f*, separated by a short conical obtuse median process. The crest or ridge, *h, i*, is carried forward in front, where it is only, however, of moderate height, and is not continued to the posterior extremity, but terminates at *i*, in the most convex part. The coracoid bones, *i, i*, are extremely large, very broad at their lower part, and having a deep groove and thin elongated process, *j*, at the upper for the tendon of the pectoralis medius, which raises the wing. The furcula, *k, k, l*, is ankylosed with the crest of the sternum, at *h*, has its crura moderately stout and much diverging, and its upper extremity very broad and recurvate. The scapula, of which only the anterior process *t, l*, is seen, is small. A sternal apparatus like this indicates a steady and powerful flight, the wings being supported upon a very firm basis, and well separated. The great mass of the pectoral muscle being thrown forward, it acts more directly than in such birds as the Gallinæ and Ducks, in which it is placed farther backwards, and although its bulk is not so great as in them, it is more advantageously situated. The sternal apparatus of this Pelican is thus extremely similar to that of the Cormorant, and the American Anhinga, and is also constructed

on the same plan as that of the Gannets, although in the latter its body is more elongated.



LONG-TAILED DUCK.

FULIGULA GLACIALIS, BONAP.PLATE CCCXII. MALE AND FEMALE IN SUMMER, MALE IN WINTER,
AND UNFLEDGED YOUNG.

IN the course of one of my rambles along the borders of a large fresh-water lake, near Bras-d'or in Labrador, on the 28th of July 1833, I was delighted by the sight of several young broods of this species of Duck, all carefully attended to by their anxious and watchful mothers. Not a male bird was on the lake, which was fully two miles distant from the sea, and I concluded that in this species, as in many others, the males abandon the females after incubation has commenced. I watched their motions a good while, searching at the same time for the nests, one of which I was not long in discovering. Although it was quite destitute of anything bearing the appearance of life, it still contained the down which the mother had plucked from herself for the purpose of keeping her eggs warm. It was placed under an alder bush, among rank weeds, not more than eight or nine feet from the edge of the water, and was formed of rather coarse grass, with an upper layer of finer weeds, which were neatly arranged, while the down filled the bottom of the cavity, now apparently flattened by the long sitting of the bird. The number of young broods in sight induced me to search for more nests, and in about an hour I discovered six more, in one of which I was delighted to find two rotten eggs. They measured 2 inches and $\frac{1}{8}$ long, by $1\frac{4}{8}$ broad, were of a uniform pale yellowish-green, and quite smooth.

My young companions had, unfortunately for me, walked that morning to Blanc Sablon, about thirty miles distant, down the Straits of Belle Isle; and having no dog to assist me in procuring some of the young ducks, I was obliged to enact the part of one myself, although the thermometer that day was $45^{\circ} 50'$, and the atmosphere felt chilly. I gave chase to the younglings, which made for different parts of the shore, as I followed them up to my middle in the water, while they dived before me like so many Water-witches, the mothers keeping aloof, and sounding their notes of alarm and admonition. I was fortu-

nate enough to procure several of the young birds, and afterwards shot one of the old, which having young much smaller than the rest, was more anxious for their safety, and kept with them within shot. She and the young were afterwards put in rum, to be subsequently examined. I counted eleven broods on the same pond, and Mr JONES assured me that these birds always breed in numbers together, but rarely on the same lake two successive years. Their plumage was ragged, in so far as I could judge, and the individual which I shot was similar. They never dived while in my sight, but seemed constantly to urge their young to do so, and the little things so profited by the advice of their parents, that had they remained in the water, instead of making, after a while, for the land, I believe I should not have succeeded, after all my exertions, in capturing a single one of them.

The gentleman above mentioned informed me that the old birds keep the young in the ponds until they are quite able to fly, or until the end of August, when the flocks remove on wing to the sea, and soon after leave the coast, seldom reappearing before the first days of May, or about two weeks before most other kinds of ducks. The little ones which I procured, were as you see them represented in my plate. Those that were larger were of the same colour, and none shewed any feathers on their bodies. Now and then, like all other young ducks, they would skim over the surface of the water with astonishing rapidity, emitting a sharp note somewhat resembling the syllables *pee, pee, pee*, and would then dive with the quickness of thought. When squatted among the moss, they allowed me to take them without making any attempt to escape. The young were put in a tub, and had some soaked biscuit placed near them; but they were all found dead the next morning.

The range of this noisy, lively, and beautiful duck, extends along our coast as far south as Texas, and it is also found at the mouth of the Columbia River; but the species is never found on any of our fresh-water courses, and I am quite confident that Mr SAY mistook for it the Pintail Duck, *Anas acuta*, when he says that he found it on the waters of the Missouri. During all my residence in the neighbourhood of the Mississippi, and in the course of all my journeys on and along its waters, I never saw one of these birds, or heard of any having occurred on that stream above its confluence with the Gulf of Mexico; whereas the Pintails are extremely abundant there, as well as on the

Missouri, the Ohio, and all our western streams, in spring and autumn. Few Long-tailed Ducks are to be seen in the market of New Orleans, and in fact they are altogether what our gunners usually call "sea ducks."

The period of the first appearance of this species in autumn depends much on the state of the weather. I have known a difference of a whole month in the Sound, and quite as much in Chesapeake Bay, in both of which it is most abundant in winter, rarely proceeding farther south until driven away by extreme cold. Their advance from Labrador and Newfoundland along the coast, until they reach Long Island, is more hurried than afterwards. They arrive in small flocks, which are soon joined by others, and as they are prone to congregate, vast numbers are seen together in winter, when their cacklings, though different from those of our frogs in spring, are almost as incessant from sunset until dawn. For my part, I have never perceived any resemblance which their notes bear to the words "south-southerly," but think their noisy cries as duckish as those of the Mallard, although sharper and more musical. The best imitation is given by my friend NUTTALL, but if you attempt to reduce the syllables to sounds, there is some probability of your at least succeeding in exciting laughter in yourself or others. He says the notes are "ogh, ough, egh," and again "ogh, ogh, ogh, ough, egh," and adds that they are guttural, and have a ludicrous drawling tone. Dr RICHARDSON informs us that "the peculiar cry of this duck is celebrated in the songs of the Canadian voyagers." This to my mind would imply that the Long-tailed Ducks are seen by these adventurous travellers on the waters of the inland streams, which would appear to be at variance with their usual habits, for unless during the breeding season, they give a decided preference to the sea; and indeed generally keep in deep water. Owing to their reiterated cries these birds are named "Noisy Ducks;" but they have various appellations, among others those of "old wives," and "old squaws."

Although, like all sea-ducks, the "Old Wife" swims deeply, it moves with a grace and celerity, which if not superior to those of any of its tribe, are at least equal; and when the weather is rough, and the waters agitated, it raises its tail in the same manner as the Ruddy Duck and Pintail. When advancing in smooth water, its speed is such as to cause a considerable swell before it, such as sea-faring persons usually call a "bone." Like all others of its tribe, it also pre-

fers swimming against both wind and tide, as then it can sooner take wing if necessary. In calm and pleasant weather, like its congeners, it is fond of throwing its body almost over, and of pluming itself in that position. When on wing, the long feathers of its tail do not seem to aid its progress, any more than in other species.

It seldom removes from the north on its way to our Middle Districts in large flocks; but at the approach of the breeding season, and after the birds appear to be all paired, they fly northward in long lines, or broad fronts, moving high or low according to the state of the weather, passing at times at a considerable distance from the shores, but flying close to the points of every cape, although they never pass over an isthmus however narrow. Their flight is swift, well sustained, and accompanied with a well-marked whistling of their wings. Being expert divers, it is difficult to kill them on the water; and if you happen to wound one but slightly, I would advise you, Reader, to give up the chase, unless you have hit it while on the ice, in which case you will find that it runs rather awkwardly. Their flesh is none of the best, being dark, generally tough, and to the taste fishy; for which reason they are now-a-days frequently brought to our markets plucked, with the head and feet cut off, and called by the venders by all names excepting old wives, squaws, noisy ducks, or south-southerlies. The food of this species consists chiefly of shell-fish; but in the stomachs of those killed on fresh water in Labrador, I found small fishes, and a quantity of grass and its roots.

From the great number of specimens which I have procured in our Middle Districts in winter, and those which I have seen killed during the love season in the north, I am induced to think that the elongated feathers of the tail of this species scarcely if at all, differ in length at these different periods, although some writers have said that in spring they are much longer than in winter, in which latter season, however, I think the old males differ only in the colour of their plumage from their state in spring. I have obtained male specimens at New York and at Baltimore early in March, when they were already much changed from their appearance in winter; but my friend BACHMAN informs me that he has never seen one with any appearance of the summer plumage at Charleston in South Carolina, where however, he adds, this species is not common.

I have represented two male birds, one in its full spring dress, the

other in that of winter. You will also find in the same plate the first figure ever given of an adult female, accompanied with as many younglings as I could conveniently introduce. WILSON gave the figure of a young male in the first winter as that of a female.

ANAS GLACIALIS, *Linn. Syst. Nat.* vol. i. p. 203.—*Lath. Ind. Ornith.* vol. ii. p. 864.

FULIGULA GLACIALIS, *Ch. Bonaparte, Synopsis*, p. 395.

LONG-TAILED DUCK, ANAS GLACIALIS, *Wils. Amer. Ornith.* vol. viii. p. 93. pl. 70.
fig. 1. male, pl. 70. fig. 2. female.

LONG-TAILED DUCK, HARELDA GLACIALIS, *Richardson and Swainson, Fauna Bor. Amer.* vol. ii. p. 460.

LONG-TAILED DUCK, *Nuttall, Manual*, vol. ii. p. 453.

Adult male in summer. Plate CCCXII. Fig. 1.

Bill shorter than the head, higher than broad at the base, gradually depressed toward the end, the sides nearly parallel, the tip rounded. Upper mandible with the basal angles inconspicuous, the dorsal line descending and straight to the unguis, then convex and decurved, the ridge broad and flattened at the base, convex toward the end, the sides sloping and convex, the unguis roundish, the edges membranous, very narrow at the base, enlarged towards the end, with about thirty lamellæ ending in a projecting point. Nostrils sub-basal, oblong, direct, large, pervious, near the ridge, in an oblong groove with a soft membrane. Lower mandible flat, a little curved upwards, the angle very long and narrow, the unguis broad and rounded, the erect edges with about forty direct lamellæ.

Head oblong, compressed, of moderate size. Eyes of moderate size. Neck rather short. Body compact, rather elongated, and somewhat depressed. Feet short, stout, placed rather far behind; tarsus very short, compressed, anteriorly with a series of small scutella, externally of which are five in a line with the outer toe, the rest reticulated with angular scales. Hind toe very small, with a free membrane beneath; outer toe, which is the longest, almost double the length of the tarsus, middle toe scarcely shorter than outer; anterior toes with numerous narrow scutella, webbed, the margin of the webs concave; inner toe with a two-lobed expanded margin. Claws small, slightly arched, blunt.

Plumage dense, blended, elastic, stiffish; but soft and glossy on the head; the feathers broad and slightly rounded at the end. Scapulars

elongated, acuminate, the posterior decurved over the wing. Wings shortish, narrow, pointed; primary quills curved, strong, tapering, the second longest, exceeding the first by about one twelfth of an inch, the rest rapidly decreasing; secondaries broad and rounded, the inner elongated and pointed. Tail of fourteen pointed feathers, the outer very short, the middle extremely attenuated and slightly recurved, the intermediate proportional.

Bill black in its basal half, orange-yellow towards the end, the unguis bluish-grey. Iris bright carmine. Feet light bluish-grey, the webs dusky, claws black. A large oblong greyish-white patch on each side of the head from the bill to behind the ear; the upper part of the head and nape black, that colour being narrowed in front by the encroachment of the white patches. The neck all round, and anterior half of the breast, of a rich dark chocolate-brown; the back and wing-coverts brownish-black; the scapulars broadly margined with light reddish-brown; the quills are of the same chocolate tint as the breast, the secondaries margined externally with lighter, the primaries internally. The middle four feathers of the tail brownish-black, the outer two of these slightly margined with white, all the rest white, but the inner with a longitudinal dusky patch on the outer web.

Length to end of tail 23 inches, to end of wings 15, to end of claws 17; extent of wings $29\frac{1}{2}$; wing from flexure $9\frac{1}{2}$; middle tail-feathers 10, lateral tail-feathers $2\frac{1}{2}$; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{8}{12}$; tarsus $1\frac{2}{12}$; outer toe and claw $2\frac{5}{12}$, middle toe and claw $1\frac{2}{12}$, hind toe and claw $\frac{7\frac{1}{2}}{12}$.

Female in summer. Plate CCCXII. Fig. 3.

The female is somewhat less than the male, and differs not only in colour, but in the scapulars, which are not elongated, and in the tail, which is short and rounded. The bill and feet are dusky green, the iris yellow. The head is dark greyish-brown, with a patch of greyish-white surrounding the eye, but not extending to the bill; there is a larger patch of the same colour on the side of the neck, the hind part of which is similar to the head, the fore part greyish-brown, the feathers broadly margined with whitish. All the upper parts are of a dark greyish-brown, the two lateral tail-feathers edged with white; the lower parts white, the feathers under the wings slightly tinged with grey.

Length to end of tail $15\frac{5}{4}$ inches, to end of wings $14\frac{1}{2}$, to end of claws $16\frac{5}{8}$; extent of wings $26\frac{1}{2}$; wing from flexure 8; middle tail-feathers $2\frac{9}{12}$, lateral $2\frac{1}{4}$; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{5}{12}$.

Adult male in winter. Plate CCCXII. Fig. 2.

The outer half of the bill rich orange-yellow, that colour extending to the base along the ridge, the unguis and the basal half black, as well as the unguis and edges of the lower mandible. The head, neck, the fore part of back and scapulars, white; the space about the eye pale greyish-red, and a large oblong patch of chocolate brown on the side of the neck. The upper parts, including the four middle tail-feathers, are brownish-black, but the secondary quills tinged with reddish-brown, and having paler margins. The anterior half of the breast chocolate brown, the rest of the lower parts and the four lateral tail-feathers white.

Unfledged young. Plate CCCXII.

The young when newly excluded are covered with stiffish down. Bill and feet greenish-dusky; the upper parts chocolate-brown; a small spot of white under the eye; throat and lower parts whitish, as well as an oblong patch on the cheeks.

The young male in winter, that is, after its first moult, has the bill and legs dusky green. The head and half of the neck are whitish; the upper part of the former and a patch on the side of the latter mottled with brownish-black and chocolate. The upper parts brownish-black, variegated with brownish-red, the still unelongated scapulars chiefly of the latter colour. A broad undefined belt of reddish-brown over the lower fore part of the neck; the rest of the lower parts greyish-white.

Length to end of tail 22 inches; extent of wings 29.

The young female in winter is similar to the adult, but with the upper parts paler, the light-coloured patches on the head and neck more dusky, and the lower parts of a less pure white.

Adult males, assuming the summer plumage, about April, present a curious intermixture of the variously coloured feathers of the two seasons.

In a male bird, the tongue is 1 inch and 5 twelfths long, papillate at the base, fleshy, with two rows of bristles along the edges. There are 35 lamellæ on each side of the upper, and about 40 on the lower mandible. The œsophagus is $7\frac{1}{2}$ inches long, 7 twelfths in diameter at the upper part, towards the lower parts of the neck dilated to 1 inch, and continuing so to the end. The proventriculus is 1 inch 3 twelfths long, its glandules cylindrical and 2 twelfths long. The stomach is a very powerful gizzard, of a roundish form, $1\frac{5}{4}$ inch in length, 2 inches and 2 twelfths in breadth; its tendons large; the right muscle 10 twelfths, the left 11 twelfths in thickness. The cuticular lining is thick, and slightly rugous; the grinding plates thicker and denser. The contents of the stomach are small muscles and particles of quartz, some of which are 3 twelfths in diameter. The intestine is 5 feet 6 inches long, its diameter nearly uniform, about 4 twelfths; the rectum enlarged to 5 twelfths, its length $2\frac{1}{2}$ inches. Cœca $4\frac{5}{4}$ inches long, 3 twelfths in diameter, their extremity rounded; the cloaca globular, about 9 twelfths in diameter.

The trachea, moderately extended, measures 6 inches in length, its breadth at the top 5 twelfths, about the middle $3\frac{3}{4}$ twelfths. The number of ordinary rings is 72; at the lower part there are 6 expanded rings which are broad posteriorly and on the sides, but extremely narrow before; beyond this is a solid bony expansion of 7 united rings, forming anteriorly a transversely oblong case, having a membrane in front. The contractor muscles are very large, for two inches at the top expanded over the fore part, sending off two cleido-tracheals, then passing down along the edges of the six enlarged rings, and terminating on the drum, where the sterno-tracheals come off.

BLUE-WINGED TEAL.

ANAS DISCORS, LINN.

PLATE CCCXIII. MALE AND FEMALE.

Is it not strange, Reader, that birds which are known to be abundant on the Saskatchewan River during the breeding season, and which have been observed as far north as the 57th parallel, should also be found breeding at nearly the same period in Texas? Stranger still it is that species should proceed from certain points, or winter quarters, to both of the above-mentioned regions, without paying any regard to the intermediate districts, which yet seem to be as well adapted for breeding in, as they afford thousands of convenient and secluded localities for that purpose. Yet these facts, and many others connected with Nature's wonderful arrangements, we may look upon as intended to increase the innate desire which every true lover of Nature has to study her beautiful and marvellous works.

Having for some years observed such habits exhibited by the Blue-winged Teal and other birds, I have been induced to believe in the existence of what I would term *a double sense of migration* in many species, acted upon both in spring and in autumn, and giving to them at the latter period, the power as well as the desire of removing from the higher latitudes to opposite or meridional parts, thus to enter into the formation of the Fauna of different countries, from which again they are instigated to return to the place of their nativity, and thence diverge toward new sections of the globe equally adapted to their wants. If these observations should prove not unfounded, we need no longer be surprised to meet in different portions of the world with species which hitherto were supposed to be inhabitants only of far distant shores.

The mouths of the Mississippi, surrounded by extensive flat marshes, which are muddy, and in some degree periodically inundated by the overflowings of that great stream, or by the tides of the Mexican Gulf, and having in the winter months a mildness of temperature favourable to almost all our species of Waders and Swimmers, may be looked upon as the great rendezvous of the Blue-winged Teals, which are seen ar-

living there coastways, in autumn and the greater part of winter, to meet the multitudes that have travelled across the interior from the north and west. At New Orleans, and during spring, when this bird is in full plumage, it is called by the Creoles of Louisiana "Sarcelle Printanniere;" and in autumn, when scarcely an individual can be seen retaining the beauty of its spring plumage, it is known as the "Sarcelle Automniere;" in consequence of which double appellation, many persons imagine that there are two Blue-winged Teals.

They are the first ducks that arrive in that part of the country, frequently making their appearance in the beginning of September, in large flocks, when they are exceedingly fat. They depart, however, when the cold becomes so intense as to form ice; and in this respect they differ from the Green-winged Teals, which brave the coldest weather of that country. Toward the end of February, however, they are as abundant as ever, but they are then poor, although their plumage is perfected, and the males are very beautiful. During their stay, they are seen on bayous and ponds, along the banks of the Mississippi, and on the large and muddy sand-bars around, feeding on grasses and their seeds, particularly in autumn, when they are very fond of the wild pimento. Many remain as late as the 15th of May, in company with the Shoveller and Gadwall Ducks, with which they are usually fond of associating.

On my reaching the south-western pass of the Mississippi, on the 1st April 1837, I found these birds very abundant there, in full plumage, and in flocks of various sizes. On the 11th of the same month, when about an hundred miles to the westward, we saw large and dense flocks flying in the same direction. On the 15th, at Derniere Isle, the Blue-wings were very plentiful and gentle. Two days after, they were quite as numerous round Rabbit Island, in the Bay called Cote Blanche; and on the 26th they were found on all the ponds and salt bayous or inlets of Galveston Island in Texas, as well as on the water-courses of the interior, where I was assured that they bred in great numbers. Though on account of the nature of the localities in which these Teals breed, and which cannot be explored otherwise than in extremely light canoes, or by risking being engulfed in oozy morasses covered with tall grass, we were not so fortunate as to find any of their nests, we could easily judge by their manœuvres both while on wing and on the water, that we were not far from their well-concealed treasures and

the females which we procured unequivocally exhibited the state of exhaustion common in the course of incubation.

During the months of September and October, this species is plentiful on the Ohio, and in the whole of the Western Country, through which they pass again in April, but without tarrying. On the other hand, they seem to prolong their stay at this season in our Eastern Districts more than in autumn; and this is also the case in South Carolina, as I learn from the observations of my friend JOHN BACHMAN, who has seen them mated there as early as February. I have found them in the Boston markets on the 8th of September, but it is very rare to see any of them there in full spring dress. I saw or heard of none when I was in Labrador and Newfoundland; from which it may be inferred that those found in the Fur Countries reach them through the interior. They also occur on the Columbia River. On the 21st of March 1821, I saw many Blue-winged Teals copulating on the Mississippi, a little below Natchez; yet none of these birds have been known to breed in that section of the country. They were at the time mentioned on a sand-bar in company with some American Widgeons, which also were similarly employed.

The flight of the Blue-winged Teal is extremely rapid and well sustained. Indeed, I have thought that, when travelling, it passes through the air with a speed equal to that of the Passenger Pigeon. When flying in flocks in clear sunny weather, the blue of their wings glistens like polished steel, so as to give them the most lively appearance; and while they are wheeling over the places in which they intend to alight, their wings being alternately thrown in the shade and exposed to the bright light, the glowing and varied lustre thus produced, at whatever distance they may be, draws your eyes involuntarily towards them. When advancing against a stiff breeze, they alternately shew their upper and lower surfaces, and you are struck by the vivid steel-blue of their mantle, which resembles the dancing light of a piece of glass suddenly reflected on a distant object. During their flight, they almost constantly emit their soft lispng note, which they also utter when alighted and under apprehension of danger. I have never observed them travelling in company with other ducks, but have seen them at times passing over the sea at a considerable distance from land. Before alighting, and almost under any circumstances, and in any locality, these Teals pass and repass several times over the place,

as if to assure themselves of the absence of danger, or, should there be cause of apprehension, to watch until it is over. They swim buoyantly, and generally in a close body, at times nearly touching each other. Indeed, during their first appearance in autumn, when you are apt to meet with a flock entirely composed of young birds, you may, by using a little care, kill a considerable number at one shot. I was assured by a gunner residing at New Orleans, that as many as one hundred and twenty had been killed by himself at a single discharge; and I myself saw a friend of mine kill eighty-four by pulling together the triggers of his double-barrelled gun!

The Blue-winged Teal is easily kept in captivity, and soon becomes very docile. In this state it feeds freely on coarse corn meal, and I have no doubt that it could readily be domesticated, in which case, so tender and savoury is its flesh that it would quickly put the merits of the widely celebrated Canvass-backed Duck in the shade.

In the course of my stay in East Florida, at General HERNANDEZ's, and Mr BULOW's, I have observed this Teal in company with the Red-breasted Snipe, the Tell-tale Godwit, and the Yellow-shank Snipe. I observed the same circumstance in Texas.

During the time of their residence on the Delaware River, they feed principally on the seeds of the wild oats, which I also found them to do whilst at Green Bay. I have been assured by persons residing on the island of Cuba, that the Blue-winged Teal is abundant, and breeds there.

The old males lose the spring plumage of the head almost entirely during a great portion of the autumn and winter, but it is reassumed sometimes as early as the beginning of January. The young of both sexes in their first plumage resemble the females, but the males acquire their full beauty before they are a year old.

ANAS DISCORS, *Linn. Syst. Nat.* vol. i. p. 205.—*Lath. Ind. Orn.* vol. ii. p. 854.

BLUE-WINGED TEAL, ANAS DISCORS, *Wils. Amer. Ornith.* vol. viii. p. 74, pl. 68.
fig. 4.—*Nuttall, Manual*, vol. ii. p. 397.

ANAS DISCORS, *Ch. Bonap. Synopsis of Birds of the United States*, p. 385.

ANAS DISCORS, BLUE-WINGED TEAL, *Richards. and Swains. Fauna Bor. Amer.* vol. ii. p. 444.

Adult Male. Plate CCCXIII. Fig. 1.

Bill almost as long as the head, deeper than broad at the base, depressed towards the end, its breadth nearly equal in its whole length, being however a little enlarged towards the rounded tip. Upper mandible with the dorsal line at first sloping, then nearly straight, on the unguis decurved, the ridge broad and flat at the base, suddenly narrowed over the nostrils, broader and convex towards the end; the sides erect at the base, afterwards sloping and convex; the narrow membranous margins a little broader towards the end. Nostrils sub-basal, near the ridge, rather small, elliptical, pervious. Lower mandible flattened, straight, with the angle very long and rather narrow, the dorsal line very short, and slightly convex, the sides internally erect, with about a hundred and twenty lamellæ.

Head of moderate size, oblong, compressed. Neck of moderate length, rather slender. Body full, depressed. Feet short, placed rather far back; tarsus short, compressed, at its lower part anteriorly with two series of scutella, the rest covered with reticulated angular scales. Toes with numerous scutella above; first toe very small and with a narrow membrane beneath; third longest, fourth about a quarter of an inch shorter; the anterior toes united by reticulated webs, of which the outer is deeply sinuate; claws small, curved, compressed, acute, the hind one smaller and more curved, that of the third toe largest, and with the inner margin sharp.

Plumage dense, soft, and blended. Feathers of the head and neck, very small and slender, of the back and lower parts in general broad and rounded. Wings of moderate length, rather narrow and acute; primaries strong, slightly curved, tapering, the first scarcely longer than the second, the rest rapidly decreasing; secondaries broad, the outer obliquely rounded, the inner elongated and acuminate, as are the scapulars. Tail short, rounded and acuminate, of fourteen rather narrow, acuminate feathers.

Bill bluish-black. Iris dark hazel. Feet dull yellow, webs dusky, claws brownish-black, with the tips greyish-yellow. Upper part of the head black; a semilunar patch of pure white on the side of the head before the eye, margined before and behind with black. The rest of the head, and the anterior parts of the neck of a deep purplish-blue, with purplish-red reflections; the lower hind neck and fore part of back, brownish-black, glossed with green, each feather with a curved band of pale reddish-buff, and a line or band of the same in the centre;

the hind part of the back greenish-brown, the feathers edged with paler. The smaller wing-coverts of a rich ultramarine blue, silky with almost metallic lustre. Alula, primary coverts, and primary quills, greyish-brown, edged with pale bluish; outer secondaries of the same colour, those of the speculum duck-green, changing to blue and bronze, with a narrow line of white along their terminal margin; the inner greenish-black on the outer web, greenish-brown on the inner, with a central line and narrow external margin of pale reddish-buff, the more elongated scapulars similar, but some of them margined with greenish-blue. Secondary coverts brown, with their terminal portion white. Tail-feathers chocolate brown, slightly glossed with green, their margins buffy. The lower parts are pale reddish-orange, shaded on the breast with purplish-red, and thickly spotted with black, the number of roundish or elliptical spots on each feather varying from ten to twenty-five, those on the upper and hind parts of the sides running into transverse bars. Axillar feathers, some of the lower wing-coverts, and a patch on the side of the rump pure white; lower tail-coverts brownish-black.

Length to end of tail 16 inches, to end of claws $14\frac{1}{4}$, to end of wings also $14\frac{1}{4}$; extent of wings $31\frac{1}{4}$; wing from flexure $7\frac{4}{8}$; tail $3\frac{5}{8}$; bill along the back $1\frac{1}{4}$, from frontal process to tip $1\frac{1}{2}$; tarsus $1\frac{2}{8}$; first toe and claw $\frac{5}{8}$; middle toe and claw $1\frac{9}{8}$; outer toe and claw $1\frac{8}{8}$. Weight $12\frac{1}{2}$ oz.

Adult Female. Plate CCCXIII. Fig. 2.

Bill greenish-dusky; iris hazel; feet of a duller yellow than those of the male, the head and neck are pale dull buff, longitudinally marked with brownish-black lines, which are broader and darker on the top of the head; the fore part of the cheeks and the throat whitish, without markings. The upper parts are dark brown, the feathers margined with brownish-white; the smaller wing-coverts coloured as in the male, but less brilliantly; no blue on the scapulars, which are also less elongated. On the lower parts, the feathers are dusky brown, broadly margined with light brownish-grey, of which there is a streak or spot in the centre. The axillary feathers, and some of the lower wing-coverts are white, but the patch of that colour so conspicuous in the male is wanting.

Length to end of tail 15 inches, to end of wings $14\frac{1}{2}$, to end of claws

15½; extent of wings 24; wing from flexure 7¼; tail 2½; bill along the ridge 2½. Weight 10½ oz.

The young birds are similar to the female, but paler, and without the green speculum.

In a male, the roof of the mouth is deeply concave, with a prominent middle ridge, on which are a few blunt papillæ; on the upper mandible are 50 lamellæ, on the lower about 65 below, and 85 above. The tongue, 8 twelfths long, large and fleshy, has two rows of lateral bristles. The œsophagus is 8½ inches long, 4 twelfths in diameter until the middle of the neck, when it enlarges gradually to half an inch. The proventriculus is 1¼ inch in length, with oblong glandules. The stomach is a strong roundish gizzard, 1 inch and 2 twelfths long, 1½ inch broad; its left muscle 7 twelfths thick, the right 6½ twelfths; its cuticular lining or epithelium of moderate thickness and longitudinally rugous. The intestine, 5 feet 1 inch long, varies in diameter from 3 to 2 twelfths; the cœca are 2 inches 10 twelfths long, cylindrical and rounded, their diameter 3 twelfths; the cloaca globular. The contents of the stomach were gravel and seeds of plants.

The trachea is 6 inches and 2 twelfths long; its diameter at the top 4 twelfths, at the middle 2 twelfths, at the lower part 3½ twelfths. The inferior larynx is formed of three or four united rings, and has an irregular roundish bony expansion on the left side. The number of rings of the trachea is 98, of the bronchi about 25. The contractor muscles are large; cleido-tracheales and sterno-tracheales.

BLACK-HEADED, OR LAUGHING GULL.*LARUS ATRICILLA*, LINN.

PLATE CCCXIV. MALE IN SPRING, AND YOUNG.

Before entering upon the peculiar habits of this Gull, allow me, good-natured Reader, to present you with some general observations on the genus to which it belongs.

At the approach of autumn, it frequently happens that the young birds of several species associate together, congregating at times in vast numbers, and especially during low tides, on the outer margins of sand-bars situated in estuaries. There you may hear them keeping up an almost incessant cackle, and see them running about dressing their plumage, or patiently waiting the rising of the waters, on which much desired event taking place, they generally disperse, and fly off to search for food. If disturbed while thus reposing, they shew greater shyness, perhaps, than at any other time, and the loud note of alarm from one of the group soon reaches your ear. Look at them now, Reader, as they simultaneously spread their wings, and after a step or two launch into the air, gradually ascend, and in silence rise to a great height, performing extended gyrations, and advancing toward the open sea.

It seldom happens that when one of the larger species is shot, its companions will come to the rescue, as is the case with the smaller, such as the Kittiwake, and the present species. I have thought it remarkable how keenly and aptly Gulls generally discover at once the intentions towards them of individuals of our own species. To the peaceable and industrious fisherman they scarcely pay any regard, whether he drags his heavy net along the shore, or patiently waits until his well-baited hook is gulped below the dancing yet well-anchored bark, over the side of which he leans in constant and anxious expectation. At such a time indeed, if the fisher has had much success, and his boat displays a good store, Gulls will almost assail him like so many beggars, and perhaps receive from him a trifling yet dainty morsel. But, on the opposite side of the bay, see how carefully and suspiciously the same birds are watching every step of the man who, with a long gun held in a trailing position, tries to approach the flock of sleeping Widgeons.

Why, not one of the Gulls will go within three times the range of his murderous engine ; and, as if to assure him of their knowledge of his designs, they merely laugh at him from their secure station.

When congregated during the love-season, their loquacity has never failed to remind me of the impetuous, unmusical, and yet not unpleasant notes of our thieving Red-winged Starlings. But when apart, and at all times excepting the periods of pairing or breeding, or while some of the smaller species are chased by their vigilant enemies the Jagers, they are usually silent birds, especially when on wing. In rainy or squally weather, they skim low over the water, or the land, always against the wind, passing at times within a few feet of the surface. Again, at such times, I have observed Gulls of every species with which I am acquainted, suddenly give a shake or two to their wings, and stop as it were for a moment in their flight, as if they had espied something worthy of their attention below ; but, on closely observing them, I have become convinced that such manœuvres were performed only with the view of readjusting their whole plumage, which had perhaps been disarranged by a side current of wind.

All Gulls are wonderfully tenacious of life. When wounded or closely pursued, they are very apt to disgorge their food, or to sustain themselves against the agonies of death with uncommon vigour. They appear indeed to be possessed of extraordinary powers of respiration, through means of which they revive at the very moment when you might conceive them to have actually reached the last gasp. I have seen cases in which individuals of this tribe, after having been strongly squeezed for several minutes across the body, and after their throats had been crammed with cotton or tow, recovered as soon as the pressure was remitted, and immediately attempted to bite with as much eagerness as when first seized, when, by the by, they are wont to mute, as well as when suddenly surprised and taking to wing. In certain states of the atmosphere, Gulls, as well as other birds, appear much larger than they actually are; and on such occasions, they, of course, seem nearer than you would find them to be ; for which reason, I would advise you, Reader, to be on your guard, for you may be strangely misled as to the distance at which you suppose the bird to be, and pull your trigger merely to send your shot into the sand, far short from the Gulls or other light-coloured birds in view.

Much confusion appears to exist among authors regarding our Laughing Gull, and this, in my humble opinion, simply because not one of them has studied it, in its native haunts, and at all seasons, since the period when it was briefly characterized by our great master LINNÆUS, who, after all that has been said against him, has not yet had his equal. ALEXANDER WILSON, who, it seems, knew something of the habits of this bird, thought it however identical with the *Larus ridibundus* of Europe, as is shewn by the synonymes which he has given. Others, who only examined some dried skins, without knowing so much as the day or even the year in which they had been shot, or their sex, or whether the feathers before them had once belonged to a bird that was breeding, or barren, when it was procured, described its remains perhaps well enough for their own purpose, but certainly not with all the accuracy which is necessary to establish once and for ever a distinct species of bird. Others, not at all aware that most Gulls, and the present species in particular, assume, in the season of pairing, and in a portion of the breeding time, beautiful rosy tints in certain parts of their plumage, which at other periods are pure white, have thought that differences of this sort, joined to those of the differently-sized white spots observable in particular specimens, and not corresponding with the like markings in other birds of the same size and form, more or less observable at different periods on the tips of the quills, were quite sufficient to prove that the young bird, and the breeding bird, and the barren bird, of one and the same species, differed specifically from the old bird, or the winter-plumage bird. But, Reader, let us come to the point at once.

At the approach of the breeding season, or, as I like best to term it, the love season, this species becomes first hooded, and the white feathers of its breast, and those of the lower surface of its wings, assume a rich blush of roseate tint. If the birds procured at that time are several years old and perfect in their powers of reproduction, which is easily ascertained on the spot, their primary quills shew little or no white at their extremities, and their hood descends about three quarters of an inch lower on the throat than on the hind part of the head, provided the bird be a male. But should they be barren birds, *the hood will be wanting*, that portion of their plumage remaining as during winter, and although the primaries will be black, or nearly so, each of them

will be broadly tipped, or marked at the end, with a white spot, which in some instances will be found to be fully half an inch in size; yet the tail of these birds, as if to prove that they are adults, is as purely white to its extreme tip, as in those that are breeding; but neither the breast, nor the under wing-coverts, will exhibit the rosy tint of one in the full perfection of its powers.

The males of all the Gulls with which I am acquainted, are larger than the females; and this difference of size is observable in the young birds even before they are fully fledged. In all of these, however, putting aside their sex, I have found great differences of size to exist, sometimes as much as two inches in length, with proportional differences in the bills, tarsi, and toes; and this, in specimens procured from one flock of these gulls at a single discharge of the gun, and at different seasons of the year. The colour of their bills too is far from being always alike, being brownish-red in some, purplish or of a rich and deep carmine in others. As to the white spots on the extremities of the primary quills of birds of this family, I would have you, Reader, never to consider them as affording essential characters. Nay, if you neglect them altogether, you will save yourself much trouble, as they will only mislead you by their interminable changes, and you may see that the spots on one wing are sometimes different in size and number from those on the other wing of the same specimen. If all this be correct, as I assure you it must be, being the result of numberless observations made in the course of many years, in the very places of resort of our different Gulls, will you not agree with me, Reader, that the difficulty of distinguishing two very nearly allied species must be almost insuperable when one has nothing better than a few dried skins for objects of observation and comparison?

The Black-headed Gull may be said to be a constant resident along the southern coast of the United States, from South Carolina to the Sabine River; and I have found it abundant over all that extent both in winter and in summer, but more especially on the shores and keys of the Floridas, where I found it breeding, as well as on some islands in the Bay of Galveston in Texas. A very great number of these birds however remove, at the approach of spring, towards the Middle and Eastern Districts, along the shores of which they breed in considerable numbers, particularly on those of New Jersey and Long Island, as well

as on several islands in the Sound. They constantly evince a dislike to rocky shores, and therefore are seldom seen beyond Massachusetts, in which State indeed they are exceedingly rare.

None were observed by any members of my party on the Magdalene Islands, or on the coasts of Labrador or Newfoundland. I never met with any of them on the Mississippi above New Orleans, although they are plentiful in that neighbourhood during winter, and until the breeding season commences; and I think that this species never travels beyond the influence of the tide-waters of any stream. WILSON, in speaking of it, says that it is seen on the newly ploughed fields, and around the houses of the farmers of New Jersey; but the habit of visiting ploughed grounds I have not observed in any one of the American Gulls, although I have frequently noticed it in some of the European species, particularly *Larus canus*, *L. ridibundus*, and *L. argentatus*.

At all periods of the year, the Black-headed Gulls keep in flocks formed of many families; and in the breeding season, or even as soon as their courtships have commenced, they assemble by hundreds of pairs, or even by thousands. At this time they are so clamorous as to stun your ear with their laughing-like cries, though at other seasons they are generally silent, unless when suddenly alarmed, or when chased by the Jager. Their loves are conducted with extreme pomposity: they strut and bow to the females, throwing their head backwards, like all other Gulls, although in a less degree and with a less curious motion than Cormorants. You see them first stretching their heads forwards; then with open bill, vibrating tongue, and eyes all glowing, they emit their loud laughing notes, which, in a general sense, resemble those of many other species, though they are not precisely similar to those of any. But before I proceed with my account of their manners, I will give you the result of some curious observations which I made on them in Florida.

Previously to my visit to that interesting peninsula, I had not unfrequently noticed indications of strong amatory propensities in several species of Gulls, but never to the extent exhibited by the present species, many of which I saw copulating in the latter part of autumn and in winter, fully three months before the usual time of depositing their eggs in that country. Similar observations were made on *Larus argentatus*, on the coast of Maine, and on *Larus marinus*, in the Bay of Fundy. Nay, even in Europe I have seen this extraordinary tendency

to reproduce out of season, as it were. On some such occasions, when I was at St Augustine, in the month of December, I have observed four or five males of the present species paying their addresses to one female, who received their courtesies with evident welcome. Yet the females in that country did not deposit eggs until the 20th day of April. The most surprising fact of all was, that, although these birds were paired, and copulated regularly, by the 1st of February, not one had acquired the spring or summer plumage, or the dark coloured hood, or the rosy tint of the breast, nor lost the white spots on the tips of their primary quills. This change, however, was apparent by the 5th of March, became daily stronger, and was perfected by the 15th of that month. A few exceptions occurred among the numbers procured at these periods, but the generality of the birds were as above described.

Whilst at Great Egg Harbour, in May 1829, shortly after my return from England, I found this species breeding in great numbers on the margins of a vast salt marsh, bordering the sea-shore, though separated from the Atlantic by a long and narrow island. About sunrise every morning, an immense number of these birds would rise in the air, as if by common consent, and wing their way across the land, probably intent on reaching the lower shores of the Delaware River, or indeed farther towards the head waters of Chesapeake Bay. They formed themselves into long straggling lines, following each other singly, at the distance of a few yards. About an hour before sunset, the same birds were seen returning in an extended front, now all silent, although in the morning their cries were incessant, and lasted until they were out of sight. On arriving at the breeding ground, they immediately settled upon their nests. On a few occasions, when it rained and blew hard, the numbers that left the nests were comparatively few, and those, as I thought, mostly males. Instead of travelling high, as they were wont to do in fair and calm weather, they skimmed closely over the land, contending with the wind with surprising pertinacity, and successfully too. At such times they were also quite silent. I now and then observed some of them whilst on wing, and at a considerable height, suddenly check their course, as if to examine some object below; but on none of these occasions did I see one attempt to alight, for it soon resumed its wonted course, and rejoined its companions.

Now, Reader, though I am growing old, I yet feel desirous of ac-

quiring knowledge regarding the habits of our birds, and should much like to learn from you the reasons why these gulls went off in lines from their breeding grounds, and returned in an extended front? Was it, in the latter case, because they were afraid of passing their nests unknowingly; or, in the former, under the necessity of following an experienced leader, who, under the stimulus of an empty maw, readily undertook the office, but who, like many other bon-vivants, became in the evening too dull to be of use to his companions?

This species breeds, according to the latitude, from the 1st of March to the middle of June; and I have thought that on the Tortuga Keys, it produced two broods each season. In New Jersey, and farther to the eastward, the nest resembles that of the Ring-billed Gull, or Common American Gull, *Larus zonorhynchus*, being formed of dried sea-weeds, and land plants, two and sometimes three inches high, with a regular rounded cavity, from four and a half to five inches in diameter, and an inch and a half in depth. This cavity is formed of finer grasses, placed in a pretty regular circular form. I once found a nest formed as it were of two; that is to say, two pairs had formed a nest of nearly double the ordinary size, and the two birds sat close to each other during rainy weather, but separately, each on its own three eggs. I observed that the males, as well as the females, thus concerned in this new sort of partnership, evinced as much mutual fondness as if they were brothers. On the Tortugas, where these Gulls also breed in abundance, I found their eggs deposited in slight hollows scooped in the sand. Whilst at Galveston, in Texas, I found their nests somewhat less bulky than in the Jerseys, which proved to me how much birds are guided in these matters by differences in atmospheric temperature and locality.

I never found more than three eggs in a nest. Their average length is two inches and half an eighth, their greatest breadth a trifle more than an inch and a half. They vary somewhat in their general tint, but are usually of a light earthy olive, blotched and spotted with dull reddish-brown and some black, the markings rather more abundant towards the larger end. As an article of food, they are excellent. These gulls are extremely anxious about their eggs, as well as their young, which are apt to wander away from the nest while yet quite small. They are able to fly at the end of six weeks, and soon after this are abandoned by their parents, when the old and young birds keep apart in flocks

until the following spring, when, I think, the latter nearly attain the plumage of their parents, though they are still smaller, and have the terminal band on the tail.

The Black-headed Gull frequently associates with the Razor-billed Shearwater, *Rhynchops nigra*, in winter; and I can safely say that I have seen more than a thousand of each kind alight on the same points of estuaries and mouths of rivers; the Gulls standing or sitting by themselves, at no great distance from the Razor-bills. Now and then they would all suddenly rise on wing as if frightened, perform a few evolutions in the air, and again settle on the very same spot, still, however, keeping separate. While thus in the company of the Razor-bills, the Gulls are with great difficulty approached, the former being exceedingly wary, and almost always rising when a person draws near, the Gulls immediately following them, and the two great flocks making off to some distant point, generally not very accessible. If taken up on being wounded, these gulls are apt to bite severely. If, on being shot at, they fall on the water, they swim fast and lightly, their companions all the while soaring above, and plunging towards them, as if intent on rescuing them. This great sympathy often proves fatal to them, for, if the gunner is inclined, he may shoot them down without any difficulty, and the more he kills the more his chances are increased.

On the 10th of May 1832, it was my good fortune to be snugly on board the "Lady of the Green Mantle," or, in other words, the fine revenue cutter the Marion. The Gulls that laughed whilst our anchors were swiftly descending towards the marvellous productions of the deep, soon had occasion to be sorrowful enough. As they were in great numbers, officers and men, as well as the American Woodsman, gazing upon them from the high decks of the gallant bark, had ample opportunities of observing their motions. They were all busily engaged on wing, hovering here and there around the Brown Pelicans, intent on watching their plunges into the water, and all clamorously teasing their best benefactors. As with broadly extended pouch and lower mandible, the Pelican went down headlong, so gracefully followed the gay rosy-breasted Gull, which, on the brown bird's emerging, alighted nimbly on its very head, and with a gentle stoop instantly snatched from the mouth of its purveyor the glittering fry that moment entrapped!

Is this not quite strange, Reader? Aye, truly it is. The sight of

these manœuvres rendered me almost frantic with delight. At times, several gulls would attempt to alight on the head of the same Pelican, but finding this impossible, they would at once sustain themselves around it, and snatch every morsel that escaped from the pouch of the great bird. So very dexterous were some of the Gulls at this sport, that I have seen them actually catch a little fish as it leaped from the yet partially open bill of the Pelican. And now, Reader, I will conclude this long article with some fragments from my journals.

Tortugas, May 1832.—Whilst here, I often saw the Black-headed Gull of Wilson, sucking the eggs of *Sterna fuliginosa*, and *Sterna stolidus*. Our sailors assured me that these gulls also eat the young of these two species of Terns when newly hatched.

Great Egg Harbour, May 1829.—Like all other gulls, the *Larus atricilla* disgorges its food when attacked by a Lestris, or when wounded, or suddenly surprised; but on all occasions of respite this gull is apt to return to it, and vulture-like to swallow it anew. It differs however from the larger species of gulls, by never, as far as I have observed, picking up bivalve shells, for the purpose of letting them fall to break them, and afterwards feed on their contents. On the ground they walk with considerable alertness, and not without a certain degree of elegance, especially during the love season. Whilst floating or swimming on the water, they are graceful in a high degree, and when seen, as they oftentimes are, in groups of many pairs, rising with, or sinking amidst the billows, which ever and anon break on the sandy shores of the coast, their alternate appearance brings to the mind of the bystander ideas connected with objects altogether different from the simple yet beautiful Laughing Gull.

April 1. 1837.—South-west pass of the Mississippi. *L. atricilla* abundant here at this season, as well as at New Orleans. Saw some floating on logs during a heavy breeze. Not noisy yet, though they and *L. zonorhynchus* are in full spring dress (the old birds).

Barataria Bay, April 1837.—This species is abundant, following the porpoises, whilst the latter are fishing, and attending on them, as they do on the Brown Pelicans, which I saw here tormented by these birds, as in the Floridas. These Gulls follow the Brown Pelicans to their roosts, and along with them sit on grounded logs, at some distance from the shores, to avoid the attacks of racoons and other carnivorous animals.

Galveston Bay, April 26. 1837.—Black-headed Gulls are not unfrequently seen hovering over the inner ponds of these islands, as if in search of food. They are now all paired, and very noisy.

May 4.—I observed to-day that at the single cry of a Black-headed Gull, all others within hearing at once came towards the caller, and this never failed when any of them had found floating garbage on which to feed. These, as well as all other gulls, pat the water with their feet, their legs being partially extended, whilst assisting themselves with the bill to pick up any floating food. At this time the whole group emit a more plaintive single note than usual. They come not unfrequently within a few yards of our vessel at anchor, and when the food thrown to them is exhausted, they separate, and at once renew their repeated cries. I observed that the few immature birds among the old ones, were quite silent even when in the company of the adults. When the young are nearly able to fly, they are by no means bad eating.

LARUS ATRICILLA, *Linn. Syst. Nat.* vol. i. p. 225.—*Lath. Ind. Ornith.* vol. ii. p. 812.

—*Ch. Bonaparte, Synopsis of Birds of the United States*, p. 359.

BLACK-HEADED GULL, LARUS RIDIBUNDUS, *Wils. Amer. Ornith.* vol. ix. p. 89.
pl. 74. fig. 4.

BLACK-HEADED GULL, *Nuttall, Manual*, vol. ii. p. 291.

Adult Male in spring. Plate CCCXIV. Fig. 1.

Bill rather shorter than the head, nearly straight, moderately stout, compressed. Upper mandible with its dorsal outline straight to the middle, then curved and declinate, the ridge convex, the sides rapidly sloping, the edges sharp and direct, the tip rather obtuse but sharp-edged. Nasal groove rather long and narrow; nostrils in its fore part, longitudinal, submedial, large, linear-oblong, broader anteriorly, pervious. Lower mandible with the angle long and pointed, the outline of its crura decurved anteriorly, that of the ridge slightly concave and ascending, the sides erect and nearly flat.

Head of moderate size. Neck of ordinary length. Body compact. Feet rather long, stoutish; tibia bare below for three-fourths of an inch, covered behind with narrow scutella; tarsus compressed, anteriorly covered with numerous curved scutella, laterally with small oblong scales, posteriorly with small scutella. Toes slender, of moderate length, covered above with numerous scutella; first extremely small,

second much shorter than fourth, third two-twelfths of an inch longer than the latter; anterior toes connected by reticulated webs, the outer and inner slightly marginate; claws small, slightly arched, compressed, thin-edged, that of the middle toe with an expanded inner margin.

Plumage close, soft, and blended. Wings very long and pointed; primaries tapering to a rounded point; first longest, second a twelfth of an inch shorter, the rest rapidly diminishing; secondaries broad, incurvate, and obliquely rounded, the inner straight and more elongated. Tail of moderate length, even, of twelve broad, rounded feathers.

Bill and feet, as well as the margin of eyelids, and the inside of the mouth, of a rich deep carmine; claws brownish-black. Iris bluish-black. The head and a portion of the upper part of the neck all round, blackish lead-grey, darker on the upper part of the head and along the posterior margin, which descends lower in front, or to the extent of about two inches and a half from the base of the lower mandible; two narrow white bands bordering the upper and lower eyelids. Lower neck all round, the whole lower surface, the rump and tail, pure white; but the fore part of the neck and the breast, down to the legs, of a beautiful light rosy tint. The back and wings are greyish-blue, with a very slight tinge of purple, excepting a large terminal portion of the secondaries, and the tips of the primaries, which are white. The first primary is black, with a tinge of grey on the inner web at the base; the second and third similar, with the grey more extended; on the fourth it extends over two-thirds; the fifth is black only for an inch and a half; and on the sixth the black is reduced to two spots near the end; the other parts and the remaining primaries of the same general colour as the back.

Length to end of tail 17 inches, to end of wings 20, to end of claws 17; extent of wings $40\frac{3}{4}$; wing from flexure $12\frac{10}{12}$; tail $5\frac{2}{12}$; bill along the ridge $1\frac{11}{12}$, along the edge of lower mandible $2\frac{1}{4}$; tarsus 2; hind toe and claw $\frac{4}{12}$; middle toe and claw $1\frac{9}{12}$; outer toe and claw $1\frac{1}{2}$; inner toe and claw $1\frac{5}{12}$.

The female is precisely similar to the male, but considerably smaller.

In winter the head is white, the feathers on its upper part and on the nape more or less brownish-grey in their concealed part, that colour appearing in slight patches here and there, and especially along

the posterior margin of the part that is coloured in summer, as well as on a small space before the eye. The rosy tint of the breast disappears after the breeding season. In other respects the plumage is as in summer.

Young fully fledged. Plate CCCXIV. Fig. 2.

Bill, feet, inside of mouth, and edges of eyelids, olivaceous brown. The upper parts are brownish-grey, the feathers edged with paler; the hind part of the back light bluish-grey; upper tail-coverts nearly white; tail pale greyish-blue, with a broad band of brownish-black at the end, the extreme tips narrowly edged with white, the outer margin of the lateral feathers of the same colour. The first four primaries are destitute of white at the tip. A smaller patch before the eye, two slight bands on the eyelids, and the throat, greyish-white; the lower part of the neck brownish-grey, the rest of the lower parts greyish-white, the sides darker, the axillars ash-grey, the lower surface of the wing dusky-grey.

In an adult male, the tongue is $1\frac{1}{4}$ inch long, slender, tapering, emarginate at the base, with minute papillæ, the tip horny along the back. The œsophagus is $6\frac{1}{2}$ inches long, 5 twelfths in diameter until it enters the thorax, then dilates to 1 inch and 5 twelfths; its walls are extremely thin, its inner coat longitudinally plaited. Proventriculus very short, the belt of oblong glandules being only 7 twelfths in breadth. Stomach rather small, oblong, $1\frac{1}{2}$ inch long, 10 twelfths broad; its lateral muscles rather thick, the tendons large; the inner coat thick, horny, and thrown into very prominent longitudinal rugæ, its upper margin abrupt, and manifestly not continuous with the inner coat of the proventriculus, as some have supposed the epithelium to be in all birds. In the stomach remains of fishes. Intestines 1 foot $9\frac{1}{2}$ inches long, its general diameter $\frac{1}{4}$ inch. Rectum $1\frac{1}{2}$ inch; cœca extremely small, $2\frac{1}{2}$ twelfths long, $\frac{1}{2}$ twelfth in diameter.

Trachea $5\frac{1}{2}$ inches long; its rings 110, extremely thin and feeble; its diameter at the top $4\frac{1}{2}$ twelfths, at the lower part $2\frac{1}{2}$ twelfths. The lateral muscles are scarcely perceptible, the sterno-tracheal very slender; the inferior larynx small; the bronchi of moderate length and width, with 25 half-rings.

KNOT OR ASH-COLOURED SANDPIPER.*TRINGA ISLANDICA*, LINN.

PLATE CCCXV. ADULT IN SUMMER AND WINTER.

THE Knot, good Reader, is a handsome and interesting species, whether in its spring or in its winter plumage, and, provided it be young and fat, is always welcome to the palate of the connoisseur in dainties. As to its habits, however, during the breeding season, I am sorry to inform you that I know nothing at all, for in Labrador, whither I went to examine them, I did not find a single individual. I have been informed that several students of nature have visited its breeding places; but why they have given us no information on the subject, seeing that not only you and I, but many persons besides, would be glad to hear about it, is what we cannot account for.

I do not wish you to infer from these remarks, that the persons alluded to are the only ones who have neglected to note down on the spot observations which might be interesting and useful. I myself am very conscious of my own remissness in this respect, and deeply regret the many opportunities of studying nature which have been in a manner lost to me, on account of a temporary supineness which has seized upon me, at the very moment when the objects of my pursuit were placed within my reach by that bountiful Being to whom we owe all our earthly enjoyments, and all our hopes of that future happiness which we strive to merit.

I have traced the Knot along the shores of our Atlantic states, from Texas to the entrance of the Bay of Fundy, in the months of April and May, and again in the autumnal months. I have also found it in winter in East Florida, and therefore feel confident that some of the species do not proceed beyond our southern limits at that season. Whilst on the Bay of Galveston, in Texas, in April 1837, I daily observed groups of Knots arriving there, and proceeding eastward, meandering along the shores of the Gulf of Mexico. In the interior of the United States I never observed one, and for this reason I am inclined to think that the species moves northward along the coast. But as I did not find any in Nova Scotia, Labrador, or Newfoundland, I

consider it probable that those which betake themselves to the fur countries, turn off from our Atlantic shores when they have reached the entrance of the Bay of Fundy. However this may be, it is certain that they reach a very high latitude, and that some stop to breed about Hudson's Bay, where Dr RICHARDSON found them in summer.

On some few occasions I have observed the Knot associating with the Tell-tale Godwit and Semi-palmated Snipe, about a mile from the sea, along the margins of ponds of brackish-water; but such localities seemed in a manner unnatural to them, and it was seldom that more than two or three were seen there. Along the shores, in spring, I have not unfrequently thought that they seemed dull, as if they had lost themselves, for they would allow a person to go very near, and seldom took to wing unless induced to do so by companions of other species, who were better aware of their situation. In autumn, when they at times collect into very large flocks, I have often followed them until I obtained as many as I wished. WILSON has so beautifully described their movements at such times, that, although I have often witnessed them myself, I prefer giving his own words.

“In activity it is superior to the Turnstone; and traces the flowing and recession of the waves along the sandy beach with great nimbleness, wading and searching among the loosened particles for its favourite food, which is a small thin oval bivalve shell-fish, of a white or pearl-colour, and not larger than the seed of an apple. These usually lie at a short distance below the surface; but in some places are seen at low water in heaps, like masses of wet grain, in quantities of more than a bushel together. During the latter part of summer and autumn, these minute shell-fish constitute the food of almost all those busy flocks that run with such activity along the sands, among the flowing and retreating waves. They are universally swallowed whole; but the action of the bird's stomach, assisted by the shells themselves, soon reduces them to a pulp. Digging for these in the hard sand would be a work of considerable labour, whereas, when the particles are loosened by the flowing of the sea, the birds collect them with great ease and dexterity. It is amusing to observe with what adroitness they follow and elude the tumbling surf, while at the same time they seem wholly intent on collecting their food.”

I have however seen the Knot probe the wet sands, on the borders of oozy salt marshes, thrusting in its bill to the feathers on the forehead,

and this with the same dexterity as several other species. Its flight is swift, at times rather elevated, and well sustained. At their first arrival in autumn, when they are occasionally seen in great numbers in the same flock, their aërial evolutions are very beautiful, for, like our Parrakeet, Passenger Pigeon, Rice-bird, Red-winged Starling, and other birds, they follow each other in their course, with a celerity that seems almost incomprehensible, when the individuals are so near each other that one might suppose it impossible for them to turn and wheel without interfering with each other. At such times, their lower and upper parts are alternately seen, the flock exhibiting now a dusky appearance, and again gleaming like a meteor.

Many of these young birds continue mottled with dull reddish-orange on their lower parts until the winter is far advanced. The old individuals have their whole upper plumage of a uniform grey, and their lower parts white. As those of the first year have their markings at that season handsomer than at any other period of their lives, I have given the figure of one in preference to that of an adult.

It has been supposed by some that two different species of Knot occur in the United States, but I am of a different opinion. The dimensions of birds of this family, as well as of many others, are extremely variable; and, on shooting eight or ten Knots, it would be difficult to find two of them having exactly the same size and proportions. If I add to this the very remarkable changes of plumage exhibited by birds of this family before and after maturity, you will not think it strange that WILSON should have mistaken the young of the Knot for a separate species from the old bird in its spring dress. Indeed, I am obliged to tell you that I have been much puzzled, when, on picking up several of these birds from the same flock, I have found some having longer and thicker bills than others, with as strange a difference in the size of their eyes. These differences I have endeavoured to represent in my plate.

My friend JOHN BACHMAN states, that this species is quite abundant in South Carolina, in its autumn and spring migrations, but that he has never seen it there in full plumage. In that country it is called the "May Bird," which, however, is a name also given to the Rice Bird. Along the coasts of our Middle District, it is usually known by the name of "Grey-back."

TRINGA ISLANDICA, CANUTUS, CINEREA, GRISEA, &c. of *Linnaeus* and *Latham*, &c.

TRINGA ISLANDICA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 350.

RED-BREASTED SANDPIPER, TRINGA RUFA, *Wils. Amer. Ornith.* vol. vii. p. 43, pl. 57, fig. 5. Summer.

ASH-COLOURED SANDPIPER, TRINGA CINEREA, *Wils. Amer. Ornith.* vol. vii. p. 36, pl. 57, fig. 2. Winter.

KNOT, OR ASH-COLOURED SANDPIPER, *Nuttall*, Manual, vol. ii. p. 125.

TRINGA CINEREA, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 387.

Adult Male in Summer. Plate CCCXV. Fig. 1.

Bill rather longer than the head, slender, straight, compressed, tapering, with the tip a little enlarged and blunt. Upper mandible with the dorsal line straight, and slightly declinate, the ridge narrow and flattened until towards the end, when it becomes considerably broader, the sides sloping, the tip convex above and ending in a blunt point, the edges thick and flattened. Nasal groove extending to near the tip; nostrils basal, linear, pervious. Lower mandible with the angle long and very narrow, the dorsal line straight, the sides sloping outwards, with a long narrow groove, the tip a little broader, but tapering.

Head rather small, oblong, compressed. Eyes of moderate size. Neck of ordinary length. Body rather full. Feet rather long, slender; tibia bare, a third part of its length; tarsus somewhat compressed, anteriorly and posteriorly with numerous small scutella; hind toe very small, the rest of moderate length, slender, the fourth slightly longer than the second, the third longest; all free, broadly marginate, flattened beneath, and with numerous scutella above. Claws small, slightly arched, compressed, rather obtuse, that of the third toe much larger, with the inner edge dilated.

Plumage very soft, blended on the head, neck, and lower parts, the feathers rather distinct above. Wings very long and pointed; primaries tapering, obtuse, the first longest, the second two-twelfths of an inch shorter, the rest rapidly decreasing; outer secondaries slightly incurved, inner elongated, straight and tapering, one of them extending when the wing is closed, to an inch and a quarter from its tip. Tail rather short, nearly even, of twelve rather broad feathers which taper to a broad point.

Bill and feet black. Iris dark hazel. Upper part of the head and hind neck light grey, tinged with buff, and longitudinally streaked with dusky; fore part of back and scapulars, variegated with brownish-black

and yellowish, and each feather with several spots of the latter and tipped with whitish; the hind part of the back, rump, and upper tail-coverts, white, barred with black; wing-coverts ash-grey, edged with paler. Alula and primary-coverts brownish-black, tipped with white; primaries similar, their shafts and the outer margins of all excepting the first three, white, the inner webs towards the base light grey; secondaries and their coverts grey, margined with white. Tail-feathers ash-grey tinged with brown, and narrowly edged with white. The sides of the head, fore part of neck, breast, and abdomen, rich brownish-orange; lower tail-coverts and feathers of the legs, white, each of the former with a central dusky narrow-shaped or elongated spot, axillaries white barred with dusky; lower wing-coverts dusky with white margins.

Length to end of tail $10\frac{1}{4}$ inches, to end of wings $10\frac{3}{4}$, to end of claws $11\frac{1}{2}$; extent of wings 21; wing from flexure 7; tail $2\frac{9}{12}$; bill along the ridge $1\frac{4\frac{1}{2}}{12}$, along the edge of lower mandible $1\frac{4\frac{1}{2}}{12}$; tarsus $1\frac{1}{4}$; hind toe and claw $\frac{4}{12}$; middle toe and claw $1\frac{1\frac{1}{2}}{12}$. Weight $5\frac{1}{2}$ oz.

The female is similar to the male, but considerably larger.

Length to end of tail $10\frac{3}{4}$ inches. Weight 6 ounces.

In Winter. Plate CCCXV. Fig. 2.

Bill greenish-black, eye of a darker brown. Feet dull yellowish-green; claws dusky. The upper parts are deep ash-grey, each feather margined with whitish; feathers of the rump greyish-white, upper tail-coverts white, barred with dusky. The quills and tail feathers as in summer. A band from the bill over the eye to the hind part of head, white; loreal space, cheeks, and sides of neck pale grey, streaked with darker; throat and lower parts in general, white; the sides, axillar feathers, and under wing-coverts, barred or spotted with dusky; lower tail-coverts as in summer.

The young in autumn are of a dull light brownish-grey colour above, each feather having a narrow whitish margin, within which is a dusky line. The fore part and sides of the neck, and the fore part of the breast dull greyish-white, with small dusky-grey longitudinal streaks; the band over the eye indistinct, the loreal space darker. The bill and feet are of a duller tint, and the eye darker, than in the adult in winter. Weight $4\frac{1}{4}$ oz.

On the roof of the mouth is a double series of small blunt papillæ. The tongue is very slender, $1\frac{1}{12}$ inch long, emarginate and papillate at the base, channelled above, horny beneath, the point rather acute. The œsophagus is $4\frac{5}{4}$ inches long, narrow, its diameter $3\frac{1}{2}$ twelfths. The proventriculus is oblong, $5\frac{1}{2}$ twelfths in diameter, 9 twelfths long. The stomach is an extremely powerful gizzard, of a roundish form, 1 inch and 5 twelfths long, its greatest breadth $1\frac{1}{4}$ inch; the cuticular lining thin, horny, with large longitudinal rugæ. The intestine 25 inches long, its average diameter $3\frac{1}{2}$ twelfths; cœca cylindrical, 3 twelfths long. The contents of the stomach are fragments of mussels and gravel, with which part of the intestine is also filled.

The trachea is $3\frac{1}{4}$ inches long, flattened, $2\frac{1}{2}$ twelfths broad at the top, diminishing to 2 twelfths; its rings very slender and unossified, 98 in number; the bronchial half-rings about 15. The lateral muscles very thin, the sterno-tracheal slender.

ANHINGA OR SNAKE-BIRD.

PLOTUS ANHINGA, LINN.

PLATE CCCXVI. MALE AND FEMALE.

READER, the pleasures which I have experienced in the course of this chequered life of mine have been many;—perhaps many more than would have fallen to my share, had I not, fortunately for me, become a devoted and enthusiastic lover of Nature's beauteous and wondrous works, which, in truth, I have been from the earliest period to which my recollection extends; and those who have known me best will not for a moment consider it extravagant in me to say, that among the greatest pleasures I have known, has been that derived from pursuing and faithfully describing such of our American birds as were previously unknown or but little observed. Many sultry summer days I have passed amidst the most dismal swamps of the secluded woods of Louisiana, watching with anxiety and in silence the curious habits of the Anhinga; the female bird now sitting closely on her eggs, in a nest constructed by herself and securely placed on the widely extended branch of the tallest cypress, that, as if by magic planted, stood in the midst of an ample lake, while with keen eyes she watched every motion of the wily Buzzard and cunning Crow, lest either of these cowardly marauders might deprive her of her treasures; the partner of her cares and joys meanwhile, with outspread wings and fan-like tail, soaring on high, and glancing first anxiously towards her he loves, then in anger towards one and all of their numerous enemies. In wider and bolder circles he moves, rising higher and still higher, until at length, becoming a mere dusky speck, he almost vanishes from my sight amidst the expanse of the blue sky; but now, suddenly closing his wings, and rushing downwards like a meteor, I see him instantly alight erect upon the edge of the nest, and complacently gaze upon his beloved.

After some time, about three weeks perhaps, I have found the eggshells beneath the great cypress tree, cast out of the nest by the intelligent and attentive mother, and floating on the green slime of the stagnant pool. Climbing to the nest itself, I have seen the tender young clad in

down far softer than our sea-island cottons, writhing their slender and tremulous necks, and with open mouths and extended pouches seeking, as all infants are wont to seek, the food suited to their delicate frame. Then, retiring to some concealed spot, I have seen the mother arrive with a supply of finely masticated nutriment, compounded of various fishes from the lake, and furnish each of her progeny by regurgitation with its due proportion. Thus, also, I have watched the growth of the younglings, marking their daily progress, which varied according to the changes of temperature and the state of the atmosphere. At length, after waiting many days in succession, I have seen them stand, in an almost erect posture, on a space scarcely large enough to contain them. The parents seemed aware of the condition of their brood, and, affectionate as they still appeared to be, I thought their manner towards them was altered, and I felt grieved. Indeed, sorely grieved I was when, next week, I saw them discharge, as it were, their children, and force them from the nest into the waters that were spread below. It is true that, previous to this, I had seen the young Anhingas trying the power of their wings as they stood upright on the nest, flapping them many minutes at a time; yet, although thus convinced that they were nearly in a state to provide for themselves, it was not without a feeling of despondency that I saw them hurled into the air, and alight on the water. But, Reader, Nature in all this had acted beneficially; and I afterwards found that in thus expelling their young so soon, the old birds had in view to rear another brood in the same spot, before the commencement of unfavourable weather.

Many writers have described what they have been pleased to call the habits of the Anhinga; nay, some have presumed to offer comments upon them, and to generalize and form theories thereon, or even to inform us gravely and oracularly what they ought to be, when the basis of all their fancies was merely a dried skin and feathers appended. Leaving these ornithologists for the present to amuse themselves in their snug closets, I proceed to detail the real habits of this curious bird, as I have observed and studied them in Nature.

The Snake-Bird is a constant resident in the Floridas, and the lower parts of Louisiana, Alabama, and Georgia. Few remain during winter in South Carolina, or in any district to the eastward of that State; but some proceed as far as North Carolina in spring, and breed along the

coast. I have found it in Texas in the month of May, on the waters of Buffalo Bayou, and the St Jacinto River, where it breeds, and where, as I was told, it spends the winter. It rarely ascends the Mississippi beyond the neighbourhood of Natchez, from which most of the individuals return to the mouths of that great stream, and the numerous lakes, ponds, and bayous in its vicinity, where I have observed the species at all seasons, as well as in the Floridas.

Being a bird which, by its habits, rarely fails to attract the notice of the most indifferent observer, it has received various names. The Creoles of Louisiana, about New Orleans, and as far up the Mississippi as Pointe Coupé, call it "Bec à Lancette," on account of the form of its bill; whilst at the mouths of the river it bears the name of "Water Crow." In the southern parts of Florida, it is called the "Grecian Lady," and in South Carolina it is best known by the name of "Cormorant." Yet in all these parts, it bears also the name of "Snake-Bird;" but it is nowhere with us called the "Black-bellied Darter," which, by the way, could only be with strict propriety applied to the adult male.

Those which, on the one hand, ascend the Mississippi, and, on the other, visit the Carolinas, arrive at their several places of resort early in April, in some seasons even in March, and there remain until the beginning of November. Although this bird is occasionally seen in the immediate vicinity of the sea, and at times breeds not far from it, I never met with an individual fishing in salt water. It gives a decided preference to rivers, lakes, bayous, or lagoons in the interior, always however in the lowest and most level parts of the country. The more retired and secluded the spot, the more willingly does the Snake-Bird remain about it. Sometimes indeed I have suddenly come on some in such small ponds, which I discovered by mere accident, and in parts of woods so very secluded, that I was taken by surprise on seeing them. The Floridas therefore are peculiarly adapted for this species, as there the torpid waters of the streams, bayous, and lakes, are most abundantly supplied with various species of fish, reptiles, and insects, while the temperature is at all seasons congenial, and their exemption from annoyance almost unparalleled. Wherever similar situations occur in other parts of the Southern States, there the Anhingas are met with in numbers proportioned to the extent of the

favourable localities. It is very seldom indeed that any are seen on rapid streams, and more especially on clear water, a single instance of such an occurrence being all that I have observed. Wherever you may chance to find this bird, you will perceive that it has not left itself without the means of escape; you will never find one in a pond or bayou completely enclosed by tall trees, so as to obstruct its passage; but will observe that it generally prefers ponds or lakes, surrounded by deep and almost impenetrable morasses, and having a few large trees growing out of the water near their centre, from the branches of which they can easily mark the approach of an enemy, and make their escape in good time. Unlike the Fish-hawk and Kings-fisher, the Anhinga however never plunges or dives from an eminence in procuring its prey, although from its habit of occasionally dropping in silence to the water from its perch, for the purpose of afterwards swimming about and diving in the manner of the Cormorant, some writers have been led to believe that it does so.

The Black-bellied Darter, all whose names I shall use, for the purpose of avoiding irksome repetitions, may be considered as indefinitely gregarious; by which I mean that you may see eight or more together at times, during winter especially, or only two, as in the breeding season. On a few occasions, whilst in the interior of the southernmost parts of Florida, I saw about thirty individuals on the same lake. While exploring the St John's River of that country in its whole length, I sometimes saw several hundreds together. I procured a great number on that stream, on the lakes in its neighbourhood, and also on those near the plantation of Mr BULOW, on the eastern side of the Peninsula. I observed that the young Darters, as well as those of the Cormorants, Herons, and many other birds, kept apart from the old individuals, which they however joined in spring, when they had attained their full beauty of plumage.

The Anhinga is altogether a diurnal bird, and, like the Cormorant, is fond of returning to the same roosting place every evening about dusk, unless prevented by molestation. At times I have seen from three to seven alight on the dead top branches of a tall tree, for the purpose of there spending the night; and this they repeated for several weeks, until on my having killed some of them and wounded others, the rest abandoned the spot, and after several furious contests with a party that

roosted about two miles off, succeeding in establishing themselves among them. At such times they seldom sit very near each other, as Cormorants do, but keep at a distance of a few feet or yards, according to the nature of the branches. Whilst asleep, they stand with the body almost erect, but never bend the tarsus so as to apply it in its whole length, as the Cormorant does; they keep their head snugly covered among their scapulars, and at times emit a wheezing sound, which I supposed to be produced by their breathing. In rainy weather they often remain roosted the greater part of the day, and on such occasions they stand erect, with their neck and head stretched upwards, remaining perfectly motionless, as if to allow the water to glide off their plumage. Now and then, however, they suddenly ruffle their feathers, violently shake themselves, and again compressing their form, resume their singular position.

Their disposition to return to the same roosting places is so decided that, when chased from their places of resort, they seldom fail to betake themselves to them during the day; and in this manner they may easily be procured with some care. Whilst at Mr BULOW'S, I was almost daily in the habit of visiting a long, tortuous, bayou, many miles in extent, which at that season (winter) was abundantly supplied with Aningas. There the Otter, the Alligator, and many species of birds, found an ample supply of food; and as I was constantly watching them, I soon discovered a roosting place of the Snake-Birds, which was a large dead tree. I found it impossible to get near them either by cautiously advancing in the boat, or by creeping among the briars, canes, and tangled palmettoes which profusely covered the banks. I therefore paddled directly to the place, accompanied by my faithful and sagacious Newfoundland dog. At my approach the birds flew off towards the upper parts of the stream, and as I knew that they might remain for hours, I had a boat sent after them with orders to the Negroes to start all that they could see. Dragging up my little bark, I then hid myself among the tangled plants, and, with my eyes bent on the dead tree, and my gun in readiness, I remained until I saw the beautiful bird alight and gaze around to see if all was right. Alas! it was not aware of its danger, but, after a few moments, during which I noted its curious motions, it fell dead into the water, while the reverberations consequent on the discharge of my gun alarmed the birds

around, and by looking either up or down the bayou I could see many Anhingas speeding away to other parts. My dog, as obedient as the most submissive of servants, never stirred until ordered, when he would walk cautiously into the water, swim up to the dead bird, and having brought it to me, lie down gently in his place. In this manner, in the course of one day I procured fourteen of these birds, and wounded several others. I may here at once tell you that all the roosting places of the Anhinga which I have seen were over the water, either on the shore or in the midst of some stagnant pool; and this situation they seem to select because there they can enjoy the first gladdening rays of the morning sun, or bask in the blaze of its noontide splendour, and also observe with greater ease the approach of their enemies, as they betake themselves to it after feeding, and remain there until hunger urges them to fly off. There, trusting to the extraordinary keenness of their beautiful bright eyes in spying the marauding sons of the forest, or the not less dangerous enthusiast, who, probably like yourself, would venture through mud and slime up to his very neck, to get within rifle shot of a bird so remarkable in form and manners, the Anhingas, or "Grecian Ladies," stand erect, with their wings and tail fully or partially spread out in the sunshine, whilst their long slender necks and heads are thrown as it were in every direction by the most curious and sudden jerks and bendings. Their bills are open, and you see that the intense heat of the atmosphere induces them to suffer their gular pouch to hang loosely. What delightful sights and scenes these have been to me, good Reader! With what anxiety have I waded toward these birds, to watch their movements, while at the same time I cooled my over-heated body, and left behind on the shores myriads of hungry sand-flies, gnats, mosquitoes, and ticks, that had annoyed me for hours! And oh! how great has been my pleasure when, after several failures, I have at last picked up the spotted bird, examined it with care, and then returned to the gloomy shore, to note my observations! Great too is my pleasure in now relating to you the results of my long personal experience, together with that of my excellent friend Dr BACHMAN, who has transmitted his observations on this bird to me.

WILSON, I am inclined to think, never saw a live Anhinga; and the notes, furnished by Mr ABBOT of Georgia, which he has published, are very far from being correct. In the supplementary volumes of American Ornithology published in Philadelphia, the Editor, who visit-

ed the Floridas, added nothing of importance beyond giving more accurate measurements of a single specimen than WILSON had given from the stuffed skins from which he made his figures, and which were in the museum of that city.

The peculiar form, long wings, and large fan-like tail of the Anhinga, would at once induce a person looking upon it to conclude that it was intended by nature rather for protracted and powerful flight, than for spending as it does more than half of its time by day in the water, where its progress, one might suppose, would be greatly impeded by the amplitude of these parts. Yet how different from such a supposition is the fact? The Anhinga in truth is the very first of all fresh-water divers. With the quickness of thought it disappears beneath the surface, and that so as scarcely to leave a ripple on the spot; and when your anxious eyes seek around for the bird, you are astonished to find it many hundred yards distant, the head perhaps merely above water for a moment; or you may chance to perceive the bill alone gently cutting the water, and producing a line of wake not observable beyond the distance of thirty yards from where you are standing. With habits like these it easily eludes all your efforts to procure it. When shot at while perched, however severely wounded they may be, they fall at once perpendicularly, the bill downward, the wings and tail closed, and then dive and make their way under water to such a distance that they are rarely obtained. Should you, however, see them again, and set out in pursuit, they dive along the shores, attach themselves to roots of trees or plants by the feet, and so remain until life is extinct. When shot dead on the trees, they sometimes cling so firmly to the branches that you must wait some minutes before they fall.

The generally received opinion or belief that the Anhinga always swims with its body sunk beneath the surface is quite incorrect; for it does so only when in sight of an enemy, and when under no apprehension of danger it is as buoyant as any other diving bird, such as a Cormorant, a Merganser, a Grebe, or a Diver. This erroneous opinion has, however, been adopted simply because few persons have watched the bird with sufficient care. When it first observes an enemy, it immediately sinks its body deeper, in the manner of the birds just mentioned, and the nearer the danger approaches, the more does it sink, until at last it swims off with the head and neck only above the surface, when these parts, from their form and peculiar sinuous motion,

somewhat resemble the head and part of the body of a snake. It is in fact from this circumstance that the Anhinga has received the name of Snake-Bird. At such a time, it is seen constantly turning its head from side to side, often opening its bill as if for the purpose of inhaling a larger quantity of air, to enable it the better to dive, and remain under water so long that when it next makes its appearance it is out of your reach. When fishing in a state of security it dives precisely like a Cormorant, returns to the surface as soon as it has procured a fish or other article of food, shakes it, if it is not too large often throws it up into the air, and receiving it conveniently in the bill, swallows it at once, and recommences its search. But I doubt much if it ever seizes on any thing that it cannot thus swallow whole. They have the curious habit of diving under any floating substances, such as parcels of dead weeds or leaves of trees which have accidentally been accumulated by the winds or currents, or even the green slimy substances produced by putrefaction. This habit is continued by the species when in a perfect state of domestication, for I have seen one kept by my friend JOHN BACHMAN thus diving when within a few feet of a quantity of floating rice-chaff, in one of the tide-ponds in the neighbourhood of Charleston. Like the Common Goose, it invariably depresses its head while swimming under a low bridge, or a branch or trunk of a tree hanging over the water. When it swims beneath the surface of the water, it spreads its wings partially, but does not employ them as a means of propulsion, and keeps its tail always considerably expanded, using the feet as paddles either simultaneously or alternately.

The quantity of fish consumed by this bird is astonishing; and what I am about to relate on this subject will appear equally so. One morning Dr BACHMAN and I gave to an Anhinga a Black Fish, measuring nine and a half inches, by two inches in diameter; and although the head of the fish was considerably larger than its body, and its strong and spinous fins appeared formidable, the bird, which was then about seven months old, swallowed it entire, head foremost. It was in appearance digested in an hour and a half, when the bird swallowed three others of somewhat smaller size. At another time, we placed before it a number of fishes about seven and a half inches long, of which it swallowed nine in succession. It would devour at a meal forty or more fishes about three inches and a half long. On several occasions it was fed on Plaice, when it swallowed some that were four inches

broad, extending its throat, and compressing them during their descent into the stomach. It did not appear to relish eels, as it eat all the other sorts first, and kept them to the last; and after having swallowed them, it had great difficulty in keeping them down, but, although for a while thwarted, it would renew its efforts, and at length master them. When taken to the tide-pond at the foot of my friend's garden, it would now and then after diving return to the surface of the water with a cray-fish in its mouth, which it pressed hard and dashed about in its bill, evidently for the purpose of maiming it, before it would attempt to swallow it, and it never caught a fish without bringing it up to subject it to the same operation.

While residing near Bayou Sara, in the State of Mississippi, I was in the habit of occasionally visiting some acquaintances residing at Pointe Coupé, nearly opposite the mouth of the bayou. One day, on entering the house of an humble settler close on the western bank of the Mississippi, I observed two young Anhingas that had been taken out of a nest containing four, which had been built on a high cypress in a lake on the eastern side of the river. They were perfectly tame and gentle, and much attached to their foster-parents, the man and woman of the house, whom they followed wherever they went. They fed with equal willingness on shrimps and fish, and when neither could be had, contented themselves with boiled Indian corn, of which they caught with great ease the grains as they were thrown one by one to them. I was afterwards informed, that when a year old, they were allowed to go to the river and fish for themselves, or to the ponds on either side, and that they regularly returned towards night for the purpose of roosting on the top of the house. Both birds were males, and in time they fought hard battles, but at last each met with a female, which it enticed to the roost on the house-top, where all the four slept at night for a while. Soon after, the females having probably laid their eggs in the woods, they all disappeared, and were never again seen by the persons who related this curious affair.

The Anhinga is shy and wary when residing in a densely peopled part of the country, which, however, is rarely the case, as I have already mentioned; but when in its favourite secluded and peaceful haunts, where it has seldom or never been molested, it is easily approached and without difficulty procured; nay, sometimes one will remain standing in the same spot and in the same posture, un-

til you have fired several bullets from your rifle at it. Its mode of fishing is not to plunge from a tree or stump in pursuit of its prey, but to dive while swimming in the manner of Cormorants and many other birds. Indeed, it could very seldom see a fish from above the surface of the turbid waters which it prefers.

It moves along the branches of trees rather awkwardly; but still it walks there, with the aid of its wings, which it extends for that purpose, and not unfrequently also using its bill in the manner of a Parrot. On the land, it walks and even runs with considerable ease, certainly with more expertness than the Cormorant, though much in the same style. But it does not employ its tail to aid it, for, on the contrary, it carries that organ inclined upwards, and during its progress from one place to another, the movements of its head and neck are continued. These movements, which, as I have said, resemble sudden jerkings of the parts to their full extent, become extremely graceful during the love season, when they are reduced to gentle curvatures. I must not forget to say, that during all these movements, the gular pouch is distended, and the bird emits rough guttural sounds. If they are courting on wing, however, in the manner of Cormorants, Hawks, and many other birds, they emit a whistling note, somewhat resembling that of some of our rapacious birds, and which may be expressed by the syllables *EEK, eek, eek*, the first loudest, and the rest diminishing in strength. When they are on the water, their call-notes so much resemble the rough grunting cries of the Florida Cormorant, that I have often mistaken them for the latter.

The flight of the Anhinga is swift, and at times well sustained; but like the Cormorants, it has the habit of spreading its wings and tail before it leaves its perch or the surface of the water, thus frequently affording the sportsman a good opportunity of shooting it. When once on wing, they can rise to a vast height, in beautiful gyrations, varied during the love-season by zigzag lines chiefly performed by the male, as he plays around his beloved. At times they quite disappear from the gaze, lost as it were, in the upper regions of the air; and at other times, when much lower, seem to remain suspended in the same spot for several seconds. All this while, and indeed as long as they are flying, their wings are directly extended, their neck stretched to its full length, their tail more or less spread according to the movements

to be performed, being closed when they descend, expanded and declined to either side when they mount. During their migratory expeditions, they beat their wings at times in the manner of the Cormorant, and at other times sail like the Turkey Buzzard and some Hawks, the former mode being more frequently observed when they are passing over an extent of woodland, the latter when over a sheet of water. If disturbed or alarmed, they fly with continuous beats of the wings, and proceed with great velocity. As they find difficulty in leaving their perch without previously expanding their wings, they are also, when about to alight, obliged to use them in supporting their body, until their feet have taken a sufficient hold of the branch on which they desire to settle. In this respect, they exactly resemble the Florida Cormorant.

There are facts connected with the habits of birds which might afford a pretty good idea of the relative temperatures of different parts of the country during a given season; and those observed with regard to the Anhinga seem to me peculiarly illustrative of this circumstance. I have found the "Grecian Lady" breeding on St John's River in East Florida, near Lake George, as early as the 23d of February; having previously seen many of them caressing each other on the waters, and again carrying sticks, fresh twigs, and other matters, to form their nests, and having also shot females with the eggs largely developed. Now, at the same period, perhaps not a single Anhinga is to be seen in the neighbourhood of Natchez, only a few about New Orleans, in the eastern parts of Georgia, and the middle maritime portions of South Carolina. In Louisiana this bird breeds in April or May, and in South Carolina rarely before June, my friend BACHMAN having found eggs, and young just hatched, as late as the 28th of that month. In North Carolina, where only a few pairs breed, it is later by a fortnight.

I have already expressed my opinion that birds which thus breed so much earlier in one section of the country than in another, especially when at great distances, may, after producing one or even two broods, in the same year, still have time enough to proceed toward higher latitudes for the purpose of again breeding. Actual observations have moreover satisfied me that individuals of the same species produced in warm latitudes have a stronger disposition toward reproduction than

those of more northern climates. This being the case, and most birds endowed with the power of migrating, having a tendency to exercise it, may we not suppose that the pair of Anhingas which bred on the St John's in February, might be inclined to breed again either in South Carolina or in the neighbourhood of Natchez, several months after. But, as yet, I have not been able to adduce positive proof of the accuracy of this opinion.

The nest of the Snake-bird is variously placed in different localities ; sometimes in low bushes, and even on the common smilax, not more than eight or ten feet above the water, if the place be secluded, or on the lower or top branches of the highest trees, but always over the water. In Louisiana and the State of Mississippi, where I have seen a goodly number of nests, they were generally placed on very large and tall cypresses, growing out of the central parts of lakes and ponds, or overhanging the borders of lagoons, bayous, or rivers, distant from inhabited places. They are frequently placed singly, but at times amidst hundreds or even thousands of nests of several species of Herons, especially *Ardea alba* and *A. Herodias*, the Great White and Great Blue Herons. As however in all cases the form, size, and component materials are nearly the same, I will here describe a nest procured for the purpose by my friend BACHMAN.

It measured fully two feet in diameter, and was of a flattened form, much resembling that of the Florida Cormorant. The first or bottom layer was made of dry sticks of different sizes, some nearly half an inch in diameter, laid crosswise, but in a circular manner. Green branches with leaves on them, of the common myrtle, *Myrica cerifera*, a quantity of Spanish moss, and some slender roots, formed the upper and inside layer, which was as solid and compact as that of any nest of the Heron tribe. This nest contained four eggs ; another examined on the same day had four young birds ; a third only three ; and in no instance has a nest of the Anhinga been found with either eight eggs, or "two eggs and six young ones," as mentioned by Mr ABBOTT, of Georgia, in his notes transmitted to WILSON. Mr ABBOTT is however correct in saying that this species "will occupy the same tree for a series of years," and I have myself known a pair to breed in the same nest three seasons, augmenting and repairing it every succeeding spring, as Cormorants and Herons are wont to do. The eggs average

two inches and five-eighths in length, by one and a quarter in diameter, and are of an elongated oval form, of a dull uniform whitish colour externally, being covered with a chalky substance, beneath which the shell, on being carefully scraped, is of a light blue, precisely resembling in this respect the eggs of the different species of American Cormorants with which I am acquainted.

The young when about a fortnight old are clad with a uniform buff-coloured down; their bill is black, their feet yellowish-white, their head and neck nearly naked; and now they resemble young Cormorants, though of a different colour. The wing feathers make their appearance through the down, and are dark brown. The birds in the same nest differ as much in size as those of Cormorants, the largest being almost twice the size of the smallest. At this age they are in the habit of raising themselves by placing their bills on the upper part of the nest, or over a branch if convenient, and drawing themselves up by their jaws, which on such occasions they open very widely. This habit is continued by young birds whilst in confinement, and was also observed in the Cormorant, *Phalacrocorax Carbo*, the young of which assisted themselves with their bills while crawling about on the deck of the Ripley. The action is indeed performed by the Anhinga at all periods of its life. At an early age the young utter a low wheezing call, and at times some cries resembling those of the young of the smaller species of Herons. From birth they are fed by regurgitation, which one might suppose an irksome task to the parent birds, as during the act they open their wings and raise their tails. I have not been able to ascertain the period of incubation, but am sure that the male and the female sit alternately, the latter however remaining much longer on the nest. Young Aningas when approached while in the nest cling tenaciously to it, until seized, and if thrown down, they merely float on the water, and are easily captured. On the contrary, the young Florida Cormorants throw themselves into the water, and dive at once.

When they are three weeks old, the quills and tail-feathers grow rapidly, but continue of the same dark-brown colour, and so remain until they are able to fly, when they leave the nest, although they still present a singular motley appearance, the breast and back being buff-coloured, while the wings and tail are nearly black. After the feathers of the wings and tail are nearly fully developed, those of the sides of

the body and breast become visible through the down, and the bird appears more curiously mottled than before. The young male now assumes the colour of the adult female, which it retains until the beginning of October, when the breast becomes streaked with dusky; white spots shew themselves on the back, the black of which becomes more intense, and the crimpings on the two middle feathers of the tail, which have been more or less apparent from the first, are now perfect. By the middle of February, the male is in full plumage, but the eyes have not yet acquired their full colour, being only of a dull reddish-orange. In this respect also two differences are observed between the Anhinga and the Cormorants. The first is the rapid progress of the Anhinga towards maturity of plumage, the other the retaining of its complete dress through the whole of its life, no change taking place in its colours at each successive moult. The Cormorants, on the contrary, take three or four years to attain their full dress of the love season, which lasts only during that period of excitement. The progress of the plumage in the female Anhinga is as rapid as in the male, and the tints also remain unaltered through each successive moult.

Like all other carnivorous and piscivorous birds, the Anhinga can remain days and nights without food, apparently without being much incommoded. When overtaken on being wounded, and especially if brought to the ground; it seems to regard its enemies without fear. On several occasions of this kind, I have seen it watch my approach, or that of my dog, standing as erect as it could under the pain of its wounds, with its head drawn back, its bill open, and its throat swelled with anger until, when at a sure distance, it would dart its head forward and give a severe wound. One which had thus struck at my dog's nose, hung to it until dragged to my feet over a space of thirty paces. When seized by the neck, they scratch severely with their sharp claws, and beat their wings about you with much more vigour than you would suppose they could possess. Having witnessed the singular means employed by this bird in making its escape on sudden emergencies, I will here relate an instance, which evinces a kind of reason. Whilst ascending the St John's river in East Florida, along with Captain PIERCY of the U. S. Navy, our boat was rowed into a circular basin of clear shallow water, having a sandy bottom; such places being found occasionally in that country, produced by the flowing of springs from the more elevated sandy parts into the muddy rivers and lakes. We

entered the cove by passing between the branches of low trees, overhung by others of great height. The first object that attracted my attention was a female Anhinga perched on the opposite side of the cove, and, as I did not wish that it should be shot, we merely advanced towards it, when it began to throw its head about, and watch our motions. The place was small, and the enclosing trees high. Though it might have flown upwards and escaped, it remained perched, but evidently perturbed and apprehensive of danger. When the boat was at a short distance, however, it suddenly threw itself backward, cutting a somerset as it were, and, covered by the branches, darted straight through the tangled forest, and was soon out of sight. Never before nor since have I seen or heard of Anhingas flying through the woods.

For the following description of the Snake-bird's breeding grounds, a few miles distant from Charleston in South Carolina, I am indebted to my friend JOHN BACHMAN:—"On the 28th of June 1837, accompanied by Dr WILSON, Dr DRAYTON, and WILLIAM RAMSAY, Esq., I went to Chisholm Pond, about seven miles from the city, for the purpose of seeing the Anhingas while breeding. The day was fine, and in about an hour our horses brought us to the margin of the swamp. We soon discovered a bird flying over us, and making for the upper part of the pond toward a retired place, rendered almost inaccessible in consequence of its being a morass overgrown with vines and rushes. As there was no other way of examining their locality but by water, we hauled ashore a small leaky canoe which we found in the pond, caulked it in the best manner we could, so as to render it not unsafe, although after all we could do to it, we found it still very leaky. It proved uncomfortable enough, and could hold only two persons. So it was agreed that I should proceed in it, accompanied by a servant, who understood well how to paddle it.

"The pond is artificial, and such as in this country is called a "Reserve." It is situated at the upper part of rice fields, and is intended to preserve water sufficient, when needed, to irrigate and overflow the rice. It is studded with small islands, covered by a thick growth of a small species of Laurel (*Laurus geniculata*) and the Black Willow (*Salix nigra*), all entangled by various species of Smilax and other plants. These were at the time covered with Herons' nests of several kinds. Farther on the Night Herons also had formed a city. As I proceeded onwards in my search I found the difficulties increasing.

The water became shallow, the mire deeper and softer, and the boat required the best of management to be propelled along, for now it was retarded by rushes and vines. Enormous live oaks and cypress trees reared their majestic branches towards the pure sky above, covered as they were with dangling masses of Spanish moss, reaching to the very surface of the water, and turning day into night. Alligators of great size wallowed in the mire, or were heard to plunge into it, from the many logs which ever and anon intercepted my progress, while terrapins, snakes, and other reptiles swarmed around. My situation was thus not altogether so very pleasant, and the less so as it was necessary for me to destroy as many mosquitoes as possible, and guard against being upset in such a truly "dismal swamp." We moved extremely slowly, yet advanced, and at last, having reached an open space where the trees were of small size and height, I espied the nest of the Anhinga before me! The female was sitting on it, but on our coming nearer she raised herself by her bill to a branch about one foot above, and there stood with outstretched neck, like a statue. It was cruel thus to disturb her in her own peaceful solitude; but naturalists, alas! seldom consider this long, when the object of their pursuit is in their view and almost within their grasp. Being now within twenty yards of the innocent and interesting creature, I pointed my short rifle towards her, and immediately fired; but the unsteadiness of the canoe, and perhaps that of a hand not accustomed to this weapon, saved her life. She remained in her statue-like posture, the rifle was reloaded, and thrice fired, without touching her; but at last a bullet having cut through the branch on which she stood, she spread her dark pinions, and launching into the air, was soon beyond the reach of my eyes, and I trust of further danger."

The same kind friend having procured eggs and young of this interesting bird, I will present you with his observations respecting them. He writes thus:—"I brought home three young Snake-birds, two of which I immediately undertook to raise and domesticate, entrusting the third to the care of one of our mutual friends. I found no difficulty in rearing one of them. The other, by neglect of my servant, died a few weeks afterwards, during a short personal absence. Whilst these two birds were yet in the same cage, it was curious indeed to see the smaller one when hungry incessantly trying to force its bill into the mouth and throat of the other, which, after being thus teased for a short time,

would open its mouth to suffer the little one to thrust its whole head down the throat of its brother, from which it would receive the fish that the latter had previously swallowed. In this singular manner did the larger bird, which after awhile proved to be a male, continue to act as if the foster-parent of his little sister, which indeed seemed to be thrown upon his protection. The one still in my possession is fed on fish, which it picks up, tosses a few times in the air, and swallows at the first convenient opportunity, that is when the fish falls towards its mouth head foremost. At the onset, when the fish was large, I had it cut into pieces, thinking that the apparent slenderness of the bird's neck could not expand enough to swallow it whole; but I soon ascertained that this was unnecessary. Fish three times the size of the neck were tossed in the expanded jaws and gobbled at once, and immediately after, the bird would come to my feet, clicking its bill in such an unequivocal manner that I never failed to give it more. My pet was tame from the beginning of its captivity, and followed me about the house, the yard, and garden, until I thought it quite troublesome in consequence of its peculiar attachment to me. The one given to our friend was fed on fish and raw beef; but although it grew to its full size, never seemed to thrive as well as the one I had, and finally died of an affection causing spasms. This was a female, and although less bright in colour than the adult of the same sex, the two middle feathers of her tail were partially crimped, and her markings were the same. While in the young state I frequently carried it to a pond, believing that it would relish the water, and would improve in health; but I invariably found it to scramble towards the shore as soon as possible, as if dreading the element in which it was by nature destined to live. When thrown into the pond, it usually dived at once, but the next instant arose to the surface, and swam with all the buoyancy of a common duck. It is a fearless bird, keeping at bay the hens and turkeys in the yard, and never sparing any dog that chances to pass by it, dealing blows right and left with its sharp bill, and occasionally placing itself at the trough where they are fed, to prevent them from taking a morsel of food till he has tantalized them sufficiently, when he leaves them to share whatever he does not himself relish.

“ It was not until my bird was fully fledged that I found it willing or anxious to go to the water, and then, whenever it saw me go toward the pond, it accompanied me as far as the gate of the garden, seem-

ing to say "Pray let me go." On my opening this gate, it at once followed me waddling along like a duck, and no sooner was it in sight of its favourite element than it immediately let itself in, not with a plunge or a dive, but by dropping from a plank into the stream, where for a while it would swim like a duck, then, dipping its long neck, it would dive for the purpose of procuring fish. The water was clear enough to enable me to see all its movements, and after many various windings it would emerge at the distance of forty or fifty yards. This bird sleeps in the open air during warm nights, perched on the highest bar of the fence, with its head under its wings, placed there from above its back, and in rainy weather it often sits in the same position for nearly the whole day. It appears to be very susceptible of cold, retreating to the kitchen and near the fire, battling with the dogs or the cooks for the most comfortable place on the hearth. Whenever the sun shines, it spreads its wings and tail, rustles its feathers, and seems delighted with our warmest sunny days. When walking and occasionally hopping, it does not support itself by the tail, as Cormorants sometimes do. When fishes are presented to it, it seizes and swallows them greedily; but when these cannot be procured, we are forced to feed it on meat, when it opens its mouth, and receives the food placed in it. Occasionally it has spent several days without any food; but in those cases the bird became very troublesome, harassing all around by its incessant croakings, and giving blows to the servants, as if to remind them of their neglect.

"Once it made its escape, and flew off about a quarter of a mile into the pond. Some boys happening to be there in a canoe, the bird approached them with open mouth, for it was hungry and wanted food. They seeing such a strange creature pursuing them with a head somewhat like that of a snake, took alarm and paddled for the shore; but my bird followed in their wake, and landed as soon as they did. They now fled to the house, where the Anhinga also arrived, and was recognised by some members of the family, who sent it back to me; and I, to prevent its farther escape or loss, clipped one of its wings."

I saw the bird above mentioned at my friend's house at Charleston in the winter of 1836, when on my way to the Gulf of Mexico, and had many opportunities of watching its habits. It was killed by a beautiful retriever presented to me by the EARL OF DERBY, and its

death occasioned sorrow both to my friend and myself, as he had given it to me for the purpose of being sent to that nobleman.

Ever since I have been acquainted with the Anhinga, I have thought that in form and habits it is intimately connected with the Cormorants, and was induced to compare their manners. In some respects I found them similar, in others different; but when I discovered that all these birds possess a remarkable peculiarity in the structure of their feathers, I thought that their generic affinity could not be denied. The Anhinga has its body and neck covered with what I would call *fibrous* feathers, having a very slender shaft; while its quills and tail-feathers are *compact*, that is, perfect in structure, strong, and elastic. Now the shafts of all these latter feathers are *tubular from their bases to their very extremities*, which, in so far as I know, is not the case in any other bird, excepting the Cormorants. They are all very elastic, like those in the tails of our largest Woodpeckers, the shafts of which, however, are filled with a spongy pith, as in all other land-birds, and in all the aquatic species which I have examined, including Divers and Grebes, as well as *Plungers*, such as Gannets, Kings-fishers, and Fishing Hawks. The quills and tail-feathers of the Cormorants and Anhinga, in short, have the barrel as in other birds, but the shaft *hollow, even to the tip, its walls being transparent, and of the same nature as the barrel.*

WILSON, who, it is acknowledged, made his figures from stuffed specimens in the Philadelphia Museum, had no positive proof that the bird which he took for a female was one, for he had not seen the Anhinga alive or recently killed. Even his continuator, Mr ORD, procured only males during his visit to the Floridas. But the female which I have represented was proved to be of that sex by dissection, and was examined by myself nineteen years ago near Bayou Sara. Since that time I have had numerous opportunities of satisfying myself as to this point, by examining birds in various stages.

The substances which I have found in many individuals of this species were fishes of various kinds, aquatic insects, crays, leeches, shrimps, tadpoles, eggs of frogs, water-lizards, young alligators, water-snakes, and small terrapins. I never observed any sand or gravel in the stomach. On some occasions I found it distended to the utmost, and, as I have already stated, the bird has great powers of digestion. Its excrements are voided in a liquid state, and squirted to a considerable distance, as in Cormorants, Hawks, and all birds of prey.

The flesh of the Anhinga, after the bird is grown, is dark, firm, oily, and unfit for food, with the exception of the smaller pectoral muscles of the female, which are white and delicate. The crimpings of the two middle tail-feathers become more deeply marked during the breeding season, especially in the male. When young, the female shews them only in a slight degree, and never has them so decided as the male.

PLOTUS ANHINGA, *Linn. Syst. Nat.*, vol. i. p. 218.—*Lath. Ind. Ornith.*, vol. ii. p. 895.—*Ch. Bonaparte*, *Synopsis of Birds of the United States*, p. 411.

PLOTUS MELANOGASTER, *Lath. Ind. Ornith.* vol. ii. p. 895.

BLACK-BELLIED DARTER, **PLOTUS MELANOGASTER**, *Wils. Amer. Ornith.*, vol. ix. p. 75, pl. 74, fig. 1. adult, and p. 82. pl. 74, fig. 2. young.

BLACK-BELLIED DARTER, *Nuttall*, *Manual*, vol. ii. p. 507.

Adult male. Plate CCCXVI. Fig. 1.

Bill about twice the length of the head, almost straight, being very slightly recurved, rather slender, compressed, tapering to a fine point. Upper mandible with the dorsal outline slightly declinate, and almost straight, being however somewhat convex, the ridge convex, gradually narrowed, the sides sloping, the edges sharp, and beyond the middle cut into minute slender-pointed serratures, which are directed backwards; the tips very slender. Lower mandible with the angle very long and narrow, the dorsal line beyond it straight and ascending, the sides sloping slightly outwards, the edges sharp and serrated like those of the upper, the point extremely narrow; the gape line slightly ascending towards the end. No external nostrils.

Head very small, oblong. Neck very long and slender. Body elongated and slender. Feet very short and stout. Tibia feathered to the joint. Tarsus very short, roundish, reticulated all over, the scales on the hind part extremely small. Toes all connected by webs; the first of moderate length, the second much longer, the fourth longest and slightly margined externally; the first toe and the first phalanges of the rest, covered above with transverse series of scales, the rest of their extent scutellate. Claws rather large, very strong, compressed, curved, very acute; the outer smallest, the third longest, with a deep groove on the inner side, and a narrow thin edge, cut with parallel slits; those of the first and second toes nearly equal.

There is a bare space at the base of the upper mandible, including

the eye; the skin of the throat is bare and dilated, like that of the Cormorants. The plumage of the head, neck, and body, is close, blended, and of a silky texture; the feathers oblong, rounded, with the filament disunited toward the end. On each side of the neck, from near the eye to half its length, is a series of elongated narrow loose feathers, a few of which are also dispersed over the back of the neck, and which in the breeding season are an inch and a quarter in length. The scapulars, which are very numerous, are elongated, lanceolate, tapering to a point, compact, stiffish, elastic, highly glossed, gradually increasing in size backwards, the outer web of the largest, crimped. Wings of moderate length and breadth; primaries strong, firm, considerably curved, the third longest, the second almost as long, the first a little shorter than the fourth; the second, third, and fourth cut out on the outer web. Secondaries a little decurved, broad, rounded and acuminate; the inner elongated, straightish, acuminate, and resembling the posterior scapulars. Tail very long, narrow, of twelve straight feathers having strong shafts, and increasing in breadth from the base to the end, which is rounded and very broad, the two middle feathers have their outer webs curiously marked with transverse alternate ridges and depressions.

Upper mandible dusky olive, the edges yellow; lower mandible bright yellow, the edges and tips greenish; bare space about the eye bluish-green; gular sac bright orange. Iris bright carmine. Tarsi and toes anteriorly dusky olive, the hind parts and webs yellow; claws brownish-black. The general colour of the head, neck, and body, is glossy blackish-green; of the scapulars, wings, and tail, glossy bluish-black. The long loose feathers on the neck are purplish-white or pale lilac. The lower part of the neck behind is marked with very numerous minute oblong spots of white; which form two broad bands extending backwards, and gradually becoming more elongated, there being one along the centre of each feather including the scapulars. The smaller wing-coverts are similarly marked with broader white spots disposed in regular rows; the four last of which have merely a central line towards the tip, while the inner has a broad band extending from near the base over the outer half of the inner web, and towards the end including a portion of the outer web; the first row of small coverts, and the secondary coverts are white excepting the portion of the inner web. The five inner elongated secondaries are marked with a narrow

white band, occupying the inner half of the outer web, from about an inch from their base to the extremity, near which it includes a part of the inner web. The tail-feathers tipped with a band of brownish-red, fading into white.

Length to end of tail $35\frac{3}{4}$ inches, to end of wings $30\frac{1}{4}$, to end of claws $28\frac{1}{2}$, to carpus $17\frac{1}{2}$; extent of wings 44; wing from flexure 14; tail $11\frac{1}{2}$; bill along the ridge $3\frac{1}{4}$, along the edge of lower mandible $3\frac{1}{2}$; tarsus $1\frac{4}{8}$; hind toe $1\frac{1}{2}$, its claw $\frac{6}{12}$; second toe $1\frac{9}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $2\frac{5}{12}$, its claw $\frac{8}{12}$; fourth toe $2\frac{4\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$. Weight $3\frac{1}{4}$ lb.

Adult Female. Plate CCCXVI. Fig. 2. The female has the plumage similar in texture to that of the male, but only a few inconspicuous elongated feathers on the neck. The bill is lighter than in the male, the naked part around the eye darker, the eye and gular sac as in the male; as are the feet. The upper part of the head and the hind neck are dull greenish-brown, lighter at the lower part, the fore part of the neck is pale reddish-brown, tinged with grey, lighter on the throat; this colour extends over part of the breast, an inch and a half beyond the carpal joint, and terminates abruptly in a transverse band of deep reddish-chestnut; the rest of the lower parts as in the male, as are the upper, only the fore part of the back is tinged with brown, and its spots less distinct.

Length to end of tail 34 inches, to end of wings $29\frac{1}{4}$, to end of claws $27\frac{1}{2}$; to carpal joint $16\frac{1}{4}$; extent of wings 43. Weight 2 lb. 15 oz.

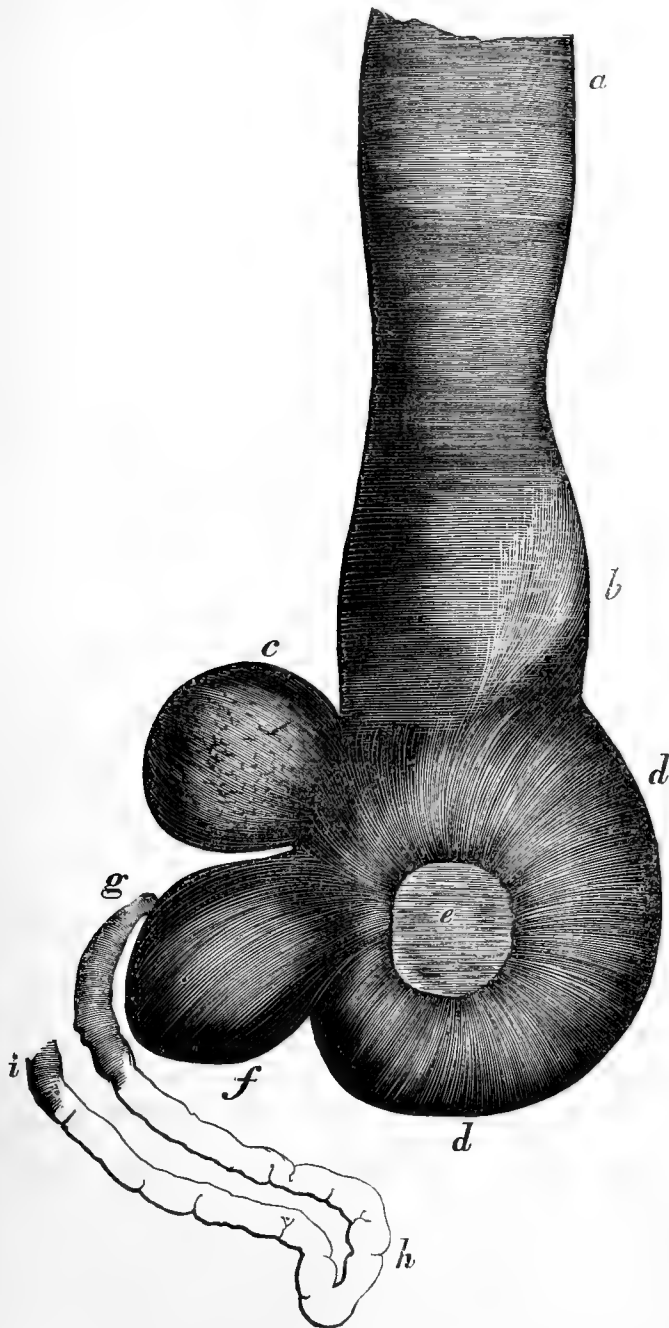
In external appearance and habits, the Snake-bird is very nearly allied to the Cormorants. The structure of the feet is essentially the same in both genera, as is that of the wings and tail, the latter however being more elongated in the Anhinga, in correspondence with the neck. If one might suppose a small Cormorant elongated and attenuated, with the feet rather enlarged but shortened, the head diminished in size, and the bill formed more on the model of that of a Heron, being destitute of the distinct ridge and curved unguis, he would form a pretty correct notion of this bird. Not only is the bill like that of a Heron, but the vertebræ of the neck are very similar to those of that family, and form the same abrupt curvatures between the seventh and eighth vertebræ. But all the other bones are those

of the Cormorants and Pelicans. The sternum in particular is almost precisely similar to that of the Crested Cormorant, so that without entering very minutely into its description, no differences could be pointed out.

Both mandibles are concave within; the palate flat, with two longitudinal ridges; the posterior aperture of the nares linear and 9 twelfths long, the anterior or external aperture *entirely obliterated*. The lower mandible has a distinct oblique joint at about a third of its length, enabling it to be expanded to the extent of an inch and a half. The pouch, which is small, is constructed in the same manner as that of the Pelicans and Cormorants; its muscular fibres running from the lower edge of the mandible downwards and backwards, and a slender muscle passing from the anterior part of the hyoid bone to the junction of the crura of the mandible. The tongue is reduced to a mere oblong knob, $1\frac{1}{2}$ twelfth long, and $\frac{1}{2}$ twelfth in height. The aperture of the glottis is 3 twelfths long, with two roundish thin edged flaps behind, destitute of papillæ. There is a small bone appended to the occipital ridge, $\frac{1}{4}$ inch in length, as in the Cormorants.

The œsophagus *a b*, is 17 inches long, exceedingly delicate and dilat-able, with external longitudinal fibres, the transverse fibres becoming stronger towards the lower parts. Its diameter when moderately dilated is $1\frac{3}{4}$ inch at the top, 1 inch farther down, at its entrance into the thorax, 9 twelfths, and finally $1\frac{1}{2}$ inch; but it may be dilated to a much greater extent. *The proventricular glands, instead of forming a belt at the lower part of the œsophagus, are placed on the right side in the form of a globular sac, about an inch in diameter, communicating with the œsophagus, b, and stomach, d.* For two inches of the lower part of the œsophagus, *b*, or at that part usually occupied by the proventriculus, the transverse muscular fibres are enlarged, and form an abrupt margin beneath; on the inner surface there are four irregular series of large apertures of gastric glandules or crypts. The proventriculus itself, *c*, is composed of large crypts of irregular form, with very wide apertures, and covered externally with muscular fibres. The stomach, *d d*, is roundish, about an inch and three quarters in diameter, with two roundish tendinous spaces, *e*, and fasciculi of muscular fibres; its inner coat thin, soft, and smooth. It opens by an aperture a quarter of an inch in diameter into a small sac, *f*, precisely similar to that of the Pelican, which has a muscular coat, with a soft even internal membrane, like that of the stomach. The pylorus has a

diameter of 2 twelfths, is closed by a semilunar valve or flap, and is surrounded by a disk of radiating rugæ three-fourths of an inch in diameter. The intestine, *g h*, is 3 feet 4 inches long, its average diameter $2\frac{1}{4}$ twelfths, but only 1 twelfth at its junction with the rectum, which is



$3\frac{1}{2}$ inches long, 3 twelfths in diameter. The cloaca globular, $1\frac{1}{2}$ inch in diameter. There are *no cæca* properly so called, but a *small rounded termination of the rectum* 2 twelfths in length as in the Herons.

The subcutaneous cellular tissue is largely developed, and the longitudinal cells on the neck are extremely large, as in Gannets and Herons. The olfactory nerve is of moderate size, and the nasal cavity is a simple compressed sac $4\frac{1}{2}$ twelfths in its greatest diameter. The external nares are closed, and there are *no supraorbital glands*. The external aperture at the ear is circular, and not more than half a twelfth in diameter.

The trachea is $13\frac{1}{2}$ inches long, much flattened, narrow at the upper extremity, where it is $2\frac{1}{2}$ twelfths in breadth, enlarging gradually to $4\frac{1}{2}$ twelfths, and toward the lower larynx contracting to $2\frac{1}{2}$ twelfths. The rings are very slender, unossified, and feeble ; their number 230 ; the bronchial half-rings 25. The contractor muscles moderate ; sterno-tracheales ; and a pair of inferior muscles going to the last ring.

In a young bird scarcely two days old, and measuring only $3\frac{3}{4}$ inches in length, the two most remarkable circumstances observed refer to the nostrils and stomach. The posterior or palatal aperture of the nares is of the same form, and proportional size, as in the adult ; the nasal cavity is similar ; but there is an external nasal aperture, or nostril, on each side, so small as merely to admit the mystachial bristle of a Common Squirrel. The stomach is of enormous size, occupying three-fourths of the cavity of the thorax and abdomen, being 10 twelfths of an inch long, and of an oval shape. The proventriculus is separated from the stomach and formed into a roundish lobe, as in the old bird ; and beside it is the lobe or pouch appended to the stomach, and from which the duodenum comes off. Even at this very early age, the stomach was turgid with a pultaceous mass apparently composed of macerated fish, without any bones or other hard substances intermixed.

Here then we have an instance of external nares in the young of a bird in which they are entirely obliterated in the adult.

SURF DUCK.

FULIGULA PERSPICILLATA, BONAP.

PLATE CCCXVII. MALE AND FEMALE.

ALTHOUGH several years have elapsed since I visited the sterile country of Labrador, I yet enjoy the remembrance of my rambles there; nay, Reader, many times have I wished that you and I were in it once more, especially in the winter season. I calculate indeed how easily this wish might be accomplished, were I ten years younger. Under the hospitable roof of Mr JONES, while the tempest might be hurling southward the drifting snows, I could live in peaceful content, cheered by the matchless hand-organ of my kind hostess. Then, how pleasant it would be in calm weather to traverse the snowy wastes, to trap the cunning fox and the Jer Falcon, allured by their favourite winter food, the Rock Grouse; with what delight should I gaze on the dim red sun creeping along the southern horizon, or watch the flitting beams of the northern aurora. Now, over the glittering snow, JONES'S Esquimaux curs might swiftly convey us to his friends, here crossing the ice-bound gulf, there traversing fissures and crags impassable in summer. Then what long tales for the long nights, and sports for the short days. The broad-antlered Caribou might have scampered before me, but its bounds would have been suddenly checked by the fleet ball of my well-directed rifle. The wolf might have prowled around us, until he had been captured in the deeply dug and well-baited pit. Then Nature's pure mantle would be seen slowly to disappear, the low grounds would be inundated with the snow-waters, the warm breezes would dry the mountain ridges, and with the first appearance of verdure joy would cause every heart to bound. Thousands of seals would be seen to snuff the milder air, myriads of tiny fishes would approach the shores, and millions of feathered wanderers would pass over on whistling pinions. But alas! I shall never spend a winter in Labrador.

While proceeding towards that country in 1833, on board the Ripley, I found the waters of the Gulf of St Lawrence alive with ducks of different species. The nearer we approached the coast, the more

numerous did they become; and of the many kinds that presented themselves to our anxious gaze, the Surf Duck was certainly not the least numerous. It is true that in the noble bays of our own coast, in the Sound, between New York and the Hook, on the broader waters of the Chesapeake, and beyond them to the mouths of the Mississippi, I had seen thousands of Surf Ducks; but the numbers that passed the shores of Labrador, bound for the far north, exceeded all my previous conceptions.

For more than a week after we had anchored in the lovely harbour of Little Macatina, I had been anxiously searching for the nest of this species, but in vain: the millions that sped along the shores had no regard to my wishes. At length I found that a few pairs had remained in the neighbourhood, and one morning, while in the company of Captain EMERY, searching for the nests of the Red-breasted Merganser, over a vast oozy and treacherous fresh-water marsh, I suddenly started a female Surf Duck from her treasure. We were then about five miles distant from our harbour, from which our party had come in two boats, and fully five and a half miles from the waters of the Gulf of St Lawrence. The marsh was about three miles in length, and so unsafe that more than once we both feared, as we were crossing it, that we might never reach its margin. The nest was snugly placed amid the tall leaves of a bunch of grass, and raised fully four inches above its roots. It was entirely composed of withered and rotten weeds, the former being circularly arranged over the latter, producing a well-rounded cavity, six inches in diameter, by two and a half in depth. The borders of this inner cup were lined with the down of the bird, in the same manner as the Eider Duck's nest, and in it lay five eggs, the smallest number I have ever found in any duck's nest. They were two inches and two and a half eighths in length, by one inch and five-eighths in their greatest breadth; more equally rounded at both ends than usual; the shell perfectly smooth, and of a uniform pale yellowish or cream colour. I took them on board, along with the female bird, which was shot as she rose from her nest. We saw no male bird near the spot; but in the course of the same day, met with several males by themselves, about four miles distant from the marsh, as we were returning to the harbour. This induced me to believe that, like the Eider and other ducks that breed in Labrador, the males abandon the females as soon as incubation commences. I regret that, not-

withstanding all my further exertions, I did not succeed in discovering more nests or young birds.

In the States of Maine and Massachusetts, this species is best known by the name of "Butter-boat-billed Coot." The gunners of Long Island and New Jersey call it the Black Sea Duck. It is often seen along the coast of South Carolina, where my friend JOHN BACHMAN has met with it. The Surf Duck is a powerful swimmer and an expert diver. It is frequently observed fishing at the depth of several fathoms, and it floats buoyantly among the surf or the raging billows, where it seems as unconcerned as if it were on the most tranquil waters. It rises on wing, however, with considerable difficulty, and in this respect resembles the Velvet Duck; but when once fairly under way, it flies with rapidity and to a great distance, passing close to the water during heavy gales, but at the height of forty or fifty yards in calm and pleasant weather. It is an uncommonly shy bird, and therefore difficult to be obtained, unless shot at while on wing, or when asleep, and as it were at anchor on our bays, or near the shore, for it dives as suddenly as the Velvet and Scoter Ducks, eluding even the best percussion-locked guns. The female, which was killed as she flew off from the nest, uttered a rough uncouth guttural cry, somewhat resembling that of the Goosander on similar occasions; and I have never heard any other sound from either sex.

The migration of the Surf Ducks eastward from our Southern coast, begins at a very early season, as in the beginning of March none are to be seen in the New Orleans markets. When I was at Eastport in Maine, on the 7th of May 1833, they were all proceeding eastward. How far up the St Lawrence they advance in winter I have not learned, but they must give a decided preference to the waters of that noble stream, if I may judge by the vast numbers which I saw apparently coming from them as we approached the Labrador coast. I have never seen this species on any fresh-water lake or river, in any part of the interior, and therefore consider it as truly a marine duck.

During their stay with us, they are always seen in considerable numbers together, and, unless perhaps during the breeding season, they seem to be gregarious; for even during their travels northward they always move in large and compact bodies. When I was at Newfoundland, I was assured that they breed there in considerable numbers on the lakes of the interior. My friend Professor MACCULLOCH,

of Pictou, however informs me that none are seen in Nova Scotia in summer. A gentleman of Boston, with whom I once crossed the Atlantic, assured me that the species is extremely abundant on the northern shores of the Pacific Ocean, and about the mouth of Mackenzie's River. Doctor TOWNSEND mentions it as being also found on the Columbia. It appears that a single specimen of the Surf Duck has been procured on the shores of Great Britain; and this has induced the ornithologists of that country to introduce it as a constituent of its Fauna.

In all the individuals which I have examined, I have found the stomach to contain fish of different kinds, several species of shell-fish, and quantities of gravel and sand, some of the fragments being of large size. Their flesh is tough, rank, and fishy, so as to be scarcely fit for food.

In the young males, in the month of September, the whole upper plumage is mottled with darkish-brown and greyish-white, the latter colour margining most of the feathers. The neck has a considerable extent of dull greyish-white, spread over two or three inches, and approaching toward the cheeks and throat. This colour disappears about the beginning of January, when they become of a more uniform dark tint, the upper part of the head brownish-black, without any white spot; there is a patch of brownish-white at the base of the upper mandible on each side; another of an oblong form over the ear, and on the nape are elongated greyish-white marks; the bill and feet dusky green, the iris brown.

ANAS PERSPICILLATA, *Linn. Syst. Nat.* vol. i. p. 201.—*Lath. Ind. Ornith.* vol. ii. p. 847.

BLACK OR SURF DUCK, *Wils. Amer. Ornith.* vol. viii. p. 49, pl. 67, fig. 2.

FULIGULA PERSPICILLATA, *Ch. Bonaparte, Synopsis of Birds of the United States,* p. 389.

OIDEMIA PERSPICILLATA, *Richards. and Swains. Faun. Bor. Amer.* vol. ii. p. 449.

BLACK OR SURF DUCK, *Nuttall, Manual,* vol. ii. p. 416.

Adult Male. Plate CCCXVII. Fig. 1.

Bill about the length of the head, very broad, as deep as broad at the base, depressed towards the end, which is rounded. Upper mandible with the dorsal outline convex and descending, before the nostrils concave, on the unguis convex and declinate; the ridge broad and convex at the base; the sides at the base erect, bulging, and very broad, towards the end convex, the edges soft, with about 30 internal lamellæ.

for two-thirds from the base they are nearly parallel and straight, but towards the end ascending, the unguis very large, somewhat triangular and rounded. Lower mandible flattened, with the angle long and rather narrow, the dorsal line slightly convex, the edges with about 35 lamellæ. Nostrils submedial, elliptical, large, pervious, near the ridge.

Head large, oblong, flattened above. Eyes of moderate size. Neck short and thick. Body large, and much depressed. Feet short, placed rather far behind; tarsus very short, compressed, having anteriorly in its whole length a series of small scutella, and above the outer toe a partial series, the rest covered with reticular angular scales. Hind toe small, with a free membrane beneath; anterior toes nearly double the length of the tarsus, connected by reticulated membranes having a sinus on their free margins, the inner with a lobed marginal membrane, the outer with a thick margin, the third and fourth about equal and longest. Claws small, that of the first toe very small and curved, of the middle toe largest, with a dilated inner edge, of the rest slender, all rather obtuse.

Plumage soft, dense, blended, and glossy. Feathers on the head and neck of a velvety texture. Wings rather short, narrow, and pointed; primary quills curved, strong, tapering, and pointed, the first longest, the second little shorter, the rest rapidly graduated; secondaries broad and rounded, the inner elongated and tapering. Tail very short, narrow, wedge-shaped, of fourteen stiff, narrow, pointed feathers.

Upper mandible with a nearly square black patch at the base, margined with orange, unless in front, where there is a patch of bluish-white extending to near the nostrils, prominent part over the nostrils deep reddish-orange, becoming lighter towards the unguis, and shaded into rich yellow towards the margins; the unguis dingy greyish-yellow; lower mandible flesh-coloured, unguis darker. Iris bright yellowish-white. Tarsi and toes orange-red, the webs dusky tinged with green; claws black. The plumage is of a deep black, glossed with blue. On the top of the head, between the eyes, is a roundish patch of white, and on the nape a larger patch of an elongated form.

Length to end of tail 20 inches, to end of wings 18, to end of claws 22; extent of wings $33\frac{1}{2}$; bill from the angle in front $1\frac{1}{2}$; from the prominence at the base $2\frac{1}{2}$; along the edge of lower mandible $2\frac{5}{12}$; wing from flexure $9\frac{3}{4}$; tail $3\frac{3}{4}$; tarsus $1\frac{7}{12}$; first toe and claw $\frac{1}{12}$; outer toe, and claw $2\frac{1}{4}$; middle toe and claw $\frac{1}{12}$ longer. Weight 2 lb. 7 oz.

Adult Female. Plate CCCXVII. Fig. 2.

Bill greenish-black ; iris as in the male ; feet yellowish-orange, webs greyish-dusky, claws black. The general colour of the plumage is brownish-black ; darker on the top of the head, the back, wings, and tail ; on the breast and sides the feathers edged with dull greyish-white.

Length to end of tail 19 inches, to end of wings $15\frac{3}{4}$, to end of claws 18 ; extent of wings $31\frac{1}{2}$; wing from flexure $8\frac{3}{4}$; tarsus $1\frac{5}{8}$; middle toe $2\frac{3}{4}$, hind toe $1\frac{9}{12}$. Weight 2 lb. 2 oz.

In an adult Male, the tongue is 1 inch 9 twelfths long, has numerous conical papillæ at the base, is deeply grooved along the middle, has two lateral series of bristles, and terminates in a thin rounded lobe, 2 twelfths long. On the middle line of the upper mandible are about ten short conical papillæ, and on each of its margins about 35 lamellæ ; on the lower an equal number. The heart is 1 inch 8 twelfths long, 1 inch 2 twelfths broad. The œsophagus, $8\frac{1}{2}$ inches long, is wide, its diameter at the upper part being 1 inch, towards the middle of the neck 1 inch and a quarter. The proventriculus is $1\frac{1}{2}$ inch long ; its glandules cylindrical, $1\frac{1}{2}$ twelfths in length, and, as in all other ducks, arranged so as to form a complete belt. The stomach is a powerful gizzard of a roundish form, 1 inch 10 twelfths long, 1 inch 10 twelfths broad, its lateral muscles very large, the right 10 twelfths thick, the left 9 twelfths. In the stomach were various small bivalve shells and much gravel. The cuticular lining longitudinally rugous ; the grinding plates $\frac{3}{4}$ inch in diameter. The intestine, 5 feet 7 inches in length, has an average diameter of 6 twelfths. The rectum is $7\frac{1}{2}$ inches long, 8 twelfths in diameter. Of the cœca one is 3 inches 4 twelfths long, cylindrical, obtuse, $2\frac{1}{2}$ twelfths in diameter, the other $4\frac{1}{2}$ inches long.

The aperture of the glottis is 8 twelfths long, with numerous minute papillæ behind. The trachea presents the same structure as that of the Velvet Duck. Its upper rings, to the number of 9, are very narrow, and continuous with a large bony expansion, 7 twelfths long, and 8 twelfths broad. Beyond this part its diameter is 5 twelfths, gradually diminishes to 3 twelfths about the middle, then enlarges to 5 twelfths. In this part the number of rings is 78. Then comes a roundish or transversely elliptical enlargement, 1 inch 2 twelfths in breadth, 9 twelfths in length, convex before, slightly concave behind, and composed of about 12 united rings. The trachea then contracts to 4 twelfths

and presently enlarges to form the inferior larynx, which is large, ossified, but symmetrical. In this space there are 6 distinct rings, and 10 united. The entire length of the trachea is $7\frac{1}{2}$ inches, its rings are all osseous and strong. The contractor muscles are very strong, pass along the sides of the lower dilatation, on which are given off the cleido-tracheals, then continue to the commencement of the inferior larynx, where the sterno-tracheals come off. The bronchial half-rings 25, unossified.

The cavity of the nose is very large, being 2 inches long, $\frac{1}{2}$ inch in diameter at the lower part, continued narrow in front over the dilatation causing the external protuberance of the base of the bill. The olfactory nerves are of moderate size; the maxillary branches of the fifth pair very large.

AMERICAN AVOSET.

RECURVIROSTRA AMERICANA, GMEL.

PLATE CCCXVIII. ADULT MALE, AND YOUNG IN WINTER.

THE fact of this curious bird's breeding in the interior of our country accidentally became known to me in June 1814. I was at the time travelling on horseback from Henderson to Vincennes in the State of Indiana. As I approached a large shallow pond in the neighbourhood of the latter town, I was struck by the sight of several Avosets hovering over the margins and islets of the pond, and although it was late, and I was both fatigued and hungry, I could not resist the temptation of endeavouring to find the cause of their being so far from the sea. Leaving my horse at liberty, I walked toward the pond, when, on being at once assailed by four of the birds, I felt confident that they had nests, and that their mates were either sitting or tending their young. The pond, which was about two hundred yards in length, and half as wide, was surrounded by tall bulrushes extending to some distance from the margin. Near its centre were several islets, eight or ten yards in length, and disposed in a line. Having made my way through the rushes, I found the water only a few inches deep; but the mud reached above my knees, as I carefully advanced towards the nearest island. The four birds kept up a constant noise, remained on wing, and at times dived through the air until close to me, evincing their displeasure at my intrusion. My desire to shoot them however was restrained by my anxiety to study their habits as closely as possible; and as soon as I had searched the different inlets, and found three nests with eggs, and a female with her brood, I returned to my horse, and proceeded to Vincennes, about two miles distant. Next morning at sunrise I was snugly concealed amongst the rushes, with a fair view of the whole pond. In about an hour the male birds ceased to fly over me, and betook themselves to their ordinary occupations, when I noted the following particulars.

On alighting, whether on the water or on the ground, the American Avoset keeps its wings raised until it has fairly settled. If in the water, it stands a few minutes balancing its head and neck, somewhat in the manner of the Tell-tale Godwit. After this it stalks about search-

ing for food, or runs after it, sometimes swimming for a yard or so while passing from one shallow to another, or wading up to its body, with the wings partially raised. Sometimes they would enter among the rushes, and disappear for several minutes. They kept apart, but crossed each other's path in hundreds of ways, all perfectly silent, and without shewing the least symptom of enmity towards each other, although whenever a Sandpiper came near, they would instantly give chase to it. On several occasions, when I purposely sent forth a loud shrill whistle without stirring, they would suddenly cease from their rambling, raise up their body and neck, emit each two or three notes, and remain several minutes on the alert, after which they would fly to their nests, and then return. They search for food precisely in the manner of the Roseate Spoonbill, moving their heads to and fro sideways, while their bill is passing through the soft mud; and in many instances, when the water was deeper, they would immerse their whole head and a portion of the neck, as the Spoonbill and Red-breasted Snipe are wont to do. When, on the contrary, they pursued aquatic insects, such as swim on the surface, they ran after them, and on getting up to them, suddenly seized them by thrusting the lower mandible beneath them, while the other was raised a good way above the surface, much in the manner of the Black Shear-water, which however performs this act on wing. They were also expert at catching flying insects, after which they ran with partially expanded wings.

I watched them as they were thus engaged about an hour, when they all flew to the islets where the females were, emitting louder notes than usual. The different pairs seemed to congratulate each other, using various curious gestures; and presently those which had been sitting left the task to their mates and betook themselves to the water, when they washed, shook their wings and tail, as if either heated or tormented by insects, and then proceeded to search for food in the manner above described. Now, Reader, wait a few moments until I eat my humble breakfast.

About eleven o'clock the heat had become intense, and the Avosets gave up their search, each retiring to a different part of the pond, where, after pluming themselves, they drew their heads close to their shoulders, and remained perfectly still, as if asleep, for about an hour, when they shook themselves simultaneously, took to wing, and rising to the height of thirty or forty yards, flew off towards the waters of the Wabash River.

I was now desirous of seeing one of the sitting birds on its nest, and leaving my hiding place, slowly, and as silently as possible, proceeded toward the nearest islet on which I knew a nest to be, having the evening before, to mark the precise spot, broken some of the weeds, which were now withered by the heat of the sun. You, good Reader, will not, I am sure, think me prolix ; but as some less considerate persons may allege that I am tediously so, I must tell them here that no student of Nature ever was, or ever can be, too particular while thus marking the precise situation of a bird's nest. Indeed, I myself have lost many nests by being less attentive. After this short but valuable lecture, you and I will do our best to approach the sitting bird unseen by it. Although a person can advance but slowly when wading through mud and water knee-deep, it does not take much time to get over forty or fifty yards, and thus I was soon on the small island where the Avoset was comfortably seated on her nest. Softly and on all four I crawled toward the spot, panting with heat and anxiety. Now, Reader, I am actually within three feet of the unheeding creature, peeping at her through the tall grasses. Lovely bird ! how innocent, how unsuspecting, and yet how near to thine enemy, albeit he be an admirer of thy race ! There she sits on her eggs, her head almost mournfully sunk among the plumage, and her eyes, unanimated by the sight of her mate, half closed, as if she dreamed of future scenes. Her legs are bent beneath her in the usual manner. I have seen this, and I am content. Now she observes me, poor thing, and off she scrambles,—running, tumbling, and at last rising on wing, emitting her clicking notes of grief and anxiety, which none but an inconsiderate or callous-hearted person could hear without sympathizing with her.

The alarm is sounded, the disturbed bird is floundering hither and thither over the pool, now lying on the surface as if ready to die, now limping to induce me to pursue her and abandon her eggs. Alas, poor bird ! Until that day I was not aware that gregarious birds, on emitting cries of alarm, after having been scared from their nest, could induce other incubating individuals to leave their eggs also, and join in attempting to save the colony. But so it was with the Avosets, and the other two sitters immediately rose on wing and flew directly at me, while the one with the four younglings betook herself to the water, and waded quickly off, followed by her brood, which paddled along swimming, to my astonishment, as well as ducklings of the same size.

How far such cries as those of the Avoset may be heard by birds of the same species I cannot tell; but this I know, that the individuals which had gone toward the Wabash reappeared in a few minutes after I had disturbed the first bird, and hovered over me. But now, having, as I thought, obtained all desirable knowledge of these birds, I shot down five of them, among which I unfortunately found three females.

The nests were placed among the tallest grasses, and were entirely composed of the same materials, but dried, and apparently of a former year's growth. There was not a twig of any kind about them. The inner nest was about five inches in diameter, and lined with fine prairie grass, different from that found on the islets of the pond, and about two inches in depth, over a bed having a thickness of an inch and a half. The islets did not seem to be liable to inundation, and none of the nests exhibited any appearance of having been increased in elevation since the commencement of incubation, as was the case with those described by WILSON. Like those of most waders, the eggs were four in number, and placed with the small ends together. They measured two inches in length, one inch and three-eighths in their greatest breadth, and were, exactly as WILSON tells us, "of a dull olive colour, marked with large irregular blotches of black, and with others of a fainter tint." To this I have to add, that they are pear-shaped and smooth. As to the time of hatching, I know nothing.

Having made my notes, and picked up the dead birds, I carefully waded through the rushes three times around the whole pond, but, being without my dog, failed in discovering the young brood or their mother. I visited the place twice the following day, again waded round the pond, and searched all the islets, but without success: not a single Avoset was to be seen; and I am persuaded that the mother of the four younglings had removed them elsewhere.

Since that time my opportunities of meeting with the American Avoset have been few. On the 7th of November 1819, while searching for rare birds a few miles from New Orleans, I shot one which I found by itself on the margin of Bayou St John. It was a young male, of which I merely took the measurements and description. It was very thin, and had probably been unable to proceed farther south. Its stomach contained only two small fresh-water snails and a bit of

stone. In May 1829, I saw three of these birds at Great Egg Harbour, but found no nests, although those of the Long-legged Avoset of WILSON were not uncommon. My friend JOHN BACHMAN considers them as rare in South Carolina, where, however, he has occasionally 'seen some on the gravelly shores of the sea islands.

On the 16th of April 1837, my good friend Captain NAPOLEON COSTE, of the United States Revenue Cutter the Campbell, on board of which I then was, shot three individuals of this species on an immense sand-bar, intersected by pools, about twelve miles from Dernière Island on the Gulf of Mexico, and brought them to me in perfect order. They were larger, and perhaps handsomer, than any that I have seen; and had been killed out of a flock of five while feeding. He saw several large flocks on the same grounds, and assured me that the only note they emitted was a single whistle. He also observed their manner of feeding, which he represented as similar to that described above.

My friend THOMAS NUTTALL says in a note, that he "found this species breeding on the islands of shallow ponds throughout the Rocky Mountains about midsummer. They exhibited great fear and clamour at the approach of the party, but no nests were found, they being then under march." Dr RICHARDSON states, that it is abundant on the Saskatchewan Plains, where it frequents shallow lakes, and feeds on insects and small fresh-water crustacea.

The flight of the American Avoset resembles that of the *Himantopus nigricollis*. Both these birds pass through the air as if bent on removing to a great distance, much in the manner of the Tell-tale Godwit, or with an easy, rather swift and continued flight, the legs and neck fully extended. When plunging towards an intruder, it at times comes downwards, and passes by you, with the speed of an arrow from a bow, but usually in moving off again, it suffers its legs to hang considerably. I have never seen one of them exhibit the bending and tremulous motions of the legs spoken of by writers, even when raised suddenly from the nest; and I think that I am equally safe in saying, that the bill has never been drawn from a fresh specimen, or before it has undergone a curvature, which it does not shew when the bird is alive. The notes of this bird resemble the syllable *click*, sometimes repeated in a very hurried manner, especially under alarm.

RECURVIROSTRA AMERICANA, *Lath.* Ind. Ornith. vol. ii. p. 787.—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 394.

AMERICAN AVOSET, RECURVIROSTRA AMERICANA, *Wils.* Amer. Ornith. vol. vii. p. 126, pl. 63, fig. 2.

RECURVIROSTRA AMERICANA, *Richards. and Swains.*, Fauna Bor.-Amer. vol. ii. p. 375.

AMERICAN AVOSET, *Nuttall*, Manual, vol. ii. p. 74.

Adult Male. Plate CCCXVIII. Fig. 1.

Bill more than twice the length of the head, very slender, much depressed, tapering to a point, and *slightly* recurved. Upper mandible, with the dorsal line straight for half its length, then a little curved upwards, and at the tip slightly decurved, the ridge broad and flattened, the edges rather thick, the nasal groove rather long and very narrow. Nostrils linear, basal, pervious. Lower mandible with the angle long and very narrow, the dorsal line slightly curved upwards, the point very slender, extremely thin and a little curved upwards.

Head small, rounded above, rather compressed. Neck long. Body compact, ovate. Legs very long, slender; tibia elongated, bare for half its length, and reticulated; tarsus very long, compressed, reticulated with hexagonal scales; toes rather short, the first extremely small; outer toe a little longer than inner; the anterior toes connected by webs of which the anterior margin is deeply concave, the lateral toes thickly margined. Claws very small, compressed, rather blunt.

Plumage soft and blended. Wings long, of moderate breadth, pointed; primaries straightish, tapering, the first longest, the rest rapidly graduated; secondaries broad, incurved, the outer rounded, the rest becoming pointed, the inner elongated and tapering. Tail short, even, of twelve rather narrow, rounded feathers.

Bill black. Iris bright carmine. Feet light blue, webs flesh-coloured towards their edges, claws black. Head, neck, and fore part of breast, reddish-buff, the parts around the base of the bill and the eye, nearly white. The back is white; but on its fore part is a longitudinal band of brownish-black elongated feathers on each side, and the inner scapulars are of the same colour, the outer and the anterior edge of the wing being white. The wing brownish-black, with a broad band of white formed by the tips of the secondary coverts, four of the inner secondaries, and the basal part, with the inner webs and outer edges of the rest. The under parts white, excepting some of the primary quills and some of their coverts, which are greyish-brown.

Length to end of tail 18 inches, to end of wings $18\frac{1}{2}$, to end of claws

$23\frac{1}{2}$ extent of wings $30\frac{5}{8}$; wing from flexure $9\frac{1}{2}$; tail $3\frac{1}{2}$; bill along the ridge $3\frac{3}{4}$; bare part of the tibia $2\frac{3}{12}$; tarsus $3\frac{5}{8}$; hind toe and claw $\frac{5}{12}$; middle toe and claw $1\frac{10}{12}$; breadth of foot extended $2\frac{5}{8}$. Weight $16\frac{3}{4}$ oz.

The Female is similar to the male, but somewhat smaller.

Young in winter. Plate CCCXVIII. Fig. 2.

The young in winter is similar to the adult, but with the head and neck white, the dark colours of a browner tint.

Length to end of tail 18 inches, to end of wings $18\frac{1}{2}$; extent of wings $30\frac{1}{2}$. Weight 13 oz.

In structure the Avosets are similar to the Numenii and Totani. In an adult female the tongue is very short in proportion to the length of the bill, being only $1\frac{3}{4}$ inch long, slightly emarginate at the base with a few conical papillæ, slender, tapering to a point, horny on the back, and flattened above. On the palate are two longitudinal series of blunt papillæ. The posterior aperture of the nares is linear, 10 twelfths long, papillate on the edges. The œsophagus is 7 inches and 9 twelfths long, inclines to the right side, and when the neck is bent becomes posterior at the middle, as in the Herons and other long-necked birds; its diameter 5 twelfths at the upper part, dilated to 8 twelfths previous to its entrance into the thorax. The proventriculus is 1 inch long and 7 twelfths in diameter; its glandules cylindrical, 1 twelfth long. The stomach is a gizzard of moderate strength, oblong, $1\frac{1}{2}$ inch in length, 10 twelfths in breadth, its right lateral muscle 4 twelfths thick. Its contents were remains of small shells. Its inner membrane of moderate thickness, hard, longitudinally rugous, and deeply tinged with red. The intestine is 3 feet long, and 4 twelfths in diameter; the rectum 2 inches long; of the cœca one is $2\frac{3}{4}$ inches long, the other $2\frac{1}{4}$, their diameter 2 twelfths.

In another individual the intestine is 3 feet 9 inches long; one of the cœca $2\frac{5}{8}$ inches, the other 3; the stomach $1\frac{1}{2}$ by $1\frac{1}{12}$. Its contents small shell-fish and fragments of quartz.

The trachea is $6\frac{1}{2}$ inches long; its rings extremely thin and unossified, 140 in number, its diameter $3\frac{1}{4}$ twelfths, nearly uniform throughout, but rather narrower in the middle. The lateral muscles are very thin. The bronchi are short, of about 10 rings.

LEAST TERN.

STERNA MINUTA, LINN.

PLATE CCCXIX. ADULT AND YOUNG.

SYLPH-LIKE bird of the waters, how delightful has it been to me to gaze on thy gliding movements, on the fannings of thy gentle wings, on the delicate silvery glance of thy soft and sattiny bosom, as thou camest from distant and unknown shores, when the winter had passed away, and the mild breezes of early summer blew around thee, and thou soughtest a place of safety in which to sojourn for a time. That frail frame of thine must have suffered many a hardship. Fronting that last damp and chilling blast, I have seen thee gathering up all thy little strength to force thy way ; and when the fury of the tempest assailed thee, wert thou not glad to seek for refuge under yon bold headland ! Ah, deny it not, for I have seen the delight expressed by thee, when after awhile, returning calm and sunshine revived thee, and thou spreadest thy wings anew, to ramble gaily over the still turbulent waters. Well knowest thou, heaven-taught, each bar and shallow along the desolate shore which thou skirtest pilotless ; soon shalt thou reach the haven where last summer smiled on thee and thy brood ; and there shalt thou gracefully alight by the side of one whose love is all to thee.

As no account of this species exists in the Fauna Boreali-Americana, it is to be supposed that it is not met with beyond the western shores of Labrador, where however I found it in abundance and breeding, in the beginning of June 1833. On the 14th of August following I observed them at Newfoundland, moving southward in detached parties of old and young, against a strong breeze, and uttering their clamorous cries. Again, in the end of April 1837, hundreds of pairs were breeding on the islands of Galveston Bay in Texas, the numerous specimens which I then examined exhibiting no difference from those obtained in Labrador and in our Middle Districts. Nay, once, in the middle of June, while wading through the quick-sands of Bayou Sara in Louisiana, I came to a high and dry sand-bar where I picked up several eggs belonging to three pairs of birds of this species, although the distance was about two hundred miles from the sea in a direct line. I have at various times

observed this Tern on the waters of the Ohio in autumn, and now and then in spring, at the latter period in company with the Short-tailed Tern, *Sterna nigra*, and have again met with it on the shores of Lake Erie. I have also found it in winter on the eastern coast of the Floridas, but in small numbers. Few birds indeed seem to me to be so irregular in their migratory movements, for they appear to stop at any convenient breeding place from Texas to Labrador.

This species in some of its habits resembles the Marsh Tern of WILSON, which I feel certain is the *Sterna anglica* of MONTAGU. The resemblance is especially manifest in the peculiar manner in which it seizes insects while on wing over the pools of salt marshes and elsewhere, where it is fond of rambling whenever the weather is at all fine or pleasantly warm. It then plunges toward the ground or the water, and, like a true Flycatcher, snatches its prey unawares from the tops of the grasses, or whilst flying over the shallow green-mantled pools.

Few birds are more gentle than this delicate species is at times ; for, apparently unaware of danger from the vicinity of man, it allows him to approach within a few yards, whether it be on wing or on the ground. Indeed, in the latter case, I have seen it when gorged so reluctant to fly off that I have more than once thought it was asleep, although on coming up I was always disappointed in my attempts to catch it. Nothing can exceed the lightness of the flight of this bird, which seems to me to be among water-fowls, the analogue of the Humming-bird. They move with great swiftness at times, at others balance themselves like hawks over their prey, then dart with the velocity of thought to procure the tiny fry beneath the surface of the waters. When you invade their breeding place, they will sometimes sweep far away, and suddenly return, coming so near as almost to strike you. While travelling, their light but firm flight is wonderfully sustained ; and on hearing and seeing them on such occasions, one is tempted to believe them to be the happiest of the happy. They seem as if marshalled and proceeding to a merry-making, so gaily do they dance along, as if to the music of their own lively cries. Now you see the whole group suddenly check their onward speed, hover over a deep eddy supplied with numberless shrimps, and dash headlong on their prey. Up rises the little thing with the shrimp in its bill, and again down it plunges ; and its movements are so light and graceful that you look on

with pleasure, and are in no haste to depart. Should this scene be enacted while they have young in their company, the latter await in the air the rise of their parents, meet them, and receive the food from them. When all are satiated, they proceed on their journey, stopping at another similar but distant place.

Although along our Southern and Middle Districts, the Least Tern merely scoops a very slight hollow in which to deposit its eggs, doing this from the first of April to the first of June, according to the latitude of the place, those which I found breeding on the coast of Labrador had formed very snug nests, composed of short fragments of dry moss, well matted together, and nearly of the size of that of the American Robin, *Turdus migratorius*; while those met with on the islands near the Bay of Galveston, were observed to have laid their eggs upon the dry drifted weeds which appeared to have been gathered by them for the purpose. The nests are generally placed out of reach of the tides, but on some occasions I have known the hopes of a whole colony destroyed by the sudden overflow of their selected places caused by a severe gale, and have observed that, on such occasions, their clamour was as great as if they had been robbed of their eggs by man.

The number of eggs deposited by this species is more frequently three than four. Like those of most other Terns, they differ somewhat in size and markings, although I never found any so large as those described by WILSON, who states that they measure nearly an inch and three quarters in length, which would better agree with the eggs of the Common Tern. The average of a basketful was found to be one inch and two and a half eighths in length, by seven and a half eighths in breadth. They are rather pointed at the smaller end, and their ground colour is pale yellowish-white, blotched with irregular dark brown spots, intermixed with others of a dull purplish tint.

I have found this Tern breeding among Shearwaters along the Florida coast; and my friend the Reverend JOHN BACHMAN has observed the same circumstance on the "Bird's Banks," on the coasts of South Carolina, where it is abundant, as well as on Sullivan Island.

The common note of our Least Tern resembles that of the Barn Swallow when disturbed about its nest, being as smartly and rapidly repeated at times. When it proves convenient for it to alight on the ground or on a sand-beach, after it has secured a prawn or small fish, it does so, and there devours its prey piecemeal, but it more usually

swallows it on wing. On the ground it walks prettily, with short steps, keeping its tail somewhat raised.

STERNA MINUTA, Linn. Syst. Nat. vol. i. p. 228.—Lath. Ind. Ornith. vol. ii. p. 809.

—Ch. Bonaparte, Synopsis of Birds of United States, p. 355.

LESSER TERN, *STERNA MINUTA*, Wils. Amer. Ornith. vol. vii. p. 80, pl. 60, fig. 2.

SILVERY TERN, Nuttall, Manual, vol. ii. p. 280.

Adult Male. Plate CCCXIX. Fig. 1.

Bill about the length of the head, slender, tapering, much compressed, nearly straight, extremely attenuated towards the end. Upper mandible with the dorsal line slightly arched, the ridge rather broad and convex at the base, narrow towards the end, the sides nearly erect, the edges sharp and direct. Nasal groove short, extending to a fourth of the length of the bill; nostrils basal, linear, direct, pervious. Lower mandible with the angle extremely narrow, very acute, extending to the middle, the dorsal line straightish, the sides erect, the edges sharp and inflected, the tip extremely acute.

Head of moderate size, ovate; neck short; body very slender; feet small. Tibia bare below; tarsus very short, slender, compressed, covered anteriorly with small scutella, laterally and behind with reticular scales; toes small, slender, the first extremely small, the third longest, the fourth considerably shorter, all scutellate above, the anterior united by reticulated webs having a deeply concave margin. Claws arched, compressed, acute, that of hind toe smallest, of middle toe by much the largest, and having its inner edge thin and dilated.

Plumage soft, close, blended, very short on the fore part of the head; the feathers in general broad and rounded. Wings very long, narrow, and pointed; primary quills tapering, straight, the first longest, the next five-twelfths of an inch shorter, the rest rapidly graduated; secondary quills short, broad, incurved, narrowed towards the end, the inner straight. Tail rather long, very deeply forked, the lateral feathers extending an inch and seven-twelfths beyond the fork.

Bill light yellowish-orange, its tips black, but the extreme points horn-colour. Iris hazel; feet light orange-red, the bare part of the tibia dusky; claws black. On the forehead, a triangular white patch extending to the middle of the eye; upper part of the head and the nape, with a line from the eye to the bill, deep black; sides of the head,

fore-neck and lower parts, pure white ; back and wings very pale bluish-grey ; first two quills with the outer web greyish-black, and rather less than half of their inner web of the same colour, the rest white, extending to about half an inch from their extremities. Tail white in summer, of a paler tint than the back at other times.

Length to end of tail $8\frac{2}{3}$ inches, to end of wings $9\frac{1}{2}$, to end of claws $7\frac{1}{2}$, to end of shortest tail-feathers 7 ; extent of wings $18\frac{3}{4}$; wing from flexure $6\frac{1}{2}$; tail $3\frac{1}{2}$; bill along the ridge $7\frac{1}{2}$ twelfths, along the edge of lower mandible $1\frac{5}{8}$; tarsus $\frac{7}{8}$; middle toe $\frac{7}{8}$, its claw $\frac{5}{8}$.

The Female is a little smaller than the male, but otherwise similar.

Young fledged. Plate CCCXIX. Fig. 2.

Bill greenish-black. Iris dusky. Feet pale yellowish-orange. All the under parts dull greyish-white, as are the upper parts including the tail ; the hind part of the head streaked with dusky, on the back and rump the feathers with a curved marginal band of greyish-brown ; primary quills greyish-brown, the outer two darker. At this period the tail is even, each feather narrowly margined with greyish-white.

In a male bird the tongue is 10 twelfths long, slender, triangular, tapering to a point, horny beneath, emarginate and papillate at the base. On the palate are five longitudinal ridges. The posterior aperture of the nares is linear, 7 twelfths long. The œsophagus is 4 inches 2 twelfths long, very wide, its average diameter on the neck $4\frac{1}{2}$ twelfths, within the thorax 9 twelfths ; it is exceedingly thin and delicate, its muscular fibres scarcely apparent, unless closely examined. The proventriculus is only a quarter of an inch long. The stomach is 9 twelfths long, 8 twelfths broad, its lateral muscles of considerable size, the cuticular lining dense, tough, longitudinally rugous, and of a reddish-brown colour, as in gulls. Contents of stomach and œsophagus, small fishes, one of them 2 inches long. The intestine is 14 inches long, its diameter $1\frac{1}{2}$ twelfths. The cœca are 2 twelfths long, nearly 1 twelfth in diameter.

The trachea is 2 inches and 4 twelfths long, its diameter 2 twelfths at the top, diminishing to 1 twelfth ; its rings about 105, unossified ; its lateral muscles moderate, as are the sterno-tracheal, and single pair of inferior laryngeal. The bronchial half-rings about 25.

LITTLE SANDPIPER.

TRINGA PUSILLA, WILS.

PLATE CCCXX. MALE AND FEMALE.

BEFORE proceeding to detail my observations on the habits of this humble but extremely interesting bird, I deem it necessary to inform you that I disclaim as species belonging to the United States, or even to any part of North America, the following, which however are given in the Synopsis of the PRINCE of MUSIGNANO, and in the work of my generous friend THOMAS NUTTALL, viz., *Tringa platyrhincha* of TEMMINCK, *T. Temminckii* of LEISLER, *T. minuta* of LEISLER, *T. minuta* of TEMMINCK, and *T. pusilla* of BECHSTEIN. This opinion of mine I divulged to the PRINCE of MUSIGNANO in London, and he has on this account omitted these species in his recently published list. The extreme confusion that exists with respect to these species, and many others of the same tribe, is in my opinion caused solely by the anxiety of authors to discover or invent new species, often founding distinctions on slight differences in the length of bills, tarsi, or toes. Now, Reader, if in such large species as the *Grus Americana*, for example, the young has been palmed on the world of science as a distinct species for nearly a century past, without any other kind of reason or proof than that obtained from mere dried skins, can we be surprised that in birds so small as the present, opportunities should have occurred of committing errors. My opinion, which I do not present to you without due consideration, is, that we have in the United States only the diminutive species badly figured by WILSON, and almost as carelessly described by that wonderful man. To enter upon a long discussion as to the identity of the present bird with any of the small Tringas enumerated by European authors, would be to me quite as irksome as it would prove unprofitable to you, for there scarcely exists a single description of these birds sufficiently accurate to enable one to decide with certainty. All are as nearly as possible of the same size and colour, excepting in those deviations dependent upon age, and the different states of plumage. But in the most intimately allied species there

are always marked differences in habits, and especially in the sound of the voice.

That this species is naturally disposed to seek alpine sections of the country for the purpose of reproduction, I obtained abundant proof whilst in Labrador, where I found it plentiful, and breeding on the moss-clad crests of the highest rocks, within short distances of the sea. There are means through which the experienced student of Nature may discover the hidden treasures of birds of this family, which to others would prove useless, and which I shall here point out. At all periods, excepting those at which they have nests containing eggs, or young so small and delicate as to require all the care of their parents, the flight of the present species usually resembles that of the Common Snipe, *Scolopax Wilsonii*; but when startled from the nest, or from any place in its immediate vicinity, it rises on wing, and moves off low over the ground with deeply incurved wings, and with a whirring motion of these organs, which, if as rapid as that of a Partridge, would appear quite similar; but, on such occasions, our bird moves slowly before you, and instead of uttering the note of independence, as it were, which it emits at other times while freely and fearlessly travelling, it gives out sounds weakened as if by grief or anxiety, for the purpose of inducing you to follow it. If on the ground, it acts in a similar manner, moves off slowly, and limping as if crippled, and this at times quite as much as if you had really come upon it while on its nest, or surprised it with its young. On all such occasions, Reader, you ought to mark well the spot from which the bird has started, and, to assure yourself that your eye may not be deceived, throw your cap or hat at your feet to serve as a beacon, should necessity afterwards call for it, to guide you around the place until you have discovered the nest which you are desirous of seeing.

Through these means, on the 20th of July 1833, I after some search found the nest and eggs of this species. The birds flew, to use the words of my Journal, like Partridges, and not like Tringas. I marked them well, for both the female and the male flew from near the nest, and having left my fisher's hat where I then stood, I walked carefully over the moss hither and thither, until at last I came upon the spot. My pleasure would have been greatly augmented had any of my young companions been near; but the sailors who had rowed me to the foot of the rocks exhibited little more delight than they

would have done on finding that their grog had been stopped. For my part, I felt as happy as when, on the same coast, I for the first time saw the nest and eggs of the Black-crowned Warbler, of which you have read an account in the second volume of this work. Four beautiful eggs, larger than I had expected to see produced by birds of so small a size, lay fairly beneath my eye as I knelt over them for several minutes in perfect ecstasy. The nest had been formed first, apparently, by the patting of the little creature's feet on the crisp moss, and in the slight hollow thus produced were laid a few blades of slender dry grass bent in a circular manner, the internal diameter of the nest being two inches and a half, and its depth an inch and a quarter. The eggs, which were in shape just like those of the Spotted Sandpiper, *Totanus macularius*, measured seven and a half eighths of an inch in length, and three-fourths of an inch in breadth. Their ground colour was a rich cream-yellow tint, blotched and dotted with very dark umber, the markings larger and more numerous toward the broad end. They were placed with their pointed ends together, and were quite fresh. The nest lay under the lea of a small rock, exposed to all the heat the sun can afford in that country. No sooner had the little creatures felt assured that I had discovered their treasure, than they manifested a great increase of sorrow, flew from the top of one crag to another in quick succession, and emitted notes resembling the syllables *peep, peet*, which were by no means agreeable to my feelings, for I was truly sorry to rob them of their eggs, although impelled to do so by the love of science, which affords a convenient excuse for even worse acts.

This pair, however, would seem to have been late in depositing their eggs, for on the 4th of August my party and myself saw young birds almost as large as their parents, and agreeing in almost every point with the descriptions given of *Tringa Temminckii*. Many small flocks of these birds, consisting of old and young, were already departing from Labrador, and were seen on all our excursions. On the 11th of August, we also found adult and young in great numbers. But not a single newly hatched individual of this species could I procure, while the young of the Ring Plover were very abundant.

I was surprised, whilst rambling along the shores of the Raritan River, between New Jersey and New York, to find a great number of Little Sandpipers, on the 29th of July 1832, leading me to believe that

they had probably bred on the elevated portions of Staten Island, although on the other hand, they might have been barren birds. I have been equally astonished to see large flocks of this species on the sand-bars along the shores of the Ohio, below the great Rapids, about the middle of August. According to Dr RICHARDSON, it "breeds within the Arctic Circle, arriving as soon as the snow melts. It was observed on the 21st of May, on the swampy borders of small lakes in latitude 66°. The crops of those we killed were filled with a soft blackish earth, and some white worms." From the above quotation, I would be almost inclined to believe that, like some others of our birds, which are said to be found in northern Europe, this might be one.

The habits of the Little Sandpiper have been described with great care and accuracy by my friend THOMAS NUTTALL. His account is indeed so perfect that I shall here lay it before you in preference to one by myself. "The Peeps, as they have been called, are seen in the salt marshes around Boston, as early as the 8th of July; indeed, so seldom are they absent from us in the summer season, that they might be taken for denizens of the state, or the neighbouring countries. When they arrive, now and then accompanied by the semi-palmated species, the air is sometimes, as it were, clouded with their flocks. Companies led from place to place in quest of food, are seen whirling suddenly in circles, with a desultory flight, at a distance, resembling a swarm of hiving bees, seeking out some object on which to settle. At this time, deceiving them by an imitation of their sharp and querulous whistle, the fowler approaches, and adds destruction to the confusion of their timorous and restless flight. Flocking together for common security, the fall of their companions, and their plaintive cry, excite so much sympathy among the harmless Peeps, that, forgetting their own safety, or not well perceiving the cause of the fatality which the gun spreads among them, they fall sometimes in such a state of confusion, as to be routed with but little effort, until the greedy sportsman is glutted with his timorous and infatuated game. When much disturbed, they, however, separate into small and wandering parties, and are now seen gleaning their fare of larvæ, worms, minute shell-fish, and insects, in the salt marshes, or on the muddy and sedgy shores of tide rivers and ponds. At such times they may be very nearly approached, betraying rather a heedless familiarity than a timorous mistrust of their most wily enemy; and even when rudely startled, they will often re-

turn to the same place in the next instant, to pursue their lowly occupation of scraping in the mud, whence, probably, originated the contemptible appellation of *Humility*, by which they and some other small birds of similar habits have been distinguished. For the discovery of their food, their flexible and sensitive awl-like bills are thrust into the mire, marshy soil, or wet sand, in the manner of the Snipe and Woodcock, and in this way they discover and route from their hiding retreat, the larvæ and soft worms which form a principal part of their fare. At other times, they also give chase to insects, and pursue their calling with amusing alacrity. When at length startled, or about to join the company they have left, a sharp, short, and monotonous whistle, like the word *peet*, or *peep*, is uttered, and they instantly take to wing, and course along with the company they had left. On seeing the larger marsh-birds feeding, as the Yellow-shanks and others, a whirling flock of the Peeps will descend among them, being generally allowed to feed in quiet; and at the approach of the sportsman, these little timorous rovers are ready to give the alarm. At first, a slender *peep* is heard, which is then followed by two or three others, and presently *peep*, *pip*, *pip' p' p*, murmurs in a lisping whistle through the quailing ranks, as they rise on the wing, and inevitably entice with them their larger but less watchful associates. Towards evening in fine weather, the marshes almost re-echo with the shrill but rather murmuring or lisping, subdued, and querulous call of *peet*, and then a repetition of *pé-dee*, *pé-dée*, *dě-děe*, which seems to be the collecting cry of the old birds calling together their brood, for, when assembled, the note changes into a confused murmur of *peet*, *peet*, attended by a short and suppressed whistle."

During my never-to-be-forgotten residence at Henderson, on the banks of the fair Ohio, I was in the habit of frequently seeing large flocks of these birds on the sandy shores of that river, during the autumnal months, and finding after a while that they could easily be driven into a partridge net, I laid one accordingly on several occasions, when, by using gentle means, I induced many dozens of these tiny, fat, and delicious birds to enter and become prisoners. I clipped the wings of many of them, and turned them loose in my garden, for the purpose of studying their habits in this sort of half-confined state; but they were all soon destroyed by these most destructive pests, the Norway rats, which at that time infested all my premises.

I found these birds quite abundant on the whole coast of Florida, during winter, and I have no doubt that many remain with us all the year; indeed, it would not at all surprise me to hear that some of them actually breed in parts of the alpine districts of our Middle States. I have also found them equally numerous along the whole coast of the Bay of Mexico, during my recent visit to Texas, when, late in April, some of them were still travelling from farther south-west, and proceeding eastward. In South Carolina, they are frequent in spring and autumn, along the borders of the rice fields, and inland fresh-water ponds.

Since writing the above, my friend Dr TOWNSEND has furnished me with a list of some of the birds seen by him on the Rocky Mountains and the Columbia River, in which this species is mentioned as being found along the shores of that celebrated stream of the far west.

TRINGA PUSILLA, *Wils. Amer. Ornith. vol. v. p. 32, pl. 37, fig. 4.—Ch. Bonap., Synopsis of Birds of the United States, p. 319.*

WILSON'S SANDPIPER, TRINGA WILSONII, *Nuttall, Manual, vol. ii. p. 120.*

Adult Male in Summer Plumage. Plate CCCXX. Fig. 1.

Bill shorter than the head, slender, straight, compressed, tapering from the base to near the point, which is slightly swelled, but with the tip rather acute. Upper mandible with the dorsal line straight, the ridge narrow and convex, a little broader and flattened towards the end, the sides sloping, with the nasal groove extending to near the tip. Lower mandible with the angle very long and narrow, the dorsal line straight, towards the end slightly declinate, the sides sloping a little outwards, with a groove extending to near the tip.

Head of moderate size, oblong, compressed. Neck rather short. Body compact, ovate. Feet of moderate length and slender; tibia bare a fourth of its length; tarsus of moderate length, compressed, scutellate before and behind, so as to leave scarcely any intermediate space; hind toe extremely small; anterior toes rather long, slender, free, slightly margined, and with numerous scutella above. Claws small, slightly arched, much compressed, that of the third toe larger, with the inner edge a little dilated.

Plumage soft, blended on the neck and lower parts, somewhat compact on the upper. Wings long, pointed; primaries tapering, obtuse,

the first longest, the second very little shorter, the third rather more than one-eighth of an inch shorter than the second, the rest rapidly decreasing; outer secondaries incurved, obliquely rounded, inner straight, tapering, one of them reaching to two-twelfths of an inch of the end of the first quill. Tail of moderate length, doubly emarginate, that is with the middle feathers considerably longer than the lateral, which are a little longer than the intermediate.

Bill greenish-dusky; feet pale dull yellowish-green; claws black; iris hazel. The feathers on the upper part of the head, and back, including the scapulars, smaller wing-coverts, and inner secondaries, black, broadly margined with light brownish-red; some of the scapulars margined externally with white, and the larger glossed with green. Alula, primary coverts, primary quills, and outer secondaries, greyish-black, all more or less narrowly tipped with greyish-white; secondary coverts largely tipped with the same; the primaries externally edged with the same toward the base, as are the outer secondaries in a fainter degree, the inner webs of some of the latter greyish-white towards the base. Rump and upper tail-coverts black. The two middle tail-feathers black, with pale brownish-red margins, the next feather on each side greyish-brown, margined with greyish-white, the outer four pale brownish-grey, very narrowly margined externally, more broadly round their points and along the inner edges with greyish-white; lateral tail-coverts with the outer web white. From the forehead over the eye to the occiput, a band of dull greyish-white, faintly streaked with dusky; loreal band brownish-dusky, that colour extending to the ear-coverts; the rest of the cheeks dull greyish-white, faintly streaked with dusky; the throat greyish-white; the sides and fore part of the neck of the same colour, faintly streaked with dusky; the rest of the lower parts, including the axillar and lateral rump feathers, pure white; the lower surface of the wing pale brownish-grey, the coverts margined and tipped with greyish-white; the shafts of the primaries white.

Length to end of tail $5\frac{5}{8}$ inches, to end of wings $5\frac{1}{8}$, to end of claws $5\frac{3}{4}$; extent of wings $11\frac{3}{8}$; from tip of bill to carpal joint 2; wing from flexure $3\frac{8}{12}$; tail $1\frac{8}{12}$; bill along the ridge $\frac{8\frac{1}{2}}{12}$; tarsus $\frac{8\frac{1}{2}}{12}$; hind toe and claw $\frac{2\frac{1}{2}}{12}$, middle toe and claw $\frac{10\frac{1}{2}}{12}$; outer toe and claw $\frac{8}{12}$; inner $\frac{1}{12}$ shorter.

Adult Female. Plate CCCXX. Fig. 2.

The Female is somewhat larger than the male, but similarly coloured.

In autumn, previous to the moult, the upper parts are of a darker colour, on account of the wearing of the red margins of the feathers.

On the roof of the mouth is a series of papillæ, and the tongue is 7 twelfths long, extremely slender, and tapering to a fine point. The œsophagus is 2 inches and 11 twelfths long, 1 twelfth in diameter; the proventriculus enlarged to $2\frac{1}{2}$ twelfths, its length 5 twelfths. The stomach is a powerful gizzard, $\frac{1}{2}$ inch long, $4\frac{1}{2}$ twelfths broad; its lateral muscles large, as are the tendons. Its contents were coleopterous and other insects. The epithelium longitudinally rugous, and of a brownish-red colour. The intestine of moderate length, measuring $9\frac{1}{2}$ inches, its average diameter $1\frac{1}{2}$ twelfths. The cœca $1\frac{1}{2}$ inch long, their greatest diameter $\frac{3}{4}$ of a twelfth.

The trachea is $1\frac{8}{12}$ inch long, flattened, unossified, $1\frac{1}{2}$ twelfth in diameter at the top, diminishing to 1 twelfth; the number of rings about 105. Bronchial half-rings 15.

ROSEATE SPOONBILL.

PLATALEA AJAJA, LINN.

PLATE CCCXXI. ADULT MALE.

THIS beautiful and singular bird, although a constant resident in the southern extremities of the peninsula of Florida, seldom extends its journeys in an eastern direction beyond the State of North Carolina. Indeed it is of extremely rare occurrence there, and even in South Carolina, my friend JOHN BACHMAN informs me that he has observed only three individuals in the course of twenty years. He once obtained a specimen in full plumage about ten miles north of Charleston. It is rarely seen in the interior of the country, at any distance from the waters of the Atlantic, or those of the Gulf of Mexico. A specimen sent to WILSON at Philadelphia from the neighbourhood of the city of Natchez, in the State of Mississippi, appears to have lost itself, as during my stay in that section of the country I never heard of another; nor have I ever met with one of these birds farther up the Mississippi than about thirty miles from its mouths. Although rather abundant on some parts of the coast of Florida, I found it more so along the Bay of Mexico, particularly in Galveston Bay in the Texas, where, as well as on the Florida Keys, it breeds in flocks. The Spoonbills are so sensible of cold, that those which spend the winter on the Keys, near Cape Sable in Florida, rarely leave those parts for the neighbourhood of St Augustine before the first days of March. But after this you may find them along most of the water courses running parallel to the coast, and distant about half a mile or a mile from it. I saw none on any part of the St John's River; and from all the answers which I obtained to my various inquiries respecting this bird, I feel confident that it never breeds in the interior of the peninsula, nor is ever seen there in winter.

The Roseate Spoonbill is found for the most part along the marshy and muddy borders of estuaries, the mouths of rivers, ponds, or sea islands or keys partially overgrown with bushes, and perhaps still more commonly along the shores of those singular salt-water bayous so abundant within a mile or so of the shores, where they can reside

and breed in perfect security in the midst of an abundance of food. It is more or less gregarious at all seasons, and it is rare to meet with fewer than half a dozen together, unless they have been dispersed by a tempest, in which case one of them is now and then found in a situation where you would least expect it. At the approach of the breeding season, these small flocks collect to form great bodies, as is the manner of the Ibises, and resort to their former places of residence, to which they regularly return, like Herons. During the moult, which takes place in Florida late in May, the young of the preceding year conceal themselves among the close branches of the mangroves and other trees growing over narrow inlets, between secluded keys, or on bayous, where they spend the whole day, and whence it is difficult to start them. Toward night they return to their feeding grounds, generally keeping apart from the old birds. In the same country the old birds pass through their spring moult early in March, after which they are truly beautiful, presenting the appearance which I have attempted to represent in the plate before you. The sight of a flock of fifteen or twenty of these full-dressed birds is extremely pleasing to the student of nature, should he conceal himself from their view, for then he may observe their movements and manners to advantage. Now, they all stand with their wings widely extended to receive the sun's rays, or perhaps to court the cooling breeze, or they enjoy either seated on their tarsi. Again, they all stalk about with graceful steps along the margin of the muddy pool, or wade in the shallows in search of food. After a while they rise simultaneously on wing, and gradually ascend in a spiral manner to a great height, where you see them crossing each other in a thousand ways, like so many Vultures or Ibises. At length, tired of this pastime, or perhaps urged by hunger, they return to their feeding grounds in a zigzag course, and plunge through the air, as if displaying their powers of flight before you. These birds fly with their necks stretched forward to their full length, and their legs and feet extended behind, moving otherwise in the manner of Herons, or with easy flappings, until about to alight, when they sail with expanded wings, passing once or twice over the spot, and then gently coming to the ground, on which they run a few steps. When travelling to a distant place they proceed in regular ranks, but on ordinary occasions they fly in a confused manner. When the sun is shining, and they are wheeling on wing previous to alighting,

their roseate tints exhibit a richer glow, which is surpassed only by the brilliancy of the Scarlet Ibis, and American Flamingo.

This beautiful bird is usually fond of the company of our different Herons, whose keen sight and vigilance are useful to it in apprising it of danger, and allowing it to take flight in due time. When the Spoonbills are by themselves and feeding, they can easily be approached by those who, like yourself perhaps, are expert at crawling over the mud on hands and knees, through the tall and keen-edged saw-grass. I well recollect my own success when, after having seen three of these precious birds alight on their feeding grounds, about a quarter of a mile from where I stood, I managed after something short of half an hour to get within shot of them. Then, after viewing them for a while unseen, I touched one of my triggers, and two of them fell upon the surface of the shallow water. The other might, I believe, have been as easily shot, for it stood, as I have seen Wild Turkey cocks do on like occasions, looking with curious intensity as it were upon its massacred friends, until, seeing me get up and wade towards them, it hurriedly extended its broad wings, and flew off towards the sea-shore. When wounded in the wing, they make towards deeper water, and, if closely pursued, will swim to some distance, but without ever attempting to dive, and when at last seized, offer no resistance. On the contrary, if their wings are uninjured, though they may otherwise be severely wounded, they rise and fly to a great distance, or drop while on the way. I have considered these birds as tough to kill, and, when on open ground, even without being in company with Herons, as difficult of approach. They are as nocturnal as the night Heron, and, although they seek for food at times during the middle of the day, their principal feeding time is from near sunset until daylight. To all such feeding grounds as are exposed to the tides, they betake themselves when it is low water, and search for food along the shallow margins until driven off by the returning tide. Few birds are better aware of the hours at which the waters are high or low, and when it is near ebb you see them wending their way to the shore. Whenever a feeding place seems to be productive, the Spoonbills are wont to return to it until they have been much disturbed, and persons aware of this fact may waylay them with success, as at such times one may shoot them while passing over head. To procure their food, the Spoonbills first generally alight near the water, into which they then wade up to the

tibia, and immerse their bills in the water or soft mud, sometimes with the head and even the whole neck beneath the surface. They frequently withdraw these parts however, and look around to ascertain if danger is near. They move their partially opened mandibles laterally to and fro with a considerable degree of elegance, munching the fry, insects, or small shell-fish, which they secure, before swallowing them. When there are many together, one usually acts as sentinel, unless a Heron should be near; and in either case you may despair of approaching them. I have never seen one of these birds feeding in fresh water, although I have been told that this is sometimes the case. To all those keys in the Floridas in which ponds have been dug for the making of salt, they usually repair in the evening for the purpose of feeding; but the shallow inlets in the great salt marshes of our southern coasts are their favourite places of resort.

The Roseate Spoonbills alight on trees with as much facility as Herons, and even walk on their large branches. They usually nestle on the tops of the mangroves, placing their nests at the distance of a few yards from each other. They are formed of sticks of considerable size and are flat, like most of those of the Heron tribe. The eggs are laid about the middle of April, and are usually three. They measure two inches and five-eighths in length, an inch and seven-eighths in their greatest breadth, are slightly granulated, almost equally rounded at both ends, and have a pure white colour. I have never seen the young when recently hatched; but when able to fly they are greyish-white. The bill is then quite smooth, of a yellowish-green colour, as are the legs and feet, as well as the skin on part of the head. Young birds in their second year have the wings and the lower wing-coverts of a pale roseate tint, the bill more richly coloured, and the legs and feet dark brownish-red, or purplish. At this age, they are unadorned with the curling feathers on the breast; but in the third spring the bird is perfect, although it increases in size for several seasons after. I have never seen one of these birds of the bright red colour assigned to them by some authors.

While on one of the islands of Galveston Bay in Texas, I found eight or ten nests of these birds, placed in low cactuses, amid some hundreds of nests belonging to Herons of different species, but was not rendered aware of the fact until I compared the eggs found there with those procured in the Floridas, although I did at the time mention to

my friend EDWARD HARRIS, and to my son, that I thought the eggs and nests of which I speak were those of the Roseate Spoonbill and not of the Herons. What rendered the fact doubtful, however, was, that no Spoonbills were to be seen, as they had all betaken themselves to flight on hearing the reports of our guns.

In connection with the procuring of some of these birds, I find a rather curious occurrence recorded in my journal. On the 2d of May 1837, my party and I went on shore from the Revenue Cutter the "Campbell," on the island of Galveston, for the purpose of obtaining fish and prawns, the latter of which are in that country extremely abundant, and certainly the largest I have ever seen. Our fishing over, we were on the point of returning, when we saw three Spoonbills alight on a sand-bar, and almost immediately proceed to the water in search of food. My son was despatched after them, and having waded through some muddy parts of the inlet on the shore of which we were standing, he succeeded in getting near, and killed the finest of the three. Almost at the same instant, the back fins of a large fish, resembling those of a shark, were seen meandering above the surface of the shallow waters. My son received prompt intelligence of this, to enable him to make good his return. The monster moved about rather slowly, and JOHN having rammed home a couple of bullets, lodged them in its body, on which it floundered about apparently in great agony. One of our boats immediately pushed toward the spot, and my son was taken on board, while the animal used its best efforts to get into deeper water. Now sailors and all joined in the chase. The gun was again charged with balls, my son waded once more towards it, and lodged the missiles in its body, while from the bow of the boat it received several blows from the oars and gaff-hook. The tars all leaped into the water, and the bleeding fish was at once closely beset. The boatswain at a single lucky stroke cut off its tail, and having afterwards fastened the hook in one of its eyes, we dragged it to the beach. About a hundred Mexican prisoners, Texian soldiers, and officers, were there; but instead of our prize turning out a shark, it proved to be a sawfish, measuring rather more than twelve feet in length. From its body we took out alive ten young ones. It was cut into pieces by the Mexican prisoners, and soon devoured. Five or six of the young were put into rum, and ultimately carried to England.

The feathers of the wings and tail of the Roseate Spoonbill are ma-

nufactured into fans by the Indians and Negroes of Florida; and at St Augustine these ornaments form in some degree a regular article of trade. Their flesh is oily and poor eating.

PLATALEA AJAJA, *Linn. Syst. Nat.* vol. i. p. 231.—*Lath. Ind. Ornith.* vol. ii. p. 668.
—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 346.

ROSEATE SPOONBILL, PLATALEA AJAJA, *Wils. Amer. Ornith.* vol. vii. p. 123, pl. 63,
fig. 1.—*Nuttall, Manual*, vol. ii. p. 79.

Adult Male. Plate CCCXXI.

Bill very long, excessively depressed, being when viewed laterally very slender, but when seen from above nearly as broad as the head at the base, considerably contracted in the middle, and at the end expanded into a large obovate disk much broader than the head. Upper mandible with the dorsal outline almost straight, descending at the base, at the tip decurved, the ridge extremely broad and flat, gradually widening beyond the nostrils, at the end terminated by the very small, decurved, blunt claw; the sides declinate at the base, horizontally flattened towards the end, separated in their whole length from the ridge by a narrow groove, their margins soft and blunt. Nostrils basal, oblong-linear, of moderate size. Lower mandible with the angle very long, narrow, rounded, the crura narrow, and gradually flattened, the extremity expanded into a flattened disk as in the upper. The mandibles are covered with soft skin, which for half their length is rough with roundish plates having their anterior margin somewhat prominent.

Head of moderate size, flattened above. Neck long and slender. Body compact, ovate. Legs long and rather slender; tibia bare in its lower half, and reticulate; tarsus rather long, stout, roundish, covered all round with reticulated subhexagonal scales; toes rather long, moderately stout, covered above with numerous scutella, but at the base reticulated; first more slender, articulated on the same plane; second considerably shorter than third, which is in the same proportion exceeded by the fourth. Claws moderate, arched, compressed, laterally grooved, rather obtuse.

The head, gular sac, and a small part of the neck, destitute of feathers. Those on the neck linear or lanceolate, small, with disunited barbs; a tuft on the lower and fore part of the neck recurved and silky. The feathers on the other parts are of moderate length,

ovate, rather compact above, blended beneath. Wings long and very broad; primaries firm, broad, tapering, but rounded, the second longest, the third next, the first a quarter of an inch shorter; secondaries broad and broadly rounded. Tail short, even, of twelve rather broad, abruptly rounded feathers.

Bill yellowish-grey at the base, mottled with brownish-black, in the rest of its extent pale greenish-blue, light on the margins; base of margin of lower mandible greenish-yellow. Iris bright carmine. Feet pale lake; claws brownish-black. Head yellowish-green; space around the eye and the gular sac orpiment orange; a band of black from the lower mandible to the occiput. Feathers of the neck white. Back and wings of a beautiful delicate rose colour; the lower parts of a deeper tint; the tuft of recurved feathers on the fore neck, a broad band across the wing along the cubitus, and the upper and lower tail-coverts, of a rich and pure carmine with silky lustre. The shafts of all the quills and scapulars are light carmine. On each side of the lower part of the neck and fore part of the body a patch of pale ochre. Tail feathers ochre-yellow, but at the base pale roseate, with the shafts carmine.

Length to end of tail $30\frac{3}{4}$ inches, to end of wings $29\frac{3}{4}$, to end of claws 36; extent of wings 53; bill 7; breadth of gape $1\frac{5}{8}$, depth of pouch 2; breadth of bill at the base $1\frac{5}{8}$; at the end $2\frac{1}{2}$; bare part of tibia 3; tarsus 4; hind toe and claw $1\frac{1}{2}$; second toe and claw $2\frac{8}{12}$; middle toe and claw $3\frac{7}{12}$; outer toe and claw $3\frac{1}{12}$; wing from flexure $15\frac{1}{4}$; tail $4\frac{3}{4}$. Weight 4 lb. 2 oz.

The female is smaller, but resembles the male.

Length to end of tail 28 inches, to end of wings 28, to end of claws $35\frac{3}{4}$; extent of wings 48. Weight 3 lb.

The affinities of this remarkable bird being variously represented by authors, it becomes a matter of considerable interest to determine its relations according to its internal organs. The skin is thin, but tough, and the subcutaneous cellular tissue is largely developed. In these respects its affinity is to the Ibises and Curlews, as much at least as to any other birds. On the roof of the mouth are two rows of blunt papillæ, as in many Scolopacidæ. The tongue is extremely small, being only 3 twelfths of an inch in length, but 7 twelfths in breadth at the base, where it is emarginate and furnished with numerous delicate

papillæ, the outer much larger. The gular membrane is very dilatable and of the same general nature as that of the Cormorants and Pelicans, having a longitudinal series of muscular fibres along the centre, with two layers of fasciculi interposed between the external skin and the internal, the inner fasciculi running parallel to the lower mandible, the outer transversely. The bill is similar to that of the Pelican's modified, the middle part or ridge being flattened, and the unguis abbreviated. The breadth of the mouth is within $1\frac{1}{2}$ inch. The external aperture of the ear is roundish, 4 twelfths in diameter, that of the meatus oblique, oblong, 3 twelfths across. The œsophagus, *a b*, is 17 inches long (including the proventriculus, as in all the other measurements); its diameter at the top $1\frac{1}{4}$ inch, at the distance of six inches, it contracts to 5 twelfths, then for four inches enlarges, having its greatest diameter $1\frac{1}{2}$ inch; between the coracoid bones it again contracts to half an inch, and on entering the thorax enlarges to an inch. The proventriculus is bulbiform, $1\frac{1}{2}$ inch long, its glandules very large, cylindrical, the longest being $\frac{1}{4}$ inch, and 1 twelfth in diameter. The stomach, *c d*, is a powerful gizzard of a roundish form, 1 inch 11 twelfths long, and 1 inch 10 twelfths broad; the muscular fibres disposed in large fasciculi all around, but not forming distinct lateral muscles; the central tendons very large, being 10 twelfths in diameter; the cuticular lining excessively thick, of a rather soft texture, divided by deep longitudinal irregular fissures, its greatest thickness being about half an inch. The intestine *d e f* is very long, measuring 8 feet $9\frac{1}{2}$ inches, of moderate diameter, varying from 4 to $3\frac{1}{2}$ twelfths. It is compactly and beautifully arranged in very numerous somewhat concentric folds, being coiled up like a rope, the duodenum *d e*, curving backwards and upwards over the stomach for five inches, then returning, and enclosing the pancreas, until under the right lobe of the liver where it receives the biliary ducts. The cloaca is globular, 2 inches in diameter when distended; the rectum, exclusive of the cloaca $3\frac{1}{2}$ inches, and having at its upper extremity two bulging knobs in place of cœca. Now, the œsophagus and proventriculus are those of a Numenius, the stomach that of a Heron in the arrangement of its fasciculi, and in the softness of its epithelium; but otherwise it differs in being much larger and more muscular. The intestines are thicker and more muscular than those of Herons, and differ more especially in having two cœcal appendages, which however are extremely short, whereas the herons have merely a single cœcal prominence.

The heart, *g*, is remarkably large, being 1 inch and 10 twelfths long, 1 inch and a half in breadth. The lobes of the liver, *h*, *i*, are very large, and about *equal*, their greatest length being 3 inches; the gall-bladder globular, 8 twelfths in diameter. One of the testes is 11 twelfths long, 9 twelfths broad; the other 10 twelfths by 7 twelfths; their great size being accounted for by the individual's having been killed in the breeding season.

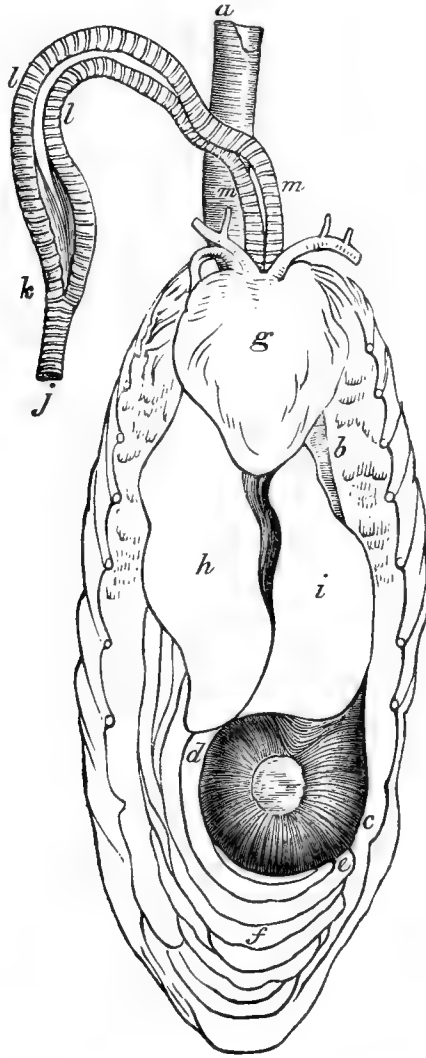
In a female of much smaller size the œsophagus is 15 inches long; the stomach 2 inches in length, 1 inch and 9 twelfths broad; the intestine 7 feet 7 inches. The contents of the stomach, fishes, shrimps, and fragments of shells.

One of the most remarkable deviations from ordinary forms in this bird is *the division of the trachea previous to its entering the thorax*. It may be described as very short, a little flattened, and quite membranous, the rings being cartilaginous and very thin. Its diameter at the top is 5 twelfths, and it is scarcely less at the lower part, where, half-way down the neck, is formed an inferior larynx, *k*, which is scarcely enlarged. The two bronchi *lm*, *l m*, are in consequence excessively elongated. They are compressed, 5 twelfths in diameter at the commencement, gradually contracting to 3 twelfths, and enlarging a little towards the end; and are singular in this respect that the rings of the upper fourth are incomplete, the tube being completed by membrane in the usual manner, whereas in the rest of their extent, the rings are elliptical, entire, stronger, and those at the lower part united or ankylosed on the inner side. The rings of the trachea are 105, of the two bronchi 73 and 71. The contractor muscles are feeble and terminate at the lower larynx; from which no muscle extends along the bronchi, which, until they enter the thorax, run parallel and in contact, being enclosed within a common sheath of dense cellular tissue. The bronchi have the last ring much enlarged, and open into a funnel, which passing backwards and terminating in one of the abdominal cells, is perforated above with eight or ten transverse elliptical slits, which open into similar tubes or tunnels, opening in the same manner into smaller tubes, and thus ramifying through the lungs.

In the male bird, of which the upper part of the trachea has been destroyed, there are in one bronchus 80, in the other 71 rings, 20 of the upper rings being incomplete.

The vertebræ of the neck have no resemblance to those of Herons,

nor does that part curve in the same abrupt manner ; and the sternum is in all essential respects similar to that of the Curlews, Tringas, and other birds of that family, it having a very prominent crest, with two deep posterior notches on each side. In fact, the sternum of *Tringa Cinclus* is almost an exact miniature of it.



The compact form of the body, its great muscularity, the form of the legs, the length and slenderness of the neck, the form and bareness of the head, and the elongation of the bill, especially when it is laterally viewed, all indicate an affinity to the *Tantali* and *Numenii*. But the Spoonbills are also allied in various degrees to the *Hérons* and *Pelicaninæ*; so that they clearly present one of those remarkable centres of radiation, demonstrative of the absurdity of quinary and circular arrangements, founded merely on a comparison of skins.

RED-HEADED DUCK.*FULIGULA FERINA*, STEPHENS.

PLATE CCCXXII. MALE AND FEMALE.

AT New Orleans, this bird is commonly known by the name of "Dos Gris." It arrives there in great flocks, about the first of November, and departs late in April, or in the beginning of May. On the lakes Borgne, St John, and Ponchartrain, it is very abundant, keeping in large flocks, separate from the other species. In that part of the country its food consists of small fishes, in pursuit of which it is seen constantly diving. It is caught in different sorts of nets, and easily kept in confinement, feeding greedily on Indian corn, whether entire or crushed by the millstone. In 1816, many thousands of these ducks as well as others of different species, were caught in nets by a Frenchman, who usually sent them alive to market in cages from the narrows of the Lakes, especially from those called "La pointe aux herbes," and the "Isle aux pins." So many of them, however, were procured by this man, that he after a while gave up sending them alive, on account of the great difficulty he encountered in procuring a sufficient number of cages for their accommodation.

Although Dr RICHARDSON informs us that this species breeds "in all parts of the fur-countries, from the fiftieth parallel to their most northern limits," I saw none of these birds during the spring and summer months which I spent on the coast of Labrador. I was equally unsuccessful in my search for it in Newfoundland. Indeed, I have never observed it eastward of the State of Massachusetts, although from thence it is more and more abundant the farther south you proceed, until you reach the tributaries of the Mississippi. Beyond the mouths of that river, these birds are rarely seen; and when I was there in April 1837, none were observed by my party or myself after we had left the south-west Pass on our way westward. In the Texas none were even heard of. From these circumstances I have inferred that, along with several other species, the Red-headed Duck reaches the Middle and Southern States by passing overland or following our great streams, such as the Ohio, Missouri, and Mississippi, westward,

and the North River, and others eastward, both in its vernal and autumnal migrations. This I am the more inclined to believe, on account of the great numbers which on such occasions I have seen in ponds in the States of Illinois, Indiana, Ohio, and Kentucky.

I found it abundant in the marshes near St Augustine, in East Florida, on the 8th November 1831, when the young males of that year had the breast and lower neck mottled with brown and blackish feathers; and yet whilst at General HERNANDEZ'S, in that district, on the 20th of December, they were in almost perfect plumage. At this latter period they were shy, and kept in company with Mallards, American Wigeons, Scaup Ducks, and Spoonbills, generally in shallow fresh-water ponds, at some distance from the sea shore. In south Carolina, these ducks are now much more abundant than they were twenty years ago, especially on the Santee River, where my friend Dr SAMUEL WILSON has shot many of them, as well as of the Canvass-back species.

The Red-headed Duck may be said to be equally fond of salt and fresh water, and is found in abundance, during its stay with us, on the Chesapeake Bay, especially in the month of March, when it associates with the Canvass-back and other Ducks, and is offered for sale in the Baltimore markets in great numbers. There I have seen them sold at 75 cents the pair, which was lower by 25 cents than their price at New Orleans in April 1837.

Although they dive much and to a great depth, while in our bays and estuaries, yet when in the shallow ponds of the interior, they are seen dabbling the mud along the shores, much in the manner of the Mallard; and on occasionally shooting them there, I have found their stomach crammed with young tadpoles and small water-lizards, as well as blades of the grasses growing around the banks. Nay, on several occasions, I have found pretty large acorns and beech-nuts in their throats, as well as snails, entire or broken, and fragments of the shells of various small unios, together with much gravel.

In confinement, they do not exhibit that degree of awkwardness attributed to them when on land. It is true that the habitual shortening of the neck detracts from their beauty, so that in this state they cannot be said to present a graceful appearance; yet their aspect has always been pleasing to my sight. Their notes are rough and coarse, and bear less resemblance to the cries of those species which are peculiar to fresh water than those of any other of their tribe. Their flight

is performed in a hurried manner, and they start from the water pell-mell; yet they can continue very long on wing, and the motions of their pinions, especially at night, produce a clear whistling sound.

The fine pair from which I made the two figures in the plate were given me by my friend DANIEL WEBSTER, Esq. of Boston, Massachusetts, whose talents and accomplishments are too well known to require any eulogium from me.

The flesh of this bird is generally esteemed, insomuch that many persons know no difference between it and that of the Canvass-back Duck, for which it is not unfrequently sold; but I look upon it as far inferior to that of many other ducks. Individuals of both sexes vary much in size. On comparing American with European skins, I am unable to perceive any difference of colour or proportions indicative of specific distinction.

ANAS FERINA, *Linn. Syst. Nat.* vol. i. p. 31.—*Lath. Ind. Ornith.* vol. ii. p. 862.

RED-HEADED DUCK, ANAS FERINA, *Wils. Amer. Ornith.* vol. viii. p. 110, pl. 70, fig. 6.

FULIGULA FERINA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 392.

FULIGULA FERINA, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 452.

THE RED-HEADED DUCK, or POCHARD, *Nuttall, Manual*, vol. ii. p. 434.

Adult Male. Plate CCCXXII. Fig. 1.

Bill as long as the head, deeper than broad at the base, the margins parallel, slightly dilated towards the end, which is rounded, the frontal angles rather narrow and pointed. Upper mandible with the dorsal line at first straight and declinate, then slightly concave, direct for a short space near the tip, where it is incurved, the ridge broad and concave at the base, narrowed at the middle, enlarged and convex at the end; the sides nearly erect at the base, becoming anteriorly more and more declinate and convex, the edges curved, with about 45 lamellæ, the unguis elliptical, and abruptly rounded at the end. Nostrils submedial, oblong, rather large, pervious, near the ridge, in an oblong depression covered with soft membrane. Lower mandible flattened, being but slightly convex, with the angle very long and rather narrow, the dorsal line very short and slightly convex, the erect edges with about 55 inferior lamellæ; the unguis obovate and abrupt.

Head rather large, compressed, convex above. Eyes small. Neck

of moderate length, rather thick. Body full, depressed. Wings small. Feet very short, strong, placed rather far behind; tarsus very short, compressed, anteriorly with narrow scutella continuous with those of the middle toe, and having another series commencing half-way down and continuous with those of the outer toe, the rest reticulated with angular scales. Hind toe small, with an inner expanded margin or web; middle toe nearly double the length of the tarsus, outer a little shorter. Claws small, compressed, that of the first toe very small and curved, of the third toe larger and more expanded than the rest.

Plumage dense, soft, blended. Feathers of the upper part of the head small and rather compact, of the rest of the head and neck small, blended, and glossy. Wings shortish, narrow, pointed; primary quills strong, tapering, the first longest, the second almost as long, the rest rapidly diminishing; secondary quills broad and rounded, the inner elongated and tapering. Tail very short, much rounded, or wedge-shaped, of fourteen feathers.

Bill light greyish-blue, with a broad band of black at the end, and a dusky patch anterior to the nostrils. Iris orange-yellow. Head and neck all round, for more than half its length of a rich brownish-red, glossed with carmine above. A broad belt of brownish-black occupies the lower part of the neck, and the fore part of the body, of which the posterior part is of the same colour, more extended on the back than under the tail. Back and scapulars pale greyish-white, very minutely traversed by dark brownish-grey lines; the sides and abdomen similar, the undulations gradually fading away into the greyish-white of the middle of the breast; upper wing-coverts brownish-grey, the feathers faintly undulated with whitish toward the end. Primary quills brownish-grey, dusky along the outer web and at the end; secondaries ash-grey, narrowly tipped with white, the outer faintly tinged with yellow, and almost imperceptibly dotted with whitish, four or five of the inner of a purer tint tinged with blue, and having a narrow brownish-black line along the margin; the innermost like the scapulars but more dusky. Tail brownish-grey, towards the end lighter. Axillar feathers and lower wing-coverts white. Feet dull greyish-blue, the webs dusky, the claws black.

Length to end of tail 20 inches, to end of wings $18\frac{1}{2}$, to end of claws 22; extent of wings 33; wing from flexure $9\frac{2}{1\frac{1}{2}}$; tail $2\frac{8}{1\frac{1}{2}}$; bill along the ridge 2, from the tips of the frontal processes $2\frac{4}{1\frac{1}{2}}$; tarsus $1\frac{1}{2}$, first toe

and claw $\frac{1}{2}$; second toe $1\frac{1}{2}$, its claw $\frac{3}{4}$, third toe $2\frac{5}{12}$, its claw $\frac{4}{12}$; fourth toe $2\frac{6}{12}$, its claw $\frac{3}{12}$. Weight $2\frac{1}{2}$ lb.

Adult Female. Plate CCCXXII. Fig. 2.

The female has the bill of a dusky bluish-grey, with a broad band of black at the end, and a narrow transverse blue line, narrower than in the male. Iris yellow. Feet as in the male, the head and upper part of the neck dull reddish-brown, darker above, and lighter on the fore part of the cheeks and along a streak behind the eye. The rest of the neck all round, and the upper parts in general, are dull greyish-brown, the feathers paler at their extremity; the flanks and fore part of the neck dull reddish-brown, the feathers broadly tipped with pale greyish-brown. The wings are as in the male, but of a darker tint, and without undulations. The tail as in the male. Lower wing-coverts light grey, those in the middle white; middle of breast greyish-white, hind part of abdomen light brownish-grey.

Length to end of tail 21 inches, to end of claws $23\frac{1}{2}$; extent of wings $32\frac{1}{2}$. Weight 2 lb. 7 oz.

The following account of the digestive organs is taken from a *British specimen*, an adult male, examined by Mr MACGILLIVRAY in March 1836.

The tongue is 1 inch and 10 twelfths long, $6\frac{1}{2}$ twelfths broad, its sides furnished with two series of bristly filaments. The œsophagus is 11 inches long, with a diameter of nearly 5 twelfths at the top, 8 twelfths at the lower part of the neck. The proventriculus has a diameter of 9 twelfths; its glandules are cylindrical, and 2 twelfths long. The stomach is an extremely powerful gizzard, of an elliptical form, compressed, oblique, its length $2\frac{1}{2}$ inches, its breadth $1\frac{3}{4}$; its lateral muscles more than half an inch thick; the cuticular coat rather thin, but very tough, slightly rugous, with two circular thicker parts opposite the centres of the lateral muscles. The upper part forms a small sac, from which the duodenum comes off; the pylorus without valve. The intestine is 5 feet 4 inches long, narrowest in its upper part where its diameter is 4 twelfths, widest at the middle, where it is $6\frac{1}{2}$ twelfths, near the cœca $\frac{5}{12}$. The rectum is $5\frac{1}{2}$ inches long, its diameter 6 twelfths; the cœca 7 inches long, nearly cylindrical, 4 twelfths in diameter, a little narrower at the commencement.

BLACK SKIMMER OR RAZOR-BILLED SHEARWATER.*RHYNCHOPS NIGRA*, LINN.

PLATE CCCXXIII. MALE.

THIS bird, one of the most singularly endowed by nature, is a constant resident on all the sandy and marshy shores of our more southern States, from South Carolina to the Sabine River, and doubtless also in Texas, where I found it quite abundant in the beginning of spring. At this season parties of Black Skimmers extend their movements eastward as far as the sands of Long Island, beyond which however I have not seen them. Indeed in Massachusetts and Maine this bird is known only to such navigators as have observed it in the southern and tropical regions.

To study its habits therefore, the naturalist must seek the extensive sand-bars, estuaries, and mouths of the rivers of our Southern States, and enter the sinuous bayous intersecting the broad marshes along their coasts. There, during the warm sunshine of the winter days, you will see thousands of Skimmers, covered as it were with their gloomy mantles, peaceably lying beside each other, and so crowded together as to present to your eye the appearance of an immense black pall accidentally spread on the sand. Such times are their hours of rest, and I believe of sleep, as, although partially diurnal, and perfectly able to discern danger by day, they rarely feed then, unless the weather be cloudy. On the same sands, yet apart from them, equal numbers of our common Black-headed Gulls may be seen enjoying the same comfort in security. Indeed the Skimmers are rarely at such times found on sand or gravel banks which are not separated from the neighbouring shores by some broad and deep piece of water. I think I can safely venture to say that in such places, and at the periods mentioned, I have seen not fewer than ten thousand of these birds in a single flock. Should you now attempt to approach them, you will find that as soon as you have reached within twice the range of your long duck-gun, the crowded Skimmers simultaneously rise on

their feet, and watch all your movements. If you advance nearer, the whole flock suddenly taking to wing, fill the air with their harsh cries, and soon reaching a considerable height, range widely around, until, your patience being exhausted, you abandon the place. When thus taking to wing in countless multitudes, the snowy white of their under parts gladdens your eye, but anon, when they all veer through the air, the black of their long wings and upper parts produces a remarkable contrast to the blue sky above. Their aërial evolutions on such occasions are peculiar and pleasing, as they at times appear to be intent on removing to a great distance, then suddenly round to, and once more pass almost over you, flying so close together as to appear like a black cloud, first ascending, and then rushing down like a torrent. Should they see that you are retiring, they wheel a few times close over the ground, and when assured that there is no longer any danger, they alight pell-mell, with wings extended upwards, but presently closed, and once more huddling together they lie down on the ground, to remain until forced off by the tide. When the Skimmers repose on the shores of the mainland during high-water, they seldom continue long on the same spot, as if they felt doubtful of security; and a person watching them at such times might suppose that they were engaged in searching for food.

No sooner has the dusk of evening arrived than the Skimmers begin to disperse, rise from their place of rest singly, in pairs, or in parties from three or four to eight or ten, apparently according to the degree of hunger they feel, and proceed in different directions along parts of the shores previously known to them, sometimes going up tide-rivers to a considerable distance. They spend the whole night on wing, searching diligently for food. Of this I had ample and satisfactory proof when ascending the St John River in East Florida, in the United States' Schooner the Spark. The hoarse cries of the Skimmers never ceased more than an hour, so that I could easily know whether they were passing upwards or downwards in the dark. And this happened too when I was at least a hundred miles from the mouth of the river.

Being aware, previously to my several visits to the peninsula of the Floridas and other parts of our southern coasts where the Razor-bills are abundant, of the observations made on this species by M.

LESSON, I paid all imaginable attention to them, always aided with an excellent glass, in order to find whether or not they fed on bivalve shell-fish found in the shallows of sand-bars and other places at low water ; but not in one single instance did I see any such occurrence, and in regard to this matter I agree with WILSON in asserting that, while with us, these birds do not feed on shell-fish. M. LESSON's words are as follows :—“ Quoique le Bec-en-ciseaux semble defavorisé par la forme de son bec, nous acquimes la preuve qu'il savait s'en servir avec avantage et avec la plus grande adresse. Les plages sabloneuses de Peuce sont en effect remplies de Mactres, coquilles bivalves, que la marée descendente laisse presque à sec dans des petites mares ; le Bec-en-ciseaux très au fait de cet phenomène, se place aupres de ces mollusques, attend que leur valves s'entrouvrent un peu, et profite aussitot de ce mouvement en enforçant la lame inferieure et tranchante de son bec entre les valves qui se reserrent. L'oiseaux enleve alors la coquille, la frappe sur la grève, coupe le ligament du mollusque, et peut ensuite avaler celui-ci sans obstacle. Plusieurs fois nous avons été temoins de cet instinct très perfectionné.”

While watching the movements of the Black Skimmer as it was searching for food, sometimes a full hour before it was dark, I have seen it pass its lower mandible at an angle of about 45 degrees into the water, whilst its *moveable* upper mandible was elevated a little above the surface. In this manner, with wings raised and extended, it ploughed as it were, the element in which its quarry lay to the extent of several yards at a time, rising and falling alternately, and that as frequently as it thought it necessary for securing its food when in sight of it ; for I am certain that these birds never immerse their lower mandible until they have observed the object of their pursuit, for which reason their eyes are constantly directed downwards like those of Terns and Gannets. I have at times stood nearly an hour by the side of a small pond of salt water having a communication with the sea or a bay, while these birds would pass within a very few yards of me, then apparently quite regardless of my presence, and proceed fishing in the manner above described. Although silent at the commencement of their pursuit, they become noisy as the darkness draws on, and then give out their usual call notes, which resemble the syllables *hurk, hurk*, twice or thrice repeated at short intervals, as if to induce some of their companions to follow in their wake. I have seen a few of these birds

glide in this manner in search of prey over a long salt-marsh bayou, or inlet, following the whole of its sinuosities, now and then lower themselves to the water, pass their bill along the surface, and on seizing a prawn or a small fish, instantly rise, munch and swallow it on wing. While at Galveston Island, and in the company of my generous friend EDWARD HARRIS and my son, I observed three Black Skimmers, which having noticed a Night Heron passing over them, at once rose in the air, gave chase to it, and continued their pursuit for several hundred yards, as if intent on overtaking it. Their cries during this chase differed from their usual notes, and resembled the barkings of a very small dog.

The flight of the Black Skimmer is perhaps more elegant than that of any water bird with which I am acquainted. The great length of its narrow wings, its partially elongated forked tail, its thin body and extremely compressed bill, all appear contrived to assure it that buoyancy of motion which one cannot but admire when he sees it on wing. It is able to maintain itself against the heaviest gale; and I believe no instance has been recorded of any bird of this species having been forced inland by the most violent storm. But, to observe the aërial movements of the Skimmer to the best advantage, you must visit its haunts in the love season. Several males, excited by the ardour of their desires, are seen pursuing a yet unmated female. The coy one, shooting aslant to either side, dashes along with marvellous speed, flying hither and thither, upwards, downwards, in all directions. Her suitors strive to overtake her; they emit their love-cries with vehemence; you are gladdened by their softly and tenderly enunciated *ha, ha*, or the *hack, hack, cae, cae*, of the last in the chase. Like the female they all perform the most curious zigzags, as they follow in close pursuit, and as each beau at length passes her in succession, he extends his wings for an instant, and in a manner struts by her side. Sometimes a flock is seen to leave a sand-bar, and fly off in a direct course, each individual apparently intent on distancing his companions; and then their mingling cries of *ha, ha, hack, hack, cae, cae*, fill the air. I once saw one of these birds fly round a whole flock that had alighted, keeping at the height of about twenty yards, but now and then tumbling as if its wings had suddenly failed, and again almost upsetting, in the manner of the Tumbler Pigeon.

On the 5th of May 1837, I was much surprised to find a large flock

of Skimmers alighted and apparently asleep, on a dry grassy part of the interior of Galveston Island in Texas, while I was watching some marsh hawks that were breeding in the neighbourhood. On returning to the shore, however, I found that the tide was much higher than usual, in consequence of a recent severe gale, and had covered all the sand banks on which I had at other times observed them resting by day.

The instinct or sagacity which enables the Razor-bills, after being scattered in all directions in quest of food during a long night, often at great distances from each other, to congregate again towards morning, previously to their alighting on a spot to rest, has appeared to me truly wonderful; and I have been tempted to believe that the place of rendezvous had been agreed upon the evening before. They have a great enmity towards Crows and Turkey Buzzards when at their breeding ground, and on the first appearance of these marauders, some dozens of Skimmers at once give chase to them, rarely desisting until quite out of sight.

Although parties of these birds remove from the south to betake themselves to the eastern shores, and breed there, they seldom arrive at Great Egg Harbour before the middle of May, or deposit their eggs until a month after, or about the period when, in the Floridas and on the coast of Georgia and South Carolina, the young are hatched. To these latter sections of the country we will return, Reader, to observe their actions at this interesting period. Were I to speak of the vast numbers that congregate for the purpose of breeding, some of my readers might receive the account with as little favour as they have accorded to that which I have given of the wild pigeons; and therefore I will present you with a statement by my friend the Rev. JOHN BACHMAN, which he has inserted in my journal. "These birds are very abundant, and breed in great numbers on the sea islands at Bull's Bay. Probably twenty thousand nests were seen at a time. The sailors collected an enormous number of their eggs. The birds screamed all the while, and whenever a Pelican or Turkey Buzzard passed near, they assailed it by hundreds, pouncing on the back of the latter, that came to rob them of their eggs, and pursued them fairly out of sight. They had laid on the dry sand, and the following morning we observed many fresh-laid eggs, when some had been removed the previous afternoon." Then, Reader, judge of the deafening angry cries of such a multitude, and see them all over your head begging for mercy as it

were, and earnestly urging you and your cruel sailors to retire and leave them in the peaceful charge of their young, or to settle on their lovely rounded eggs, should it rain or feel chilly.

The Skimmer forms no other nest than a slight hollow in the sand. The eggs, I believe, are always three, and measure an inch and three quarters in length, an inch and three-eighths in breadth. As if to be assimilated to the colours of the birds themselves, they have a pure white ground, largely patched or blotched with black or very dark umber, with here and there a large spot of a light purplish tint. They are as good to eat as those of most Gulls, but inferior to the eggs of Plovers and other birds of that tribe. The young are clumsy, much of the same colour as the sand on which they lie, and are not able to fly until about six weeks, when you now perceive their resemblance to their parents. They are fed at first by the regurgitation of the finely macerated contents of the gullets of the old birds, and ultimately pick up the shrimps, prawns, small crabs, and fishes dropped before them. As soon as they are able to walk about, they cluster together in the manner of the young of the Common Gannet, and it is really marvellous how the parents can distinguish them individually on such occasions. This bird walks in the manner of the Terns, with short steps, and the tail slightly elevated. When gorged and fatigued, both old and young birds are wont to lie flat on the sand, and extend their bills before them; and when thus reposing in fancied security, may sometimes be slaughtered in great numbers by the single discharge of a gun. When shot at while on wing, and brought to the water, they merely float, and are easily secured. If the sportsman is desirous of obtaining more, he may easily do so, as others pass in full clamour close over the wounded bird.

RHYNCHOPS NIGRA, *Linn. Syst. Nat.* vol. i. p. 228.—*Lath. Ind. Ornith.* vol. ii. p. 802.

—*Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 352.

BLACK SKIMMER, OR SHEAR-WATER, *RHYNCHOPS NIGRA*, *Wils. Amer. Ornith.* vol. vii. p. 85, pl. 60, fig. 4.—*Nuttall*, *Manual*, vol. ii. p. 264.

Adult Male. Plate CCCXXIII.

Bill longer than the head, nearly straight, tetragonal at the base, suddenly extremely compressed, and continuing so to the end. Upper mandible much shorter than the lower, its dorsal outline very slightly convex, its ridge sharp, the sides erect, more or less convex, the edges

approximated so as to leave merely a very narrow groove between them ; the tip a little rounded when viewed laterally. Nasal groove rather short, narrow near the margin ; nostrils linear-oblong, sub-basal in the soft membrane. Lower mandible with the angle extremely short, the dorsal outline straight or slightly decurved, the sides erect, the edges united into a very thin blade which fits into the narrow groove of the upper mandible, the tip rounded or abrupt when viewed laterally.

Head rather large, oblong, considerably elevated in front. Neck short and thick. Body short, ovate, and compact. Feet short, moderately stout ; tibia bare below, with narrow transverse scutella before and behind ; tarsus short, moderately compressed, anteriorly covered with broad scutella, reticulated on the sides and behind ; toes very small ; the first extremely short, and free ; the inner much shorter than the outer, which is but slightly exceeded by the middle toe ; the webs very deeply concave at the margin, especially the inner. Claws long, compressed, tapering, slightly arched, rather obtuse, the inner edge of the middle toe dilated and extremely thin. Plumage moderately full, soft, and blended ; the feathers oblong and rounded. Wings extremely elongated, and very narrow : the primary quills excessively long ; the first longest, the rest rapidly graduated ; the secondaries short, broad, incurved, obliquely pointed, some of the inner more elongated. Tail rather short, deeply forked, of twelve feathers, disposed in two inclined planes.

Bill of a rich carmine, inclining to vermilion for about half its length, the rest black. Iris hazel. Feet of the same colour as the base of the bill, claws black. The upper parts are deep brownish-black ; the secondary quills, and four or five of the primaries, tipped with white ; the latter on their inner web chiefly. Tail-feathers black, broadly margined on both sides with white, the outer more extensively ; the middle tail-coverts black, the lateral black on the inner and white on the outer web. A broad band of white over the forehead, extending to the fore part of the eye ; cheeks and throat of the same colour ; the rest of the neck and lower parts in spring and summer of a delicate cream-colour ; axillary feathers, lower wing-coverts, and a large portion of the secondary quills, white ; the coverts along the edge of the wing black.

Length from point of upper mandible to end of tail 20 inches, to end of wings $24\frac{1}{2}$, to end of claws 17 ; to carpal joint $8\frac{1}{2}$; extent of wings 48 ; upper mandible $3\frac{1}{8}$; its edge $3\frac{7}{8}$; from base to point of lower

mandible $4\frac{1}{2}$; depth of bill at the base 1; wing from flexure $15\frac{3}{4}$; tail to the fork $3\frac{1}{2}$; to end of longest feather $5\frac{1}{4}$; tarsus $1\frac{1}{4}$; hind toe and claw $\frac{4}{12}$; middle toe $\frac{10}{12}$; its claw $\frac{4}{12}$. Weight 13 oz.

The female, which is smaller, is similar to the male, but with the tail-feathers white, excepting a longitudinal band including the shaft.

Length to end of tail $16\frac{3}{4}$, to end of wings $20\frac{1}{4}$, to end of claws $16\frac{1}{4}$, to carpus 8; extent of wings $44\frac{1}{2}$. Weight 10 oz.

After the first autumnal moult, there is on the hind part of the neck a broad band of white mottled with greyish-black; the lower parts pure white, the upper of a duller black; the bill and feet less richly coloured.

Length to end of tail $16\frac{3}{4}$ inches, to end of wings 20, to end of claws $14\frac{1}{2}$, to carpus $6\frac{3}{8}$; extent of wings 42.

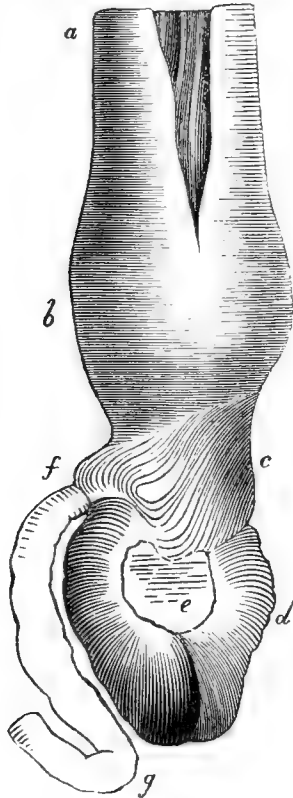
In some individuals at this period, the mandibles are of equal length.

The palate is flat, with two longitudinal series of papillæ directed backwards. The upper mandible is extremely contracted, having internally only a very narrow groove, into which is received the single thin edge of the lower mandible. The posterior aperture of the nares is $1\frac{5}{12}$ inch long, with a transverse line of papillæ at the middle on each side, and another behind. The tongue is sagittiform, $6\frac{1}{2}$ twelfths long, with two conical papillæ at the base, soft, fleshy, flat above, horny beneath. Aperture of the glottis $4\frac{1}{2}$ twelfths long, with numerous small papillæ behind. Lobes of the liver equal, $1\frac{1}{2}$ inch long. The heart of moderate size, $1\frac{1}{2}$ long, 10 twelfths broad.

The œsophagus, of which only the lower portion, *a*, is seen in the figure, is 8 inches long, gradually contracts from a diameter of 1 inch to 4 twelfths, then enlarges until opposite the liver, where its greatest diameter is $1\frac{4}{12}$. Its external transverse fibres are very distinct, as are the internal longitudinal. The proventriculus, *b*, is 9 twelfths long, its glandules extremely small and numerous, roundish, scarcely a quarter of a twelfth in length. The stomach, *c*, *d*, *e*, is rather small, oblong, 1 inch 4 twelfths long, 11 twelfths broad, muscular, with the lateral muscles moderate. The cuticular lining of the stomach is disposed in nine broad longitudinal rugæ of a light red colour, as in the smaller Gulls and Terns. Its lateral muscles are about 4 twelfths thick,

the tendons, *e*, 6 twelfths in diameter. The intestine is 2 feet 4 inches long, its average diameter $2\frac{1}{2}$ twelfths. The rectum is 2 inches long. One of the cœca is 4, the other 3 twelfths, their diameter $1\frac{1}{4}$ twelfths.

In another individual, the intestine is $22\frac{1}{4}$ inches long; the cœca 5 twelfths long, 1 twelfth in diameter; the rectum $1\frac{3}{4}$ inch long; the cloaca 9 twelfths in diameter.



The trachea is $5\frac{3}{4}$ inches long, round, but not ossified, its diameter at the top 5 twelfths, contracting gradually to $2\frac{1}{2}$ twelfths. The lateral or contractor muscles are small; the sterno-tracheal slender; there is a pair of inferior laryngeals, going to the last ring of the trachea. The number of rings is 90, and a large inferior ring. The bronchi are of moderate length, but wider, their diameter being $3\frac{1}{2}$ twelfths at the upper part; the number of their half-rings about 18.

The digestive organs of this bird are precisely similar to those of the Terns and smaller Gulls, to which it is also allied by many of its habits.

BONAPARTIAN GULL.*LARUS BONAPARTII*, SWAINS.

PLATE CCCXXIV. MALE, FEMALE, AND YOUNG.

My first acquaintance with this species took place whilst I was at Cincinnati, in the beginning of August 1819. I was crossing the Ohio, along with Mr ROBERT BEST, then curator of the Cincinnati Museum, for the purpose of visiting the Cliff Swallows which had taken up their abode on the walls of the garrison on the Kentucky side, when we observed two Gulls sweeping gracefully over the tranquil waters. Now they would alight side by side, as if intent on holding a close conversation; then they would rise on wing and range about, looking downwards with sidelong glances, searching for small fishes, or perhaps eyeing the bits of garbage that floated on the surface. We watched them for nearly half an hour, and having learned something of their manners, shot one, which happened to be a female. On her dropping, her mate almost immediately alighted beside her, and was shot. There, side by side, as in life, so in death, floated the lovely birds. One, having a dark bluish nearly black head, was found to be the male; the other, with a brown head, was a female. On the 12th of November 1820, I shot one a few miles below the mouth of the Arkansas, on the Mississippi, which corresponded in all respects with the male just mentioned.

No sooner do the shads and old-wives enter the bays and rivers of our Middle Districts, than this Gull begins to shew itself on the coast, following these fishes as if dependent upon them for their support, which however is not the case, for at the time when these inhabitants of the deep deposit their spawn in our waters, the Gull has advanced beyond the eastern limits of the United States. However, after the first of April, thousands of Bonapartian Gulls are seen gambling over the waters of Chesapeake Bay, and proceeding eastward, keeping pace with the shoals of fishes.

During my stay at Eastport in Maine, in May 1833, these Gulls were to be seen in vast numbers in the harbour of Passamaquody at high water, and in equal quantities at low water on all the sand and mud-bars in the neighbourhood. They were extremely gentle, scarcely

heeded us, and flew around our boats so close that any number might have been procurèd. My son JOHN shot seventeen of them at a single discharge of his double-barrelled gun, but all of them proved to be young birds of the preceding year. On examining these specimens, we found no development of the ovaries in several, which, from their smaller size, we supposed to be females, nor any enlargement of the testes in the males; and as these young birds kept apart from those which had brown and black hoods, I concluded that they would not breed until the following spring. Their stomachs were filled with *coleopterous insects*, which they caught on the wing, or picked up from the water, into which they fell in great numbers when overtaken by a cold fog, while attempting to cross the bay. On the 24th of August 1831, when at Eastport with my family, I shot ten of these Gulls. The adult birds had already lost their dark hood, and the young were in fine plumage. In the stomach of all were shrimps, very small fishes, and fat substances. The old birds were still in pairs.

When exploring the Bay of Fundy, in May 1833, I was assured by the captain and sailors, as well as the intelligent pilot of the Revenue Tender, the Nancy, that this Gull bred in great abundance on the islands off Grand Manan; but unfortunately I was unable to certify the fact, as I set out for Labrador previous to the time at which they breed in that part of the country. None of them were observed on any part of the Gulf of St Lawrence, or on the coast of Labrador or Newfoundland. In winter this species is common in the harbour of Charleston, but none are seen at that season near the mouths of the Mississippi.

The flight of this Gull is light, elevated, and rapid, resembling in buoyancy that of some of our Terns more than that of most of our Gulls, which move their wings more sedately. I found the adult birds in moult in August. Although their notes are different from those of all our other species, being shriller and more frequent, I am unable to represent them intelligibly by words.

Since I began to study the habits of Gulls, and observe their changes of plumage, whether at the approach of the love season, or in autumn, I have thought that the dark tint of their hoods was in the first instance caused by the extremities of the feathers then gradually changing from white to black or brown, without the actual renewal of the feathers themselves, as happens in some species of land-birds. At Eastport, I

had frequent opportunities of seeing the black-hooded males copulating with the brown-hooded females, so that the colour of the head in the summer season is really distinctive of the sexes. I found in London a pair of these birds, of which the sexes were distinguished by the colour of the head, and which had been brought from Greenland. They were forwarded by me to the EARL of DERBY, in whose aviaries they are probably still to be seen.

This is certainly the species described in the *Fauna Boreali-Americana* under the same name; but it is there stated that the females agree precisely with the males, their hood being therefore "greyish-black;" which I have never found to be the case. As to the *Larus capistratus* of Bonaparte's Synopsis, I have nowhere met with a Brown-headed Gull having the tail "sub-emarginate;" and I infer that the bird described by him under that name is merely the female of the present species.

LARUS BONAPARTII, BONAPARTIAN GULL, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 425.

BROWN-MASKED GULL, LARUS CAPISTRATUS, *Bonap. Amer. Ornith.*, vol. iv. Female.

LARUS CAPISTRATUS, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 358.
BONAPARTIAN GULL, *Nuttall, Manual*, vol. ii. p. 294.

Adult Male in Spring Plumage. Plate CCCXXIV. Fig. 1.

Bill shorter than the head, nearly straight, slender, compressed. Upper mandible with its dorsal line straight to the middle, then curved and declinate, the ridge narrow, the sides slightly convex, the edges sharp and a little inflected, the tips narrow but rather obtuse, with a slight notch on each side. Nasal groove rather long and narrow; nostrils in its fore part, longitudinal, submedial, linear, pervious. Lower mandible with a slight prominence at the end of the angle, which is long and narrow, the dorsal line then ascending and slightly concave, the ridge convex, the sides nearly erect and flattened.

Head of moderate size, ovate, narrowed anteriorly, convex above. Eyes of moderate size. Neck rather short. Body rather slender. Wings very long. Feet of moderate length, rather strong; tibia bare below for a short space, covered behind with narrow scutella; tarsus compressed, anteriorly covered with numerous scutella and three in-

ferior series of transverse scales, laterally with oblong scales, posteriorly with oblique scutella. Toes slender, with numerous scutella; first extremely small, second considerably shorter than fourth, third longest; anterior toes connected by reticulated webs, of which the anterior margins are deeply concave, the outer and inner slightly marginate. Claws small, compressed, moderately arched, rather obtuse, that of middle toe with an expanded inner edge.

Plumage full, close, soft, blended. Wings very long and pointed; primaries tapering and rounded, first longest, second very little shorter, the rest rapidly graduated; secondaries obliquely pointed, the rounded extremity extending beyond the tip of the shaft, which is exterior to it, the inner feathers more elongated. Tail of moderate length, almost even, the middle feathers slightly longer.

Bill black, inside of mouth vermilion. Iris reddish hazel. Feet orange, slightly tinged with vermilion; claws dusky brown. Head and upper part of neck all round, greyish-black, that colour extending half an inch lower on the throat than on the occiput. A white band divided by a narrow black line margining the eye behind; the remaining part of the neck white; back, scapulars and wings, light greyish-blue. The anterior ridge of the wing, alula, smaller coverts on the carpal margin, four outer primary coverts, shaft and inner web of the outer primary, both webs of second, inner webs of third and fourth white; of which colour also are the rump, tail, and all the lower parts. Outer web of first quill, excepting a small portion towards the end, its tip to the length of half an inch, black, as are the ends of the next six, which however have a small tip of white, the black on some of them about an inch long, and running along the inner edge to a considerable extent.

Length to end of tail $14\frac{1}{8}$ inches, to end of wings $15\frac{5}{8}$, to end of claws $13\frac{1}{8}$; extent of wings $32\frac{1}{4}$; wing from flexure $10\frac{3}{4}$; tail $4\frac{2}{12}$; bill along the ridge $1\frac{4}{12}$, along the edge of lower mandible $1\frac{10}{12}$; tarsus $1\frac{5}{12}$; hind toe and claw $\frac{34}{12}$; middle toe $1\frac{5}{12}$; its claw $\frac{34}{12}$, outer toe $1\frac{1}{12}$, its claw $\frac{24}{12}$; inner toe $\frac{11}{12}$, its claw $\frac{21}{12}$. Weight $6\frac{1}{2}$ oz.

Adult Female. Plate CCCXXIV. Fig. 2.

The female is somewhat smaller, and resembles the male, but has the head and upper part of the neck umber brown.

Young in December. Plate CCCXXIV. Fig. 3.

Bill greyish-black, iris dark brown; feet flesh-coloured, claws dusky. Head and neck greyish-white; a small black patch about an inch behind the eye on each side. Upper parts dull bluish-grey, many of the wing-coverts greyish brown, edged with paler; quills as in the adult; rump and tail white, the latter with a broad band of black at the end, the tips narrowly edged with whitish.

Length to end of tail $13\frac{5}{8}$, to end of wings $15\frac{5}{8}$, to end of claws 13; extent of wings $32\frac{1}{2}$ inches. Weight 6 oz.

The white spots on the tips of the wings vary greatly in size, and are frequently obliterated when the feathers become worn.

Palate with five series of small distant papillæ. Tongue 1 inch $1\frac{1}{2}$ twelfths long, slender, tapering to a slit point, emarginate and papillate at the base, horny towards the end. Aperture of posterior nares linear, 9 twelfths long. Heart 1 inch long, 9 twelfths broad. Right lobe of liver 1 inch 11 twelfths long, the other lobe 1 inch 7 twelfths.

The œsophagus is $6\frac{1}{2}$ inches long, very wide with rather thin parietes, its average diameter when dilated 10 twelfths, within the thorax enlarged to 1 inch 2 twelfths. The transverse muscular fibres are distinct, the internal longitudinal less so; the mucous coat longitudinally plicate. The proventriculus is $\frac{1}{2}$ inch long, with very numerous small glandules. The stomach is a small oblong gizzard, 10 twelfths long, 8 twelfths broad; its lateral muscles rather large, as are its tendons. The inner coat or epithelium is of moderate thickness, dense, with nine longitudinal broad rugæ, and of a brownish-red colour. The intestine is $24\frac{1}{2}$ inches long, its diameter 2 twelfths. The rectum is $1\frac{1}{2}$ inch long. The cœca are 2 twelfths long, 1 twelfth in diameter, cylindrical and obtuse.

The intestine of another individual, a male, is $20\frac{1}{2}$ inches long, 3 twelfths in diameter.

The trachea is 3 inches 10 twelfths long, its diameter at the top 3 twelfths, at the lower part $2\frac{1}{4}$ twelfths, the rings very feeble, unossified, about 130 in number. The sterno-tracheal muscles are very slender, as are the contractors; and there is a pair of inferior laryngeals. The bronchi are of moderate length, with about 18 half rings.

BUFFEL-HEADED DUCK.*FULIGULA ALBEOLA*, BONAP.

PLATE CCCXXV. MALE AND FEMALE.

THERE are no portions of the Union on the waters of which this beautiful miniature of the Golden-eye Duck is not to be found, either during the autumnal months or in winter; and, therefore, to point out any particular district as more or less favoured by its transient visits would be useless. The miller's dam is ornamented by its presence; the secluded creeks of the Middle States are equally favoured by it as the stagnant bayous and lakes of Lower Louisiana; in the Carolinas and on the Ohio, it is not less frequent; it being known in these different districts by the names of Spirit Duck, Butter-box, Marrionette, Dipper, and Die-dipper. It generally returns from the far north, where it is said to breed, about the beginning of September, and many reach the neighbourhood of New Orleans by the middle of October, at which period I have also observed them in the Floridas. Their departure from these different portions of our country varies from the beginning of March to the end of May. On the 11th of that month in 1833, I shot some of them near Eastport in Maine. None of them have, I believe, been found breeding within the limits of the Union. During the period of their movements towards the north, I found them exceedingly abundant on the waters of the Bay of Fundy, the males in flocks, and in full dress, preceding the females about a fortnight, as is the case with many other birds.

The Marrionette—and I think the name a pretty one—is a very hardy bird, for it remains at times during extremely cold weather on the Ohio, when it is thickly covered with floating ice, among which it is seen diving almost constantly in search of food. When the river is frozen over, they seek the head waters of the rapid streams, in the turbulent eddies of which they find abundance of food. Possessed of a feeling of security arising from the rapidity with which they can dive, they often allow you to go quite near them, though they will then watch every motion, and at the snap of your gun, or on its being discharged, disappear with the swiftness of thought, and perhaps as quick-

ly rise again, within a few yards as if to ascertain the cause of their alarm. I have sometimes been much amused to see the apparent glee with which these little Dippers would thus dive at the repeated snappings of a miserable flint lock, patiently tried by some vagrant boys, who becoming fatigued with the ill luck of their piece, would lay it aside, and throw stones at the birds, which would appear quite pleased.

Their flight is as rapid as that of our Hooded Merganser, for they pass through the air by regularly repeated beats of their wings, with surprising speed; and yet this is the best time for the experienced sportsman to shoot them, as they usually fly low. Their note is a mere croak, much resembling that of the Golden-eye, but feebler. At the approach of spring, the males often swell their throats and expand the feathers of the head, whilst they utter these sounds, and whilst moving with great pomposity over the waters. Often too, they charge against each other, as if about to engage in combat, but I have never seen them actually fighting.

When these birds return to us from the north, the number of the young so very much exceeds that of the old, that to find males in full plumage is much more uncommon than toward the time of their departure, when I have thought the males as numerous as the females. Although at times they are very fat, their flesh is fishy and disagreeable. Many of them, however, are offered for sale in our markets. I have often found some of them on inland ponds, which they seemed loth to leave, for, although repeatedly shot at, they would return. Their food is much varied according to situation. On the sea-coast, or in estuaries, they dive after shrimps, small fry, and bivalve shells; and in fresh-water, they feed on small crayfish, leeches, and snails, and even grasses.

Not having found any of these birds in Labrador or Newfoundland, I am unable to say anything as to their nests. Dr RICHARDSON states, that they frequent the rivers and fresh-water lakes throughout the Fur Countries in great numbers, but does not mention having observed them breeding. As in almost all other species of this family, the young of both sexes in autumn resemble the adult female. Dr TOWNSEND has found this species on the streams of the Rocky Mountains, and it has been observed as far westward as Monterey in New California.

ANAS ALBEOLA, *Linn. Syst. Nat.* vol. i. p. 199.—*Lath. Ind. Ornith.* vol. ii. p. 867.

ANAS BUCEPHALA, *Linn. Syst. Nat.* vol. i. p. 200; ANAS RUSTICA, p. 201.

BUFFEL-HEADED DUCK, ANAS ALBEOLA, *Wilson, American Ornith.* vol. viii. p. 51, pl. 67, fig. 2, 3.

FULIGULA ALBEOLA, *Ch. Bonaparte, Synops. of Birds of United States*, p. 394.

CLANGULA ALBEOLA, SPIRIT DUCK, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 458.

SPIRIT DUCK, *Nuttall, Manual*, vol. ii. p. 445.

Adult Male. Plate CCCXXV. Fig. 1.

Bill much shorter than the head, comparatively narrow, deeper than broad at the base, gradually depressed towards the end, which is rounded. Upper mandible with the dorsal line straight and sloping to the middle, then nearly straight, at the end decurved; the ridge broad and flat at the base, narrowed between the nostrils, convex towards the end, the sides convex, the edges soft, with about thirty-five lamellæ, the unguis oblong. Nostrils submedial, linear, pervious, nearer the ridge than the margin. Lower mandible flat, ascending, curved at the base, the angle long, rather narrow, the dorsal line very slightly convex, the edges with about forty lamellæ, the unguis broadly elliptical.

Head rather large, compressed. Eyes of moderate size. Neck short and thick. Body compact, depressed. Feet very short, placed far back; tarsus very short, compressed, having anteriorly in its whole length a series of small scutella, and above the outer toe a few broad scales, the rest covered with reticular angular scales. Hind toe very small, with a free membrane beneath; anterior toes longer than the tarsus, connected by reticulated membranes, having a sinus on their free margins, the inner with a narrow lobed marginal membrane, the outer with a thickened edge, the third and fourth about equal and longest, all covered above with numerous narrow scutella. Claws small, slightly arched, obtuse, that of first toe very small, of third largest, and with an inner thin edge.

Plumage dense, soft and blended. Feathers on the fore part of the head very small and rounded, on the upper and hind parts linear and elongated, as they also are on the lateral and hind parts of the upper neck, so that when raised, they give the head an extremely tumid appearance, which is the more marked that the feathers of the neck immediately beneath are short. Wings very small, decurved, pointed; the outer primaries pointed, the first longest, the rest rapidly graduated;

the secondaries incurved, obliquely rounded, the inner much elongated and acuminate. Tail short, graduated, of sixteen feathers.

Bill light greyish-blue. Iris hazel. Feet very pale flesh-colour, claws brownish-black. Fore part of the head of a deep rich green, upper part rich bluish-purple, of which colour also are the elongated feathers on the fore part and sides of the neck, the hind part of the latter deep green; a broad band of pure white from one cheek to the other over the occiput. The coloured parts of the head and neck are splendid and changeable. The rest of the neck, the lower parts, the outer scapulars, and a large patch on the wing, including the greater part of the smaller coverts and some of the secondary coverts and quills, pure white, the scapulars narrowly margined with black, as are the inner lateral feathers. Axillary feathers brownish-black, some of them white on the margins and towards the end; lower wing-coverts brownish-black, the smaller tipped with white. The back, inner scapulars, and inner secondary quills, velvet-black. The feathers on the anterior edge of the wing are black, narrowly edged with white; alula, primary coverts, and primary quills deep black. The feathers on the rump gradually fade into greyish-white, and those of the tail are brownish-grey, with the edges paler, and the shafts dusky.

Length to end of tail $14\frac{1}{2}$ inches, to end of wings $13\frac{3}{4}$, to end of claws $15\frac{3}{4}$; extent of wings 23; wing from flexure $6\frac{3}{4}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{5\frac{1}{2}}{12}$; tarsus $1\frac{3}{12}$, hind toe and claw $\frac{8}{12}$; outer toe $2\frac{1}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; middle toe 2, its claw $\frac{3\frac{1}{2}}{12}$; inner toe and claw $1\frac{9}{12}$. Weight 1 lb.

Adult Female. Plate CCCXXV. Fig. 2.

The female is much smaller. The plumage of the head is not elongated as in the male, but there is a ridge of longish feathers down the occiput and nape. Bill darker than that of the male; feet greyish-blue, with the webs dusky. Head, upper part of neck, hind neck, back and wings, greyish-brown; a short transverse white band from beneath the eye, and a slight speck of the same on the lower eyelid. Six of the secondary quills white on the outer web. Lower parts white, shaded into light greyish-brown on the sides; tail dull greyish-brown.

Length to end of tail 13 inches, to end of claws $13\frac{1}{2}$, to end of wings $11\frac{1}{2}$; extent of wings $22\frac{1}{4}$. Weight 8 oz.

Individuals of both sexes differ much in size, and in the tints of their plumage.

In an adult male, the tongue is 1 inch and 2 twelfths long, fleshy, and of the same general form as in the other ducks already described. The œsophagus is $6\frac{3}{4}$ inches long, passes along the right side, has a diameter at the top of $4\frac{1}{2}$ twelfths, enlarges about the middle to 9 twelfths, and contracts to $\frac{1}{2}$ inch as it enters the thorax. The proventriculus is 1 inch long, 8 twelfths in its greatest diameter, its glandules, which are of moderate size, forming a complete belt, as in all other ducks. The stomach is a muscular gizzard of a roundish form, 1 inch 5 twelfths long, 1 inch 4 twelfths in breadth; its lateral muscles 5 twelfths in thickness; its epithelium tough, hard, and slightly rugous. The intestine is 3 feet 11 inches long; its average diameter 3 twelfths, its walls thick, and its inner surface villous. The rectum is 3 inches long; the cœca $2\frac{1}{4}$ inches in length, their diameter at the commencement 1 twelfth, towards the end 2 twelfths.

The trachea is 5 inches long, much flattened, its rings unossified, its diameter at the top $2\frac{3}{4}$ twelfths, towards the lower part 3 twelfths, having scarcely any appearance of dilatation at the part which is so excessively enlarged in the Golden-eyed Duck, which in form and habits is yet very closely allied. The lateral muscles are strong, and there are cleido-tracheal and sterno-tracheal muscles, as in other ducks.

COMMON GANNET.

SULA BASSANA, LACEP.

PLATE CCCXXVI. ADULT MALE AND YOUNG.

ON the morning of the 14th of June 1833, the white sails of the Ripley were spread before a propitious breeze, and onward she might be seen gaily wending her way toward the shores of Labrador. We had well explored the Magdalene Islands, and were anxious to visit the Great Gannet Rock, where, according to our pilot, the birds from which it derives its name bred. For several days I had observed numerous files proceeding northward, and marked their mode of flight while thus travelling. As our bark dashed through the heaving billows, my anxiety to reach the desired spot increased. At length, about ten o'clock, we discerned at a distance a white speck, which our pilot assured us was the celebrated rock of our wishes. After a while I could distinctly see its top from the deck, and thought that it was still covered with snow several feet deep. As we approached it, I imagined that the atmosphere around was filled with flakes, but on my turning to the pilot, who smiled at my simplicity, I was assured that nothing was in sight but the Gannets and their island home. I rubbed my eyes, took up my glass, and saw that the strange dimness of the air before us was caused by the innumerable birds, whose white bodies and black-tipped pinions produced a blended tint of light-grey. When we had advanced to within half a mile, this magnificent veil of floating Gannets was easily seen, now shooting upwards, as if intent on reaching the sky, then descending as if to join the feathered masses below, and again diverging toward either side and sweeping over the surface of the ocean. The Ripley now partially furled her sails, and lay to, when all on board were eager to scale the abrupt sides of the mountain isle, and satisfy their curiosity.

Judge, Reader, of our disappointment. The weather, which hitherto had been beautiful, suddenly changed, and we were assailed by a fearful storm. However, the whale-boat was hoisted over, and manned by four sturdy "down-easters," along with THOMAS LINCOLN

and my son. I remained on board the Ripley, and commenced my distant observations, which I shall relate in due time.

An hour has elapsed; the boat, which had been hid from our sight, is now in view; the waves run high, and all around looks dismal. See what exertions the rowers make; it blows a hurricane, and each successive billow seems destined to overwhelm their fragile bark. My anxiety is intense, as you may imagine; in the midst of my friends and the crew I watch every movement of the boat, now balanced on the very crest of a rolling and foaming wave, now sunk far into the deep trough. We see how eagerly yet calmly they pull. My son stands erect, steering with a long oar, and LINCOLN is bailing the water which is gaining on him, for the spray ever and anon dashes over the bow. But they draw near, a rope is thrown and caught, the whale-boat is hauled close under our lee-board; in a moment more all are safe on deck, the helm round, the schooner to, and away under bare poles she scuds toward Labrador.

THOMAS LINCOLN and my son were much exhausted, and the sailors required a double allowance of grog. A quantity of eggs of various kinds, and several birds, had been procured, for wherever sufficient room for a gannet's nest was not afforded on the rock, one or two Guillemots occupied the spot, and on the ledges below the Kittiwakes lay thick like snow-flakes. The discharging of their guns produced no other effect than to cause the birds killed or severely wounded to fall into the water, for the cries of the countless multitudes drowned every other noise. The party had their clothes smeared with the nauseous excrements of hundreds of gannets and other birds, which in shooting off from their nests caused numerous eggs to fall, of which some were procured entire. The confusion on and around the rock was represented as baffling all description; and as we gazed on the mass now gradually fading on our sight, we all judged it well worth the while to cross the ocean to see such a sight. But yet it was in some measure a painful sight to me, for I had not been able to land on this great breeding-place, of which, however, I here present a description given by our pilot Mr GODWIN.

“ The top of the main rock is a quarter of a mile wide, from north to south, but narrower in the other direction. Its elevation is estimated at about four hundred feet. It stands in Lat. 47° 52'. The surf beats its base with great violence, unless after a long calm, and it is extremely difficult to land upon it, and still more so to ascend to the

top or platform. The only point on which a boat may be landed lies on the south side, and the moment the boat strikes it must be hauled dry on the rocks. The whole surface of the upper platform is closely covered with nests, placed about two feet asunder, and in such regular order that a person may see between the lines, which run north and south, as if looking along the furrows of a deeply ploughed field. The Labrador fishermen and others who annually visit this extraordinary resort of the Gannets, for the purpose of procuring their flesh to bait their cod-fish hooks, ascend armed with heavy short clubs, in parties of eight, ten, or more, and at once begin their work of destruction. At sight of these unwelcome intruders, the affrighted birds rise on wing with a noise like thunder, and fly off in such a hurried and confused manner as to impede each other's progress, by which thousands are forced downwards, and accumulate into a bank many feet high; the men beating and killing them with their clubs until fatigued, or satisfied with the number they have slain." Here Mr GODWIN assured us that he had visited the Gannet Rock ten seasons in succession, for the purpose just mentioned, and added, that on one of these occasions, "six men had destroyed five hundred and forty Gannets in about an hour, after which the party rested a while, and until most of the living birds had left their immediate neighbourhood, for all around them, beyond the distance of about a hundred yards, thousands of Gannets were yet sitting on their nests, and the air was filled with multitudes of others. The dead birds are now roughly skinned, and the flesh of the breast cut up in pieces of different sizes, which will keep good for bait about a fortnight or three weeks. So great is the destruction of these birds for the purpose mentioned, that the quantity of their flesh so procured supplies with bait upwards of forty boats, which lie fishing close to the Island of Brion each season. By the 20th of May the rock is covered with birds on their nests and eggs, and about a month afterwards the young are hatched. The earth is scratched by the birds for a few inches deep, and the edges surrounded by sea-weeds and other rubbish, to the height of eight or ten inches, tolerably well matted together. Each female Gannet lays a single egg, which is pure white, but not larger than a good-sized hen's egg. When the young are hatched, they are bluish-black, and for a fortnight or more their skin is not unlike that of the common dog-fish. They gradually become downy and white, and when five or six weeks old look like great lumps of carded wool."

I was well pleased with this plain statement of our pilot, as I had with my glass observed the regularity of the lines of nests, and seen many of the birds digging the earth with their strong bills, while hundreds of them were carrying quantities of that long sea-weed called Eel-grass, which they seem to bring from towards the Magdalene Islands. While the Ripley lay to near the rock, thousands of the Gannets constantly flew over our heads; and although I shot at and brought several to the water, neither the reports nor the sight of their dead companions seemed to make any impression on them.

On weighing several of the Gannets brought on board, I found them to average rather more than seven pounds; but Mr GODWIN assured me that when the young birds are almost ready to fly, they weigh eight and sometimes nine pounds. This I afterwards ascertained to be true, and I account for the difference exhibited at this period by the young birds, by the great profusion of food with which their parents supply them, regardless in a great measure of their own wants. The Pilot further told me that the stench on the summit of the rock was insupportable, covered as it is during the breeding season, and after the first visits of the fishermen, with the remains of carcasses of old and young birds, broken and rotten eggs, excrements, and multitudes of fishes. He added that the Gannets, although cowardly birds, at times stand and await the approach of a man, with open bill, and strike furious and dangerous blows. Let me now, Reader, assure you that unless you had seen the sight witnessed by my party and myself that day, you could not form a correct idea of the impression it has to this moment left on my mind.

The extent of the southward migration of the Gannet, after it has reared its young, is far greater perhaps than has hitherto been supposed. I have frequently seen it on the Gulf of Mexico, in the latter part of autumn and in winter; and a few were met with, in the course of my last expedition, as far as the entrance of the Sabine River into the Bay of Mexico. Being entirely a maritime species, it never proceeds inland, unless forced by violent gales, which have produced a few such instances in Nova Scotia and the State of Maine, as well as the Floridas, where I saw one that had been found dead in the woods two days after a furious hurricane. The greater number of the birds of this species seen in these warm latitudes during winter are young of that or the preceding year. My friend JOHN BACHMAN has informed me that

during one of his visits to the Sea Islands off the shores of South Carolina, on the 2d of July 1836, he observed a flock of Gannets of from fifty to an hundred, all of the colouring of the one in my plate, and which was a bird in its first winter plumage. They were seen during several days on and about Cole's Island, at times on the sands, at others among the rolling breakers. He also mentions having heard Mr GILES, an acquaintance of his, who knows much about birds, say, that in the course of the preceding summer he had seen a pair of Gannets going to, and returning from, a nest in a tree! This is in accordance with the report of Captain NAPOLEON COSTE, who commanded the United States Revenue Cutter, the Campbell, placed at my disposal during my visit to the Texas, and who was Lieutenant as well as Pilot of the Marion. He stated that he had found a breeding place on the coast of Georgia, occupied by a flock of old, and therefore White Gannets, the nests of all of which were placed upon trees. No one can be greatly surprised at these reports, who knows, as I do, that the Brown Gannet, *Sula fusca*, breeds both on trees and on dry elevated sand bars. During winter months I have generally observed single birds at some considerable distance from the shore out at sea, sometimes indeed beyond what mariners call soundings, but rarely young ones, they generally keeping much nearer to the shores, and procuring their food in shallower water.

The flight of the Gannet is powerful, well sustained, and at times extremely elegant. While travelling, whether in fine or foul weather, they fly low over the surface of the water, flapping their wings thirty or forty times in succession, in the manner of the Ibis and the Brown Pelican, and then sailing about an equal distance, with the wings at right angles to the body, and the neck extended forwards. But, Reader, to judge of the elegance of this bird while on wing, I would advise you to gaze on it from the deck of any of our packet ships, when her commander has first communicated the joyful news that you are less than three hundred miles from the nearest shore, whether it be that of merry England or of my own beloved country. You would then see the powerful fisher, on well-spread pinions, and high over the water, glide silently along, surveying each swelling wave below, and coursing with so much ease and buoyancy as to tempt you to think that had you been furnished with equal powers of flight, you might perform a journey of eighty or ninety miles without the slightest fatigue in a single hour. But perhaps at the very moment when these thoughts have crossed

your mind, as they many times have crossed mine on such occasions, they are suddenly checked by the action of the bird, which, intent on filling its empty stomach, and heedless of your fancies, plunges headlong through the air, with the speed of a meteor, and instantaneously snatches the fish which its keen sight had discovered from on high. Now perchance you may see the snow-white bird sit buoyantly for a while on the bosom of its beloved element. either munching its prey, or swallowing it at once. Or perhaps, if disappointed in its attempt, you will see it rise by continued flappings, shaking its tail sideways the while, and snugly covering its broad webbed feet among the under coverts of that useful rudder, after which it proceeds in a straight course, until its wings being well supplied by the flowing air, it gradually ascends to its former height, and commences its search anew.

In severe windy weather, I have seen the Gannet propelling itself against the gale by sweeps of considerable extent, placing its body almost sideways or obliquely, and thus alternately, in the manner of Petrels and Guillemots; and I have thought that the bird then moved with more velocity than at any other time, except when plunging after its prey. Persons who have seen it while engaged in procuring food, must, like myself, have been surprised when they have read in books that Gannets "are never known to dive," and yet are assured that they "have been taken by a fish fastened to a board sunk to the depth of two fathoms, in which case the neck has either been found dislocated, or the bill firmly fixed in the wood." With such statements before him, one might think that his own vision had been defective, had he not been careful to note down at once the result of his observations. And as this is a matter of habit with me, I will offer you mine, good Reader, not caring one jot for what has been said to you before on the subject.

I have seen the Gannet plunge, and afterwards remain under the surface of the water for at least one minute at a time. On one occasion of this kind, I shot one just as it emerged, and which held a fish firmly in its bill, and had two others half-way down its throat. This has induced me to believe that it sometimes follows its prey in the water, and seizes several fishes in succession. At other times I have observed the Gannet plunge amidst a shoal of launces so as scarcely to enter the water, and afterwards follow them, swimming, or as it were running, on the water, with its wings extended upwards, and striking to the right and left until it was satiated. While on the Gulf of Mexico, I

wounded a Gannet, which, on falling to the water, swam so fast before the boat, that we rowed about a quarter of a mile before we reached it, when it suddenly turned towards us, opened its bill, as if intent on defending itself, but was killed with the stroke of an oar by one of the sailors. When shot at without even being touched, these birds often disgorge their food in the manner of Vultures; and this they always do when wounded, if their stomach and gullet happen to be full. Sometimes, after being wounded in the wings, they will float and allow you to take them, without making any attempt to escape. Nay, my young friend, GEORGE C. SHATTUCK, M. D., of Boston, while with me at Labrador, caught one which he found walking amongst a great number of Guillemots, on a low and rocky island.

When they are on their favourite breeding rocks, and about to fly, they elevate their head, throw it backward, open the bill, and emit a loud prolonged cry, before launching themselves into the air, in doing which they waddle a few paces with their wings partially extended. After starting, their first motion is greatly inclined downwards, but they presently recover, and seem to support themselves with ease. When they are twenty or thirty yards off, you observe them shaking the tail sideways, and then hiding their feet among the under coverts of the tail. At other times they suddenly open their feet, moving them as if for the purpose of grasping some object below, in the same manner as some hawks, but only for a few moments, when again the tail is shaken, and the feet hidden as before. They beat their wings and sail alternately, even when flying around their breeding places.

On the ground the movements of the Gannet are exceedingly awkward, and it marches with hampered steps, assisting itself with the wings, or keeping them partially open, to prevent its falling. Their walk, indeed, is merely a hobble. When the sun shines, they are fond of opening their wings and beating them in the manner of Cormorants, shaking the head meanwhile rather violently, and emitting their usual uncouth guttural notes of *cara*, *karew*, *karow*. You may well imagine the effect of a concert performed by all the Gannets congregated for the purpose of breeding on such a rock as that in the Gulf of St Lawrence, where, amidst the uproar produced by the repetition of these notes, you now and then distinguish the loud and continued wolfish howling-like sounds of those about to fly off.

The newly-finished nest of this bird is fully two feet high, and quite

as broad externally. It is composed of seaweeds and maritime grasses, the former being at times brought from considerable distances. Thus, the Gannets breeding on the rocks in the Gulf of St Lawrence, carry weeds from the Magdalene Islands, which are about thirtymiles distant. The grasses are pulled or dug up from the surface of the breeding place itself, often in great clods consisting of roots and earth, and leaving holes not unlike the entrances to the burrows of the Puffin. The nests, like those of Cormorants, are enlarged or repaired annually. The single egg, of a rather elongated oval form, averages three inches and one-twelfth in length, by two inches in its greatest breadth, and is covered with an irregular roughish coating of white calcareous matter, which on being scraped off, leaves exposed the pale greenish-blue tint of the under layer.

The birds usually reach the rock when already paired, in files often of hundreds, and are soon seen billing in the manner of Cormorants, and copulating on the rocks, but never, like the birds just mentioned, on the water, as some have supposed. The period of their arrival at their breeding grounds appears to depend much on the latitude of the place; for, on the Bass Rock, in the Firth of Forth, which I had the pleasure of visiting in the agreeable company of my learned friend WILLIAM MACGILLIVRAY and his son, on the 19th of August 1835, the Gannets are first seen in February, whereas in the Gulf of St Lawrence they rarely reach the Great Rock until the middle of April or beginning of May; and at Chateau Beau in the Straits of Belle Isle, not until a fortnight or three weeks later. Like the members of most large communities, the Gannets, though so truly gregarious at this season, shew a considerable degree of animosity towards their more immediate neighbours as soon as incubation commences. A lazy bird perhaps, finding it easier to rob the nest of its friend of weeds and sods, than to convey them from some distant place, seizes some, on which the other resents the injury, and some well-directed thrusts of their strong bills are made, in open day and in full view of the assembled sitters, who rarely fail to look on with interest, and pass the news from one to another, until all are apprized of the quarrel. The time however passes on. The patient mother, to lend more warmth to her only egg, plucks a few of the feathers from some distance beneath her breast. In sunny weather, she expands those of her upper parts, and passing her bill along their roots, destroys the vile insects that lurk there. Should a boister-

ous gale or a thick cold fog mar the beauty of the day, she gathers her apparel around her, and shrinks deeper into her bed; and should it rain, she places her body so as to prevent the inundation of her household. How happy, Reader, must she be when now and then her keen eyes distinguish in the crowd her affectionate mate, as he returns from the chase, with loaded bill, and has already marked her among the thousand beauties all equally anxious for the arrival of their lords! Now by her side he alights as gently as is in his nature, presents her with a welcome repast, talks perhaps cheerfully to her, and again opening his broad wings departs in search of a shoal of herrings. At length, the oval chest opens, and out crawls the tender young; but lo! the little thing is black. What a strange contrast to the almost pure white of the parent! Yet the mother loves it, with all the tenderness of other mothers. She has anxiously expected its appearance, and at once she nurses it with care; but so tender is it that she prefers waiting a while before she feeds it. The time however soon comes, and with exceeding care she provides some well macerated morsels which she drops into its open mouth; so well prepared are they that there is no instance on record of a Gannet, even of that tender age, having suffered from dyspepsia or indigestion.

The male Gannet assists in incubating, though he sits less assiduously than the female; and, on such occasions, the free bird supplies the other with food. The sight of the young Gannet just after birth might not please the eye of many, for it is then quite naked, and of a deep bluish-black, much resembling a young Cormorant. Its abdomen is extremely large, its neck thin, its head large, its eyes as yet sightless, its wings but slightly developed. When you look at it three weeks afterwards, it has grown much, and almost entirely changed its colour, for, now, with the exception of certain parts of the neck, the short thighs, and the belly, it is covered with yellowish soft and thick down. In this state it looks perhaps as uncouth as at first, but it grows so rapidly that at the end of three weeks more, you find its downy coat patched with feathers in the most picturesque manner imaginable. Looking around you, you observe that all the young are not of the same growth; for all the Gannets do not lay on the same day, and probably all the young are not equally supplied with food. At this period, the great eyrie looks as if all its parts had become common property; the nests, which were once well fashioned are

trampled down ; the young birds stand everywhere or anywhere ; lazy-looking creatures they are, and with an appearance of non-chalance which I have never observed in any other species of bird, and which would lead you to think that they care as little about the present as the future. Now the old birds are freed of part of their cares, they drop such fish as they have obtained by the side of their young, and, like Cormorants, Pelicans, or Herons, seldom bring a supply oftener than once a-day. Strange to say, the young birds at this period do not appear to pay the least attention to the old ones, which occasionally alight near them, and drop fish for them to feed upon.

Gannets do not feed, as some have supposed, and as many have believed, on herring only ; for I have found in their stomachs codlings eight inches in length, as well as very large American mackerels, which, by the way, are quite different from those so abundantly met with on the coasts of Europe.

The young never leave the spot on which they have been reared until they are well able to fly, when they separate from the old birds, and do not rejoin them until at least a year after. Although I have in a few instances found individuals yet patched with dark-grey spots, and with most of their primary quills still black, I am confident that it is not until the end of two years that they acquire their full plumage. I have seen some with one wing almost pure black, and the tail of that colour also ; others with the tail only black ; and several with pure black feathers interspersed among the general white plumage.

I know of no other bird that has so few formidable enemies as the Gannet. Not one of the species of *Lestris* with which I am acquainted, ever attempts to molest it ; and, although I have seen the Frigate Pelican in quest of food within a short distance of it, I never saw it offer injury. The insular rocks on which it breeds are of course inaccessible to quadrupeds. The only animals, so far as I know, that feed on the eggs or young, are the *Larus marinus* and *Larus glaucus*. It is said that the Skua, *Lestris Catarractes*, sometimes pursues the Gannets, but that species does not exist in North America ; and I am inclined to doubt the truth of this statement, for I have never seen a *Lestris* of any kind attack a bird equal to itself in size and strength.

Soon after the young Gannets are able to fly, all the birds of the species leave the breeding place, and absent themselves until the fol-

lowing season. While at Newfoundland, I was told that the English and French fishermen who inhabit that country salt young Gannets for winter provision, as is done in Scotland; but I saw none there. In my estimation, the flesh of this bird is so bad that, as long as any other can be procured, it ought to be rejected.

It is a curious fact, that the Gannets often procure mackerels or herrings four or five weeks before the fishermen fall in with them on our coast; but this is easily explained by their extensive wanderings. Although this bird is easily kept in captivity, it is far from being a pleasant pet. Its ordure is abundant, disagreeable to the eye as well as the nose; its gait is awkward; and even its pale owl-like eyes glare on you with an unpleasant expression. Add to this, the expense of its food, and I can easily conceive that you will not give it a place in your aviary, unless for the mere amusement of seeing it catch the food thrown to it, which it does like a dog.

The feathers of the lower parts of the Gannet differ from those of most other birds, in being extremely convex externally, which gives the bird the appearance of being covered beneath with light shell-work, exceedingly difficult to be represented in a drawing.

My highly esteemed and talented friend WILLIAM MACGILLIVRAY having given a full account of the habits of the Gannet, as observed on the Bass Rock in Scotland, I here present it to you.

“ The Bass is an abrupt rock, having a basis of about a mile in circumference, and of an oblong form. The cliffs are perpendicular in some places, overhanging in others, and everywhere precipitous, excepting at the narrow extremity next the land, where, sloping less abruptly, they form at the base a low projection, on which is the only landing-place. Above this are the ruins of the fortifications and houses, the Bass having formerly been used as a State-prison. The rocks are in some places apparently two hundred feet in height, and the summit, towards which the surface rises in an irregular manner, is probably a hundred and fifty feet higher. In as far as I observed, the whole mass is of a uniform structure, consisting of trap, intermediate between greenstone and clinkstone, of a dull brownish-red colour, and small granular structure. Although a great portion of the upper surface of the island is composed of rock, there is an abundant vegetation, consisting chiefly of *Festuca ovina*, *F. duriuscula*, and a few other grasses, mixed with the plants usually found in maritime situations.

“The circumstance connected with the Bass most interesting to the Zoologist, is its being one of the few places in Britain to which the Gannet resorts during the breeding season. The number which I saw on the 13th May 1831, when I for the first time visited it along with some friends, might be estimated at twenty thousand. Every part of the mural faces of the rock, especially towards their summits, was more or less covered by them. In one spot near the landing place, about forty yards in circumference, and on a gentle slope of gravelly ground, about three hundred individuals were sitting in peaceful security on their nests.

“The Gannets arrive about the middle of February or the beginning of March, and depart in October; some years a few individuals remain during the winter. The nests are composed of grass and sea-weeds, generally placed on the bare rock or earth, elevated in the form of a truncated cone, of which the base is about twenty inches in diameter, with a shallow terminal cavity. On the summit of the island are numerous holes in the turf, from eight to fifteen inches deep, and from six to nine broad, formed by the Gannets in pulling away grass and turf for their nests. They are placed on all parts of the rocks where a convenient spot occurs, but are much more numerous towards the summit. Some of them on the face of the rock, or in a shallow fissure, and which have been occupied for years, are piled up to the height of from three to five feet, but in this case they always lean against the rock. The egg, which is solitary, and presents nothing remarkable in its position, is of an elongated oval form, bluish-white, dull, with a chalky surface, usually patched with yellowish-brown dirt. It is subjected to what might appear rough usage, for the bird in alighting, flying off, or when disturbed by the intrusion of human visitors, tosses it about, and often stands upon it.

“When sitting, the Gannets usually allow a person to approach within three feet, sometimes much nearer, so that one may even touch them. When one approaches them, they merely open their bill, and utter their usual cry, or they rise and express some degree of resentment, but seem to have very little apprehension of danger. They take advantage of the absence of their neighbours to pilfer the materials of their nests, frequently two join in this act, and occasionally two may be seen tugging at the same bunch, endeavouring to wrest it from each other. They are constantly repairing their nests, which being

composed in a great measure of sea-weeds, shrink up in dry weather, and decompose in wet; and when seated close together they have frequent quarrels. I saw one seize its neighbour by the back of the neck, until the latter, I may say, roared out; but in general, they are satisfied with menacing each other with open bills and loud clamour. In leaving the nest, they generally scatter about a quantity of the materials of which it is composed, for they are extremely awkward in their motions when on the ground, hobbling and limping along, aiding themselves with their wings, and dragging the abdominal feathers and tail.

“ In launching from the cliffs, they frequently utter a single plaintive cry, perform a curve, having its concavity upwards, then shake the tail, frequently the whole plùmage, draw the feet backwards, placing them close under the tail, on each side, and cover them with the feathers. In some the feet were entirely covered, while in others parts of the toes were apparent. In flying, the body, tail, neck, and bill, are nearly in a straight line, the wings extended and never brought close to the body, and they move by regular flappings, alternating with short sailings. In alighting, they generally ascend in a long curve, keeping their feet spread, and come down rather heavily, often finding it difficult to balance themselves, and sometimes, when the place is very steep, or when another bird attacks them, flying off, to try it a second time. On the rocks they stand with the body nearly horizontal, or they lie on their belly, although some may be seen in an oblique or even nearly erect posture. They usually repose with the head resting between the shoulders, the bill concealed among the feathers of the back. I caught one in that state, by walking up to it, and seizing it by the tail and the tips of the wings, which cross each other over it.

“ Owing to their interference with each other, a constant noise is kept up amongst them. Their cry is hoarse and harsh, and may be expressed by the syllables *carra, carra, carra*, or *kirra, kirra, kirra*, or *crac, crac, crac*. The cry varies considerably in different individuals, some having a sharper voice than others, and when unusually irritated they repeat it with great rapidity. An ornithological writer thinks they cry *grog, grog*; but neither Mr AUDUBON nor myself interpreted their notes so, otherwise we could have satisfied a few at least, as we had a bottle of whisky and a keg of water.

“ The young are at first covered with very beautiful close snow-white

down; at the age of about six weeks the feathers make their appearance among the down; when two months old the birds are pretty well fledged, and at the end of three months they are able to fly. The old bird at first feeds the young with a kind of fish-soup prepared in its gullet and stomach, and which it introduces drop by drop as it were into its throat. But when its nursling is pretty well grown, it places its bill within its mouth, and disgorges the fish either entire or in fragments. They never carry fish to the rock in their bills. The smallest number of young killed in a year is a thousand, the greatest two thousand; but in general the number is fifteen or sixteen hundred. After being plucked, they are sold at from sixpence to a shilling each. The price of a young bird for stuffing is two shillings; of an old bird five, of an egg one. For the information contained in this paragraph I am indebted to the keeper.

“At the period of my second visit with Mr AUDUBON (the 19th August 1835), the nests in most places had almost entirely disappeared, for it is only during incubation that the birds keep them in constant repair. The young were in various stages, a few quite small and covered all over with white down, the greater number partially fledged, with the down remaining on the head and neck, and some nearly ready to fly, and having merely a few tufts of down on the hind neck. The young lay flat, either on the remnants of their nest, or on the bare rock or ground. They are very patient and uncomplaining; in fact, none uttered a single cry while we were inspecting them. I observed an old bird, with its own young beside it, squeeze the neck of another youngling with considerable force. The poor bird bore the persecution with perfect resignation, and merely covered under the bill of the tyrant. The young of the latter also attacked its neighbour, but was instantly checked, on which it meekly desisted. One of the men informed me that last year there were fourteen nests, each with two eggs. In such cases, one of the young is said to be much smaller than the other.”

PELECANUS BASSANUS, *Linn. Nat.* vol. i. p. 217.—*Lath. Ind. Ornith.* vol. ii. p. 891.

SULA BASSANA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 408.

GANNET, *Nuttall, Manual*, vol. ii. p. 495.

Adult Male. Plate CCCXXVI. Fig. 1.

Bill longer than the head, opening beyond the eyes, straight, elongated-conical, moderately compressed. Upper mandible with the dorsal line straight and declinate, at the end convex and a little decurved; ridge very broad, convex, with a slight median carina, and separated on each side, from the sides, which are nearly perpendicular, slightly convex, and have an additional narrow jointed piece below the eye; edges sharp, direct, irregularly serrate, with numerous slender cuts directed backwards; tip compressed, a little decurved, rather acute. No external nostrils. Lower mandible with the angle very long and narrow, the dorsal line straight, ascending, the sides erect, convex, the edges sharp and serrated, the tip compressed and sharp.

Head large; neck of moderate length and very thick, body of moderate bulk, rather elongated; wings long. Feet short, strong, placed rather far behind; tibiæ concealed; tarsus very short, rounded before, sharp behind, at its upper part anteriorly with rather large roundish-flat scales, in the rest of its extent with very small oblong tubercles; anteriorly there are three lines of small transversely oblong scutella, which run down the toes. The latter are long and slender, all united by membranes, which are reticularly granulated, and have their margins straight; first toe rather small, directed inwards and forwards, middle toe longest, the outer almost equal. Claws of moderate size, slightly arched, those of the first and middle toes depressed, the latter with its inner edge thin and pectinated.

Plumage generally close, rather compact, the feathers small and rounded; those on the head and neck blended and slightly glossed. A bare space between the bill and the eye, surrounding the latter, and extending an inch behind the angle of the mouth. The gular membrane also bare for a small breadth, extending two inches beyond the base of the mandible. About a quarter of an inch of the tibia bare. Wings very long, narrow, acute; primaries strong, narrow, tapering rapidly to a rounded point; first longest, second about a quarter of an inch shorter, the rest rapidly graduated; secondaries short, rather broad, rounded, with a minute acumen. Tail rather long, cuneate, of twelve narrow tapering feathers.

Bill pale bluish-grey, tinged with green towards the base; the lines on the upper mandible blackish-blue; the bare space about the eye, and that on the throat, blackish-blue. Iris white. Tarsi, toes, and webs brownish-black, the bands of narrow scutella on the tarsus and

toes light greenish-blue; claws greyish-white. The general colour of the plumage is white; the upper part of the head and the hind neck of a fine buff colour. Primary quills brownish-black, their shafts white toward the base.

Length to end of tail $40\frac{1}{2}$ inches, to end of wings $38\frac{1}{4}$, to end of claws 41; extent of wings 75; wing from flexure $20\frac{3}{4}$; tail 10; bill along the ridge 4, along the edge of lower mandible 6; tarsus $2\frac{2}{12}$; first toe and claw $1\frac{1}{4}$; middle toe $3\frac{8}{12}$, its claw $\frac{7}{12}$; outer toe $3\frac{8\frac{1}{2}}{12}$; its claw $\frac{4}{12}$. Weight 7 lb.

The Female is similar to the male, but rather smaller.

Young fully fledged. Plate CCCXXVI. Fig. 2.

Bill light greyish-brown; the bare space around the eye pale greyish-blue. Iris green. Feet dusky, the narrow bands of scutella pale greyish-blue; claws greyish-white. The head, neck, and upper parts are chocolate brown, each feather with a terminal narrow triangular white spot; the lower parts greyish-white, spotted with greyish-brown; each feather having a broad terminal margin of that colour. The quills and tail-feathers are brownish-black. An individual shot in October measured as follows:—

Length to end of tail 38 inches, to end of claws $32\frac{1}{2}$; extent of wings 72. Weight 3 lb. 4 oz. This individual, however, was very poor.

Three individuals shot in the neighbourhood of Boston, Massachusetts, presented the following dimensions, which are here given as indicative of the difference of size frequently observed:—

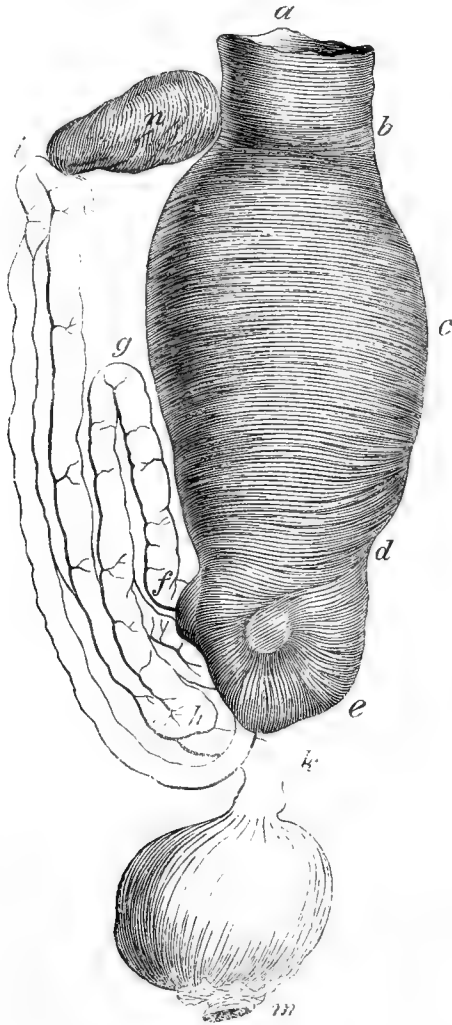
Length to end of tail,	.	$38\frac{3}{4}$	$38\frac{3}{4}$	37
.....wings,	.	$37\frac{1}{2}$	$37\frac{1}{2}$	35
.....claws,	.	$34\frac{1}{4}$	$34\frac{1}{2}$	33
Extent of wings,	. .	$73\frac{1}{2}$	72	$68\frac{1}{2}$
Wing from flexure,	. .	$19\frac{1}{2}$	$17\frac{1}{2}$	$19\frac{1}{2}$

An adult Male killed near Boston. The cellular tissue of the back exhibits vacuities of very large size, intervening between the skin and the muscles: one, at the lower part of the neck behind, being 5 inches in length; another $5\frac{1}{2}$ inches long, extending from the furcula down

the humerus; and behind the wings four others, extending to the last rib. Branches from these pass between the muscles, which present the appearance of having been as it were dissected. A cell of enormous size covers the side of the abdomen, and another pair run down the middle of it, separated by a partition in the median line. That part of the cellular tissue which adheres to the bases of the feathers is also remarkably loose; and, close to each of them, is a roundish aperture of large size, communicating with the great cavities mentioned above. Between the pectoralis major and the subjacent muscles is a large interspace formed by a great cell. The internal thoracic and abdominal cells are also very large.

On the roof of the mouth are five sharp ridges. The nasal aperture is 1 inch and 5 twelfths long, linear, with a soft longitudinal flap on each side. The tongue is extremely small, being only 7 twelfths long, 1 twelfth broad, blunt at the extremity, and with two papillæ at the base. The bare skin between the crura of the mandibles is of the same structure as that of the Pelicans and Cormorants, but of small extent, its posterior acute extremity not extending farther than that at the base of the bill. The aperture of the glottis is $7\frac{1}{2}$ twelfths long. The thyroid bone has an anterior curved prolongation, which projects forwards, and from the extremity of which comes the elastic ligament by which it is connected with the hyoid bone. The œsophagus, *a, b*, is 15 inches long, measured to the commencement of the proventriculus, extremely dilated, its diameter $2\frac{1}{2}$ inches at the top, contracting to 2 inches as it enters the thorax, its narrowest part 1 inch 4 twelfths; its transverse muscular fibres moderately strong. The proventriculus, *c, d*, is excessively large, $3\frac{1}{2}$ inches long, its greatest diameter $2\frac{1}{4}$ inches. The glandules are cylindrical, 3 twelfths long, forming a very broad belt, separated however at its narrowest part by a longitudinal interval of 5 twelfths of an inch, and having three partial divisions on its lower edge. The greatest length of the proventriculus, or breadth of the belt of glandules, is $2\frac{1}{2}$ inches. The mucous coat of the œsophagus is smooth, but thrown into longitudinal plicæ when contracted; that of the proventriculus is continuous, and of the same nature, being marked with extremely minute reticulated lines, of which the more prominent have a longitudinal direction. The stomach, properly so called, *d e*, is extremely small, being only 1 inch 9 twelfths long, and about the same breadth. Its inner coat is similar to that of the œsophagus and pro-

ventriculus, being destitute of epithelium ; several large mucous crypts are scattered over its surface. The pylorus is small, having a diameter of nearly 3 twelfths, and a marginal flap or valve on one side. The intestine, *f, g, h*, is of moderate length, measuring 53 inches. The duodenum *at first passes upwards* in the direction of the liver for 2 inches, *f g*, is then recurved for 3 inches, *g, h*, ascends for 4 inches, *h, i*, and receives the biliary ducts, then passes toward the spine and forms a curvature. The average diameter of the intestine is 5 twelfths at the upper part, and it gradually contracts to 3 twelfths. The rectum, *k*, measured to the anus is $5\frac{1}{4}$ inches. It gradually enlarges from 4 to $6\frac{1}{2}$ twelfths. The cloaca, *m*, is globular, 9 twelfths long, 8 twelfths broad. The cœca are 3 twelfths long, $1\frac{1}{2}$ twelfth broad.



The lobes of the liver are extremely unequal, as is always the case when the stomach or the proventriculus is excessively large, the right lobe being $2\frac{3}{4}$ inches long, the left 1 inch and 8 twelfths. The gall-

bladder, *n*, is very large, of an oblong form, rounded at both ends, 1 inch and 8 twelfths long.

The trachea is 12 inches long, moderately ossified, round, its diameter at the top 7 twelfths, gradually narrowing to 4 twelfths; the rings 124, the lower 4 united. The bronchi are large, their diameter greater than that of the lower part of the trachea; of 25 cartilaginous half-rings. The lateral or contractor muscles of the trachea are of moderate strength; the sterno-tracheals strong; a pair of inferior laryngeal muscles attached to the glandular-looking, yellowish-white bodies inserted upon the membrane between the first and second rings of the bronchi.

The olfactory nerve comes off from the extreme anterior point of the cerebrum, enters a canal in the spongy tissue of the bone, and runs in it close to the septum between the eyes for 10 twelfths of an inch, with a slight curve. It then enters the nasal cavity, which is of an irregular triangular form, $1\frac{1}{2}$ inch long at the external or palatal aperture, 10 twelfths in height. The supramaxillary branch of the fifth pair runs along the upper edge of the orbit, and by a canal in the spongy tissue of the bones, enters the great cavity of the upper mandible, keeping nearer its lower surface, and there branching. This cavity appears to have no communication with the nasal; nor has the latter any passage towards the obliterated external nostrils. The lachrymal duct passes obliquely inwards from the anterior corner of the eye, and enters the nasal cavity by an aperture $\frac{1}{2}$ twelfth in diameter, near its anterior margin.

In the cloaca was found a solid calculus, half an inch in diameter, of an irregular form, white within, externally pale yellowish-brown, and marked with grooves impressed by the action of the sphincter ani.

The digestive and respiratory organs of the American Gannet are thus precisely similar to those of the European. In external form, proportions, and colours, there are no appreciable differences. The young in all stages are similar. The flight, voice, general habits, and all other circumstances, are the same. What, then, shall we say to those who have pretended that the American bird differs from the European? Merely this, compare the two, outside and inside, shew us differences, and then we shall judge if they be sufficient to indicate different species; but until you have done this, do not imagine that a mere "*Sula Americana* Nob.," is enough to satisfy the world on this or any similar point.

SHOVELLER DUCK.

ANAS CLYPEATA, LINN.

PLATE CCCXXVII. MALE AND FEMALE.

THE Creoles of Louisiana are well acquainted with this species, under the name of "*Micoine*," the etymology of which I am unable to trace. In that country it arrives, both from the westward and from the eastern inland districts, along with the Blue-winged Teal, or at the commencement of autumn. It associates with that species, to which, as well as to the Green-winged, the Mallard, the Dusky Duck, and the Gadwall, I should consider it very nearly allied, notwithstanding the peculiar expansion of its bill. The Shovellers remain in the lower parts of Louisiana during the whole of the winter, and depart along with the Blue-wings between the end of April and the middle of May. There, in early spring, they resort chiefly to ponds, where they feed on grasses and their seeds, as well as at times a small kind of onion, the bulbs of which they pull up from the moist grounds on their margins. This may perhaps to some seem strange, but I have long since made up my mind to learn from Nature, and believe what is, rather than what philosophers imagine ought to be. Having fed through the night, they collect towards dawn into large bands, and betake themselves to the margins of sand-bars on the Mississippi, where they spend the greater part of the day. At other times I have found them swimming or wading along the muddy margins of ponds and streams, immersing the head and part of the neck while alternately moving the bill to either side, in the manner of the Roseate Spoonbill, sifting as it were the contents of the soft mud or water, and ejecting the substances unfit for food. Repeated inspection of the stomach has shewn me that the Shoveller is not more nice as to the quality of its food than the Mallard or any other of the Duck tribe, for I have found in it leeches, small fishes, large ground-worms, and snails. They never however, I believe, feed by semi-immersion, like the Mallards and Teals; nor do they dive unless hard pressed, or when in a sportive mood, when they will dash for a moment beneath the surface.

This species is generally considered scarce in the United States, and I believe it is so, for, although many pass northward and breed in the Fur Countries, a greater number spend the summer months in the Texas and the districts farther westward. It is however abundant on the streams of the Rocky Mountains, as well as on the tributaries of the Columbia River, where it was frequently observed by Dr TOWNSEND, during summer.

We have no Ducks in the United States whose plumage is more changeable than that of the male of this beautiful species. While the female is sitting on her eggs, he undergoes a moult, after which he appears mottled, and seems as if inclined to assume the garb of his partner. From this period, the beginning of July, until late in November, very few finely-coloured males are to be seen, and only such as have not mated that season, in which case they do not moult until the beginning of winter, as if to be the sooner ready to associate with females on the approach of the next breeding season.

In the Carolinas, this species, though found during winter in the rice fields, is not abundant; more than three or four being seldom seen together. In our Central and Eastern Districts, they are rather rare, and a male in full dress is not to be obtained without difficulty, although I have seen some in the markets of New York and Philadelphia.

The Shoveller walks prettily, and I have often admired its movements in the puddles formed by heavy dashes of rain in our southern corn-fields, where I have found it in company with the Wood Duck, the Mallard, and the Pin-tail. Its flight resembles that of the Blue-winged Teal; and in tenderness as well as in flavour, it rivals, as an article of food, that beautiful bird. No sportsman who is a judge will ever pass a Shoveller to shoot a Canvass-back. It is rarely however found on salt water, and that only when compelled to resort thither.

In the beginning of May, when I was in Texas, I found Shovelers breeding in considerable numbers. The males had already left the females, and were seen on the sand-bars of the Bay of Galveston, up to the River St Jacinto, but none of my party discovered the nest. During the autumn, they are to be seen on the waters adjoining the Ohio, and generally in ponds in company with the Bald-pate or American Widgeon, when they become very fat, and afford delicious eating. At this time I have been often much pleased when, on perceiving a flock

of eight or nine of these ducks, probably members of a single family, and cautiously approaching them, while they were busily engaged in searching for food with their heads and necks immersed, I have obtained several of them at the first shot, and as the survivors flew off have succeeded in procuring one or two more. On such occasions, they rise almost perpendicularly to the height of fifteen or twenty feet, and then fly off in a direct course, in the manner of Mallards.

ANAS CLYPEATA, *Linn. Syst. Nat.* vol. i. p. 200.—*Lath. Ind. Ornith.* vol. ii. p. 856.—

Ch. Bonaparte, Synopsis of Birds of United States, p. 382.

SHOVELLER, *Wils. Amer. Ornith.* vol. viii. p. 45, pl. 67, fig. 7.

ANAS CLYPEATA, SHOVELLER, *Richards. and Swains. Faun. Bor.-Amer.* vol. ii. p. 439.

SHOVELLER, *Nuttall, Manual*, vol. ii. p. 439.

Adult Male. Plate CCCXXVII. Fig. 1.

Bill longer than the head, higher than broad at the base, depressed and much widened towards the end, where its breadth is doubled. Upper mandible with the dorsal line sloping and very slightly concave, the ridge at the base broad, narrowed over the nostrils; sides nearly erect at the base, gradually more declinate and convex; the tip very broadly rounded, with the unguis oblong, rather small, curved and rounded at the extremity; the margins soft, with very numerous lamellæ, which are prolonged beyond the edges and taper to a point, unless at the commencement of the broadest part of the bill. Nasal groove elliptical, and filled by the soft membrane of the bill; nostrils elliptical, pervious, placed near the ridge. Lower mandible slightly curved upwards, with the angle very long and narrow, the unguis obovate.

Head of moderate size, oblong, compressed, rounded above; neck moderate; body rather full, slightly depressed. Feet short, stout, placed a little behind the centre of the body; legs bare a little above the joint; tarsus very short, moderately compressed, anteriorly with small scutella, and an external short series of larger, on the other parts reticulated with small scales. Hind toe very small, with a narrow free membrane; third toe longest, fourth almost as long; the three anterior slender, with numerous oblique scutella, and connected by webs which have the margin concave and denticulate; the inner

toe with a broad margin. Claws small, arched, compressed, acute; that of middle toe slightly dilated on the inner edge.

Plumage dense, soft, and elastic; of the head and neck short, blended, and splendent, of the occiput and nape considerably elongated; of the other parts in general broad and rounded. Wings of moderate length, acute; primaries narrow and tapering, the first longest, the second very little shorter; the secondaries broad, curved inwards; the inner elongated and tapering. Tail short, rounded, of fourteen acute feathers, of which the two middle extend five twelfths of an inch beyond the next.

Bill greyish-black tinged with yellow. Iris reddish-orange. Feet vermilion; claws dusky. Head and upper part of neck, deep green with purplish reflections, the top of the head of a darker tint with less vivid gloss. A longitudinal band on the hind neck and the back, greyish-brown, the feathers edged with paler; the rump and upper tail-coverts greenish-black. The anterior scapulars white, the posterior elongated, light blue on the outer web, longitudinally banded with white and greenish-black on the inner. Smaller wing-coverts light blue; alula, primary coverts, and primary quills blackish-brown, their shafts white. Outer secondaries greyish-brown, eight of them externally of a rich duck-green; the inner greenish-black, with a longitudinal white streak; the secondary coverts broadly tipped with white. Tail-feathers greyish-brown, irregularly variegated and margined with reddish-white, that colour enlarging on the outer feathers. Lower part of neck pure white; breast and middle part of abdomen dull purplish-chestnut. A large patch of white on each side of the rump, with a band of the same towards the tail; lower tail-coverts greenish-black, with bright green and blue reflections; axillaries and lower wing-coverts pure white.

Length to end of tail $20\frac{1}{2}$ inches, to end of wings 19, to end of claws $21\frac{1}{4}$; extent of wings $31\frac{1}{2}$; bill along the ridge $2\frac{8}{12}$; wing from flexure $9\frac{8}{12}$; tail $2\frac{1}{12}$; tarsus $1\frac{4}{12}$; first toe and claw $\frac{8}{12}$; third toe $1\frac{9}{12}$, its toe $\frac{5}{12}$, fourth toe $1\frac{9}{12}$, its claw $\frac{3}{12}$. Weight 1 lb. 9 oz.

Female. Plate CCCXXVII. Fig. 2.

Bill dull yellowish-green, iris paler than in the male; feet as in the male but lighter. The upper parts are blackish-brown, the feathers edged with light reddish-brown; the throat and sides of the head are

light reddish-brown, which is the prevailing colour over the lower part of the neck, a portion of the breast and the sides, of which however the feathers are margined with dusky; the middle of the breast white. Smaller wing-coverts dull brownish-grey; alula and primaries as in the male; inner secondaries brownish-black; the speculum as in the male, but paler, and changing to blue; the secondary coverts tipped with white; tail nearly as in the male.

Length to end of tail 17 inches; to end of claws 20; bill along the ridge $2\frac{1}{2}$; extent of wings $29\frac{1}{2}$. Weight 1 lb. 1 oz.

The bill of a male measures 2 inches and 8 twelfths along the ridge, the frontal angles 4 twelfths more; the breadth of the upper mandible at the base is $8\frac{1}{2}$ twelfths, near the end 1 inch and 3 twelfths. The roof of the mouth is broadly and deeply concave, with a prominent median ridge, which becomes papillate towards the base; the edges of the mandible soft, direct, inflected towards the end; lamellæ projecting beyond the margins and tapering to a point. On each side of the lower mandible are about 220 lamellæ, and about 180 on the upper. The tongue is $2\frac{3}{4}$ inches long, deeply emarginate at the base, with numerous papillæ, for half an inch narrow and compressed, then for an inch expanded, with a thin longitudinal flap above on each side divided into lamellæ and minute bristles, at its anterior part having a breadth of 1 inch and terminating abruptly, but with a median thin semi-circular tip, which is 3 twelfths long.

The œsophagus is 8 inches and 10 twelfths long, $4\frac{1}{2}$ twelfths in diameter, its walls thick. The proventriculus is oblong, 1 inch in length; its glandules of moderate size. The stomach is a strong gizzard of moderate size; the lateral muscles and their tendons large as in all other ducks. The intestine is very long, measuring 8 feet, and very narrow, its diameter being from 2 twelfths to $1\frac{1}{2}$ twelfth, for half its length, after which it enlarges to $3\frac{1}{2}$ twelfths at the distance of about 2 feet from the commencement of the rectum, then gradually diminishes to 2 twelfths. The rectum is 3 inches 2 twelfths long, the cœca 4 inches, their diameter for $1\frac{1}{4}$ inch $1\frac{1}{2}$ twelfth, afterwards $3\frac{1}{2}$ twelfths.

The trachea is 6 inches 9 twelfths long, very little flattened, its diameter at the upper part $2\frac{1}{2}$ twelfths, gradually enlarging to 4 twelfths. On the left side of the inferior larynx there is a rounded expansion of

very moderate size compared with that observed in many other ducks. The rings are 98; those at the lower part broader and much stronger, but all of them ossified. The bronchial half rings about 35.

In another individual, the stomach is $1\frac{1}{2}$ inch long, $1\frac{5}{8}$ broad; the right lateral muscle 6 twelfths thick. Contents, particles of quartz, and fragments of shells. Intestine 11 feet 6 inches long; cœca $6\frac{1}{4}$ inches long; rectum $3\frac{1}{2}$ inches.

Long intestines, like long bills, often exhibit great differences in the same species; for which reason characters taken from the length of these parts must be received with latitude. Even in the Rapacious Birds, in which the intestine is generally very short, considerable differences are observed in individuals of the same sex and size. It will be seen from the above statement that the Shoveller has a longer and more slender intestine than any other American duck. In this respect it is analogous to *Pandion* and *Haliaeetus* among the *Raptores*; generalizing vaguely from the consideration of which, as some have done, one might be apt to conclude that it is more piscivorous than the *Canvass-back* and *Pochard*, which however is by no means the case. Although in some birds and mammalia a very elongated intestinal canal is connected with piscivorous habits, yet many birds which feed exclusively on fish, such as *Gannets*, *Auks*, and *Guillemots*, have the intestine of only moderate length or short. It appears simply that when for some reason resulting from the economy of the species, the intestine must be elongated, it is made proportionally narrow; whereas if it be expedient that it should be short, its calibre is increased.

BLACK-NECKED STILT.

HIMANTOPUS NIGRICOLLIS, VIEILL.

PLATE CCCXXVIII. ADULT MALE.

A FEW individuals of this singular species occasionally pass the winter in the lower parts of Louisiana, especially in the section called Oppellousas. I have also found it at the same period in the Floridas, but the greater number follow the shores of the Gulf of Mexico, and proceed beyond our southern limits. In April 1837, I observed their first appearance at Galveston Bay in Texas, where many remained until our departure. They were in small flocks, seldom composed of more than seven or eight individuals, which almost immediately separated into parties of two or three, and commenced their search for food. They kept about the small shallow brackish ponds on the islands of the bay, and now and then were observed following the sinuosities of bayous in company with other birds. They were much more shy than they are while breeding, and it was with some difficulty that we procured specimens. When one was killed, the rest would fly to a considerable distance, sometimes from one island to another, in a rapid manner, with regular beats of the wings, their necks and legs extended. On such occasions they uttered a whistling cry, different from the *cleek, cleek, cleek*, which they emit when they have nests or young.

All the writers who have described the habits of this bird, allege that it walks with a "staggering gait;" but this is by no means the case, for they appeared to us to walk as firmly as any other long-legged birds, such as Herons, Curlews, and the American Avoset; and I had many opportunities of observing them, as had my friend EDWARD HARRIS, my son, and all the members of our party.

Toward the end of April, flocks of this bird reach the Middle Districts, by following the coast, for they are very rarely met with at any great distance from the sea shore. They generally betake themselves to extensive marshes abounding in muddy inlets and small ponds, in the vicinity of which they usually place their nests. About the middle of May, parties of from ten to twenty collect, and are seen wading sometimes up to their breast, in search of food, which is extremely

abundant in such places. They are now paired, and select suitable spots for their nests, which are generally not far distant from each other, and near the margins of the ponds, or on small islets. The nest is very similar to that of the Willet, or Semi-palmated Snipe, *Totanus semipalmatus*, being rather large, and formed of dry weeds and the twigs of small shrubs. I have never observed the singular manner of augmenting and raising their tenements, described by ALEXANDER WILSON, although, like him, I have found and examined several in the very same districts. The eggs are always four, placed with the smaller ends together, pyriform, almost 2 inches long, with the smaller end rounded, $1\frac{3}{8}$ in their greatest breadth; of a pale yellowish-clay colour, and plentifully marked with large irregular blotches and lines of brownish-black.

While the females are sitting, the males pay them much attention, acting in this respect like those of the American Avoset, watching the approach of intruders, giving chase to the Red-winged Starlings, as well as to the Fishing and American Crows, and assailing the truant young gunner or egger. When there is no appearance of annoyance, they sometimes roam as far as the sea-beach. When the young are hatched, they leave the nest, and follow their parents through the grass, but on the appearance of danger squat and remain motionless. About the beginning of September, young and old commence their journey southward.

This species is rather scarce along the shores of the Carolinas; nor is it abundant in any part of the United States, and is seldom seen to the eastward beyond Long Island. Its food consists of insects, small crustacea, worms, and young fry of fishes. I have frequently observed them running after flies, and attempting to seize the smaller Libellulæ. When wounded so as to fall on the water, they are unable to dive, but on reaching the shore they run nimbly off and hide themselves.

I feel confident that in spring the males migrate apart from the females, but in autumn in company with them. The flesh of this species is not decidedly good or bad, being of ordinary quality. The males are larger than the females, and individuals of both sexes vary considerably in size.

LONG-LEGGED AVOSET, RECURVIROSTRA HIMANTOPUS, *Wils. Amer. Ornith.*
vol. vii. p. 48, pl. 55, fig. 1.

HIMANTOPUS NIGRICOLLIS, *Ch. Bonaparte*, Synopsis of Birds of United States,
p. 322.

BLACK-NECKED STILT, *Nuttall*, Manual, vol. ii. p. 8.

Adult Male. Plate CCCXXVIII.

Bill about twice as long as the head, very slender, roundish, tapering, slightly recurved. Upper mandible with its outline very slightly curved upwards, at the tip declinate; the ridge convex, the sides convex, the edges sharp and inflected, the tip narrow and rather acute. Nasal groove nearly half the length of the bill; nostrils linear, direct, sub-basal, pervious. Lower mandible with the angle very long and narrow, the sides grooved as far as the angle, the edges sharp and inflected, the tip narrow.

Head small, ovate, rounded above; neck very long and slender; body rather compact. Legs extremely elongated and slender; tibia bare for more than half its length, covered anteriorly with large curved scutella; tarsus very long, moderately compressed, scutellate before, reticulate on the sides; toes of moderate length, slender; hind toe wanting, outer a little longer than inner, and connected with the middle toe by a web extending nearly to the second joint; the inner toe also connected with the middle by a very short web. Claws small, nearly straight, moderately compressed.

Plumage ordinary, the feathers ovate and rounded. Wings very long, of moderate breadth, acute, the first quill longest, the other primaries rapidly graduated. Tail short, even, of twelve feathers.

Bill black, iris bright carmine; feet lake-coloured, claws dusky. Forehead, a spot above the eye, another below it, fore part and sides of the neck, and all the other lower parts, pure white. Upper part of head, hind neck, and upper parts, bluish-black, glossed with green; tail white.

Length to end of tail $14\frac{1}{2}$ inches, to end of wings $16\frac{1}{2}$, to end of claws $21\frac{3}{4}$; extent of wings 27; wing from flexure 9; tail $2\frac{1}{2}$; bill along the ridge $2\frac{8}{12}$, along the edge of lower mandible $2\frac{1}{2}$; bare part of tibia $3\frac{1}{4}$; tarsus $4\frac{2\frac{1}{2}}{12}$; middle toe $1\frac{1}{2}$, its claw $\frac{5}{12}$. Weight $6\frac{1}{4}$ oz.

The Female is smaller than the male but otherwise similar.

Length to end of tail 14 inches, to end of wings $15\frac{1}{4}$, to end of claws 20; extent of wings $25\frac{3}{4}$. Weight 5 oz.

The median ridge of the anterior part of the roof of the mouth is furnished with a few short papillæ. The tongue is 1 inch 2 twelfths long, slender, tapering, emarginate and papillate at the base. The œsophagus is 7 inches long, with an average diameter of 4 twelfths; the proventriculus 9 twelfths long, and 6 twelfths in diameter. The stomach is elliptical, 1 inch in length, $8\frac{1}{2}$ twelfths in breadth; its lateral muscles of moderate strength, the right being 4 twelfths thick; the inner coat or epithelium dense, longitudinally rugous, and of a brownish-red colour. The intestine is 20 inches long, its diameter varying from 3 to $1\frac{1}{2}$ twelfths. The cœca are $1\frac{1}{2}$ inch long, $\frac{1}{2}$ in diameter at the base, 2 twelfths towards the end, which is blunt.

The trachea is $5\frac{1}{4}$ inches long, rather wide, its diameter at the upper part 3 twelfths, gradually diminishing to $1\frac{1}{2}$ twelfth; the rings 120, unossified, excepting a few at the lower part. The contractor muscles are feeble; the sterno-tracheal slender. The bronchi are very short, with about 10 half rings.

The Prince of MUSIGNANO has introduced into his lately published list a species of this genus, under the name of *Himantopus Mexicanus*. I have received from Florida two skins, which from their large size might at first sight be thought to differ from the common kind; but after closely comparing them with my other specimens, I can find no difference indicative of a distinction of species. Nor have I ever met with individuals in North America of any other species than that above described.

YELLOW-BREASTED RAIL.

RALLUS NOVEBORACENSIS, BONAP.

PLATE CCCXXIX. MALE.

THE PRINCE of MUSIGNANO, who purchased one of these birds in the New York market, in February 1826, gave a figure of it, and considered it as an arctic species. This opinion, however, is incorrect, for the Yellow-breasted Rail is a constant resident in the Peninsula of the Floridas, as well as in the lower parts of Louisiana, where I have found it at all seasons. That a few straggling individuals should proceed northwards, advancing even to pretty high latitudes, is not much to be wondered at, as we have a similar case in the Common Gallinule. But at the season mentioned the individual referred to must have been forced thither by a storm, as no Rails of any kind are found in that part of the country in winter.

In the neighbourhood of New Orleans, this species is found in all the deserted savannahs, covered with thick long grass, and pools of shallow water. There you hear its sharp and curious notes many times in the course of the day, just as you hear those of *Rallus crepitans* near the sea-shore, more especially after the report of a gun, when they are louder and more quickly repeated. These sounds come on the ear so as to induce you to believe that the bird is near; but whether this be the case or not is not easily determined, for when you move towards a spot in which you suppose it to be, the sounds recede at your approach, and you may think yourself fortunate if, after half an hour of search, you discover one on wing. Indeed, if we have a bird in America approaching in its habits the Corn Crake of Europe, it is the Yellow-breasted Rail; and were I disposed to systematize, I should consider it as a connecting link between land and water birds, as in some of its habits it also resembles the European Quail, a bird as fond at times of damp meadows bordering rivers as this species is wont to be, when it seeks for a place of safety in which to form its nest and rear its young.

In the Floridas, this bird is more abundant than even in Louisiana; and I met with it frequently in the course of my wanderings there, not only on the mainland, but also on several of the keys, where they begin breeding in March. On Sandy Island, near Cape Sable, I found several

pairs, in May 1832. About New Orleans it commences breeding at the same period. Dr BACHMAN has procured specimens near Charleston. I have also found a few near Vincennes on the Wabash River in summer, when they had young broods. In the course of my stay at the Silver Springs in East Florida, I observed a good number of these birds along the margins of the lakes and swampy bayous, and had ample opportunities of assuring myself that this species is far from being nocturnal, as authors have alleged, at least when in places where they are under no apprehension of danger. In those sultry solitudes I have at times seen them following the margins of the muddy shores, with delicate and measured steps, until attracted by something worthy of their attention, when they suddenly jerked their tail upwards and for a moment disappeared. Again, they would gracefully leap upon the slender twig of some low shrub or bush, apparently in search of small snails or other objects, jerking their tail at every movement. There it was that I again saw the extraordinary power of contraction which their body is able to assume while they are pushing forward between two or more stubborn branches. They were all so gentle that I at times approached within a few yards of them, when they would now and then look cunningly at me, rise more erect for a moment, and then resume their occupations.

When searched for by a dog, they seem as if determined to put him out by continual manœuvring, running and cutting backwards within a few yards of extent until the dog can no longer follow the last trail. Just then they rise on wing, or run off to some other spot equally adapted for security. A friend of mine who resides in New Orleans, and has shot some hundreds of this species, told me that the best method of obtaining a shot is to lie concealed near an opening in the grass, and call the bird out of cover by imitating its notes, when in a few minutes, being extremely pugnacious, it comes to the clear space, and may be easily shot. Its flesh is delicate and savoury.

The nest somewhat resembles that of *Rallus elegans*. It is generally placed upon the ground in the centre of a thick tuft of grass, and the bed of it is at times elevated above the soil to the height of four or five inches. It is composed of weeds of various kinds, and is now and then covered over in the same manner as that of our Meadow Lark. The eggs are from eight to ten, pure white, thin-shelled, and measure $1\frac{1}{8}$ inch by nearly seven eighths. The young are at first black, and are able to follow their parents almost immediately

after birth. I am induced to believe that two, or perhaps three, broods are reared in the season.

The flight of this pretty little bird is rather swift, and more protracted than that of some of our Rails, especially when put up by a dog coming inadvertently upon it. At other times, when in places not frequented, it rises and removes to a distance rarely exceeding thirty or forty yards, falling as it were among the grass with wings stretched upwards and dangling legs. The gizzard is large and muscular, as in the Water-hen and our other Rails. One which I opened was filled with minute fresh-water shell-fish and gravel. They feed also on insects of various kinds, and the seeds of grasses.

My friend THOMAS NUTTALL has so well described the notes of this bird, that I cannot do better than present you with his account of them. "On the 6th of October (1831), having spent the night in a lodge, on the borders of Fresh Pond, employed for decoying and shooting Ducks, I heard, about sunrise, the Yellow-breasted Rails begin to stir among the reeds (*Arundo Phragmites*) that thickly skirt this retired border of the lake, and in which, among a host of various kinds of Blackbirds, they had for sometime roosted every night. As soon as awake, they called out in an abrupt and cackling cry, 'krèk, 'krèk, 'krèk, 'krèk, 'kuk' k'kh, which note, apparently from the young, was answered by the parent (probably the hen), in a lower soothing note. The whole of these uncouth and guttural notes have no bad resemblance to the croaking of the tree frog, as to sound. This call and answer, uttered every morning, is thus kept up for several minutes in various tones, till the whole family, separated for the night, have met and satisfactorily recognised each other."

I once shot a female bird of this species near New Orleans upon which I had nearly trodden as she was on the nest and about to lay an egg, and which she dropped as she flew before me, previously to my touching the trigger. In August and September I have found this species uncommonly fat, and most delicious. The difficulty of procuring them, however, renders them a rarity for the table even in those parts of the country where they are most abundant.

I have no doubt that a few stragglers now and then go far north to breed, as I find in the Fauna Boreali-Americana the following note from Mr Hutchins's manuscripts:—"This elegant bird is an inhabitant of the marshes (on the coast of Hudson's Bay, near the efflux of Severn River, where Mr Hutchins resided) from the middle of May to

the end of September. It never flies above sixty yards at a time, but runs with great rapidity among the long grass near the shores. In the morning and evening it utters a note, which resembles the striking of a flint and steel; at other times it makes a shrieking noise. It builds no nest, but lays from ten to sixteen perfectly white eggs among the grass."

Now, this making no nest is to me a convincing proof that the species is not there in its natural place, but finding itself pushed for time, and yet obliged to breed, is contented to do so under unfavourable circumstances. Dr RICHARDSON, who spent several years in the northern parts of America, did not meet with this species. I saw none in Labrador or Newfoundland; and in the British provinces of New Brunswick and Nova Scotia, the only bird of this family known is the Sora, *Rallus carolinus*.

GALLINULA NOVEBORACENSIS, *Lath.* Ind. Ornith. vol. ii. p. 771.

RALLUS NOVEBORACENSIS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 335.—*Ch. Bonaparte*, American Ornith. vol. iv. p. 136, pl. 27, fig. 2.

YELLOW-BREASTED RAIL, RALLUS NOVEBORACENSIS, *Richards.* and *Swains.* Fauna Bor.-Amer. vol. ii. p. 402.

YELLOW-BREASTED RAIL, *Nuttall*, Manual, vol. ii. p. 402.

Adult Male. Plate CCCXXIX.

Bill shorter than the head, rather stout, compressed, tapering. Upper mandible with the dorsal line nearly straight, being slightly convex towards the end, the ridge narrow and convex in its whole length, the sides convex towards the end, the edges sharp, slightly overlapping, destitute of notch. Nasal groove broad, and extending to a little beyond the middle of the bill; nostrils linear, lateral, submedial, pervious. Lower mandible with the angle long and narrow, the sides erect, the dorsal line sloping upwards, the edges a little inflected, the tip narrowed, the gape-line straight.

Head rather small, oblong, compressed. Neck shortish. Body compact, deeper than broad. Feet of moderate length, rather stout; tibia bare a short way above the joint; tarsus of ordinary length, compressed, anteriorly covered with broad scutella, posteriorly with smaller, and on the sides reticulated. Hind toe small and very slender; middle toe longest, and longer than the tarsus; inner toe considerably shorter than the outer; toes free, with numerous scutella above. Claws

much compressed, slightly arched, tapering to a fine point, flat and marginate beneath.

Plumage rather stiff, but soft, blended, and slightly glossed above. Feathers of the forehead somewhat bristly, broad and rounded; of the hind parts elongated. Wings short, broad, concave; alula large, primaries curved, broad, abruptly rounded, the second longest, third scarcely shorter, first equal to seventh; secondaries broad and rounded, the inner elongated, some of them extending a quarter of an inch beyond the longest primary. Tail extremely short, much rounded, of *ten* feeble rounded feathers; the upper and lower tail-coverts as long as the tail-feathers.

Bill greenish-black, with the base dull yellowish-orange. Iris hazel. Feet and claws light flesh-colour. Upper part of the head and hind neck blackish-brown, the feathers slightly edged with dull light brownish-red, those on the occiput and hind neck with a small white spot on the outer edge. The upper parts are brownish-black, longitudinally streaked with brownish-yellow, each feather being broadly margined with the latter, and crossed with from one to three narrow white bars. Alula greyish-brown, each feather with a white dot near the tip; primaries similar, the outer four unspotted; the edge of the wing, and the basal half of the outer web of the first primary yellowish-white; outer secondaries greyish-brown, white towards the end, three of them having that colour extending over more than half of their length; inner secondaries like the back; as are the tail-feathers. Loral space and a line beyond the eye blackish-brown. Sides of the head, neck, and anterior part of the body light brownish-red, each feather terminally margined with deep brown; sides like the back; axillaries, lower wing-coverts, and middle of the abdomen, pure white; sides of the rump like the back; lower tail-coverts brownish-red, with faint whitish dots.

Length to end of tail $7\frac{3}{4}$ inches, to end of claws $9\frac{5}{4}$, to end of wings 7; extent of wings $12\frac{1}{4}$; wing from flexure $3\frac{9}{12}$; tail $1\frac{4}{2}$; tarsus $1\frac{1}{2}$; first toe and claw $\frac{5}{12}$; second toe $\frac{10}{12}$, its claw $\frac{3}{12}$; third toe $1\frac{1}{2}$, its claw $\frac{3}{12}$; fourth toe $\frac{10}{12}$, its claw $\frac{2}{12}$. Weight $2\frac{3}{4}$ oz.

The Female is smaller than the male, but similar in colour.

Length to end of tail $6\frac{3}{4}$ inches, to end of claws $8\frac{5}{4}$; extent of wings 11. Weight 2 oz.

AMERICAN RING PLOVER.

CHARADRIUS SEMIPALMATUS, BONAP.

PLATE CCCXXX. MALE AND YOUNG.

I HAVE had great pleasure in observing the migrations of this species, particularly in early spring, when great numbers enter the southern portions of the United States, on their way northward, where it is now well known to breed. At that period, whatever attempts you may make to prevent their progress, they always endeavour to advance eastward; whereas in early autumn, they will rove in any direction, as if perfectly aware that, the task imposed upon them by Nature having been accomplished, they may enjoy their leisure. Those which pass the winter within the limits of the Union, are mostly found along the shores of South Carolina, Georgia, the Floridas, and as far south as the mouths of the Mississippi; there being no doubt that many remain on the coasts of the Gulf of Mexico, as I have found some there early in spring, before observing those which I knew by their manners to be recently arrived. In the course of my late visit to Texas, I found them on Galveston Bay, where I observed some arriving from the westward.

During their polar migration, they proceed rather swiftly, for although they appear to touch at every place likely to afford them food and repose, they seldom tarry long. Thus, many individuals, which may have been in Texas early in April, not unfrequently reach Labrador by the middle of May; although some are a month later in reaching the ultimate point of their journey, which, according to Dr RICHARDSON, sometimes extends as far as the Arctic Regions.

While with us in spring, they confine themselves to the sandy beaches of our sea-coasts, whether on the mainland or on islands; but when they arrive at their breeding stations, they abandon their maritime life, and resort to mountainous mossy lands, as is also the custom with several other species. On my way to Labrador, I saw some of them in almost every place at which we landed; and when I reached Nastasquan Bay, they were breeding in all the spots that were adapted for that purpose. Their manners formed an agreeable subject of

observation to all the members of my party. As soon as one of us was noticed by a Ring Plover, it would at once stand still and become silent. If we did the same, it continued, and seldom failed to wear out our patience. If we advanced, it would lower itself and squat on the moss or bare rock until approached, when it would suddenly rise on its feet, droop its wings, depress its head, and run with great speed to a considerable distance, uttering all the while a low rolling and querulous cry, very pleasing to the ear. On being surprised when in charge of their young, they would open their wings to the full extent, and beat the ground with their extremities, as if unable to rise. If pursued, they allowed us to come within a few feet, then took flight, and attempted to decoy us away from their young, which lay so close that we very seldom discovered them, but which, on being traced, ran swiftly off, uttering a plaintive *peep* often repeated, that never failed to bring their parents to their aid. At Labrador, the Ring Plover begins to breed in the beginning of June. On the 2d of July, I procured several young birds apparently about a week old; they ran briskly to avoid us, and concealed themselves so closely by squatting, that it was very difficult to discover them even when only a few feet distant.

This species, like the Piping Plover, *Charadrius melodus*, forms no nest; and whilst the latter scoops a place in the sand for its eggs, the Ring Plover forms a similar cavity in the moss, in a place sheltered from the north winds, and exposed to the full rays of the sun, usually near the margins of small ponds formed by the melting of the snow, and surrounded by short grass. Some of these pools are found on the tops of the highest rocks of that country. The eggs, like those of all the family, are four, and placed with the small ends together. They are broad at the larger end, rather sharp at the other, measure $1\frac{1}{4}$ inch in length, $7\frac{1}{8}$ inches in their greatest breadth, are of a dull yellowish colour, irregularly blotched and spotted all over with dark brown of different tints. The young are at first of a yellowish-grey colour, prettily marked with darker spots on the shoulders and rump. As soon as their parents dismissed them, they were observed searching for food among the drying cod-fish, and along the beaches.

By the 12th of August, all the individuals which had bred in Labrador and Newfoundland, had taken their departure, migrating southward in company with the Phalaropes and Schintz's Sandpipers. Many of these birds proceed by our great lakes and rivers, they being

sometimes seen in September along the shores of the Ohio and Mississippi. At this period they are now and then observed on ploughed lands, where they appear to procure different species of seeds and insects. Along the whole extent of our Atlantic shores, they are numerous at this season, and great numbers are killed, the flesh of the young birds especially being juicy and tender.

The flight of this species is swift and sustained. They are fond of associating with other birds of similar habits, and are generally unsuspecting, so that they are easily approached. When on wing, their notes are sharp, sonorous, and frequently repeated. The young members of my party were often much amused by witnessing our pointer chasing the old birds, whilst the latter, as if perfectly aware of the superiority in speed, would seem to coax him on, and never failed to exhaust him by flying along the declivities of the rocks up to their summits, and afterwards plunging downwards to the base, thus forming great circuits over a limited range. Their food consists of small crustacea, mollusca, and the eggs of various marine animals. The old males are very pugnacious in the breeding season, and engage in obstinate conflicts, drooping their wings, and trailing their tail fully spread out in the manner of some species of Grouse on similar occasions.

RING PLOVER, *TRINGA HIATICULA*, *Wils. Amer. Ornith.* vol. vii. p. 65, pl. 59, fig. 3.

CHARADRIUS SEMIPALMATUS, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 296.

AMERICAN RING PLOVER, *CHARADRIUS SEMIPALMATUS*, *Richards. and Swains. Fauna. Bor.-Amer.* vol. ii. p. 367.

SEMIPALMATED RING PLOVER, *Nuttall, Manual*, vol. ii. p. 24.

Adult Male. Plate CCCXXX. Fig. 1.

Bill shorter than the head, straight, somewhat cylindrical. Upper mandible with the dorsal line straight for half its length, then bulging a little and curving to the tip, which is rather acute, the sides sloping at the base, convex towards the end, where the edges are sharp and direct. Nasal groove extended along more than half of the mandible; nostrils basal, linear, in the lower part of the membrane, open, and pervious. Lower mandible with the angle short, narrow, but rounded, the sides at the base sloping outwards and flat, the dorsal line ascending and slightly convex, the edges sharp and involute towards the tip.

Head of moderate size, oblong, rather compressed, the forehead rounded. Eyes large. Neck rather short. Body ovate, compact. Wings long. Feet slender, of moderate length; tibia bare a considerable way above the joint; tarsus of moderate length, rather compressed, covered all round with sub-hexagonal scales; toes slender; the hind toe wanting; third or middle toe much longer than the outer, which exceeds the inner; all with numerous scutella; the outer connected with the middle toe by a web which extends to the second joint of the former, and runs along the edge of the latter, forming a broad margin, the outer toe also connected with the middle toe by a short membrane which does not extend more than half-way to the second joint. Claws small, slightly arched, compressed, rather blunt, that of the middle toe having the inner edge dilated.

Plumage soft and blended; the feathers rounded, those of the back somewhat distinct. Wings long and pointed; primary quills tapering, the first longest, the second a little shorter, the rest rapidly graduated; outer secondaries incurved and obliquely emarginate; the inner tapering and elongated, one of them reaching to half an inch from the tip of the longest primary. Tail of moderate length, considerably rounded, of twelve feathers.

Bill black, its basal half rich orange. Iris deep hazel. Feet pale flesh-colour, claws black. Forehead, loreal space, and a band passing below the eye and including the auriculars, black; the rest of the head above and the nape, light greyish-brown, tinged with dull olive. A broad band between the eyes, continuous with a streak over them, a small band on the lower eyelid, and a ring on the middle of the neck, enlarged in front so as to cover the throat, pure white. A broad ring of black on the lower part of the neck, broader in front. All the lower parts and the sides of the rump white. The upper parts of the same greyish-brown as the head, the scapulars and elongated inner secondaries more decidedly glossed with olive. Alula, primary coverts, and primary quills dusky, the coverts tipped with white, the outer primaries, with a portion of the shaft white, the inner with an elongated patch of white on the outer web in addition, and the proximal part of the inner web of the same colour. Secondary quills with a narrow terminal margin of white, which is much enlarged on (or in some specimens covers) the two next to the elongated ones, which are externally margined with brownish-white. Tail pale greyish-brown, brownish black

towards the end, the tip white, enlarging on the outer, and including the whole of the lateral feather, and the outer web of the next.

Length to end of tail $7\frac{1}{4}$ inches, to end of wings 8, to end of claws 7; extent of wings 14; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure 5, tail $2\frac{1}{2}$; tarsus $1\frac{1}{2}$, middle toe and claw $\frac{1}{2}$. Weight $1\frac{1}{2}$ oz.

The Female is a little larger than the male, but similar, although the black markings are tinged with brown.

Young in September. Plate CCCXXX. Fig. 2.

Bill dusky, at the base yellowish. Feet pale yellowish-green, claws dusky. Upper parts lighter than in the adult, the feathers margined with pale yellowish-grey; no black band on the forehead, or on the neck, but a patch of dusky on the side of the neck and breast; the band from the bill to behind the eye greyish-brown.

This species exhibits a very intimate affinity to *Charadrius Hiaticula* of Europe, which is precisely similar in form, proportions, and colouring, but considerably larger, and having the feet orange-coloured, with the webs much less extended.

GOOSANDER.

MERGUS MERGANSE, LINN.

PLATE CCCXXXI. MALE AND FEMALE.

THIS species may be said to be a constant resident with us, as many individuals breed in the interior of the States of New York, Massachusetts, and Maine. When I first resided in Kentucky, some bred there also, although at the present day none pass the summer in that country. In the latter part of autumn, in winter, and in early spring, they are found in all parts of the Union; in Texas I procured some in April 1837, and in the beginning of May saw a considerable flock in Galveston Bay. How much farther southward their migrations extend I know not, but from having observed them coming from that direction, I suspect that they advance pretty far into the interior of Mexico, from which some perhaps cross to the Arkansas River, on which I have also seen them. On the Mississippi, the Ohio, and their tributaries, Goosanders are found during the coldest weather; and when the larger streams are covered with ice, they betake themselves to such smaller creeks as have very rapid currents or cascades, about which they feed. But there are parts of our southern coast, where they are exceedingly rare, such as South Carolina, where my friend Dr BACHMAN has never seen one, and the Floridas, in which none occurred to me during my rambles there. Indeed one is surprised to find that among birds like this, which is so hardy as to remain in our North-eastern States during the severest part of the winter, some should extend their movements at the same season as far to the south-west as Texas; but facts like these are beyond our philosophy. In the lower parts of Louisiana, this species is called the "Bec-sciede-mer," probably because there it is found only on the large salt-water lakes, and about the mouths of the Mississippi, and to distinguish it from the Hooded Merganser, which there is more usually seen on fresh water. I have been assured by Professor MACCULLOCH of Pictou that it now and then breeds in Nova Scotia. Yet I found none in Labrador or Newfoundland, where the Red-breasted species was breeding in great numbers. Dr RICHARDSON found it in abundance in the Fur Countries.

The Goosander is a vigorous and robust bird. It swims deeply, but with considerable speed, even against a strong current, running waters being generally preferred by it, even when rather shallow, provided their beds are of sand or pebbles, for it is rarely seen on muddy or stagnant waters, even during the breeding season, when it returns to the inland lakes. Like the Grebes it has the power of sinking backwards, and it dives expertly, remaining occasionally several minutes beneath the surface. It usually swims and dives against the current, and close by the shores, extricating itself from floating ice by passing under it. Its voracity is great, so that it consumes an extraordinary quantity of fish. I have found fishes in its stomach seven inches in length, and of smaller kinds so many as to weigh more than half a pound. Digestion takes place with great rapidity, insomuch that some which I have fed in captivity devoured more than two dozen of fishes about four inches in length, four times daily, and yet always seemed to be desirous of more. The alleged awkwardness of this bird when on shore is a fable, for I have seen individuals while courting in spring run with great celerity fifty or more yards at a time, keeping nearly in an erect position. On occasions of this kind I have observed on the sand-bars of the Mississippi flocks of seven or eight males chasing each other with great animosity. At other times, however, they are not fond of walking much, but when on shore are generally seen lying flat on the ground. At times the Mergansers rise almost at once on wing from the water, but at others they seem to find considerable difficulty, patting it with their feet for many yards. These differences seem to depend on various circumstances, such as their being suddenly surprised, or during violent winds. They generally, if not always, rise on wing against the breeze.

The flight of the Goosander is powerful, and as rapid and sustained as that of the Red-breasted and Hooded Mergansers. When fairly under way and at a good height, they advance in an almost direct course and proceed with surprising velocity, so that, when suddenly apprised of the vicinity of man, they at times find it difficult to check their speed so quickly as may be necessary for their safety. I well remember that on several occasions having watched one of these birds flying directly up a creek and towards me, I have taken aim at it and fired when it was at the proper distance, and yet such had been its velocity that it would advance, after being shot, many yards towards me.

When rising from the water, whatever number may be in the flock, they all start together, paddle off with their feet and wings, stretching out their necks, and thus run as it were on the water to the distance of twenty or thirty yards with great velocity, extending in a front, or following each other in a line, according to the extent of the space before them. They then gradually ascend to the height of the trees, and move off to some considerable distance, but often return to the same place. They seem to ascertain the fertility of the waters by sipping a little on their alighting, and then, having found appearances favourable, they open their bills, apparently to take a deep inspiration, and immediately dive. When they have procured a sufficiency of food, they betake themselves to some sand-bar, on which they repose until it is digested.

The Goosander rises to the surface with the fish in its bill, and, shifting it about until it is in a proper position, swallows it head foremost, then dives for more. So deeply does it swim, that on such occasions not more than a third of its body is seen on the surface; and there is very little chance of shooting it, for it dives on seeing the flash, or even on hearing the click of the lock. The only chance of procuring one at such times is when, on coming to the surface, it stretches itself up and beats its wings. If it is only wounded, it often exhibits great tenacity of life, and diving at once remains a long time in the water. On emerging, it is seen shaking its head violently, for the purpose of disgorging its food, and, perhaps, the blood that has flowed into its lungs; and, on effecting this, it again plunges headlong. At length, you see it come to the surface, with its beautifully tinged breast upwards; but if your object be to obtain game, you will have little satisfaction in procuring a Goosander or any of its genus, for they are all fishy, oily, tough, and fitted for the palate of none but experienced epicures. The food of the Goosander consists chiefly of fish, but also of bivalve shells, snails, leeches, aquatic lizards, crays, and frogs.

Now, good Reader, Spring has once more gladdened the face of Nature, pearly drops hang on every leaf, glistening in the bright sunshine, and thousands of gay insects flutter around. My light canoe is ready. Leap in, seat yourself snugly in the bow, and sit still while I paddle you to the green islands of this beautiful lake, where we shall probably find a Merganser or two, perhaps a female sitting on her eggs.

As to the dog, we need him not ; so lie thee down, Baron, until I return. I was always fond of "paddling my own canoe," and I never met with a single accident so long as I managed it myself ; but on more occasions than one I have been turned out as gently as one turns himself in bed, and having put the frail bark to rights, have assisted the awkward fellow who had caused the disaster, dived for his gun and my own, and conducted him to the camp to dry his garments. Therefore, be quiet, and fear nothing. See ! what's that ? Nothing, friend, but the head of a musk-rat. But look there, how swiftly swims that beautiful Loon ! Heed him not ; have I not already told you all that I know about him ? How smooth and silvery are the pure waters, how beautiful those tall trees ! The dogwood is in full bloom, so are the maples, whose rich red blossoms cluster on the twigs. Here we are just entering the rushes of this little island. Get out, and wade to the shore with all possible gentleness ; or allow me to do so ; for to lighten our slight bark, one of us must get into the water. Softly we advance as I pull the canoe by the bow ; but now, squat, for here are tracks of the Goosander. There now lies the female close before us. She thinks we have not seen her, for she crouches closer upon her eggs. Alarm her not, or she will soon depart. There she croaks, and scrambling off through the tall grass, flies off on rapid wings. Look at the nest ! count the eggs if you choose, but allow me, if you please, to describe them.

The islands on which the Goosander is wont to breed are mostly small, as if selected for the purpose of allowing the sitting bird to get soon to the water in case of danger. The nest is very large, at times raised seven or eight inches on the top of a bed of all the dead weeds which the bird can gather in the neighbourhood. Properly speaking, the real nest, however, is not larger than that of the Dusky Duck, and is rather neatly formed externally of fibrous roots, and lined round the edges with the down of the bird. The interior is about seven and a half inches in diameter, and four inches in depth. There are seldom more than seven or eight eggs, which measure two inches and seven-eighths in length, by two inches in breadth, are of an elliptical form, being nearly equally rounded at both ends, smooth, and of a uniform dull cream-colour. The young are led to the water in a few hours after they are hatched, and are covered with fur-like hair, of a reddish-brown colour about the head and neck, the body lightish grey. They are ex-

cellent divers, and run on the surface with surprising velocity; but they are not able to fly for nearly two months, when, being fat, they are easily fatigued if closely pursued, and on such occasions will often betake themselves to the shore, lie down, and even allow you to lay hold of them. My friend THOMAS NUTTALL has given an interesting account of his chase of a brood of Goosanders.

“ Early in the month of May 1832, while descending the Susquehannah near to Dunstown, a few miles below the gorge of the Alleghanies, through which that river meanders near the foot of the Bald Eagle Mountain, G. LYMAN, Esq. and myself observed, near the head of a little bushy island, some Wild Duck, as we thought, with her brood making off round a point which closed the view. On rowing to the spot, the wily parent had still continued her retreat, and we gave chase to the party, which with all the exertions that could be made in rowing, still kept at a respectful distance before us. We now perceived that these diminutive possessors of their natal island were a female Goosander or Dun Diver, with a small but active little brood of eight young ones. On pushing the chase for near half an hour, the young, becoming somewhat fatigued, drew around their natural protector, who now and then bore them along crowding on her back. At length, stealing nearly from our sight, as the chase relaxed, the mother landed at a distance on the gravelly shore, which being nearly of her own grey colour and that of her family, served for some time, as a complete concealment. When approached again, however, they took to the water, and after a second attempt, in which the young strove to escape by repeated divings, we succeeded in cutting off the retreat of one of the family, which was at length taken from behind a flat boat under which it had finally retreated to hide. We now examined the little stranger, and found it to be a young Merganser of this species, not bigger than the egg of a Goose, and yet already a most elegant epitome of its female parent, generally grey, with the rufous head and neck, and the rudiments of a growing crest. After suffering itself to be examined with great calmness, and without any apparent fear, we restored it to its more natural element, and, at the first effort, this little diminutive of its species flew under the water like an arrow, and coming out to the surface only at considerable distances, we soon lost sight of it, making good its aquatic retreat in quest of the parent. On inquiry, we learned from the tavern-keeper, that for several years past

a nest or brood of these birds had annually been seen near this solitary and secluded island.”

The male Goosanders leave the females immediately after incubation has commenced, and are then seen in the wildest parts of the country. Several females are often found breeding on the same island, and it is after their young are pretty well grown, that they moult. For a number of years past, I have sometimes entertained a hope, at the approach of the breeding season, of finding a male Goosander having his head adorned with a broad erectile crest, like that of the female and young, but I have hitherto been disappointed, and am therefore unable to say whether such a crest ever exists in that sex. The young of both sexes retain the colouring of the female for two years, during which time the males can be distinguished from the females only by their being much larger. The males have not the rich buffy tint on the breast until about two years after they have commenced breeding, and the first perceptible change by which their sex is distinguished is the appearance of black feathers on the head and neck. Until of late years, the females were thought to be of a distinct species, to which the name of *Dun Diver* was given.

Many writers have said that this bird breeds in the hollows of trees, or on their branches; but of the various nests which I have found, not one occurred in such situations; and the Hooded Merganser is the only species of this genus which I have observed nestling in an elevated place.

The notes of the Goosander are harsh, consisting of hoarse croaks, seldom uttered unless the bird be suddenly startled, or when courting. The females are usually silent, but when with their young brood, and pursued, they emit the same guttural sounds as the males. Goosanders are easily caught with hooks baited with fish; my friend JOHN BACHMAN has procured them in this manner on the Hudson River, and I also have on the Ohio.

Along with the representation of a pair of adult birds of this species, I have given a correct view of the Cohoes Falls in the State of New York.

MERGUS MERGANSER, *Linn. Syst. Nat.* vol. i. 208.—*Lath. Ind. Ornith.* vol. ii. p. 828.
—*Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 397.

GOOSANDER, MERGUS MERGANSER, *Wils. Amer. Ornith.* vol. viii. p. 68, pl. 68, fig. 1.
Male, and fig. 2. Female.—*Richards. and Swains. Fauna Bor.-Amer.* vol. ii.
p. 461.—*Nuttall, Manual*, vol. ii. p. 460.

Adult Male. Plate CCCXXXI. Fig. 1.

Bill about the length of the head, straight, strong, tapering, higher than broad at the base, nearly cylindrical toward the end. Upper mandible with the dorsal outline sloping gently to the middle, then straight, along the unguis suddenly decurved; the ridge broad at the base, then convex; the sides sloping rapidly at the base, convex toward the end; the edges serrated beneath; the unguis oblong, much curved, abruptly rounded at the end. Nasal groove elongated; nostrils submedial, linear, direct, pervious. Lower mandible with the angle very narrow, and extended to the unguis, which is obovate; the sides nearly erect in their outer half, with a long narrow groove, the edges serrate within.

Head rather large, compressed, oblong. Neck rather short, thick. Body full, depressed. Feet placed far behind, short, stout; tibia bare for about a quarter of an inch; tarsus very short, compressed, anteriorly covered with small scutella, and another row on the lower half externally, the sides reticulate. Hind toe very small, with an inferior free membrane; anterior toes half as long again as the tarsus; second shorter than fourth, which is almost as long as the third, all connected by reticulated webs, which are deeply concave; the outer toe slightly margined, the inner with a broad marginal membrane. Claws rather small, moderately arched, compressed, acute, that of the middle toe with a thin inner edge.

Plumage moderately full, dense, soft, glossy. Feathers of the head and neck silky, blended, elongated along the median line, so as to form a not conspicuous crest; of the back rather compact; of the lower parts blended. Wings short, of moderate breadth, convex, acute; primaries narrow, tapering, the first scarcely shorter than the second, the rest rapidly graduated; secondaries rather short, narrow, rounded, the inner elongated and tapering. Tail short, much rounded, of eighteen rather narrow rounded feathers.

Bill bright vermilion, with the unguis black. Iris carmine. Feet orange-red in winter, bright vermilion in the breeding season. Head

and upper half of neck greenish-black, splendent, with bright green reflections; hind part of neck below white; fore part of neck and all the under parts of a delicate reddish-buff; the sides of the rump and part of the abdomen greyish-white, finely undulated and dotted with dark grey; some of the lower wing-coverts dusky, the larger coverts and primaries light grey. The fore part of the back, and the inner scapulars, glossy black; the hind part ash-grey, becoming lighter and finally undulated on the rump. Upper tail-coverts and tail-feathers deep grey, outer scapulars white; a transverse band of black at the base of the wing, concealed by the scapulars. Wing-coverts white; alula, primary coverts, primary quills, and a band formed by the base of the first row of large coverts, black; secondaries white, six of them margined externally with a black line, the innermost margined on both webs, but more broadly on the inner, and with the tip black.

Length to end of tail 27 inches, to end of claws $26\frac{1}{2}$, to end of wings 24, to carpal joint $13\frac{5}{8}$, to end of green on the neck $7\frac{1}{4}$; extent of wings 36; bill along the ridge $2\frac{8}{12}$, along the edge of lower mandible $3\frac{1}{2}$; wing from flexure $11\frac{1}{4}$; tail 5; tarsus $1\frac{10}{12}$; first toe and claw $\frac{1}{2}$; outer toe $2\frac{7}{12}$, its claw $\frac{4}{12}$; middle toe $2\frac{8}{12}$, its claw $\frac{5}{12}$. Weight 5 lb. Of another $3\frac{3}{4}$ lb.

Dimensions of two other Males :

Length to end of tail,	.	.	26	$25\frac{7}{8}$ inches.
..... claws,	.	.	27	25
..... wings,	.	.	24	$23\frac{1}{2}$
Extent of wings,	.	.	38	35

Female. Plate CCCXXXI.

The female is much smaller. The bill, eyes, and feet are coloured as in the male, but the ridge of the bill is black, and the nail whitish; the longitudinal crest is much more elongated, being composed of linear feathers, some of them fully two inches and a half long. Head and upper part of neck brownish-red; throat white; all the upper parts, with the sides of the body and rump deep ash-grey, the feathers paler at the margin. Smaller wing-coverts and inner secondaries grey; bases and tips of secondary coverts black, the intermediate part white; middle secondaries white, outer and primaries black; anterior part of neck below faintly banded with ash-grey; breast and abdomen white, slightly tinged with buff.

Length to end of tail 24 inches, to end of claws $23\frac{1}{2}$, to end of wings $20\frac{3}{4}$; extent of wings 34; bill along the ridge $11\frac{1}{2}$, along the edge of lower mandible $2\frac{1}{2}$; wing from flexure $10\frac{1}{4}$; tail $4\frac{1}{2}$; tarsus $1\frac{9}{12}$; hind toe and claw $\frac{8\frac{1}{2}}{12}$; middle toe $2\frac{4}{12}$, its claw $\frac{5}{12}$; outer toe $2\frac{4}{12}$, its claw $\frac{4}{12}$.

The young males after the autumnal moult, and until the middle of summer, resemble the females.

An adult male obtained near Boston examined. The heart is 2 inches long; the lobes of the liver are nearly equal, the right being 3 inches 7 twelfths long, the left 3 inches 3 twelfths.

The upper mandible has about 28 recurved conical, acute, horny papillæ, and an internal series of smaller, on each side; the tip of the unguis serrulate; on the lower mandible are about 40 of the same nature. The tongue is 2 inches 1 twelfth long, fleshy, emarginate, and papillate at the base, tapering, with a double row of slender reversed papillæ along the upper surface, and two lateral series of filaments on each side; the tip lacerated, horny on the back. Posterior nasal aperture oblong, 10 twelfths in length, papillate on the edges. Aperture of the glottis $4\frac{1}{2}$ twelfths long. The mouth is 10 twelfths in breadth, but may be extended to 1 inch 9 twelfths. The œsophagus is $10\frac{1}{2}$ inches long, its diameter 1 inch 7 twelfths on the neck, contracting to 8 twelfths as it enters the thorax, but again expanding; the external coat of transverse muscular fibres very thick; the internal layer of longitudinal fibres very distinct; the mucous coat thrown into prominent longitudinal plaits when contracted; the mucous follicles disposed in longitudinal single series. The proventriculus is 2 inches long, the glandules very numerous, oblong, about 2 twelfths in length, forming a complete belt. The stomach is a strong gizzard, of moderate size, 2 inches long, the lateral muscles 5 twelfths thick; the epithelium very thick, nearly 1 twelfth, longitudinally rugous. In the stomach and gullet was a fish 9 inches long, the portions lying in the stomach and proventriculus partially dissolved, the rest 4 inches long, not acted upon; there were also two fragments of quartz, one of them a quarter of an inch long. The intestine is long, measuring 6 feet 3 inches, its diameter from 5 to 3 twelfths. The cœca are 2 inches long, for half an inch $1\frac{1}{2}$ twelfth in diameter, in the rest of their extent 4 twelfths.

The rectum 5 inches long, including the cloaca, which has a diameter of an inch and a quarter.

The trachea, $10\frac{1}{2}$ inches long, has at first a diameter of 4 twelfths, dilates gradually to 8 twelfths, then contracts to 4 twelfths, enlarges a second time to 7 twelfths, and gradually contracts to 3 twelfths. In this space the rings, 146, are strong, broad, and osseous. At its lower part is an enormous dilatation composed of numerous united rings, bulging irregularly on the right side and behind, and on the left expanded into a case having two large spaces filled by membrane; the greatest diameter of this tympanum is 2 inches and 2 twelfths. The bronchi come off at the distance of nearly an inch from each other, and are short, but wide, with about 25 half-rings. The lateral or contractor muscles are very strong, give off a pair of cleido-tracheals from the second enlargement, and at the commencement of the labyrinth the sterno-tracheals, which are also very large; but there are no other inferior laryngeal muscles.

The intestine of a male in the first winter is 6 feet 8 inches long, its greatest diameter half an inch, wider towards the rectum than at the upper part, where the diameter is 4 twelfths. Rectum $4\frac{1}{2}$ inches long, exclusive of the cloaca. Cœca $2\frac{1}{4}$ inches. Contents of stomach, remains of fishes and a great quantity of quartz fragments.

An adult Female. Œsophagus $10\frac{1}{2}$ inches long; stomach 2 inches long; intestine 5 feet 3 inches; rectum $4\frac{1}{2}$; cœca $2\frac{2}{12}$. The trachea 9 inches long, of uniform diameter, 4 twelfths, with a very slight dilatation toward the lower part, and at the lower larynx contracted to 3 twelfths; the last ring is very large, laterally dilated, but symmetrical; the bronchi come off at the distance of 5 twelfths from each other, and are composed of 25 rings. The tracheal rings 150.

With respect to their digestive organs, the Mergansers are perhaps more allied to the Divers than to the Ducks. In this, as in other respects, they seem to be placed on the limits of the two families.

PIED DUCK.

FULIGULA LABRADORA, GMEL.

PLATE CCCXXXII. MALE AND FEMALE.

ALTHOUGH no birds of this species occurred to me when I was in Labrador, my son, JOHN WOODHOUSE, and the young friends who accompanied him on the 28th of July 1833 to Blanc Sablon, found, placed on the top of the low tangled fir-bushes, several deserted nests, which from the report of the English clerk of the fishing establishment there, we learned to belong to the Pied Duck. They had much the appearance of those of the Eider Duck, being very large, formed externally of fir twigs, internally of dried grass, and lined with down. It would thus seem that the Pied Duck breeds earlier than most of its tribe. It is surprising that this species is not mentioned by Dr RICHARDSON in the *Fauna Boreali-Americana*, as it is a very hardy bird, and is met with along the coasts of Nova Scotia, Maine, and Massachusetts, during the most severe cold of winter. My friend Professor MACCULLOCH of Pictou has procured several in his immediate neighbourhood; and the Honourable DANIEL WEBSTER of Boston sent me a fine pair killed by himself, on the Vineyard Islands, on the coast of Massachusetts, from which I made the drawing for the plate before you. The female has not, I believe, been hitherto figured; yet the one represented was not an old bird.

The range of this species along our shores does not extend farther southward than Chesapeake Bay, where I have seen some near the influx of the St James River. I have also met with several in the Baltimore market. Along the coast of New Jersey and Long Island it occurs in greater or less number every year. It also at times enters the Delaware River in Pennsylvania, and ascends that stream at least as far as Philadelphia. A bird-stuffer whom I knew at Camden had many fine specimens, all of which he had procured by baiting fish-hooks with the common mussel, on a "trot-line" sunk a few feet beneath the surface, but on which he never found one alive, on account of the manner in which these Ducks dive and flounder when securely hooked. All the specimens which I saw with this person, male and female, were in perfect plumage; and I have not enjoyed opportunities of seeing the changes which this species undergoes.

The Pied Duck seems to be a truly marine bird, seldom entering rivers unless urged by stress of weather. It procures its food by diving amidst the rolling surf over sand or mud bars; although at times it comes along the shore, and searches in the manner of the Spoonbill Duck. Its usual fare consists of small shell-fish, fry, and various kinds of sea-weeds, along with which it swallows much sand and gravel. Its flight is swift, and its wings emit a whistling sound. It is usually seen in flocks of from seven to ten, probably the members of one family.

ANAS LABRADORA, *Lath.* Ind. Ornith. vol. ii. p. 859.

PIED DUCK, *ANAS LABRADORA*, *Wils.* Amer. Ornith. vol. viii. p. 91, pl. 69, fig. 6. male.

FULIGULA LABRADORA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 391.

PIED DUCK, *Nuttall*, Manual, vol. ii. p. 428.

Adult Male. Plate CCCXXXII. Fig. 1.

Bill nearly as long as the head, rather broader than high at the base, the sides nearly parallel, but at the end enlarged by soft membranous expansions to the upper mandible. The latter has the dorsal outline at first straight and declinate, then direct and slightly convex, at the extremity decurved; the ridge broad at the base, convex toward the end; the sides sloping at the base, then convex, the extremity broad and rounded, the unguis broadly obovate; the margins soft, expanded toward the end, and with about 50 lamellæ, of which the anterior are inconspicuous. Nasal groove oblong, nostrils linear-oblong, sub-basal near the ridge. Lower mandible flattened, curved upwards, with the angle very long and narrow, the dorsal line very short, and nearly straight, the nearly erect edges with about 30 large and prominent lamellæ; the unguis very broad.

Head of moderate size, oblong, compressed. Eyes small. Neck rather short and thick. Body full, depressed. Feet very short, strong, placed rather far behind; tarsus very short, compressed, with two anterior series of rather small scutella, the sides and back part reticulated with angular scales. Hind toe very small, with a free membrane beneath; outer anterior toes double the length of the tarsus, and nearly equal, the inner much shorter, and with a broad marginal membrane. Claws small, slightly arched, compressed, rather acute.

Plumage dense, soft, blended; feathers of the head and neck small, oblong; those on the lower part of the cheeks very stiff, having the terminal filaments more or less united into a horny plate. Wings short, of moderate breadth, concave, acute; primary quills curved,

strong, tapering, the second very slightly longer than the first, the rest rapidly graduated; secondary quills broad and rounded, the inner elongated and tapering. Tail very short, much rounded, of fourteen tapering feathers.

Bill with the basal space between the nostrils running into a rounded point in the middle, pale greyish-blue; the sides of the base, and the edges of both mandibles for two-thirds of their length, dull pale orange; the rest of the bill black. Iris reddish-hazel. Feet light greyish-blue, webs and claws dusky. Head and upper half of neck white, excepting an elongated black patch on the top of the head and nape. Below the middle of the neck is a black ring, from the hind part of which proceeds a longitudinal band of the same colour, gradually becoming wider on the back and rump; below the black ring anteriorly is a broad band of white, passing backwards on each side so as to include the scapulars. All the under parts black, excepting the axillaries and lower wing-coverts. Upper wing-coverts and secondary quills white, some of the inner quills with a narrow external black margin; alula, primary coverts, and primary quills, brownish-black. Tail brownish-black, tinged with grey, the shafts black; upper tail-coverts dusky, minutely dotted with reddish-brown.

Length to end of tail 20 inches, to end of claws $22\frac{1}{2}$, to end of wings $18\frac{1}{4}$; extent of wings 30; wing from flexure $9\frac{1}{4}$; tail $3\frac{5}{8}$; bill along the ridge $1\frac{3}{4}$, along the edge of lower mandible $2\frac{3}{8}$; tarsus $1\frac{1}{2}$; middle toe $2\frac{3}{8}$, its claw $\frac{3}{8}$, hind toe $4\frac{1}{8}$, its claw $\frac{1}{8}$; outer toe and claw slightly longer than middle; inner toe $1\frac{7}{8}$, its claw $\frac{2}{8}$. Weight 1 lb. $14\frac{1}{2}$ oz.

Female. Plate CCCXXXII. Fig. 2.

The female is less than the male. The bill, iris, and feet are coloured as in the male; sides of the forehead white (not in the figure, it having been taken from a young bird). The general colour is brownish-grey, darker on the head, cheeks, back, rump, and abdomen, of a lighter tint approaching to ash-grey, on the throat, breast, wing-coverts, and inner secondaries, which are margined externally with black; seven or eight of the secondary quills white; the primaries and tail-feathers as in the male.

Length to end of tail $18\frac{1}{4}$ inches, to end of claws $19\frac{3}{8}$, to end of wings 17; extent of wings 29; wing from flexure 9; tail $3\frac{1}{2}$; bill along the ridge $1\frac{5}{8}$, along the edge of lower mandible $2\frac{1}{8}$; tarsus $1\frac{1}{2}$; hind toe and claw $\frac{3}{4}$; middle toe and claw $2\frac{1}{2}$. Weight 1 lb. 1 oz.

GREEN HERON.

ARDEA VIRESCENS, LINN.

PLATE CCCXXXIII. MALE AND YOUNG.

THIS species is more generally known than any of our Herons, it being very extensively dispersed in spring, summer, and early autumn. It ranges along our many rivers to great distances from the sea, being common on the Missouri and its branches, from which it spreads to all such localities as are favourable to its habits. To the north of the United States, however, it is very seldom seen, it being of rare occurrence even in Nova Scotia. At the approach of winter it retires to the Floridas and Lower Louisiana, where individuals, however, reside all the year, and many remove southward beyond the limits of our country. I have observed their return in early spring, when arriving in flocks of from twenty to fifty individuals. They would plunge downwards from their elevated line of march, cutting various zigzags, until they would all simultaneously alight on the tops of the trees or bushes of some swampy place, or on the borders of miry ponds. These halts took place pretty regularly about an hour after sun-rise. The day was occupied by them, as well as by some other species, especially the Blue, the Yellow-crowned, and Night Herons, all of which at this period travelled eastward, in resting, cleansing their bodies, and searching for food. When the sun approached the western horizon, they would at once ascend in the air, arrange their lines, and commence their flight, which, I have no doubt, continued all night. You may therefore, good Reader, conclude that Herons are not only diurnal birds when feeding, but also able to travel at night when the powerful impulse of migration urges them from one portion of the country to another. But although on their northward journey, the Green Herons travel in flocks, it is a curious fact, that, unlike our smaller Waders, Ducks, Geese, and Cranes, they usually return southward at the approach of winter, singly or in very small flocks.

Stagnant pools or bayous, and the margins of the most limpid streams, are alike resorted to by this species for the purpose of procuring food. It is little alarmed by the presence of man, and you may often see it

close to houses, on the mill-dams, or even raising its brood on the trees of gardens. This is often the case in the suburbs of Charleston in South Carolina, where I have seen several nests on the same live oak in the grounds of the Honourable Joel Poinset, as well as in those of other cities of the Southern States. The gentleness, or as many would say, the stupidity of this bird is truly remarkable, for it will at times allow you to approach within a few paces, looking as unconcernedly upon you as the House Sparrow is wont to do in the streets of London.

Although they not unfrequently breed in single pairs; they also associate, not only forming communities of their own kind, but mingling with the larger species of their tribe, and with the Boat-tailed Grakles, and other birds. On the 23d May 1831, I found two nests of the Green Heron on one of the Florida Keys, close to some of *Ardea rufescens* and *A. cœrulea*. Now and then a dozen or more of their nests are found on a bunch of vines in the middle of a pond, and placed within two or three feet of the water; while in other cases, they place their tenements on the highest branches of tall cypresses. In our Middle Districts, however, and especially at some distance from the sea, it is very seldom that more than a single nest is seen in one locality.

The nest of the Green Heron, like that of almost every other species of the tribe, is flat and composed of sticks, loosely arranged, among which are sometimes green twigs with their leaves still attached. The eggs are three or four, seldom more, an inch and three-eighths in length, an inch and one-eighth in breadth, nearly equally rounded at both ends, and of a delicate sea-green colour. According to the locality, they are deposited from the middle of March to the beginning of June. In the Southern States, two broods are frequently reared, but in the Middle and Northern Districts, seldom more than one.

The young, which are at first of a deep livid colour, sparingly covered here and there, and more especially about the head, with longish tufts of soft hair-like down, of a brownish colour, remain in the nest until nearly able to fly; but if disturbed, at once leave their couch, and scramble along the branches, clinging to them with their feet, so as not to be easily drawn off.

After the spring migration is over, the flight of this species is rather feeble, and when they are passing from one spot to another, they frequently use a stronger flap of their wings at intervals. On such occasions, they scarcely contract their neck; but when travelling to a con-

siderable distance, they draw it in like all other species of the tribe, and advance with regular and firm movements of their wings. When alighting to rest, they come down with such force, that their passage causes a rustling sound like that produced by birds of prey when pouncing on their quarry, and on perching they stretch up their neck and jerk their tail repeatedly for some time, as they are also wont to do on any other occasion⁴ when alarmed.

The Green Herons feed all day long, but, as I think, rarely at night. Their food consists of frogs, fishes, snails, tadpoles, water lizards, crabs, and small quadrupeds, all of which they procure without much exertion, they being abundant in the places to which they usually resort. Their gait is light but firm. During the love-season they exhibit many curious gestures, erecting all the feathers of their neck, swelling their throat, and uttering a rough guttural note like *qua, qua*, several times repeated by the male as he struts before the female. This note is also usually emitted when they are started, but when fairly on wing they proceed in silence. The flesh of this species affords tolerable eating, and Green Herons are not unfrequently seen in the markets of our Southern cities, especially of New Orleans.

The young attain their full beauty in the second spring, but continue to grow for at least another year. The changes which they exhibit, although by no means so remarkable as those of *Ardea rufescens* and *A. cœrulea*, have proved sufficient to cause mistakes among authors who had nothing but skins on which to found their decisions. I have given figures of an adult in full plumage, and of an immature bird, to enable you to judge how carefully *Nature* ought to be studied to enable you to keep free of mistakes.

ARDEA VIRESCENS, *Linn. Syst. Nat.* vol. i. p. 238.—*Lath. Ind. Ornith.* vol. ii. p. 684.

—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 307.

GREEN HERON, ARDEA VIRESCENS, *Wils. Amer. Ornith.* vol. viii. p. 97, pl. 61, fig. 1.—*Nuttall, Manual*, vol. ii. p. 63.

Adult Male. Plate CCCXXXIII. Fig. 1.

Bill longer than the head, straight, rather slender, tapering to a very acute point, higher than broad at the base, compressed towards the end. Upper mandible with its dorsal line very slightly arched, the

ridge broad and rather flattened at the base, narrowed towards the end, the sides sloping, erect towards the edges, which are sharp and direct, the tip acute. Nasal depression long, with a groove extending to near the point; nostrils basal, linear, longitudinal. Lower mandible with the angle very long and narrow, the dorsal line sloping upwards, the sides sloping outwards and nearly flat, the edges sharp, the tip acuminate.

Head oblong, much compressed. Neck long. Body very slender, much compressed. Feet rather long, moderately stout; tibia bare for about an inch; tarsi of moderate length, covered with hexagonal scales of which some of the anterior are much larger and scutelliform. Toes rather long and slender, with numerous scutella above; hind toe stout, second and fourth nearly equal, third much longer; claws rather long, slender, arched, compressed, acute, that of middle toe expanded and serrated on the inner edge.

A large space extending from the bill to behind the eye bare. Plumage very soft, loose, and blended; feathers of the hind head elongated and erectile, as are those of the neck generally, but especially of its hind and lower anterior parts; of the fore part of the back much elongated and acuminate, scapulars very large. Wings short, very broad, rounded; second and third quills equal and longest, first and fourth equal and but slightly shorter, the rest slowly graduated; secondaries broad and rounded. Tail very short, even, of twelve, broad, soft feathers.

Bill greenish-black above, bright yellow beneath. Iris and bare part about the eye also bright yellow. Feet, greenish-yellow, claws dusky. Upper part of the head and nape glossy deep green. Neck purplish-red, tinged with lilac behind, and having anteriorly a longitudinal band of white, spotted with dusky-brown; a similar white band along the base of lower mandible to beyond the eye. Elongated feathers of the back greyish-green, in some lights bluish-grey, with the shafts bluish-white; the rest of the back similar; the upper tail-coverts and tail bluish-green; the lateral feathers slightly margined with white. Scapulars, wing-coverts, and inner secondaries, deep glossy green, bordered with yellowish-white; primary quills and outer secondaries greyish-blue tinged with green. Lower parts pale purplish-brown tinged with grey; axillary feathers purplish-grey, as are some of the lower wing-coverts; lower tail-coverts greyish-white.

Length to end of tail $17\frac{3}{4}$ inches, to end of wings $17\frac{1}{2}$, to end of claws 24, to carpal joint $11\frac{1}{4}$; extent of wings 27; wing from flexure $7\frac{5}{8}$; tail $3\frac{3}{4}$; bill along the ridge $2\frac{1}{4}$, along the edge of lower mandible $3\frac{1}{4}$; bare part of tibia $1\frac{9}{16}$; tarsus 2; hind toe $\frac{7}{8}$, its claw $\frac{1}{2}$; middle toe $1\frac{1}{8}$, its claw $\frac{2}{8}$; inner toe $1\frac{5}{8}$, its claw $\frac{1}{4}$; outer toe $1\frac{5}{8}$, its claw $\frac{1}{4}$. Weight $7\frac{1}{2}$ oz.

The Female is considerably smaller, but otherwise similar.

Length to end of tail 17 inches, to end of wings 17, to end of claws $21\frac{3}{4}$; extent of wings 25. Weight $6\frac{1}{4}$ oz.

Young fully fledged. Plate CCCXXXIII.

The bill dull greyish-green, the lower mandible lighter; bare space around the eye greenish-blue, with the exception of a streak of yellow at the upper part. Iris yellow. Feet greenish-yellow, duller than in the adult. The hind neck light brownish-red, the fore part of the neck and all the under parts white, longitudinally streaked with brownish-red, some of the long feathers on the sides of the neck also white. At this age there are no elongated feathers on the back, which is greenish-blue, as well as the scapulars, and tail-feathers. Wing as in the adult, but the smaller feathers on its anterior part more red, the coverts with a small triangular tip of white, and the quills narrowly tipped and margined with the same.

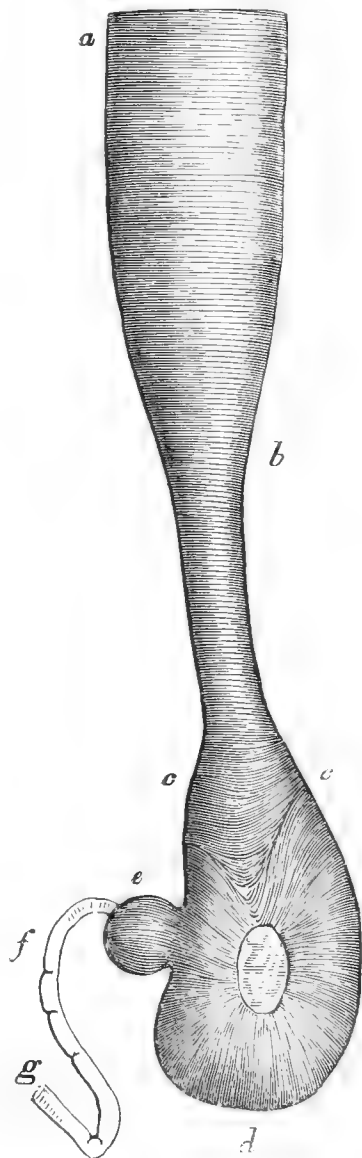
Length to end of tail $17\frac{1}{2}$ inches, to end of wings 17, to end of claws 23; extent of wings 25. Weight $6\frac{1}{2}$ oz.

The roof of the mouth is anteriorly a little concave, with a median prominent line; the palate convex; the lower jaw with a kind of joint about an inch from the base, its intercrural membrane or skin very extensible. The tongue is $1\frac{7}{12}$ inch long, very slender, trigonal, emarginate at the base, with a groove along the middle, and pointed. Posterior apertures of nares linear, $\frac{1}{2}$ inch long. Œsophagus, *a, b c*, 10 inches long, its walls delicate, its diameter at the upper part $1\frac{1}{4}$ inch, gradually contracting to $\frac{1}{2}$ inch at its entrance into the thorax. The lobes of the liver unequal, the right 1 inch 5 twelfths long, the left 11 twelfths; the gall-bladder large, 7 twelfths long. The stomach, *c, d*, is membranous, of an oblong form, 9 twelfths long, 10 twelfths in breadth; its tendons ellip-

tical, 5 twelfths by 3 twelfths. The proventriculus, *cc*, 9 twelfths long, with a complete belt of oblong glandules. There is a small roundish pyloric lobe *e*. Intestine, *f, g*, 2 feet 11 inches long, its diameter uniform, 1 twelfth, or about the thickness of a crow's quill. Rectum enlarged to 3 twelfths, and $3\frac{1}{4}$ inches long, its cœcal extremity rounded, and only one-twelfth long.

The trachea is $7\frac{1}{4}$ inches long, of nearly uniform diameter, averaging 2 twelfths; the rings 160, nearly circular and ossified. The bronchial half-rings about 18. The lateral muscles are very inconspicuous; sterno-tracheals; and a pair of inferior laryngeal, going to the first bronchial rings.

The Herons generally differ from the other Grallæ in having the œsophagus much wider and similar to that of the fish-eating palmipedes; the stomach in a manner membranous, like that of the rapacious land-birds, without lateral muscles or strong epithelium; the intestine extremely slender, and the anterior extremity of the large intestine or rectum furnished with a single cœcum, in place of two, as in almost all other birds.



BLACK-BELLIED PLOVER.*CHARADRIUS HELVETICUS, WILSON.*

PLATE CCCXXXIV. MALE IN SUMMER, YOUNG, AND ADULT IN WINTER.

THIS beautiful bird makes its appearance on our southern coasts in the beginning of April, as I had many opportunities of observing in the course of my journey along the shores of the Gulf of Mexico, in the spring of 1837. Instead of being congregated in large flocks, as is the case during their southward migration in autumn, they are seen coming in small numbers, but at short intervals, so as almost to form a continuous line. They travel chiefly by night, and rest for a great part of the day along the margins of the sea, either reposing on the sands in the sunshine, or searching the beaches for food. After dusk their well-known cries give note of their passage, but by day they remain silent, even when forced to betake themselves to flight. On such occasions they generally wheel over the waters, and not unfrequently return to the spot which they had at first selected. I have traced this species along the whole of our eastern coast, and beyond it to the rugged shores of Labrador, where my party procured a few, on the moss-covered rocks, although we did not then find any nests, and where some young birds were obtained in the beginning of August.

Individuals of this species spend the summer months in the mountainous parts of Maryland, Pennsylvania, and Connecticut, where they breed. I found their nests near the waters of the Delaware and the Perkioming Creek, when I resided in the first of these States, and in the same localities as those of *Totanus Bartramius*, as well as in ploughed fields. The nest is merely a slight hollow with a few blades of grass. The eggs are four, an inch and seven and a-half eighths in length, an inch and three-eighths in their greatest breadth; their ground-colour yellowish-white, tinged with olivaceous, and pretty generally covered with blotches and dots of light brown, and pale purple, the markings being more abundant toward the small end. Their form is similar to that of the egg of the Guillemot, that is, broadly rounded at the large end, then tapering, with the sides nearly straight, and the narrow end rounded. When sitting, these birds will remain until they are almost trodden upon. On being started, they fly off a few yards, alight running,

and use all the artifices employed on such occasions to induce the intruder to set out in pursuit. The young leave the nest almost immediately after they are hatched, and should one approach them the parents become very clamorous, and fly around until they are assured of the safety of their brood, when they take a long flight, and disappear for a time. Unless during the breeding season, they are exceedingly shy ; but their anxiety for their young renders them forgetful of the danger which they incur in approaching man. The young, when two or three weeks old, run with great celerity, and squat in perfect silence when apprehensive of danger. When they are able to fly, several families unite, and betake themselves to the sea-shore, where other flocks gradually arrive, until at length, on the approach of cold weather, almost all of them begin to move southward. Although the great body of these Plovers pass beyond the limits of the United States, some remain on the shores of the Floridas during winter. In their habits they are more maritime than the Golden Plovers, which, when migrating, generally advance over the land.

The flight of this bird is swift, strong, and well sustained. When roaming over large sand-bars, they move in compact bodies, whirling round, and suddenly veering, so as alternately to exhibit their upper and lower parts. At this time old and young are intermixed, and many of the former have lost the black so conspicuous on the neck and breast in summer. During winter, or as long as they frequent the sea-shore, they feed on marine insects, worms, and small shell-fish ; and when they are in the interior, on grasshoppers and other insects, as well as berries of various kinds, on which they fatten so as to become tolerably good eating.

This species is known in Pennsylvania by the name of Whistling Field Plover, suggested by the loud and modulated cries which it emits during the love-season. In the Eastern States, as well as in Kentucky, it is called the Bull-head ; but in the South its most common appellation is Black-bellied Plover. I have seen it, though sparingly, along the shores of the Ohio, probably during its passage from the north.

As its habits agree with those of the Plovers generally, and its form is similar to that of the Golden Plover and other species, the only difference being the presence of a rudimentary hind toe, it was scarcely necessary to distinguish it generically from *Charadrius*, as many recent authors have done.

TRINGA HELVETICA, *Linn. Syst. Nat. vol. i. p. 250.*—*Lath. Ind. Ornith. vol. ii. p. 728.*

TRINGA SQUATAROLA, *Linn. Syst. Nat. vol. i. p. 252.*—*Lath. Ind. Ornith. vol. ii. p. 729.*

BLACK-BELLIED PLOVER, CHARADRIUS HELVETICUS, *Wils. Amer. Ornith. vol. vii. p. 41, pl. 59, fig. 4. Summer.*

CHARADRIUS HELVETICUS, *Ch. Bonaparte, Synopsis of Birds of United States, p. 298.*

GREY LAPWING, VANELLUS MELANOGASTER, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 370.*

BLACK-BELLIED or SWISS PLOVER, *Nuttall, Manual, vol. ii. p. 26.*

Adult Male in summer. Plate CCCXXXIV. Fig. 1.

Bill as long as the head, straight, somewhat compressed, stout. Upper mandible with the dorsal line straight and slightly sloping for more than half its length, then bulging a little and arched to the tip, which is rather acute, the sides flat and sloping at the base, convex towards the end, where the edges are sharp and inclinate. Nasal groove extended to a little more than half the length of the mandible; nostrils sub-basal, linear, open and pervious. Lower mandible with the angle rather long and narrow, the sides at the base erect and nearly flat, the dorsal line ascending and slightly convex, the edges sharp and involute towards the narrow tip.

Head of moderate size, roundish, the forehead much rounded. Eyes large. Neck rather short. Body ovate, rather full. Feet rather long, slender; tibia bare for a considerable space; tarsus rather compressed, covered all round with reticulated hexagonal scales; toes of moderate length, slender; the first extremely diminutive, with an equally minute claw; the second shorter than the fourth, which is much exceeded by the third; the anterior toes are rather broadly marginate, the web between the third and fourth extending to the second joint of the latter, that between it and the second smaller. Claws small, compressed, slightly arched, acute.

Plumage soft, blended, the feathers broad and rounded. Wings long and pointed, primary quills tapering, the first longest, the second a quarter of an inch shorter, the rest rapidly graduated; secondaries short, broad, obliquely rounded; the inner tapering and elongated. Tail rather short, slightly rounded, of twelve rounded feathers.

Bill and claws black. Iris and feet greyish-black. Forehead

yellowish-white, the rest of the head and the hind neck greyish-white, spotted with dusky. The upper parts are variegated with black, yellowish-brown, and white, the feathers being tipped with the latter. The hind part of the rump, the upper tail-coverts, and the tail-feathers, white, transversely barred with brownish-black, the tail tipped with white, and having four dark bars on the middle feathers, and seven or eight on the outer webs of the rest. Alula, primary coverts, and primary quills brownish-black, the coverts terminally margined with white; shafts of the primaries about the middle, and part of the inner web towards the base, white; the inner six with a white patch on the outer web towards the base, and margined with white externally; the outer secondary feathers white at the base and margined with the same; the inner dusky, with marginal white triangular spots. A narrow ring round the eye, and a broad longitudinal band on the side of the neck white; loreal space, cheeks, fore part of neck, breast, and axillar feathers, black; the rest of the lower parts white, the lower primary coverts grey towards the end.

Length to end of tail $11\frac{3}{4}$ inches, to end of wings $12\frac{1}{2}$, to end of claws 14; extent of wings 25; wing from flexure $8\frac{1}{4}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{1}{4}$, along the edge of lower mandible $1\frac{1}{4}$; bare part of tibia $\frac{5}{8}$; tarsus 2; hind toe $\frac{1}{3}$; middle toe $1\frac{1}{8}$, its claw $\frac{1}{4}$; outer toe and claw $1\frac{1}{8}$; inner toe 1. Weight $6\frac{1}{2}$ oz.

The Female resembles the male, but has the black of the lower parts of a less deep tint.

Young about a week old. Plate CCCXXXIV. Fig. 2.

Bill and feet dull greenish-brown. Iris brown. The general colour is pale brownish-yellow, mottled with dusky; a whitish ring round the eye; tail with a black band, rump whitish, primary quills dusky, the outer edges of the secondaries whitish.

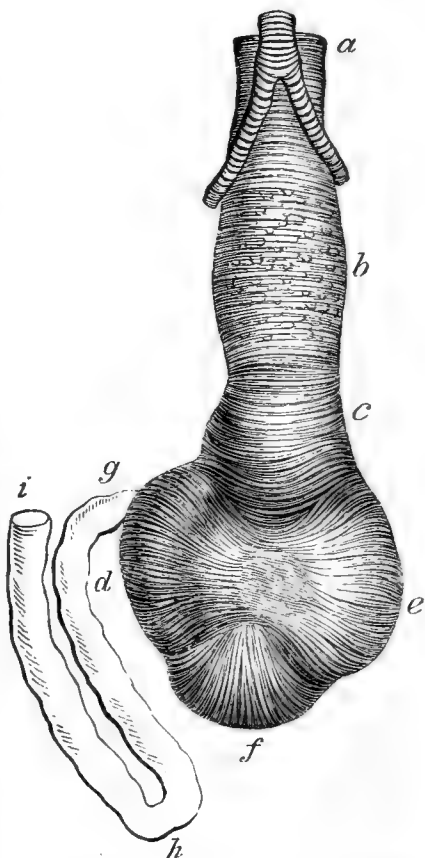
The young in autumn.

Bill greyish-black; feet bluish-grey. The upper parts brownish-black, spotted with white, some of the spots yellow; the wings and tail as in the adult, but the latter tinged with grey, and having eight dark bars on all the feathers. The fore part and sides of the neck, and the sides of the body, greyish-white, mottled with brownish-grey; axillary feathers brownish-black; the rest of the lower parts white.

Adult in winter. Plate CCCXXXIV. Fig. 3.

The adult in winter has the upper parts light greyish-brown, the margins of the feathers much lighter; the sides and fore parts of the neck pale grey, with dark grey streaks and spots; lower parts white. In other respects the colours are as in summer.

In an adult male of this species, there is a double row of papillæ on the roof of the mouth. The tongue is 1 inch long, slender, tapering, emarginate and papillate at the base, grooved above, horny on the back. The œsophagus *a*, is 5 inches long, at its upper part 4 twelfths in diameter, enlarged to $\frac{1}{2}$ inch on the lower part of the neck. The proventriculus, *b*, oblong, its greatest diameter 8 twelfths, its glandules oblong and about a twelfth in length. The stomach, *c, d, e, f*, is a very powerful gizzard of an irregular roundish form, 1 inch 5 twelfths long, 1 inch $3\frac{1}{2}$ twelfths in breadth; its lateral muscles very large and distinct, the right *d*, 4 twelfths thick, the left, *e*, 3 twelfths, the tendons large; the epithelium thick, longitudinally rugous, and of a reddish colour. The intestine *g, h, i*, is 2 feet 2 inches long, its diameter about 2 twelfths; the cœca 2 inches 2 twelfths long, their diameter at the base half a twelfth, toward the end 2 twelfths; the rectum 3 twelfths in diameter, and $2\frac{1}{2}$ inches long.



In the stomach were several shrimps. The lobes of the liver very unequal, the right being $2\frac{1}{4}$ inches in length, the other $1\frac{4}{12}$. No gall-bladder.

The trachea is wide, flattened, membranous, 4 twelfths broad at the upper part, gradually diminishing to 2 twelfths, its rings which are very slender, about 100. The lateral muscles exceedingly thin, but becoming more distinct towards the lower part; the sterno-tracheal slender. Bronchi of moderate length, of about 20 half-rings.

RED-BREASTED SNIPE.*SCOLOPAX NOVEBORACENSIS*, GMEL.

PLATE CCCXXXV. ADULT IN SUMMER AND WINTER.

ON our arrival at the mouths of the Mississippi, on the first of April 1837, I observed large flocks of this species on their way eastward. They were still in their winter plumage, and it was pleasing to see in how short a period that garb was changed, as we had opportunities of observing during our progress. At Grande Terre, on the 4th, several having reddish feathers scattered over their lower parts were procured. On the 13th, at Cayo Island, the change of colour was very considerable in some specimens, which I found to be old birds, while the younger were quite grey above, and white beneath. At Derniere Isle on the 16th, several were shot in as fine plumage as that represented in my plate, and few, even of the younger birds, were without some of the markings peculiar to the summer dress. Their numbers were exceedingly great, and continued without diminution until we reached Galveston Bay in Texas, on the 26th of the same month. How far they proceed beyond that place to spend the winter I am unable to say; but their range over North America is known to be very extensive, as they have been found on the Columbia River on the western coast, on the borders of the great northern lakes, and over the whole extent of the Fur Countries, from the time of their appearance in spring until that of their return southward in autumn.

Although much more abundant along the coast, and in its vicinity, the Red-breasted Snipe is not uncommon in many parts of the interior, especially in autumn, and I have procured many individuals along the muddy margins of lakes, more than three hundred miles in a direct line from the sea. Its migratory movements are performed with uncommon celerity, as many are observed along the coast of New Jersey early in April, and afterwards on the borders of the arctic sea, in time to rear young, and return to our Eastern and Middle Districts before the end of August.

This bird exhibits at times a manner of feeding which appeared to me singular, and which I repeatedly witnessed while at Grande Terre

in Louisiana. While watching their manner of walking and wading along sand-bars and muddy flats, I saw that as long as the water was not deeper than the length of their bills, they probed the ground beneath them precisely in the manner of the American Snipe, *Scolopax Wilsoni*; but when the water reached their bodies, they immersed the head and a portion of the neck, and remained thus sufficiently long to satisfy me that, while in this position, they probed several spots before raising their head to breathe. On such grounds as are yet soft, although not covered with water, they bore holes as deep as the soil will admit, and this with surprising rapidity, occupying but a few moments in one spot, and probing as they advance. I have watched some dozens at this work for half an hour at a time, when I was completely concealed from their view. Godwits, which are also borers, probe the mud or moist earth often in an oblique direction, whilst the Woodcock, the Common Snipe, and the present species, thrust in their bills perpendicularly. The latter bird also seizes many sorts of insects, and at times small fry, as well as the seeds of plants that have dropped into the water. Dr RICHARDSON informs us that "individuals killed on the Saskatchewan plains had the crops filled with leeches and fragments of coleoptera."

The flight of this bird is rapid, strong, and remarkably well-sustained. When rising in large numbers, which they usually do simultaneously, they crowd together, are apt to launch upwards in the air for a while, and after performing several evolutions in contrary directions, glide towards the ground, and wend their way close to it, until finding a suitable place, they alight in a very compact body, and stand for a moment. Sometimes, as if alarmed, they recommence their meandering flight, and after a while return to the same spot, alighting in the same manner. Then is the time when the gunner may carry havoc amongst them; but in two or three minutes they separate and search for food, when you must either put them up to have a good shot, or wait the arrival of another flock at the same place, which often happens, for these birds seldom suffer any of their species to pass without sending them a note of invitation. It is not at all uncommon to shoot twenty or thirty of them at once. I have been present when 127 were killed by discharging three barrels, and have heard of many dozens having been procured at a shot. When wounded and brought to the water, they try in vain to dive, and on reaching the nearest

part of the shore, they usually run a few steps and squat among the grass, when it becomes difficult to find them. Those which have escaped unhurt often remain looking upon their dead companions, sometimes waiting until shot at a second time. When they are fat, they afford good eating, but their flesh is at no time so savoury as that of the common American Snipe.

The cry of this species when on wing is a single and rather mellow *weet*. When on the ground I have heard them emit a continued guttural rolling sound, such as is on certain occasions given out by the species last mentioned. Their call-note resembles the soft and pleasing sound of a whistle; but I have never heard them emit it while travelling. Nothing is known respecting their breeding, and yet there can be little doubt that many of them must rear young within the limits of the Union.

By the Creoles of Louisiana the Red-breasted Snipe is named "Becassine de Mer," as well as "Carouk." In South Carolina it is more abundant in the autumnal months than in spring, when I should think they fly directly across from the Floridas toward Cape Hatteras, as my friend Dr BACHMAN informs me that he never saw one of them in spring in the vicinity of Charleston.

SCOLOPAX NOVEBORACENSIS, *Gmel. Syst. Nat. vol. i. p. 658.—Lath. Ind. Ornith. vol. ii. p. 723:*

SCOLOPAX GRISEA, *Gmel. Syst. Nat. vol. i. p. 658.—Lath. Ind. Ornith. vol. ii. p. 724.—Ch. Bonaparte, Synopsis of Birds of United States, p. 330.*

RED-BREASTED SNIPE, *Wilson, Amer. Ornith. vol. vii. p. 48, pl. 58, fig. 2. Summer.*

SCOLOPAX NOVEBORACENSIS, NEW YORK GODWIT, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 398.*

BROWN OR RED BREASTED SNIPE, *Nuttall, Manual, vol. ii. p. 181.*

Adult Male in summer. Plate CCCXXXV. Fig. 1.

Bill twice as long as the head, subulate, straight, compressed for more than half its length, depressed towards the end. Upper mandible with the dorsal line declinate at the base, then straight, at the end slightly arched, that part being considerably enlarged, the ridge convex, towards the end flattened, the sides with a narrow groove extending to near the tip, the edges soft and obtuse or flattened, the tip narrowed but blunt. Nostrils basal, linear, very small. Lower mandible with the angle extremely long and narrow, the sides nearly erect,

with a longitudinal groove, the edges flattened and directly meeting those of the upper mandible, the extremity enlarged, the tip contracted and rather blunt.

Head rather small, oblong, narrowed anteriorly, the forehead elevated and rounded. Neck rather short. Body rather full. Legs of moderate length, slender; tibia bare below, scutellate before and behind; tarsus with numerous scutella before, smaller ones behind, and reticulated sides; toes very slender, free, with numerous scutella above, flattened and slightly marginate beneath; first very small and elevated, third with its claw scarcely so long as the tarsus, lateral toes nearly equal, the outer connected with the middle by a web. Claws small, slightly arched, compressed, rather acute.

Plumage very soft, blended, rather dense, on the fore part of the head very short. Wings long, narrow, pointed; primaries rather broad, tapering to an obtuse point, the first longest, the rest rapidly graduated; secondaries broad, obliquely terminated, with the inner web projecting beyond the outer; the inner much elongated, one of them reaching to half an inch of the tip of the wing when it is closed. Tail moderate, nearly even, the middle feathers a little longer, of twelve rounded feathers.

Bill dark olive. Iris reddish-hazel. Feet light yellowish-olive, claws black. Upper parts brownish-black, variegated with light brownish-red, the feathers being margined and the scapulars obliquely barred with that colour. Hind part of back, upper tail-coverts and tail-feathers, light reddish-buff, obliquely barred with black, the bars on the tail seven or eight, and its tip white. Wing-coverts and secondaries greyish-brown, margined with greyish-white; the secondary coverts tipped with white, the quills tipped and obliquely banded with the same; alula, primary coverts and quills brownish-black, the shaft of the first quill white. From the base of the bill to the eye, and surrounding it, a dull reddish-white band; loreal space dusky. All the lower parts dull orange-red, with streaks and spots of black, more numerous along the sides, and on the tail-coverts.

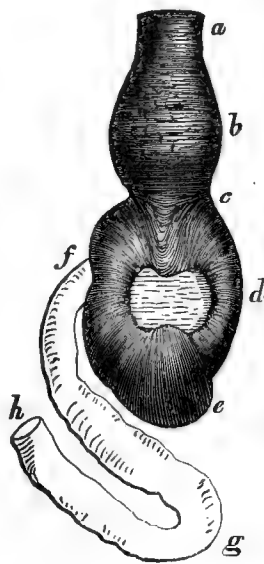
Length to end of tail $10\frac{1}{4}$ inches, to end of wings 10, to end of claws $11\frac{1}{2}$; extent of wings $18\frac{1}{8}$; wing from flexure $6\frac{1}{8}$; tail $2\frac{1}{2}$; bill along the ridge $2\frac{11}{16}$; along the edge of lower mandible $2\frac{1}{8}$; bare part of tibia $\frac{1}{2}$; tarsus $1\frac{21}{16}$; middle toe and claw $1\frac{11}{16}$; hind toe and claw $\frac{31}{16}$; inner toe and claw 1; outer toe and claw $\frac{7}{8}$. Weight $3\frac{1}{4}$ oz.

Adult in Winter. Plate CCCXXXV. Fig. 2.

The bill, iris, and feet as in summer. Upper part of head and hind neck dusky grey, with which the feathers of the fore part of the back, scapulars and wing-coverts are margined, their central parts being brownish-black. A white band from the bill over the eye; margins of eyelids also white. Hind part of back and tail barred with dusky as in summer. Quills as in summer, the inner marked with grey in place of brownish-red. Loral space, cheeks, and sides of the neck, pale grey; throat and lower parts white; the sides, axillary feathers, and lower tail-feathers, barred with dusky; lower wing-coverts dusky, edged with white, and having a central streak of the same. Individuals exhibit great differences in the length of the bills and tarsi.

On the upper mandible internally are three series of minute papillæ, which become larger on the palate. While the upper mandible is flat beneath, the lower is deeply concave, and its crura elastic and capable of being separated near the base to the distance of three-fourths of an inch. The tongue, which is $2\frac{1}{4}$ inches long, and of a slender form, carinate beneath, with the tip pointed, lies in the deep hollow of the lower mandible, and being deeply concave above, leaves a vacant space, by which, when the bill is immersed in the mud and the tips separated, the food passes along. The œsophagus is $4\frac{3}{4}$ inches long, $\frac{1}{4}$ inch in diameter, and nearly uniform. The proventriculus, *a, b, c*, is bulbiform, its diameter 6 twelfths. The stomach, *c, d, e, f*, is an oblong gizzard of moderate strength, with the lateral and inferior muscles decided, the tendons large, its length 1 inch, its breadth 8 twelfths. The epithelium is dense, tough, with numerous longitudinal rugæ, and of a reddish colour. The contents of the stomach were very small hard hemispherical seeds and vegetable fibres. The intestine, *f, g, h*, $19\frac{1}{2}$ inches long, its diameter 3 twelfths in its upper part; the cœca $1\frac{3}{4}$ inch long, and from 1 to 2 twelfths in diameter, with the extremity obtuse.

The trachea is wide, flattened, $3\frac{1}{2}$ inches long, $2\frac{3}{4}$ twelfths broad at the top, gradually diminishing to 2 twelfths; the rings about 130. The contractor muscles are very thin, the sterno-tracheal slender; and there is a pair of inferior laryngeal. The bronchial half rings are about 25.



YELLOW-CROWNED HERON.

ARDEA VIOLACEA, LINN.

PLATE CCCXXXVI. ADULT AND YOUNG.

THE Yellow-crowned Heron, which is one of the handsomest species of its tribe, is called "Cap-cap" by the Creoles of Lower Louisiana, in which country it is watched and shot with great eagerness, on account of the excellence of its flesh. It arrives about New Orleans toward the end of March, and departs in the middle of October. On arriving, they throw themselves among the thickets along the bayous, where they breed. Like the Night Heron, this species may be enticed near by imitating its cries, when it approaches, cutting many curious zigzags in the air, and alights close by. It is a curious circumstance that when passing over several gunners placed on the watch for them, they dive toward the ground if shot at and missed, and this they do several times in succession, according to the number of shots. It is in the evening and at dawn that they are chiefly obtained. They are said not to travel in boisterous weather, or when there is thunder; and I have heard the same stated with regard to the Night Heron.

In some parts of the Southern States, this species is quite abundant, while in the intermediate tracts it is seldom or never met with. Thus, in the Floridas, I found great numbers on a bayou near Halifax River, but afterwards saw none until I reached one of the keys, more than two hundred miles distant, and farther south, where it was breeding in society. The first of these flocks I saw in winter, the other on the 22d of May. Again, while proceeding toward the Texas, we saw a few on an island in Bay Blanche, but met with none afterwards until we reached Galveston Island, where they were plentiful. They seldom advance eastward far beyond North Carolina, and I am not aware of any having been seen farther than New Jersey. On the other hand, they are not generally found on the Mississippi beyond Natchez, although stragglers may sometimes be seen farther up.

This species is by no means entirely nocturnal, for I have seen it searching for food among the roots of mangroves at all hours of the day, and that as assiduously as any diurnal bird, following the margins

of rivers, and seizing on both aquatic and terrestrial animals. Whilst at Galveston, I frequently saw a large flock similarly occupied. When they had satisfied their hunger, they would quietly remove to some safe distance toward the middle of an island, where, standing in a crouching posture on the ground, they presented a very singular appearance. That they are able to see to a considerable distance on fine clear nights, I have no doubt, as I am confident that their migratory movements are usually performed at such times, having seen them, as well as several other species, come down from a considerable height in the air, after sun-rise, for the purpose of resting and procuring food.

The flight of the Yellow-crowned Heron is rather slow, and less protracted than that of the Night Heron, which it however somewhat resembles. When in numbers, and surprised on their perches, they usually rise almost perpendicularly for thirty or forty yards, and then take a particular direction, leading them to some well-known place. Whenever I have started them from the nest, especially on the Florida Keys, they would sneak off on wing quite low, under cover of the mangroves, and fly in this manner until they had performed the circuit of the island, when they would alight close to me, as if to see whether I had taken their eggs or young.

When on the ground, they exhibit little of the elegance displayed by the Louisiana, the Reddish, the Blue, or the White Herons; they advance with a less sedate pace, and seldom extend their neck much even when about to seize their food, which they appear to do with little concern, picking it up from the ground in the manner of a domestic fowl. Nor are they at all delicate in the choice of their viands, but swallow snails, fish, small snakes, crabs, crays, lizards, and leeches, as well as small quadrupeds, and young birds that have fallen from their nests. One which was killed by my friend EDWARD HARRIS, Esq., on the 19th of April 1837, on an island in the Bay of Terre Blanche, about 4 o'clock in the evening, was, when opened next morning, found to have swallowed a terrapin, measuring about an inch and a half in length, by one in breadth. It was still alive, and greatly surprised my companions as well as myself by crawling about when liberated.

This species places its nest either high or low, according to the nature of the place selected for it, and the abundance of food in the neighbourhood. In the interior of swampy woods, in Lower Louisiana, I have found the nests placed on the tops of the loftiest cypresses, and

on low bushes, but seldom so close together as those of many other Herons. On the Florida Keys, where I have examined more of these tenements than in any other part, I found them either on the tops of mangroves, which there seldom attain a greater height than twenty-five feet, or on their lowest branches, and not more than two or three feet from the water. In the Carolinas, they usually resort to swamps, nestling on the bushes along their margins. The nest is similar to that of other Herons, being formed of dry sticks loosely put together, a few weeds, with at times a scanty lining of fibrous roots. The eggs are generally three, never, in as far as I have seen, more, of a pale blue colour, inclining to green, thin-shelled, and averaging two inches in length by an inch and three and a half eighths in their greatest breadth. The young seldom remain in the nest until able to fly, as is the case with those of some other species, but usually leave it to follow their parents along the shores. If scared from the nest, they scramble along the branches with considerable agility, and hide whenever an opportunity occurs. I have given the figure of a young bird procured in October.

The differences between the periods at which this bird breeds in different latitudes, correspond with those observed with respect to other species of the same tribe. Thus, eggs and young may be procured on the Florida Keys six weeks sooner than in South Carolina, although two broods are usually raised in both districts, the birds frequently removing from one place to another for the purpose. The beautiful slender plumes on the head and back generally fall off soon after incubation commences, although I have on a few occasions found the male still bearing these ornaments when the female was sitting on her second set of eggs. When the young are just able to fly I have found them good eating, but the old birds I never relished.

When wounded, the Yellow-crowned Heron defends itself vigorously with its claws, the scratches inflicted by which are severe, and also strikes with the bill. If not brought to the ground, in a place where the trees are close and thickly branched, it is difficult to obtain them without a second shot, for they scamper quickly from one twig to another, and are very soon out of reach.

WILSON complains that the name "Yellow-crowned" should be given to this species, and this would almost induce me to suppose that he had never seen one in the breeding season, when the white of the

head is strongly tinged with yellow, which however disappears at the approach of autumn, when the bird might with all propriety be named the White-crowned Heron.

The adult bird represented in the plate was shot by my friend Dr BACHMAN, a few miles from Charleston, while I was in his company ; and the drawing of the plant was made by his amiable sister-in-law, MISS MARTIN.

ARDEA VIOLACEA, *Linn. Syst. Nat.* vol. i. p. 268.—*Lath. Ind. Ornith.* vol. ii. p. 690.

—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 306.

YELLOW-CROWNED HERON, ARDEA VIOLACEA, *Wils. Amer. Ornith.* vol. viii. p. 26, pl. 65, fig. 1. Adult.

WHITE-CROWNED HERON, *Nuttall, Manual*, vol. ii. p. 52.

Adult Male in spring plumage. Plate CCCXXXVI. Fig. 1.

Bill a little longer than the head, strong, straight, moderately compressed, tapering. Upper mandible with the dorsal line slightly arched and declinate, the ridge broad, convex, the sides bulging, the edges sharp and overlapping, the tip slender, with a distinct notch. Nasal depression wide, with a broad shallow groove extending towards the end of the mandible ; nostrils basal, oblong, pervious. Lower mandible with the angle very long and narrow, the dorsal line straight and sloping upwards, the sides sloping outwards and flat, the edges sharp, obscurely serrulate, the tip slender.

Head large, oblong, compressed. Eyes large. Neck long. Body slender, much compressed. Feet long, moderately stout ; tibia bare at its lower part, with reticular angular scales ; tarsus covered anteriorly for more than half its length with scutella, over the rest of its extent with angular scales ; toes long and rather slender, with numerous scutella above, flat beneath, marginate ; hind toe stout, fourth a little longer than second, third much longer. Claws of moderate size, arched, compressed, acute, that of middle toe beautifully pectinate on the inner edge.

Plumage loose, soft, and blended ; feathers on the upper part of the head lanceolate and acuminate, those on the occiput very long, linear, forming a pendant crest, which however is capable of being erected ; or the sides of the neck oblong, and directed obliquely backwards ; on the fore part of the back ovate-oblong ; on the lower part generally very long and loose. Between the scapulæ are two longitudinal series of

very elongated feathers, with loose margins, the longest extending far beyond the end of the tail. Wings long, of great breadth, rounded; the primaries broad and rounded, the third longest, the second and fourth nearly equal, the first half an inch shorter than the longest, the rest slowly graduated; secondaries very broad, rounded, the inner elongated, some of them nearly as long as the outer primaries when the wing is closed. Tail short, even, of twelve broad, rounded feathers.

Bill black. Iris reddish-orange; margins of eyelids and bare space in front of the eye, dull yellowish-green. Tibia, upper part of the tarsus, its hind part, and the soles, bright yellow; the scutella and scales, the fore part of the tarsus, the toes, and the claws, black. Upper part of the head pale reddish-yellow in front, white behind, of which colour are most of the elongated crest feathers, as well as an oblong patch extending from the corner of the mouth, beneath, to behind the ear. The rest of the head, and a small portion of the neck all round, bluish-black; that colour extending nearly half-way down the neck behind. The rest of the neck all round, as well as the upper and lower surface of the body, light greyish-blue; the feathers of the fore part of the back, and wings, having their central parts bluish-black, which is also the case with the elongated loose feathers, the dark part margined with bluish-white. Alular, primary coverts, and primary quills, dark bluish-grey; secondaries and tail-feathers of a lighter tint.

Length to end of tail $23\frac{1}{2}$ inches, to end of wings 25, to end of loose feathers 30, to end of claws $30\frac{1}{4}$, to carpal joint $12\frac{1}{4}$; extent of wings $43\frac{1}{2}$; bill along the ridge $2\frac{7}{8}$, along the edge of lower mandible 4; width of gape $1\frac{1}{4}$; depth of bill at base $7\frac{1}{8}$; wing from flexure $12\frac{1}{2}$; bare part of tibia $2\frac{1}{4}$; tarsus $4\frac{1}{8}$; middle toe $2\frac{1}{2}$, its claw $\frac{5}{8}$; outer toe $1\frac{7}{8}$, its claw $\frac{2}{8}$; inner toe $1\frac{3}{4}$, its claw $\frac{2}{8}$; hind toe 1, its claw $\frac{3}{8}$; tail 5. Weight 1 lb. 9 oz.

The Female resembles the male, but is somewhat smaller.

The Young in October. Plate CCCXXXVI. Fig. 2.

Bill greenish-black, the lower and basal part of the lower mandible greenish-yellow, as are the eyelids and bare space before the eye. Iris pale orange. Legs and feet dull yellowish-green, the scutella and scales in front, as well as the claws, dusky. Upper part of head and hind neck, black, longitudinally marked with somewhat triangular elongated white spots; sides of the head and neck pale dull yellowish-

brown, streaked with darker; the upper parts light grey tinged with brown, the feathers edged with yellowish-white, and tipped with a triangular spot of the same; the primaries and their coverts with the tail darker, margined with dull white. The fore part of the neck, and all the lower parts, dull yellowish-grey, each feather with its central part dark greyish-brown; lower tail-coverts unspotted.

Length to end of tail $23\frac{1}{2}$, to end of claws $29\frac{1}{2}$; extent of wings 40. Weight 1 lb. 7 oz.

Adult Male from South Carolina.

The upper mandible is slightly concave, with a median prominent ridge, the palate convex with two ridges; the posterior aperture of the nares linear, with an oblique papillate flap on each side; the lower mandible deeply concave. The tongue is of moderate length, measuring $1\frac{3}{4}$ inch, emarginate at the base, trigonal, flat above, tapering to a point. The œsophagus, which is 12 inches long, gradually diminishes in diameter from $1\frac{1}{2}$ inch to 1 inch. The proventriculus is $1\frac{1}{2}$ inch long, its glandules cylindrical, forming a complete belt, the largest 3 twelfths long. The stomach is roundish, 2 inches in diameter, compressed; its muscular coat thin, and composed of large fasciculi; its tendinous spaces nearly 1 inch in diameter; its inner coat even, soft, and destitute of epithelium. There is a small roundish pyloric lobe, 4 twelfths in diameter; the aperture of the pylorus is extremely small, having a diameter of only half a twelfth. The intestine is long and very slender, 6 feet 3 inches in length, its diameter at the upper part 3 twelfths; diminishing to $2\frac{1}{4}$ twelfths, for about a foot from the extremity enlarged to 5 eighths; the rectum $6\frac{1}{4}$ inches long; the cœcum 5 twelfths long, $1\frac{1}{2}$ twelfth in diameter at the base, tapering to 1 twelfth, the extremity rounded. The stomach contained fragments of crustacea.

The trachea is $8\frac{1}{2}$ inches long, cylindrical; the rings 154, and ossified; its diameter at the top $5\frac{1}{2}$ twelfths, diminishing in the space of an inch and a half to 3 twelfths, and so continuing nearly to the end, when it contracts to $2\frac{1}{2}$ twelfths. The last rings are much extended, and divided into two portions, the last transverse half ring arched, and 5 twelfths in length. The bronchi are in consequence very wide at the top, gradually taper, and are composed of about 25 half rings. The contractor muscles are very feeble; the sterno-tracheal slender; a pair of inferior laryngeal muscles inserted into the first bronchial ring.

AMERICAN BITTERN,

ARDEA MINOR, WILS.

PLATE CCCXXXVII. MALE AND FEMALE.

It never was my fortune to have a good opportunity of observing all the habits of this very remarkable bird, which in many respects differs from most other Herons. It is a winter resident in the Peninsula of the Floridas, as well as many of the keys or islets which border its shores. But the greater number of individuals which pass over the United States, on their way northward, in March, come from places beyond our southern limits. During my residence in Kentucky, I never saw or heard of the occurrence of one of them; and although I have killed and assisted in killing a considerable number at various times of the year, I never heard their booming or love-notes; or, if I have, I did not feel assured that the sounds which reached my ears were those of the American Bittern. This may probably appear strange, considering the many years I have spent in searching our swamps, marshes, and woods. Yet true it is that in all my rambles I had not the good fortune to come upon one of these birds sitting on its eggs either among the grass or rushes, or on the branches of low bushes, where, I have been informed, it builds.

In Lower Louisiana, it is called the "Garde Soleil," because they say it will stand on one foot for hours, with its eyes, or one of them at least, fixed on the orb of day, and frequently spread out its wings, in the manner of Cormorants and Vultures, to enjoy the heat, or perhaps the gentle breeze. There it is seldom obtained in spring, but is a regular autumnal visitant, appearing early in October, and frequenting the marshes both of fresh and salt water, where many remain until the beginning of May. It is then common in the markets of New Orleans, where it is bought by the poorer classes to make gombo soup. In almost every other part of the United States it is commonly called the "Indian Pullet," or "Indian Hen."

Although in a particular place, apparently favourable, some dozens of these birds may be found to-day, yet, perhaps, on visiting it to-morrow, you will not find one remaining; and districts resorted to one sea-

son or year, will be found deserted by them the next. That they migrate by night I have always felt assured, but that they are altogether nocturnal is rather uncertain, for in more than half a dozen instances I have surprised them in the act of procuring food in the middle of the day when the sun was shining brightly. That they are extremely timid I well know, for on several occasions, when I have suddenly come upon them, they have stood still from mere terror, until I have knocked them down with an oar or a stick. Yet, when wounded, and their courage is raised, they shew great willingness to defend themselves, and if in the presence of a dog, they never fail to spread out to their full extent the feathers of the neck, leaving its hind part bare, ruffle those of their body, extend their wings, and strike violently at their enemy. When seized they scratch furiously, and endeavour to bite, so that, unless great care be taken, they may inflict severe wounds.

I never saw one of them fly farther than thirty or forty yards at a time; and on such occasions, their movements were so sluggish as to give opportunities of easily shooting them; for they generally rise within a few yards of you, and fly off very slowly in a direct course. Their cries at such times greatly resemble those of the Night and Yellow-crowned Herons.

My friends, Dr BACHMAN and Mr NUTTALL, have both heard the love-notes of this bird. The former says, in a letter to me, "their hoarse croakings, as if their throats were filled with water, were heard on every side;" and the latter states that "instead of the *búmp* or *böomp* of the true Bittern, their call is something like the uncouth syllables of *'pump-áÿ-gáh*, but uttered in the same low, bellowing tone."

Dr BACHMAN procured, on the 29th April 1833, about forty miles from Charleston, individuals, in the ovaries of which he found eggs so large as to induce him to believe that they would have been laid in the course of a single week. Some others which were procured by him and myself within nine miles of Charleston, on the 29th of March, had the eggs extremely small.

While at Passamaquody Bay, at the eastern extremity of the United States, I was assured that this species bred in the vicinity; but I saw none there, or in any of the numerous places examined on my way to Labrador and Newfoundland. In neither of these countries did I meet with a single person who was acquainted with it.

In few other species of maritime or marsh birds have I seen so

much difference of size and weight, even in the same sex. Of about twenty specimens in my possession, scarcely two correspond in the length of the bills, legs, or wings. The plate before you was engraved from a drawing made by my son JOHN WOODHOUSE.

AMERICAN BITTERN, *ARDEA MINOR*, *Wils.* Amer. Ornith. vol. vii. p. 35, pl. 65,
fig. 3.

ARDEA MINOR, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 307.

AMERICAN BITTERN, *Nuttall*, Manual, vol. ii. p. 60.

AMERICAN BITTERN, *ARDEA LENTIGINOSA*, *Richards.* and *Swains.* Fauna Bor.-
Amer. vol. ii. p. 374.

Adult Male. Plate CCCXXXVII. Fig. 1.

Bill longer than the head, moderately stout, straight, compressed, tapering to the point. Upper mandible with its dorsal line straight, towards the end slightly convex and declinate, the ridge broad and rather rounded at the base, gradually narrowed to the middle, then a little enlarged, and again narrowed to the point, the sides bulging, towards the margin erect, the edges sharp, towards the end obscurely serrated, the tip narrow, with a distinct notch or sinus on each side. Nasal groove oblong, with a long depressed line in front; nostrils sub-basal, linear, longitudinal. Lower mandible with the angle very long and extremely narrow, the dorsal line ascending and slightly convex, the sides flattened and sloping outwards, the edges sharp, direct, obscurely serrulate, the tip extremely slender.

Head small, oblong, much compressed. Neck long. Body slender, much compressed. Legs longish, stout; tibia bare for about an inch, reticulated all round, the scales on the hind part larger; tarsus roundish, with numerous large scutella before, reticulated behind with angular scales; toes very long, slender, marginate, the fourth and third connected by a short web, not reaching the second joint of the former; first toe large, second longer than fourth, all covered with numerous large scutella above; claws long, slender, tapering, slightly arched, that of hind toe much larger and more arched.

Eyelids, and a large space before the eye, bare. Plumage loose, soft, and blended; hind part of neck in its whole length, and a large space on the fore part of the breast without feathers, but covered,

those on the neck being directed obliquely backwards. Wings rather short, broad, convex; primaries broad, rounded, the first pointed, shorter than the third, which is slightly exceeded by the second, the rest slowly graduated; secondaries very broad, rounded, the inner elongated so as slightly to exceed the primaries when the wing is closed. Tail very short, rounded, of *ten* feathers.

Bill dull yellowish-green, the ridge of the upper mandible brownish-black, of a lighter tint toward the base. Bare space before the eye brown; eyelids greenish-yellow; iris reddish-yellow. Feet dull yellowish-green; claws wood-brown. Upper part of the head brownish-grey; a streak of pale buff over the eye to behind the ear; a dusky streak from the posterior angle of the eye; the cheek and an oblique band to the middle of the neck light brownish-yellow; beneath which is a dusky brown line from the base of the lower mandible, continuous with a gradually enlarged band of black, which runs along the side of the neck; the upper parts yellowish-brown, patched, mottled, freckled, and barred with dark brown; alula, primary coverts, and most of the quills, deep bluish-grey, approaching to black; the tips of all these feathers light reddish-brown, dotted with bluish-grey. The fore part of the neck white above, yellowish-white beneath, the throat with a middle longitudinal line of yellowish-brown spots; on the rest of the neck each feather with a light brown central mark edged with darker, the rest of the lower parts dull yellowish-white, most of the feathers marked like those on the neck.

Length to end of tail 27 inches, to end of wings $26\frac{1}{2}$, to carpal joint 17, to end of claws $32\frac{3}{4}$; extent of wings 45; wing from flexure $13\frac{1}{4}$; tail $4\frac{3}{8}$; bill along the ridge $3\frac{3}{8}$, along the edge of lower mandible $4\frac{1}{2}$; breadth of mouth 1; depth of bill at base $\frac{3}{4}$; bare part of tibia 1; tarsus $3\frac{5}{8}$; hind toe $1\frac{5}{8}$, its claw $1\frac{1}{2}$; middle toe $3\frac{5}{8}$; its claw 1; outer toe $2\frac{5}{8}$, its claw $\frac{7}{8}$; inner toe $2\frac{1}{4}$, its claw $\frac{7}{8}$. Weight 1 lb. 7 oz.

Female. Plate CCCXXXVII. Fig. 2.

The Female resembles the male, but is somewhat smaller with the colours duller.

Length to end of tail $26\frac{1}{4}$ inches, to end of wings $25\frac{1}{2}$, to end of claws $27\frac{5}{4}$; extent of wings $42\frac{1}{2}$; wing from flexure $12\frac{1}{4}$. Weight 1 lb. 3 oz.

The dimensions of a young male shot in autumn were as follows :

To end of tail 24 inches, to end of wings 24, to end of claws 29 ; extent of wings 26 ; wing from flexure $10\frac{1}{2}$. Weight 1 lb. $1\frac{1}{2}$ oz.

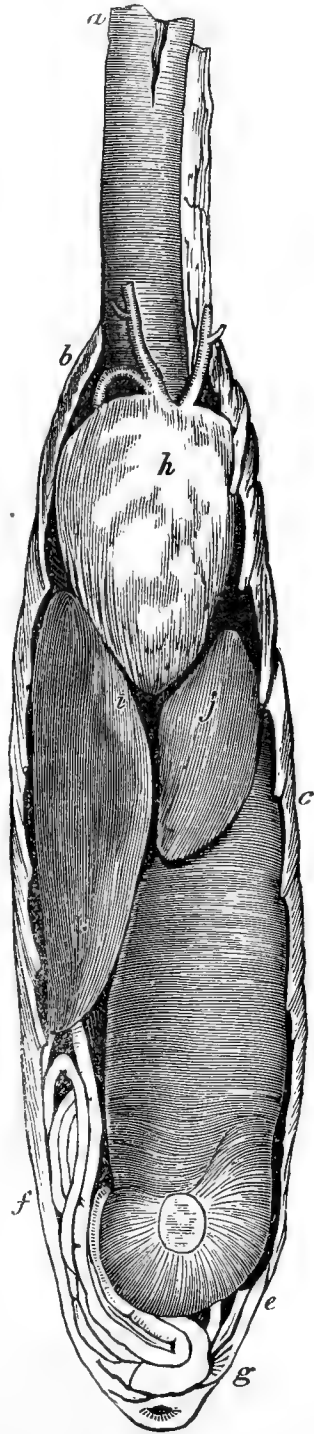
In dissecting this bird, the extreme compression of the body strikes one with surprise, its greatest breadth being scarcely an inch and a half, although it is capable of being much dilated. The great length and thickness of the neck are also remarkable ; but these circumstances are not peculiar to the present species, being equally observed in many other Herons. On the roof of the mouth are three longitudinal ridges ; the aperture of the posterior nares is linear, with an oblique flap on each side ; the lower mandible is deeply concave, its crura elastic and expansile ; the tongue $2\frac{1}{2}$ inches long, sagittate at the base with a single very slender papilla on each side, trigonal, tapering, flattened above ; the width of the mouth is 10 twelfths ; but the pharynx is much wider. The œsophagus, *a b c*, which is fifteen inches long, is very wide, having at its upper part, when inflated, a diameter of 2 inches, but gradually contracting to $\frac{1}{2}$ inch at its entrance into the thorax, and again expanding to 1 inch. Its walls are extremely thin, and when contracted, its mucous coat forms strongly marked longitudinal plaits. The proventriculus is very wide, its glandules oblong and arranged in a belt 10 twelfths in breadth. The stomach, *e*, is of moderate size, membranous, that is with its muscular coat very thin, and not forming lateral muscles ; its tendinous spaces large and round, its inner coat smooth and soft ; its greatest diameter 1 inch. There is a small roundish pyloric lobe, as in other Herons. Both lobes of the liver lie on the right side of the proventriculus ; one, *i*, being 1 inch 10 twelfths, the other, *j*, 1 inch 2 twelfths long ; the gall-bladder large, 11 twelfths long. The intestine is long and very slender, measuring 4 feet 7 inches, with a diameter of only 2 twelfths at its upper part, and $1\frac{1}{2}$ twelfth at the lower, when inflated ; the rectum 4 inches long, and 4 twelfths in diameter, its anterior extremity rounded, and having a minute papilliform termination, only 1 twelfth long.

The trachea, which is $12\frac{1}{2}$ inches long, differs from that of ordinary Herons in being much compressed, especially at its upper and lower extremities ; the middle part being less so. It is also proportionally wider, and its rings are narrower. At the top its diameter is 5 twelfths, at the middle $4\frac{1}{4}$ twelfths, towards the lower part $4\frac{3}{4}$ twelfths, at the

end $4\frac{1}{4}$ twelfths. The rings are osseous, in number 180; the five lower divided in front and behind, and much arched, the last measuring half an inch in a direct line between its extremities. The bronchi are in consequence very broad at their commencement, but gradually taper, and are composed of about 18 half rings. The contractor muscles are inconspicuous, the sterno-tracheal slender; and there is a single pair of inferior laryngeal, going to the first bronchial ring. The aperture of the glottis is 8 twelfths long, without any papillæ, but with a deep groove behind, and two thin-edged flaps.

In the digestive organs of this bird, there is nothing remarkably different from that of other Herons. The stomach contained remains of fishes and large coleopterous insects. The examination of the trachea, bronchi, and lungs, would not lead us to suppose that its cry is of the curious character represented, although it certainly would induce us to believe it different from that of ordinary Herons, which have the trachea narrower, round, and with broader and more bony rings.

Although in external appearance and habits it exhibits some affinity to the Rails, its digestive organs have no resemblance to theirs.



An egg presented by Dr BREWER of Boston measures two inches in length by one inch and a half, and is of a broadly oval shape, rather pointed at the smaller end, and of a uniform dull olivaceous tint.

BREWER'S DUCK.

ANAS BREWERI.

PLATE CCCXXXVIII. MALE.

THE beautiful Duck from which I made the drawing copied on the plate before you, was shot on Lake Barataria, in Louisiana, in February 1822. It was in company with seven or eight Canvass-back Ducks. No other individuals of the species were in sight at the time, and all my efforts to procure another have been ineffectual.

You will see that this curious bird is named in the plate "*Anas glocitans*," the descriptions of that species having induced me to consider it identical with this. But on comparing my drawing with specimens in the Museum of the Zoological Society of London, I found that the former represents a much larger bird, which, besides, is differently coloured in some of its parts. The individual figured was a male; but I have some doubts whether it had acquired the full beauty of its mature plumage, and I considered it at the time as a bird of the preceding season.

In form and proportions this bird is very nearly allied to the Mallard, from which it differs in having the bill considerably narrower, in wanting the recurved feathers of the tail, in having the feet dull yellow in place of orange-red, the speculum more green and duller, without the white bands of that bird, and in the large patch of light red on the side of the head. It may possibly be an accidental variety, or a hybrid between that bird and some other species, perhaps the Gadwall, to which also it bears a great resemblance.

Bill nearly as long as the head, higher than broad at the base, depressed and widened towards the end, rounded at the tip, the lamellæ short and numerous, the unguis obovate, curved, the nasal groove elliptical, the nostrils oblong.

Head of moderate size, oblong, compressed; neck rather long and slender; body full, depressed. Feet short, stout, placed behind the centre of the body; legs bare a little above the joint; tarsus short, a little compressed, anteriorly with small scutella, laterally and behind

with reticulated angular scales. Hind toe very small, with a narrow free membrane; third toe longest, fourth a little shorter; claws small, arched, compressed, acute.

Plumage dense, soft, and elastic; of the hind head and neck short and blended; of the other parts in general broad and rounded. Wings of moderate length, acute; tail short, graduated.

Bill dull yellow, slightly tinged with green, dusky along the ridge. Iris brown. Feet dull yellow, claws dusky, webs dull grey. Head and upper part of the neck deep glossy green; but there is an elongated patch of pale reddish-yellow, extending from the base of the bill over the cheek to two inches and a quarter behind the eye, and meeting that of the other side on the chin; the space immediately over and behind the eye light dull purple. A narrow ring of pale yellowish-red on the middle of the neck; the lower part of the neck dull brownish-red, the feathers with a transverse band of dusky, and edged with paler. The upper parts are dull greyish-brown, transversely undulated with dusky; the smaller wing-coverts without undulations, but each feather with a dusky bar behind another of light dull yellow; first row of smaller coverts tipped with black; primaries and their coverts, light brownish-grey; some of the outer secondaries similar, the next five or six duck-green, the next light grey with a dusky patch toward the end. The rump and upper tail-coverts black, as are the parts under the tail, excepting two longitudinal white bands; tail-feathers light brownish-grey, edged with whitish. All the rest of the lower parts are greyish-white tinged with yellow, beautifully undulated with dusky lines, on the middle of the breast these lines less numerous, and each feather with a reddish-grey central streak.

Length to end of tail 23 inches, to end of claws 24; extent of wings 39; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $2\frac{1}{8}$; tarsus $1\frac{1}{8}$, middle toe 2, its claw $\frac{5}{12}$; hind toe $\frac{3}{8}$, its claw $\frac{1}{8}$. Weight 2 lb. 9 oz.

I have named this Duck after my friend THOMAS M. BREWER of Boston, as a mark of the estimation in which I hold him as an accomplished ornithologist.

LITTLE GUILLEMOT.

✓ *URIA ALLE*, TEMM.

PLATE CCCXXXIX. MALE AND FEMALE.

THIS interesting little bird sometimes makes its appearance on our eastern coasts during very cold and stormy weather. It does not proceed much farther southward than the shores of New Jersey, where it is of very rare occurrence. Now and then some are caught in a state of exhaustion, as I have known to be the case especially in Passamaquody Bay near Eastport in Maine, and in the vicinity of Boston and Salem in Massachusetts.

In the course of my voyages across the Atlantic, I have often observed the Little Guillemots in small groups, rising and flying to short distances at the approach of the ship, or diving close to the bow and re-appearing a little way behind. Now with expanded wings they would flutter and run as it were on the surface of the deep; again, they would seem to be busily engaged in procuring food, which consisted apparently of shrimps, other crustacea, and particles of sea-weeds, all of which I have found in their stomach. I have often thought how easy it would be to catch these tiny wanderers of the ocean with nets thrown expertly from the bow of a boat, for they manifest very little apprehension of danger from the proximity of one, insomuch that I have seen several killed with the oars. Those which were caught alive and placed on the deck, would at first rest a few minutes with their bodies flat, then rise upright and run about briskly, or attempt to fly off, which they sometimes accomplished, when they happened to go in a straight course the whole length of the ship so as to rise easily over the bulwarks. On effecting their escape they would alight on the water and immediately disappear.

During my visit to Labrador and Newfoundland I met with none of these birds, although the cod-fishers assured me that they frequently breed there. I am informed by Dr TOWNSEND that this species is found near the mouth of the Columbia River.

ALCA ALLE, *Linn. Syst. Nat.* vol. i. p. 211.—*Lath. Ind. Ornith.* vol. ii. p. 795.

LITTLE AUK, ALCA ALLE, *Wils. Amer. Ornith.* vol. ix. p. 94, pl. 74, fig. 5.

URIA ALLE, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 425.

LITTLE GUILLEMOT, URIA ALLE, *Richards. and Swains. Faun. Bor.-Amer.* vol. ii. p. 479.

LITTLE AUK, OR SEA DOVE, *Nuttall, Manual*, vol. ii. p. 531.

Adult Male in summer. Plate CCCXXXIX.

Bill shorter than the head, stout, straightish, subpentagonal at the base, compressed towards the end. Upper mandible with the dorsal line convexo-declinate, the ridge convex, the sides sloping, the edges sharp and overlapping, the tip rather obtuse. Nasal depression short and broad; nostrils basal, oblong, with a horny operculum. Lower mandible with the angle long and wide, the dorsal outline very short, ascending, and straight, the sides convex, toward the end ascending and flattened, the edges thin and inclinate, the tip acute, with a sinus behind.

Body full and compact; neck short and thick; head large, ovate. Feet short, rather stout; tibia bare for two-twelfths of an inch; tarsus very short, compressed, covered anteriorly with oblique scutella, behind with angular scales; hind toe wanting; anterior toes connected by reticulated webs, the inner much shorter than the outer, which is almost as long as the middle; the scutella numerous. Claws rather small, moderately arched, compressed, rather acute, that of the middle toe having its inner edge considerably expanded.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries pointed, the first longest, the rest rapidly graduated; secondaries rounded. Tail very short, slightly rounded, of twelve feathers.

Bill black. Iris dark hazel. Feet pale flesh-coloured; webs dusky; claws black. Inside of mouth light yellow. The head, upper part of neck, and all the upper surface, glossy bluish-black. A small spot on the upper eyelid, another on the lower, several longitudinal streaks on the scapulars, and a bar along the tips of the secondary quills, white. The lower parts white; the feathers on the sides under the wings have the outer webs white, the inner dusky; lower wing-coverts blackish-grey.

Length to end of tail $7\frac{1}{8}$ inches, to end of claws $7\frac{7}{8}$, to end of wings $6\frac{7}{8}$, to carpal joint $2\frac{7}{8}$; extent of wings $14\frac{1}{4}$; wing from flexure $4\frac{7}{8}$; bill

along the ridge $\frac{4\frac{1}{2}}{8}$, along the edge of lower mandible 1; tarsus $\frac{3}{4}$; middle toe 1, its claw $\frac{1}{4}$; outer toe 1, claw $\frac{1\frac{1}{2}}{8}$; inner toe $\frac{5}{8}$, its claw $\frac{1\frac{1}{2}}{8}$. Weight $8\frac{1}{2}$ oz.

Adult Female, in winter. Plate CCCXXXIX. Fig. 2.

In winter, the throat and the lower parts of the cheeks are white; the sides and fore part of the neck white, irregularly barred with blackish-grey; the upper parts of a duller black than in summer.

There is nothing very remarkable in the anatomy of this bird, beyond what is observed in the Auks and Guillemots. The ribs extend very far back, and, having the dorsal and sternal portions much elongated, are capable of aiding in giving much enlargement to the body, of which the internal, or thoracic and abdominal cells are very large. The subcutaneous cells are also largely developed, as in many other diving and plunging birds.

The roof of the mouth is flat, broad, and covered with numerous series of short horny papillæ directed backwards. The tongue is large, fleshy, 10 twelfths of an inch long, emarginate at the base, flat above, horny on the back. The heart is large, measuring 10 twelfths in length, $8\frac{1}{2}$ twelfths in breadth. The right lobe of the liver is $1\frac{5}{12}$ inch in length, the left $1\frac{1}{12}$; the gall-bladder is elliptical. The kidneys are very large.

The œsophagus, Fig. 1, *abc*, is 3 inches 10 twelfths long, its walls very thin, its inner or mucous coat thrown into longitudinal plates; its diameter at the middle of the neck 5 eighths, diminishing to 4 twelfths as it enters the thorax. It then enlarges and forms the proventriculus, *ce*, which has a diameter of 8 twelfths; the glandules are cylindrical, very numerous, and arranged in a complete belt, half an inch in breadth, in the usual manner, as seen in Fig. 2, *bc*. The stomach, properly so called, Fig. 1, *dg*, is oblong, 11 twelfths in length, 8 twelfths in breadth; its muscular coat moderately thick, and disposed into two lateral muscles with large tendons; its epithelium, Fig. 2, *cde*, thick, hard, with numerous longitudinal and transverse rugæ, and of a dark reddish colour. The duodenum, *fgh*, curves in the usual manner at the distance of $1\frac{1}{4}$ inch, ascends toward the upper surface of the right lobe of the liver for 1 inch and 10 twelfths, then forms 4 loops, and from above the proventriculus, passes directly backward. The length of the in-

testine, *f g h i*, is $16\frac{1}{2}$ inches, its diameter $2\frac{1}{4}$ twelfths, and nearly uniform as far as the rectum, which is $1\frac{1}{4}$ inch long, at first 3 twelfths in diameter, enlarged into an ovate cloaca of great size, Fig. 3. *b*; the cœca *a, a*, $4\frac{1}{2}$ twelfths long, cylindrical, $\frac{1}{2}$ twelfth in diameter, obtuse.

The trachea, Fig. 1. *k, l*, is very wide, flattened, its rings unossified, its length $2\frac{9}{12}$ inches, its breadth 3 twelfths, nearly uniform, but at the lower part contracted to 2 twelfths. There are 75 rings, with 5 inferior blended rings, which are divided before and behind. The bronchi, Fig. 1. *m, m*, are wide and rather elongated, with about 25 half rings. The contractor muscles are extremely thin, the sterno-tracheal slender; there is a pair of inferior laryngeal attached to the first bronchial rings.

Fig. 1.

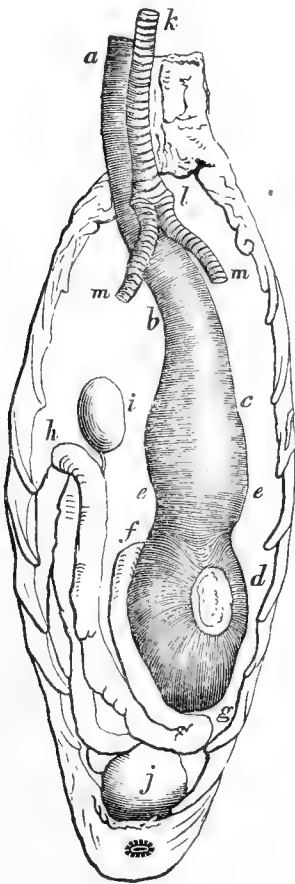


Fig. 2.

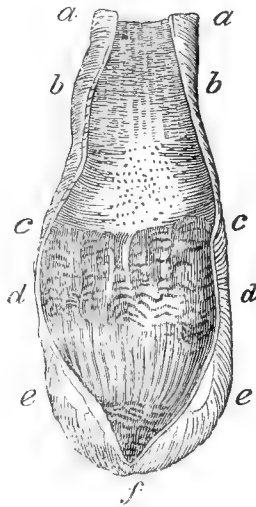


Fig. 3.



The above account of the digestive organs of this bird will be seen to be very different from that given by Sir Everard Home, who has, in all probability, mistaken the species. "There is still," says he, "one

more variety in the structure of the digestive organs of birds, that live principally upon animal food, which has come under my observation ; and with an account of which I shall conclude the present lecture. This bird is the *Alca Alle* of Linnæus, the Little Auk. The termination of the œsophagus is only known by the ending of the cuticular lining, and the beginning of the gastric glands ; for the cardiac cavity is one continued tube, extending considerably lower down in the cavity of the abdomen, and gradually enlarging at the lower part : it then turns up to the right side, about half-way to the origin of the cavity, and is there connected to a small gizzard, the digastric muscle of which is strong, and a small portion of the internal surface on each side has a hard cuticular covering. The gastric glands at the upper part are placed in four distinct longitudinal rows, becoming more and more numerous towards the lower part of the cavity, and extend to the bottom, where it turns up. The extent of the cavity in which the gastric glands are placed, exceeds any thing met with in the other birds that live upon fish ; and the turn which the cavity takes almost directly upwards, and the gizzard being at the highest part instead of the lowest, are peculiarities, as far as I am acquainted, not met with in any other birds of prey. This mechanism, which will be better understood by examining the engraving, makes the obstacles to the food in its passage to the intestines unusually great ; and enables the bird to digest both fishes and sea-worms with crustaceous shells. It appears to be given for the purpose of economizing the food in two different ways,—one retaining it longer in the cardiac cavity, the other supplying that cavity with a greater quantity of gastric liquor than in other birds. This opinion is further confirmed by the habits of life of this particular species of bird, which spends a portion of the year in the frozen regions of Nova Zembla, where the supplies of nourishment must be both scanty and precarious.”

With respect to this statement and the reasonings founded upon it, it will be seen from the description and accompanying figures above, taken directly from nature, and without the least reference to the dissections or theories of any person, that the œsophagus and stomach of the Little Auk or Guillemot, *Alca Alle* of Linnæus, are very similar to those of other Auks, Guillemots, Divers, and fish-eating birds in general. The cardiac or proventricular cavity forms no curve ; and the gizzard with which it is connected, is not small, nor has it merely a small por-

tion of the internal surface on each side covered with a hard cuticular lining; for the epithelium covers its whole surface, and is of considerable extent. The gastric glands are not at all disposed as represented by Sir E. HOME, but are aggregated in the form of a compact belt half an inch broad, Fig. 2. *b, c*. As to the ingenious reasoning by which the economy of the Little Auk is so satisfactorily accounted for, it is enough here to say, that having no foundation, it is of less than no value. But were there such a curvature as that in question, there could be no propriety in supposing that it presented any great obstacle to the passage of the food, or retained it longer than usual. Nor is the statement as to scanty and precarious supply of nourishment correct; for the Arctic Seas, to which this bird resorts in vast numbers, are represented by navigators as abounding in small crustacea, on which chiefly the Little Auk feeds, and that to such an extent as to colour the water for leagues. Besides, if there were such a scarcity of food in Nova Zembla, why should the birds go there? In short, the whole statement is incorrect; and the many compilers, from Dr CARUS to the most recent, who have pressed it into their service, may, in their future editions, with propriety leave it out, and supply its place with something equally ingenious.

The egg of this species measures one inch and nearly five-eighths in length, one inch and an eighth in its greatest breadth. It is remarkably large for the size of the bird, and of a dull uniform pale greenish-blue.

LEAST PETREL.

THALASSIDROMA PELAGICA, LEACH.

PLATE CCCXL. MALE AND FEMALE.

IN August 1830, being becalmed on the banks of Newfoundland, I obtained several individuals of this species from a flock composed chiefly of *Thalassidroma Leachii*, and *Th. Wilsoni*. Their smaller size, and the more rapid motions of their wings, rendered them quite conspicuous, and suggested the idea of their being a new species, although a closer inspection shewed them to belong to the present. In their general manners, while feeding, floating on the water, or rambling round the boat in which I went in pursuit of them, they did not differ materially from the other species. Their flight, however, was more hurried and irregular, and none of them uttered any note or cry, even when wounded and captured. I have been assured that this bird breeds on the sandy beaches of Sable Island on the coast of Nova Scotia; but not having had an opportunity of visiting it, or any other breeding place, I here present you with Mr HEWITSON's observations on this subject.

“ In an excursion,” says this amiable and enterprising naturalist, “ through the Shetland Islands during the present summer, in search of rarities for this work (the British Oology), I had the very great satisfaction of seeing and taking many of these most interesting birds alive; they breed in great numbers on several of the islands, principally upon Foula, the north of Hunst, and upon Papa, and Oxna, two small islands in the Bay of Scalloway; the last of these I visited on the 31st of May in hopes of procuring their eggs (it being the season in which most of the sea-birds begin to lay); but in this I was disappointed; the fishermen who knew them well by the name of Swallows, assured me that my search would be quite useless, that they had not yet “ come up from sea,” and so it proved. Sixteen days after this (June 16th and three following days) I was at Foula, but was alike unsuccessful, the birds had arrived at their breeding places, but had not yet begun laying their eggs; numbers of them were sitting in their holes, and were easily caught; one man brought me about a dozen tied up in an old

stocking, two of which I kept alive in my room for nearly three days, and derived very great pleasure from their company ; during the day they were mostly inactive, and after pacing about the floor for a short time, poking their head into every hole, they hid themselves between the feet of the table and the wall ; I could not prevail upon them to eat any thing, though I tried to tempt them with fish and oil ; their manner of walking is very light and pleasing, and differing from that of every other bird which I have seen ; they carry their body so far forward and so nearly horizontal, as to give them the appearance of being out of equilibrium. In the evening, toward sun-set, they left their hiding places, and for hours afterwards, never ceased in their endeavours to regain their liberty ; flying round and round the room, or fluttering against the windows ; when flying, their length of wing, and white above the tail, gives them a good deal the appearance of our House-Martin. I went to bed and watched them in their noiseless flight long ere I fell asleep, but in the morning they had disappeared : one had fortunately made its escape through a broken pane in the window which a towel should have occupied, the other had fallen into a basin, full of the yolks of eggs which I had been blowing, and was drowned. I regretted much the fate of a being so interesting, by its very remarkable, wandering, solitary, and harmless life. Before leaving Shetland I again visited the island of Oxna, and though so late as the 30th of June, they were only just beginning to lay their eggs. In Foula they breed in the holes in the cliff, at a great height above the sea ; but here under stones which form the beach, at a depth of three or four feet, or more, according to that of the stones ; as they go down to the earth, beneath them, on which to lay their eggs. In walking over the surface, I could hear them, very distinctly, singing in a sort of warbling chatter, a good deal like swallows when fluttering above our chimneys, but harsher ; and in this way, by listening attentively, was guided to their retreat, and, after throwing out stones as large as I could lift on all sides of me, seldom failed in capturing two or three seated on their nests, either under the lowest stone or between two of them. The nests, though of much the same materials as the ground on which they were placed, seem to have been made with care ; they were of small bits of stalks of plants, and pieces of hard dry earth. Like the rest of the genus, the Stormy Petrel lays invariably one egg only. During the day-time they remain within their holes ; and though

the fishermen are constantly passing over their heads (the beach under which they breed being appropriated for the drying of fish), they are then seldom heard, but toward night become extremely querulous ; and when most other birds are gone to rest, issue forth in great numbers, spreading themselves far over the surface of the sea. The fishermen then meet them very numerously ; and though they have not previously seen one, are sure to be surrounded by them upon throwing pieces of fish overboard."

The egg measures one inch and an eighth in length, six and a half eighths in breadth, is nearly equally rounded at both ends, rather thick-shelled, and pure white, but generally with numerous minute dots of dull red at the larger end, sometimes forming a circular band.

PROCELLARIA PELAGICA, *Linn. Syst. Nat.* vol. i. p. 212.—*Lath. Ind. Ornith.* vol. ii. p. 826.

STORMY PETREL, *Nuttall, Manual*, vol. ii. p. 327.

Adult Male. Plate CCCXL. Fig. 1.

Bill shorter than the head, slender, compressed towards the end, straight, with the tips curved. Upper mandible with the nostrils forming a tube at the base, beyond which, for a short space, the dorsal line is nearly straight, then suddenly decurved, the sides declinate, the edges sharp, the tip compressed and acute. Lower mandible with the angle rather long, narrow, and pointed, the dorsal line beyond it very slightly concave and decurved, the sides erect, the edges sharp, the tip slightly decurved.

Head of moderate size, roundish, anteriorly narrowed. Neck short. Body rather slender. Feet of moderate length, very slender ; tibia bare at its lower part ; tarsus very slender, reticulate ; hind toe extremely minute, being reduced, as it were, to a slightly decurved claw ; anterior toes rather long and extremely slender, obscurely scutellate above, connected by striated webs with concave margins. Claws slender, arched, compressed, acute.

Plumage very soft, blended, the feathers distinct only on the wings, which are very long and narrow ; primary quills tapering, but rounded, the second longest, the first three and a half twelfths, the third a twelfth and a half shorter ; secondaries short, the outer incurved, obliquely

rounded. Tail rather long, broad, slightly rounded, of twelve broad rounded feathers.

Bill and feet black. Iris dark brown. The general colour of the upper parts is greyish-black, with a tinge of brown, and moderately glossed; the lower parts of a sooty brown; the secondary coverts margined externally with dull greyish-white; the feathers of the rump and the upper tail-coverts white, with the shafts black, the tail-coverts broadly tipped with black.

Length to end of tail $5\frac{3}{4}$ inches, to end of claws $5\frac{1}{4}$, to end of wings $6\frac{1}{4}$; extent of wings $13\frac{1}{2}$; wing from flexure $5\frac{1}{8}$; tail $2\frac{1}{8}$; bill above $\frac{4\frac{1}{8}}$, along the edge of lower mandible $\frac{5}{8}$; tarsus $\frac{7}{8}$; middle toe and claw $\frac{7}{8}$; outer toe nearly equal; inner toe and claw $\frac{5\frac{1}{8}}$. Weight $4\frac{1}{2}$ drachms; the individual poor.

Adult Female. Plate CCCXL. Fig. 2.

The Female resembles the male.

A male bird, from Nova Scotia, examined. The upper mandible internally has a longitudinal median ridge; the palate is convex, with two lateral ridges. The tongue is $5\frac{1}{2}$ twelfths long, emarginate and serrulate at the base, very much flattened, tapering to a horny point. The heart, Fig. 1, *a*, is of a very elongated narrow conical form, 2 twelfths in length, 4 twelfths in breadth at the base. The lobes of the liver, *b*, *c*, are equal, $6\frac{1}{2}$ twelfths long. The œsophagus, *d*, *e*, is 1 inch 10 twelfths long, of a uniform diameter of $2\frac{1}{2}$ twelfths; behind the liver, it enters as it were a large sac, *f*, *g*, *h*, 9 twelfths of an inch long, which gradually expands to a diameter of 6 twelfths, forming a broad rounded fundus *g*, then curves forwards on the right side, and at *h* terminates in a small gizzard, about 3 twelfths long, and nearly of the same breadth, from the left side of which comes off the intestine. The latter passes forward, curving to the right, behind and in contact with the posterior surfaces of the liver, then forms the duodenal fold, *h*, *j*, *k*, in the usual manner. The intestine, on arriving at the right lobe of the liver, at *k*, receives the biliary duct, curves backward beneath the kidneys, and forms several convolutions, which terminate above the proventriculus. It then becomes much narrower, and passes directly backward, in a straight course to the rectum, which is only 4 twelfths of an inch long. The cœca are oblong, $1\frac{1}{4}$ twelfth in length, and

$\frac{1}{2}$ twelfth in diameter. The intestine is $8\frac{1}{2}$ inches long, its diameter diminishing gradually from 2 twelfths to $\frac{3}{4}$ of a twelfth.

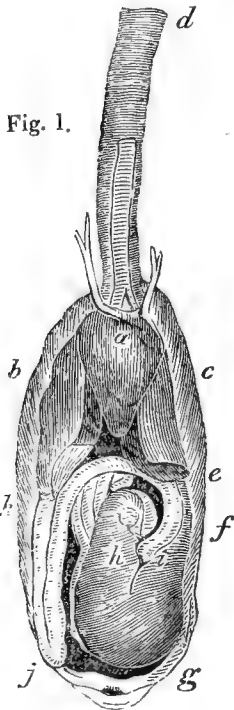


Fig. 1.

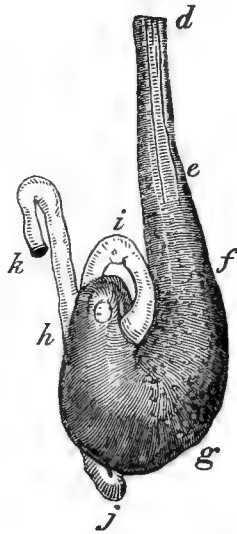


Fig. 2.

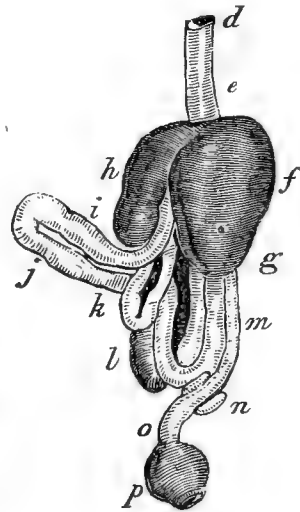


Fig. 3.

In Fig. 2. are represented:—the lower part of the œsophagus, *d, e, f*; the proventricular sac, *f, g, h*; the very small gizzard, *h*; the duodenal fold of the intestine, *i, j, k*. Here the parts are viewed from the left side.

Fig. 3. represents:—the proventricular sac thrust forward, *f, g, h*; the gizzard, *h*; the duodenum, *i, j, k*, pulled to the right side; the convolutions of the intestine, *l, m*, under the kidneys, the cœca, *n*; the rectum, *o*, and the cloaca, *p*.

The proventricular glands are very numerous, but not so closely placed as is usual, although scattered over a much larger extent, from *e* to *g* in Fig. 2. Between the termination of the glands and the stomach or gizzard has its muscular coat thick, its tendons moderate, its inner surface covered with a rather thick but not very hard epithelium, which is more prolonged on two opposite sides, although in the fundus it is complete.

This curious digestive apparatus agrees very nearly with that described and figured by Sir EVERARD HOME as that of *Alca Alle*. The stomach, it is seen, is excessively large in proportion to the size of the

bird ; but why it should be so, and moreover be curved in this manner, is not very obvious. Conjectures are easily made, and might run in this form. This little bird, which wanders over the face of the ocean, subsisting upon garbage, oily and fatty substances, small fishes, and even sea-weeds, requires a large stomach for the reception of its heterogeneous fare, which not being always very nutritious or easily digestible, must be very plentifully intermixed with the gastric juices, and detained a considerable time ; which conditions are accordingly provided for by the very great number and extensive dispersion of the proventricular glandules, and the curve of the organ. Should any hard substances, as crustacea, be introduced, they are pounded by the gizzard ; but as the bird is little addicted to feeding on such substances, that organ is reduced to a very small size.

The aperture of the glottis is $1\frac{1}{2}$ twelfth long. The trachea is 1 inch 7 twelfths in length, wide, flattened, its diameter from 2 twelfths to $1\frac{1}{2}$ twelfth ; its rings unossified, 82 in number. The bronchi are short, wide, of about 12 half rings.

GREAT AUK.

ALCA IMPENNIS, LINN.

PLATE CCCXLI. ADULT.

THE only authentic account of the occurrence of this bird on our coast that I possess, was obtained from MR HENRY HAVELL, brother of my Engraver, who, when on his passage from New York to England, hooked a Great Auk on the banks of Newfoundland, in extremely boisterous weather. On being hauled on board, it was left at liberty on the deck. It walked very awkwardly, often tumbling over, bit every one within reach of its powerful bill, and refused food of all kinds. After continuing several days on board, it was restored to its proper element.

When I was in Labrador, many of the fishermen assured me that the "Penguin," as they name this bird, breeds on a low rocky island to the south-east of Newfoundland, where they destroy great numbers of the young for bait; but as this intelligence came to me when the season was too far advanced, I had no opportunity of ascertaining its accuracy. In Newfoundland, however, I received similar information from several individuals. An old gunner residing on Chelsea Beach, near Boston, told me that he well remembered the time when the Penguins were plentiful about Nahant and some other islands in the Bay.

The egg is very large, measuring five inches in length, and three in its greatest breadth. In form it resembles that of the Common Guillemot; the shell is thick and rather rough to the touch; its colour yellowish-white, with long irregular lines and blotches of brownish-black, more numerous at the larger end.

ALCA IMPENNIS, *Linn. Syst. Nat.* vol. i. p. 210.—*Lath. Ind. Ornith.* vol. ii. p. 791.

GREAT AUK, *Nuttall, Manual*, vol. ii. p. 553.

Adult in Summer. Plate CCCXLI. Figs. 1, 2.

Bill as long as the head, feathered as far as the nostrils, beyond which it is very high, exceedingly compressed, tapering, and slightly

declinate. Upper mandible with the dorsal line straight for an inch and a quarter, then declinate and decurved to the end, the ridge very narrow, broader at the base; the sides nearly flat, with a basal ridge succeeded by a deep groove, then a large flat space, succeeded by eight oblique curved ridges, the edges sharp toward the end, the tip decurved and obtuse. Nostrils marginal, linear, short, pervious, but concealed by the feathers. Lower mandible with the angle long, the sides extremely narrow and linear for half their length, the horny part not being extended over the bone, which is covered with feathers, afterwards deep and compressed, with the dorsal line at first convex, then ascending and concave to the end, the sides flat, with about ten transverse ridges, the edges sharp, the tip deflected.

Head large, oblong, anteriorly narrowed. Eyes rather small. Neck short and thick. Body compact and full. Wings extremely small, but perfectly formed. Feet placed far behind, short, very strong; tarsus short, compressed, anteriorly scutellate, laterally covered with angular scales, those on the hind part very small. Hind toe wanting; third toe longest, outer nearly as long, inner much shorter, lateral toes marginate, all with numerous scutella and several rows of angular scales above, and connected by reticulated webs. Claws rather small, narrow, arched, convex above, and obtuse.

Plumage close, blended, very soft, on the head and neck short and velvety. Wings diminutive, much pointed; the primaries tapering to an acute point, the first longest, the rest rapidly graduated, their coverts long; secondaries short and broad, scarcely longer than their coverts. Tail short, pointed, of *fourteen* feathers.

Bill black, with the grooves between the transverse ridges white. Iris hazel. Feet and claws black. Fore part of the neck below, and all the lower parts white, of which colour also is a large oblong patch before each eye, and the tips of the secondary quills; the rest black, the throat and sides of the neck tinged with chocolate-brown, the wings with greyish-brown, the head, hind neck, and back glossed with olive-green.

Length to end of tail 29 inches, to end of wings $23\frac{3}{4}$, to end of claws $31\frac{1}{2}$, to carpal joint $18\frac{1}{2}$; extent of wings $27\frac{1}{4}$; wing from flexure $7\frac{1}{8}$; tail $2\frac{7}{8}$, bill along the ridge $3\frac{5}{8}$, along the edge of lower mandible $4\frac{1}{2}$, greatest depth of upper mandible 1, depth of lower $\frac{5}{8}$; width of gape $1\frac{7}{8}$; tarsus 2; middle toe $2\frac{5}{8}$, its claw $\frac{5}{8}$; outer toe $2\frac{5}{8}$; its claw $\frac{3}{8}$; inner toe $2\frac{1}{2}$, its claw $\frac{4}{8}$.

GOLDEN-EYE DUCK.*FULIGULA CLANGULA*, BONAP.

PLATE CCCXLII. MALE AND FEMALE.

You have now before you another of our Ducks, which at least equals any of the rest in the extent of its migrations. Braving the blasts of the north, it visits the highest latitudes in spring, and returns at the approach of winter, spreading over the whole country, as if it seemed not to care in what region it spends its time, provided it find abundance of water. Now propelling itself gaily, it may be seen searching the pebbly or rocky bottom of the Ohio, or diving deep in the broad bays of Massachusetts or the Chesapeake. Presently it emerges with a cray-fish or a mussel held firmly in its bill. It shakes its head, and over its flattened back roll the large pearly drops of water, unable to penetrate the surface of its compact and oily plumage. The food is swallowed, and the bird, having already glanced around, suddenly plunges headlong. Happy being! Equally fitted for travelling through the air and the water, and not altogether denied the pleasure of walking on the shore; endowed with a cunning, too, which preserves you from many at least of the attempts of man to destroy you; and instinctively sagacious enough to place your eggs deep in the hollow of a tree, where they are secure from the nocturnal prowler, and, amid the down of your snowy breast, are fostered until the expected young come forth. Then with your own bill you carry your brood to the lake, where under your tender care they grow apace. The winged marauders, rapid as their flight may be, cannot injure you there; for while your young ones sink into the deep waters, you arise on whistling wings, and, swifter than Jer Falcon, speed away.

In South Carolina the Golden-eye is abundant during winter, when it at times frequents the reserves of the rice-planters. I have also met with it on the water-courses of the Floridas at that season. From these countries westward and northward, it may be found in all parts of the Union where the waters are not frozen. It is seldom seen on small ponds entirely surrounded by trees, but prefers open places, and

on the Ohio is generally found in the more rapid parts, on the eddies of which it dives for food.

This species exhibits a degree of cunning which surpasses that of many other Ducks, and yet at times it appears quite careless. When I have been walking, without any object in view, along the banks of the Ohio, between Shippingport and Louisville, I have often seen the Golden-eyes, fishing almost beneath me, when, although I had a gun, they would suffer me to approach within an hundred paces. But at other times, if I crawled or hid myself in any way while advancing towards them, with a wish to fire at them, they would, as if perfectly aware of my intentions, keep at a distance of fully two hundred yards. On the former occasion they would follow their avocations quite unconcernedly ; while on the latter, one of the flock would remain above as if to give intimation of the least appearance of danger. If, in the first instance, I fired my gun at them, they would all dive with the celerity of lightning, but on emerging, would shake their wings as if in defiance. But if far away on the stream, when I fired at them, instead of diving, they would all at once stretch their necks, bend their bodies over the water, and paddle off with their broad webbed feet, until the air would resound with the smart whistling of their wings, and away they would speed, quite out of sight, up the river. In this part of the country, they are generally known by the name of " Whistlers."

I have observed that birds of this species rarely go to the shores to rest until late in the evening, and even then they retire to secluded rocks, slightly elevated above the surface, or to the margins of sand-bars, well protected by surrounding waters. In either case, it is extremely difficult for a man to get near them ; but it is different with the sly **Racoon**, which I have on several occasions surprised in the dawn, feeding on one which it had caught under night. Yet, on some of the bays of our sea-coasts, the Whistlers are easily enticed to alight by the coarsest representations of their figures in wooden floats, and are shot while they pass and repass over the place to assure themselves that what they see is actually a bird of their own kind. This mode is successfully followed in the Bay and Harbour of Boston in Massachusetts, as well as farther to the eastward.

The Golden-eye is rarely if ever seen in the company of any other species than those which are, like itself, expert divers ; such, for example, as the Mergansers, or the Buffel-headed Duck : and it is very rare to

see all the individuals of a flock immersed at once. Sometimes, when suddenly surprised, they immediately dive, and do not rise again until quite out of gun-shot. When wounded, it is next to impossible to catch them; for their power of remaining under water is most surprising, and the sooner one gives up the chase the better.

The Golden-eye Ducks manifest a propensity to adhere to a place which they find productive, and that to a most extraordinary degree. One day, while approaching the shallow fording-place of Canoe Creek, near Henderson, in Kentucky, I observed five Whistlers fishing and swimming about. They allowed me to advance to within a few yards of the shore, when, swimming close together, and shaking their necks, they emitted their rough croaking notes. Not being desirous of shooting them, I slapped my hands smartly together, when in an instant they all went down, but suddenly rose again, and running as it were over the water for about ten yards, took flight, passed and repassed several times over the ford, and alighted on the large branches of a sycamore that hung over the creek, at no greater distance from where I stood than about twenty yards. This was the first time in my life that I had seen Golden-eyes alight on a tree. I waded to the opposite side, and gazed upon them with amazement for several minutes. When on the eve of pursuing my course, one of them, gliding downwards with nearly closed wings, launched upon the water, and at once dived. The other four followed one after another, somewhat in the manner of Pigeons or Starlings, as if to ascertain whether some danger might not still exist. I left them at their avocations, and soon after met a family of country people going to Henderson, one of whom asked me respecting the depth of the ford, to which I replied that the water was low, and added that they should be careful lest some ducks that I had left there might frighten the horses on which the women were. The good folks, with whom I was acquainted, laughed, and we parted.

About four o'clock, as I was returning, with a fine Turkey-cock slung to my back, I met the same party, who told me that, "sure enough," the ducks were at the ford, and I was likely to have "a good crack at them." There they were when I went up, and I forced them to fly off; but as I was proceeding, and not more than fifty yards beyond the creek, I heard their splashings as they again alighted. In the course of a fortnight I visited the place several times, but never missed finding these five ducks there. This led me to inquire as to the cause,

and, having undressed, I waded out barefooted, and examined the bottom, which I found to be composed of rather hard blue clay, full of holes bored by cray-fish. But to make myself quite sure that these creatures formed the attraction to the Ducks, I watched an opportunity, and shot two of the latter, the examination of which satisfied me on the subject.

I had long before this been convinced, that an abundant supply of food afforded a powerful attraction to migrating birds, and on this subject you may remember my remarks in the articles of the Wild Turkey and Passenger Pigeon, in the first volume of this work ; but I had not then, nor have I since, seen so strong an instance of pertinacity in attachment to a particular spot.

The flight of this species is powerful, extremely rapid, and wonderfully protracted. It passes along with a speed equal to that of any of the Duck tribe, and I believe can easily traverse the space of ninety miles in an hour. The whistling of its wings may be distinctly heard when it is more than half a mile distant. This statement may be found to be in contradiction to those of probably every previous writer, for it has been a general opinion, that the greater the extent of wing the more rapid is the flight, which is anything but correct. On flying from the water, they proceed for a considerable distance very low, not rising to any height until they have advanced several hundred yards.

The only nest of the Golden-eye which I have examined, I discovered, on the 15th of June, on the margin of a small creek about eight miles from Green Bay. The female left it, probably to go in search of food, whilst I was sitting under the tree in which it was, thinking more of my peculiar situation than of birds of any kind, for I was almost destitute of ammunition, and bent on returning to my family, then in Louisiana. How exciting are such moments to the ardent observer of Nature ! In an instant, hunger, fatigue, even the thoughts of my beloved wife and children, vanished ; and in a few minutes I was safely lodged on the tree, and thrusting my arm into the cavity of a large broken branch. Nine beautiful, greenish, smooth eggs, almost equally rounded at both ends, were at my disposal. They were laid on some dry grass of the kind that grew on the edges of the creek, and were deeply imbedded in the down of the bird. Not being then aware of the necessity of measuring or keeping eggs, I roasted them on some embers, and finding them truly delicious, soon satisfied my hunger.

While I was eating them, the bird returned, but no male was to be seen. Whether many of these birds breed within the limits of the Union I cannot tell. Dr RICHARDSON says they are abundant in the Fur Countries, and Dr TOWNSEND states, that they are plentiful on the Rocky Mountains and along the north-west coast of America.

Of the changes which the young males undergo, nothing is known beyond the fact, that the young of both sexes resemble the adult female, until the approach of the first spring, when their general migration northward removes them from our observation.

At the approach of spring, I have observed this species swell the throat and the feathers of the head, and emit their rough croaking notes very frequently. The males at this period become very pugnacious, though, after all, they remove northward together, preceding the females for at least a fortnight. They usually spend the autumn and the earlier parts of winter separate from the females. These birds have, like the Goosanders, a habit of shaking their heads violently on emerging from the water. Their flesh is fishy, and in my opinion unfit for being eaten, unless in cases of excessive hunger. The food of this species, while on fresh water, consists of fish of various kinds, mollusca, young frogs, tadpoles, crayfish, and, I believe, some kinds of grass. When on salt water, they feed principally on bivalves and fishes of different species.

ANAS CLANGULA, *Linn. Syst. Nat.* vol. i. p. 201.—*Lath. Ind. Ornith.* vol. ii. p. 867.

Male.

ANAS GLAUCION, *Linn. Syst. Nat.* vol. i. p. 201.—*Lath. Ind. Ornith.* vol. ii. p. 867.

Female and Young.

GOLDEN-EYE, ANAS CLANGULA, *Wils. Amer. Ornith.* vol. viii. p. 62, pl. 67, fig. 6.

FULIGULA CLANGULA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 393.

CLANGULA VULGARIS, COMMON GOLDEN-EYE, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 456.

COMMON GOLDEN-EYE, *Nuttall, Manual*, vol. ii. p. 441.

Adult Male in winter. Plate CCCXLII. Fig. 1.

Bill shorter than the head, deeper than broad at the base, gradually depressed toward the end, which is rounded. Upper mandible with the dorsal line straight and sloping to the middle, then slightly concave, and finally decurved; the ridge broad and rather concave at the base, narrowed between the nostrils, convex towards the end, the frontal

angles long, the sides erect at the base, sloping and convex towards the end, the edges soft, with about fifty lamellæ, the unguis oblong and decurved. Nostrils medial, linear, pervious, nearer the ridge than the margin. Lower mandible flattened, ascending, nearly straight, a little curved at the base, the angle long, rather narrow, the dorsal line very slightly convex, the edges with about fifty lamellæ, the unguis broadly elliptical.

Head large, compressed. Eyes of moderate size. Neck short and thick. Body compact, much depressed. Feet very short, placed far back; tarsus very short, compressed, having anteriorly in its whole length a series of small scutella, and above the outer toe a few broad scales, the rest covered with reticular angular scales. Hind toe very small, with a broad free membrane beneath; anterior toes longer than the tarsus, connected by reticulated membranes, having a sinus on their free margins, the inner with a narrow, lobed, marginal membrane, the outer with a thickened edge, the third and fourth about equal and longest, all covered above with numerous narrow scutella. Claws small, slightly arched, compressed, obtuse, that of first toe very small, of third largest, and with an inner thin edge.

Plumage dense, soft and blended; feathers on the fore part of the head and cheeks very small and rounded, on the upper and hind parts, linear and elongated, as they also are on the lateral and hind parts of the upper neck, so that when raised they give the head a very tumid appearance, which is the more marked that the feathers of the neck beneath are short. Wings small, decurved, pointed; the outer primaries pointed, the first generally longest, the second slightly shorter, in some specimens a little longer, the rest rapidly graduated; the secondaries incurved, obliquely rounded, the inner much elongated. Tail short, graduated, of sixteen feathers.

Bill black. Iris bright yellow. Feet orange-yellow, webs dusky, claws black. Head and upper part of neck deep green, changing to purple in certain lights. Back, posterior scapulars, inner secondaries, edge of wing, alula, primary coverts, primary quills, and four or five outer secondaries, black,—the back being darker and glossy, the wing-feathers tinged with brown. An elliptical patch between the base of the bill and the eye, lower part of neck all round, sides of the body anteriorly, the lower parts generally, the scapulars, excepting their margins, which are black, a large patch on the wing, including many

of the smaller coverts, some of the secondary coverts, and six or seven of the secondary quills, pure white. The basal part of the secondary coverts black. Axillar feathers and lower wing-coverts dusky; the elongated feathers of the sides have the inner, some of them also their outer margins black, that colour in those of the innermost covering the whole inner web. The feathers on the legs, and along the sides of the rump dusky. The tail brownish-grey.

Length to end of tail 20 inches, to end of wings $17\frac{1}{2}$, to end of claws $20\frac{1}{4}$; extent of wings $31\frac{1}{2}$; bill along the ridge $1\frac{5}{8}$, from the angles 2, along the edge of lower mandible $2\frac{5}{12}$; wing from flexure 9; tail $4\frac{1}{2}$; tarsus $1\frac{5}{12}$; hind toe $\frac{6\frac{1}{2}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$; second toe $1\frac{9}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; third toe $2\frac{1}{4}$, its claw $\frac{4\frac{1}{2}}{12}$; fourth toe $2\frac{4}{12}$, its claw $\frac{3}{12}$. Weight 2 lb. $4\frac{1}{2}$ oz.

Of another male, length to end of tail $19\frac{1}{2}$, to end of claws $21\frac{1}{2}$, to end of wings 17; extent of wings 31.

Adult Female. Plate CCCXLII. Fig. 2.

The female is much smaller. Bill dusky, a portion at the end, not however including the unguis, dull yellowish-orange. Eyes and feet as in the male. Head and upper part of neck dull reddish-brown. Lower part of neck and the sides of the body brownish-grey, the feathers margined with pale grey. Upper parts greyish-brown, much darker behind; tail brownish-grey; wings brownish-black, seven of their coverts, excepting at the bases, white, the smaller coverts lighter and tipped with greyish-white; the legs and sides of the rump greyish-brown.

Length to end of tail 16 inches, to end of wings 15, to end of claws $17\frac{1}{4}$; extent of wings 28; wing from flexure $8\frac{1}{2}$; tail $3\frac{1}{4}$; bill along the ridge $1\frac{5}{8}$, from the angles $1\frac{5}{4}$, along the lower mandible $1\frac{5}{8}$; tarsus $1\frac{5}{8}$; hind toe $\frac{5}{8}$, its claw $\frac{1\frac{1}{2}}{8}$; middle toe $2\frac{2\frac{1}{2}}{8}$, its claw $\frac{3}{8}$; outer toe $\frac{1}{8}$ longer; inner toe and claw 2. Weight $1\frac{3}{4}$ lb.

An adult male examined. The tongue is 2 inches long, fleshy, papillate at the base, with two series of lateral filaments, a deep median groove, and a thin semicircular tip, as in many other ducks. The œsophagus is 10 inches long, of moderate diameter, dilated towards the lower part of the neck to $\frac{1}{2}$ inch; its walls very thick; the proventriculus with numerous oblong glandules. The stomach is a large and powerful gizzard, of a roundish form, 2 inches long, and of equal dia-

meter, its lateral muscles very large, and upwards of half an inch thick ; its epithelium rugous. The intestine is 6 feet 1 inch long, its diameter varying from 5 twelfths to 4 twelfths ; the rectum 4 inches long ; the cœca $3\frac{1}{4}$ inches in length, their greatest diameter $2\frac{1}{2}$ twelfths. The contents of the stomach a soft mass of a reddish colour, in which are distinguished small mussels and remains of fishes, with some vegetable fibres.

The trachea is 9 inches long, for 4 inches narrow, its diameter being about $4\frac{1}{2}$ twelfths, and its rings, which are 60 in number, cartilaginous ; it then forms an ovato-oblong expansion, which, when drawn out, is $2\frac{1}{2}$ inches long, and 1 inch in breadth, and is formed of ossified and flattened rings, narrower behind, placed obliquely, and about 30 in number ; it then contracts to a diameter of 5 twelfths, and has 16 free rings, but below this the rings, 25 in number, become united or blended, and gradually expand into a vast irregular cavity, having a broad bony frame in front, membranous behind, and separating to the distance of 1 inch, the bronchi, which are large, the right one much larger and longer than the left, and composed of 20 rings, all of which are almost complete and cartilaginous, excepting the two upper. The rings of the left bronchus, also about 20, are more incomplete.

Now for conjectures. These enormous dilatations are intended for strengthening the voice. But the voice is not strong in this duck, Well, then, they are receptacles of air, to enable the bird to keep longer under water. But the bird does not keep longer under water than many other ducks, and besides, the female, which has no such dilatations, dives as well as the male.

One use at least is this. A comparison of the windpipe of an American Golden-eye, with those of two Scotch ones, shews that the so-called *Clangula Americana*, is in this respect precisely similar to the *Clangula chrysophthalma*. Their digestive organs are also the same ; and American skins compared with European skins, exhibit no differences of the slightest importance. Some individuals, especially males, have much larger bills than others, but this happens in the birds of both countries, and the Golden-eye is not singular in this respect. *Clangula Americana*, therefore, requires a better elucidation than the appendage of a " Nob," before it can be admitted as a species.

RUDDY DUCK.

FULIGULA RUBIDA, BONAP.

PLATE CCCXLIII. MALE, FEMALE, AND YOUNG.

LOOK at this plate, Reader, and tell me whether you ever saw a greater difference between young and old, or between male and female, than is apparent here. You see a fine old male in the livery of the breeding season, put on as it were expressly for the purpose of pleasing the female for a while. The female has never been figured before; nor, I believe, has any representation been given of the young in the autumnal plumage. Besides these, you have here the young male at the approach of spring.

The Ruddy Duck is by no means a rare species in the United States; indeed I consider it quite abundant, especially during the winter months, in the Peninsula of Florida, where I have shot upwards of forty in one morning. In our Eastern Districts they make their appearance early in September, and are then plentiful from Eastport to Boston, in the markets of which, as well as of New York, I have seen them. On the Ohio and Mississippi they arrive about the same period; and I have no doubt that they will be found breeding in all our Western Territories, as soon as attention is paid to such matters as the searching for nests with the view of promoting science, or of domesticating birds which might prove advantageous to the husbandman.

My friend Dr BACHMAN informs me that this species is becoming more abundant every winter in South Carolina. In the month of February he has seen a space of the extent of an acre covered with it. Yet he has never found one in full summer plumage in that country. It is equally fond of salt or brackish and of fresh waters; and thus we find it at times on our sea-coast, bays, and mouths of rivers, as well as on lakes and even small ponds in the interior, or on our salt marshes, provided they are not surrounded by trees, as it cannot rise high in the air unless in an open space of considerable extent. At the time of their arrival, they are seen in small flocks, more than from seven to ten being seldom found together, until they reach the Southern States, where they congregate in great flocks. When they leave their northern

breeding-grounds, some proceed along the coast, but a greater number along our numerous rivers.

The flight of the Ruddy Duck is rapid, with a whirring sound, occasioned by the concave form of the wings and their somewhat broad ends, the whistling sound produced by other species having more pointed and stiffer quills, not being heard in this, or only in a very slight degree. They rise from the water with considerable difficulty, being obliged to assist themselves with their broad webbed feet, and to run as it were on the surface for several yards, always against the breeze, when it blows smartly. The strength of the muscles of their feet enables them to spring from the ground at once. When they are fairly on wing, they fly in the same manner as most of our travelling ducks, sustain themselves with ease, and are apt to remove to great distances. They alight on the water more heavily than most others that are not equally flattened and short in the body; but they move on that element with ease and grace, swimming deeply immersed, and procuring their food altogether by diving, at which they are extremely expert. They are generally disposed to keep under the lee of shores on all occasions. When swimming without suspicion of danger, they carry the tail elevated almost perpendicularly, and float lightly on the water; but as soon as they are alarmed, they immediately sink deeper, in the manner of the Anhinga, Grebes, and Cormorants, sometimes going out of sight without leaving a ripple on the water. On small ponds they often dive and conceal themselves among the grass along the shore, rather than attempt to escape by flying, to accomplish which with certainty they would require a large open space. I saw this very often when on the plantation of General HERNANDEZ in East Florida. If wounded, they dived and hid in the grass; but, as the ponds there were shallow, and had the bottom rather firm, I often waded out and pursued them. Then it was that I saw the curious manner in which they used their tail when swimming, employing it now as a rudder, and again with a vertical motion; the wings being also slightly opened, and brought into action as well as the feet. They are by no means shy, for I have often waded toward them with my gun until very near them, when I cared not about shooting them, but was on the look-out for a new Rail or Gallinule, along the margin of the ponds. They are often seen in company with Teals, Scaup Ducks, Gadwalls, Shovellers, and Mallards, with all of which they seem to agree.

My opinion that the males of this species lose the brightness of their spring dress before they return to us in autumn, is founded on the occurrence of multitudes of males at that season destitute of the garb in question, and my examination of many for the purpose of determining their sex and ascertaining that they were old birds. In February 1832, I saw immense flocks of Ruddy Ducks about an hundred miles up the St John's in Florida. They would start from the water, as our schooner advanced under sail, patting it with their feet, so as to make a curious and rather loud noise, somewhat resembling the fall of hailstones on the shingles. Their notes are uttered in a rather low tone and very closely resemble those of the female Mallard. They afford good eating when fat and young, and especially when they have been feeding for some weeks on fresh waters, where their food generally consists of the roots and blades of such grasses as spring from the bottom of rivers and ponds, as well as of the seeds of many gramineæ. When on salt marshes, they eat small univalve shells, fiddlers, and young crabs, and on the sea-coast, they devour fry of various sorts. Along with their food, they swallow great quantities of sand or gravel.

At St Augustine, in Florida, I shot a young bird of this species immediately under the walls of the fort. Although wounded severely and with one of its legs broken close to the body, it dived at once. My Newfoundland dog leaped into the water, and on reaching the spot where the bird had disappeared, dived also, and in a few moments came up with the poor thing in his mouth. When the dog approached I observed that the duck had seized his nose with its bill; and when I laid hold of it, it tried to bite me also. I have found this species hard to kill, and when wounded very tenacious of life, swimming and diving at times to the last gasp.

In the Fauna Boreali-Americana, the tail of the Ruddy Duck is said to be composed of sixteen feathers, and in NUTTALL'S Manual of twenty; but the number is eighteen.

RUDDY DUCK, *ANAS RUBIDA*, *Wils. Amer. Ornith.* vol. viii. p. 137, pl. 71, fig. 5. male; pl. 130, fig. 6. young male.

FULIGULA RUBIDA, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 390.

FULIGULA RUBIDA, RUDDY DUCK, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 455.

RUDDY DUCK, *Nuttall, Manual*, vol. ii. p. 426.

Adult Male in summer. Plate CCCXLIII. Fig. 1.

Bill as long as the head, a little higher than broad at the base, depressed and widened toward the end, which is rounded. Dorsal outline straight and declinate to the nostrils, then direct and slightly concave, the sides sloping and concave at the base, broadly convex toward the end, the edges soft, with about forty short erect lamellæ internally on each side, the unguis linear-oblong, suddenly decurved and directed backwards, its lower part transversely expanded and serrulate. Nostrils in an oblong depression covered with skin, medial, rather small, linear-oblong, pervious. Lower mandible flattened, a little recurved, its angle very long and narrow, the laminae about a hundred and forty and extremely small, the unguis oblong.

Head rather large, oblong. Eyes of moderate size. Neck short and thick. Body full, much depressed. Legs short and placed rather far behind; tibia bare for a short space; tarsus very short, compressed, with an anterior series of small scutella, an outer short series going to the fourth toe, the rest reticulated. Hind toe very small, with a free inferior web; anterior toes very long, slender, the middle toe double the length of the tarsus, the outer almost as long, the inner considerably shorter, and having a broad lobed margin; the webs reticulated. Claws rather small, slender, compressed, slightly arched, acute.

Plumage dense, blended, on the upper parts very soft; on the fore part of the head stiffish; on the lower parts with a silky gloss, and stiff, having the extremities broad, and the barbs strong and pointed. Wings very short, of moderate breadth, concave, pointed; primaries tapering, the first longest, obliquely rounded. Tail short, much graduated, of *eighteen* stiff, narrow feathers, of which the shaft is very strong, and runs out in a flattened concave point.

Bill and edges of eyelids greyish-blue. Iris hazel. Feet dull greyish-blue; webs inclining to dusky; claws greyish-brown. Upper part of the head and nape deep bluish-black, that colour running to a point about the middle of the neck; a large white patch on each side of the head, from the bill to behind the ear, narrowed on the throat. Neck all round, and all the upper parts, as well as the sides of the rump, rich glossy brownish-red or chestnut; the lower parts greyish-white, tinged with brown, and marked with transverse interrupted bands of dusky. Wing-coverts, quills, and tail-feathers, blackish-brown.

Length to end of tail $14\frac{3}{4}$ inches, to end of wings $12\frac{1}{2}$, to end of claws 15, to carpal joint $7\frac{1}{4}$; extent of wings $21\frac{1}{2}$; wing from flexure $6\frac{1}{4}$; tail $3\frac{1}{2}$; bill along the ridge $1\frac{5}{8}$, along the edge of lower mandible $1\frac{5}{8}$; tarsus $1\frac{1}{4}$; hind toe and claw $\frac{4\frac{1}{2}}{8}$; inner toe $1\frac{3}{4}$, its claw $\frac{1}{4}$; middle toe $2\frac{3}{8}$, its claw $\frac{3}{8}$; outer toe $2\frac{3}{8}$, its claw $\frac{1}{4}$. Weight $1\frac{3}{4}$ lb. Average measurements of six individuals.

The black on the head of the male is sometimes marked with a few white feathers.

Adult Female in summer. Plate CCCXLIII. Fig. 2.

The plumage presents the same characters as in the male. The bill is of a darker greyish-blue; iris as in the male; feet darker. The top of the head, and all the upper parts, are dark reddish-brown, minutely dotted and undulated with dusky; wings and tail as in the male; lower parts duller than in the male, but similarly marked; the throat, and a band from the base of the upper mandible to beneath the eye, brownish-white.

Male one year old. Plate CCCXLIII. Fig. 3.

Bill, eyes, and feet as in the adult. A similar white patch on the side of the head; upper part of head and hind neck dull blackish-brown; throat and sides of the neck greyish-brown; lower part of neck, dull reddish-brown, waved with dusky; upper parts as in the adult, but of a duller tint; lower parts greyish-white.

Young in December. Plate CCCXLIII. Fig. 4.

Bill dusky; iris hazel; feet yellowish-green, webs dusky. All the upper parts dull reddish-brown tinged with grey, and barred with dusky; wings and tail dark greyish-brown. Cheeks, fore part and sides of neck, and all the lower parts, dull yellowish-white, undulated with dusky; as is the rump above; the lower tail-coverts white.

The tongue of a male is 1 inch 8 twelfths long, and of the same general form as that of the Fuligulæ, but a little more dilated at the end. The œsophagus is $\frac{1}{2}$ inch in diameter until its entrance into the thorax, when it contracts, and again expands to 6 twelfths, to form the proventriculus, of which the glandules are oblong, small, and very numerous, occupying a space of $2\frac{1}{4}$ inches in length. The stomach is a

strong gizzard, of a roundish form, 1 inch $5\frac{1}{12}$ long, $1\frac{1}{2}$ inch broad; its lateral muscles very large, and about 8 twelfths thick; the epithelium confined to two round spaces $\frac{1}{2}$ inch in diameter, opposite the lateral muscles. The intestine is 5 feet $1\frac{1}{2}$ inch long, its diameter varying from 5 twelfths to $3\frac{1}{2}$ twelfths. The rectum is 2 inches $10\frac{1}{12}$ long; the cœca 4 inches $2\frac{1}{12}$, their greatest diameter $2\frac{1}{2}$ twelfths.

In another male, the œsophagus is $7\frac{1}{2}$ inches long; the stomach 1 inch $5\frac{1}{12}$ long, 1 inch $6\frac{1}{12}$ broad; the intestine 5 feet 11 inches long; the rectum $2\frac{3}{4}$ inches; the cœca $4\frac{1}{8}$ inches, their greatest diameter $2\frac{1}{2}$ twelfths.

The trachea is $5\frac{3}{4}$ inches long. The thyroid bone is comparatively large, forming an expansion 7 twelfths long, 5 twelfths broad. At its upper part the trachea has a diameter of 3 twelfths, about the middle enlarges to 4 twelfths, and so continues nearly to the end, when it contracts to 2 twelfths. The last ring is very large, being formed of five or six united rings, of which the last two or three are split; but there is no expansion or tympanum as in other ducks. The muscles are as in the other species of this family. The bronchi are of moderate length, with about 15 half rings.

LONG-LEGGED SANDPIPER.

TRINGA HIMANTOPUS, BONAP.

PLATE CCCXLIV.

I HAVE often spoken of the great differences as to size and colour that are observed in birds of the same species, and which have frequently given rise to mistakes, insomuch that the male, the female, and the young, have been considered as so many distinct species. The Long-legged Sandpiper has been treated in this manner, and has latterly reappeared under the name of *Tringa Douglassii*, in the Fauna Boreali-Americana of my friends RICHARDSON and SWAINSON. BONAPARTE was, in truth, the first who described this bird; and although some differences might be found between his specimen and the *one* described in the work just mentioned, they are trifling compared with those which I have observed between seven or eight individuals all procured from the same flock at a single shot. It is strange that neither BONAPARTE nor SWAINSON have mentioned the sex of their specimen.

On the morning of the 4th of April 1837, while seated among the drift wood that had accumulated on the southern shore of the island of Baratavia, forty miles from the south-west pass of the Mississippi, and occupied in observing some Pelicans, I saw a flock of about thirty Long-legged Sandpipers alight within ten steps of me, near the water. They immediately scattered, following the margin of the retiring and advancing waves, in search of food, which I could see them procure by probing the wet sand in the manner of Curlews, that is, to the full length of their bill, holding it for a short time in the sand, as if engaged in sucking up what they found. In this way they continued feeding on an extended line of shore of about thirty yards, and it was pleasing to see the alacrity with which they simultaneously advanced and retreated, according to the motions of the water. In about three quarters of an hour, during all which time I had watched them with attention, they removed a few yards beyond the highest wash of the waves, huddled close together, and began to plume and cleanse themselves. All of a sudden they ceased their occupation, stood still, and

several of them emitted a sharp *tweet-tweet*, somewhat resembling the notes of *Totanus solitarius*; immediately after which seven birds of the same species passed close to me, and alighted near those which I had already watched. They at once began to feed, and as I thought that the first flock might join them, and that I might lose the opportunity of procuring specimens, in sufficient number, I fired and killed eleven. The rest flew off, and were joined by the second group, the whole flying to windward in a compact body, and emitting every now and then their sharp *tweet, tweet*, until out of sight and hearing.

My son JOHN obtained several of these birds on the same island while they were feeding on the margins of a fresh-water pond; and we saw them on almost every island and bay on our way to the Texas, where we also procured some on Galveston Island.

The flight of these Sandpipers is rapid and regular. They move compactly, and often when about to alight, or after being disturbed, incline their bodies to either side, shewing alternately the upper and lower parts. On foot they move more like Curlews than *Tringas*, they being as it were more sedate in their deportment. At times, on the approach of a person, they squat on the ground, very much in the manner of the Esquimaux Curlew, *Numenius borealis*; and their flesh is as delicate as that of the species just named. In the stomach of several individuals I found small worms, minute shell-fish, and vegetable substances, among which were the hard seeds of plants unknown to me. I suspect that in summer and autumn they feed on small fruits and berries, though of this I have no proof.

Among those which we procured, I found the differences in the colour of the plumage quite as great as in *Scolopax noveboracensis*, some of the younger birds being yet in their winter dress, while the older had already assumed a reddish colour on the cheeks, the top of the head, and the breast. The females were all larger than the males, and differed from each other not only in the markings of the plumage, but also in the length of the bill, to the extent of a quarter of an inch, and of the legs, to a still greater extent. Whether or not this species assumes a uniform reddish tint in the breeding season, such as is observed in the Pigmy Curlew, *Tringa subarquata*, I am unable to say, although I am much inclined to think that it does.

Their passage through the United States is very rapid, both in

spring and autumn, Some few spend the winter in Lower Louisiana, but nearly all proceed southward beyond the Texas.

TRINGA HIMANTOPUS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 316.

TRINGA DOUGLASSII, *Swainson*, DOUGLAS'S SANDPIPER, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. 379.

TRINGA HIMANTOPUS, SLENDER-SHANKS SANDPIPER, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. 380

LONG-LEGGED SANDPIPER, AUDUBON'S STILT SANDPIPER, and DOUGLASS' STILT SANDPIPER, *Nuttall, Manual*, vol. ii. p. 138, 140, 141.

Male in Spring. Plate CCCXLIV. Fig. 1.

Bill much longer than the head, very slender, subcylindrical, very slightly decurved, compressed at the base, the end rather depressed, considerably enlarged. Upper mandible with the dorsal line almost straight, being very slightly decurved towards the end, the ridge narrow, convex, flattened towards the tip, the sides sloping, with a narrow groove extending nearly to the end, the edges rather blunt and soft, the tip decurved. Nostrils basal, linear, pervious. Lower mandible with the angle long and very narrow, the dorsal line straight, towards the end slightly deflected, the sides sloping outwards, with a long narrow groove, the tip a little broader.

Head small, oblong, compressed. Eyes small. Neck rather long. Body slender. Feet long, very slender; tibia bare for an inch; tarsus long, slender, compressed, covered before and behind with numerous small scutella; hind toe very small, the rest of moderate length, slender, the second very slightly longer than the fourth, the third very little longer; short basal webs, running out along the margins, that between the third and fourth toes larger. Claws rather long, very slender, slightly arched, tapering, compressed.

Plumage very soft, blended; the feathers somewhat distinct on the back. Wings very long, pointed; primaries tapering, the first longest, the second slightly shorter, the rest rapidly graduated; outer secondaries slightly incurved, obliquely sinuate on the outer web towards the end, the inner web rounded; inner secondaries very narrow, tapering, reaching to three-fourths of an inch of the longest primary when the wing is closed. Tail of moderate length, nearly even, but with the two middle feathers exceeding the rest by two and a half twelfths of an inch, of twelve narrow, rounded feathers.

Bill black. Iris brown. Feet dull yellowish-green, claws black. The upper parts are brownish-black, the feathers margined with reddish-white, the edges of the scapulars with serriform markings of the same; rump and upper tail-coverts white, transversely barred with dusky; tail light grey, the feathers white at the base and along the middle. Primary quills and their coverts brownish-black, the inner tinged with grey, the shaft of the outer primary white, secondaries brownish-grey, margined with reddish-white, the inner dusky. A broad whitish line over the eye; loreal band dusky; auriculars pale brownish-red; fore part and sides of neck, greyish-white, tinged with red, and longitudinally streaked with dusky; the rest of the lower parts pale reddish-brown, transversely barred with dusky; the middle of the breast and the abdomen without markings. Dimensions of five individuals.

Length to end of tail,	$8\frac{3}{4}$	$8\frac{1}{4}$	$7\frac{3}{4}$	8	$7\frac{1}{2}$
..... wings,	$9\frac{1}{4}$	$8\frac{3}{8}$	$8\frac{1}{4}$	$8\frac{3}{4}$	$8\frac{3}{4}$
..... claws,	$11\frac{1}{4}$	$10\frac{5}{8}$	10	$10\frac{1}{2}$	$10\frac{7}{8}$
Extent of wings,	$16\frac{3}{4}$	16	$15\frac{1}{2}$	17	16
Weight of an individual,	$2\frac{3}{4}$ oz.				

Female. Plate CCCXLIV. Fig. 2.

The female is considerably larger, but otherwise resembles the male. Dimensions of five individuals.

Length to end of tail,	$10\frac{1}{2}$	11	$9\frac{1}{4}$	$10\frac{3}{4}$	$8\frac{1}{2}$
..... wings,	11	$10\frac{3}{4}$	$11\frac{3}{4}$	$11\frac{1}{2}$	$10\frac{1}{8}$
..... claws,	$13\frac{1}{4}$	$12\frac{1}{2}$	$11\frac{1}{2}$	$12\frac{3}{4}$	$11\frac{3}{4}$
Extent of wings,	18	$16\frac{1}{2}$	$16\frac{7}{8}$	$16\frac{1}{2}$	$17\frac{3}{4}$
Weight of two individuals, 4 oz., $3\frac{3}{4}$ oz.					

The winter plumage differs considerably; the bill, iris, and feet, are as above. The upper parts are brownish-grey, the head narrowly streaked with dusky; the rump as in summer; the scapulars plainly margined with whitish; the quills as in summer. The band over the eye lighter, the loreal space grey; the fore part and sides of the neck greyish-white, longitudinally streaked with grey, the sides similar, and with the lower tail-coverts barred with grey, the rest of the lower parts white.

Length to end of tail in a male 9 inches; extent of wings $16\frac{1}{2}$; wing

from flexure $5\frac{1}{4}$; tail $2\frac{4}{12}$; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible $1\frac{7}{12}$; bare part of tibia 1; tarsus $1\frac{7}{12}$; hind toe and claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{9\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

The roof of the mouth is flat, with three rows of papillæ. The tongue is 1 inch $5\frac{1}{12}$ twelfths long, emarginate and papillate at the base, very slender, concave above, tapering to a point. The œsophagus is 4 inches long, very narrow, its diameter $2\frac{1}{12}$ twelfths. The proventriculus is oblong, $7\frac{1}{12}$ twelfths in length, $3\frac{1}{2}$ twelfths in diameter. The stomach is a strong gizzard of a roundish form, compressed, $8\frac{1}{12}$ twelfths long, $7\frac{1}{2}$ twelfths broad; its lateral muscles large, its epithelium very dense, thick, longitudinally rugous, and of a reddish-brown colour. The intestine is $12\frac{1}{2}$ inches long, its anterior part $2\frac{3}{4}$ twelfths in diameter, the hind part $1\frac{1}{2}$ twelfth. The rectum is $1\frac{1}{2}$ inch long; the cœca $11\frac{1}{12}$ twelfths long, $1\frac{1}{12}$ twelfth in diameter, obtuse.

The trachea is 3 inches long, slender, its diameter at the upper part $1\frac{3}{4}$ twelfths, gradually diminishing to the lower part, where it is $1\frac{1}{12}$ twelfth. The rings, about 110 in number, are slender and unossified, the two last divided. The bronchi have about 15 half rings. The contractor muscles are thin, the sterno-tracheal slender; and there is a pair of inferior laryngeal muscles going to the first bronchial rings.

In another individual, the intestine was $13\frac{1}{4}$ inches long, the rectum $1\frac{1}{2}$ inch, the cœca 1 inch.

The contents of the gizzard in both were fragments of shells, small black seeds, and much sand and gravel.

AMERICAN WIDGEON.

ANAS AMERICANA, GMEL.

PLATE CCCXLV. MALE AND FEMALE.

THIS lively and very handsome Duck is abundant during winter at New Orleans, where it is much esteemed on account of the juiciness of its flesh, and is best known by the name of *Zinzin*. In the Western Country, and in most parts of the Eastern and Middle States, it is called the *Bald Pate*. Early in September it enters the United States by their northern extremities, as well as from the Texas; and in both these regions it is now well known to breed in nearly equal numbers. Those which retreat south-westward remain along the coast and in the interior of the Floridas, as well as all that portion of the Gulf of Mexico extending to the mouths of the Mississippi, where they remain until the latter part of April, sometimes even until the middle of May, as they have but a comparatively short journey to perform in order to arrive in Mexico in time to breed. On the coast of the Atlantic they keep in the marshes in company with various species of the same family, being in a manner indifferent as to their associates. During early spring, in Louisiana, they are often seen alighted on extensive plains that have very little water on them.

While advancing along the shores of the Bay of Mexico, in April 1837, I and my party observed this species in considerable numbers; and during the whole of our stay in the Texas, we daily saw and very frequently procured Widgeons. There they were found in ponds of brackish water, as well as in the fresh-water streams. Before we left that country they were all paired, and I was informed by the Honourable M. FISHER, Secretary to the Texian Navy, that a good number of them breed in the maritime districts, along with several other Ducks, and that he annually received many of the young birds. Their manners at this time fully proved the correctness of the statements of all those who spoke to me on this subject. Indeed my opinion is that some of these birds also propagate in certain portions of the most southern districts of the Floridas, and in the Island of Cuba, as I have seen Widgeons in the peninsula in single pairs, in the beginning of May.

Their retrograde movements in spring, like those of other species, depend much upon the temperature or the advance of the season; and those which proceed northward set out on their journey much earlier than those which move in the opposite direction, the former departing from the middle of March to the 20th of April. Their first appearance on the waters of the Ohio takes place late in September or early in October, when they at once throw themselves into the ponds of the interior, and there remain until the waters are closed by ice, scarcely any betaking themselves to the rivers, unless to repose on the sand-bars. They are there, however, less abundant than nearer the sea-coast, and usually associate with Pintails and Teals, but rarely with Mallards or Dusky Ducks. Whilst in those retired ponds of the forest, from one to another of which they roam in quest of food, they are less noisy than most other species, even than the Pintails, and in this respect resemble the Blue-winged Teals, whose notes are feeble and delicate. Those of the Widgeon are a soft whistle somewhat similar to the word *Sweet*, enunciated as if produced by a flute or a hautboy, and in my judgment not at all like the *hew hew* spoken off by WILSON. They are less shy in those retired places than most species, or are to appearance less aware of the danger of allowing the sportsman to approach them.

In feeding they immerse their neck and the anterior part of the body, generally swimming closer together than other Ducks, in consequence of which habits they are easily neared and often shot in great numbers at a single discharge. During their stay in those districts they feed on the roots and seeds of grasses, water-insects, beech-nuts, small fry, and leeches, and are not so delicate as an article of food as those procured in the rice-fields of South Carolina, or in the plantations of Louisiana and Florida. On their return in spring (for in mild winters they remain all the season in Kentucky), they generally continue until the end of April, and usually pair before they depart; which induces me to believe that numbers of them breed within the northern limits of the United States, although I have not heard of any having actually been seen doing so.

On the lakes near New Orleans, as well as on the Chesapeake, they are not unfrequently found in company with the Canvass-back Ducks. WILSON mentions their being partially supplied with food by the industry of the latter; but they manage very well in most parts without such assistance. When in full security, the Bald-pates feed at all

hours of the day; but in thickly inhabited parts of the country, they usually seek for food at night or early in the morning.

The flight of this species is rather swift, well sustained, and accompanied by the whistling sound of the wings usual in birds of this family. They move in flocks of moderate size, and without much care as to the disposition of their ranks, being sometimes extended into a front line, sometimes in single file, frequently mingled confusedly, and flying at a moderate height, whether over the land or over the water. When they are first started, they fly almost perpendicularly, in a hurried and rather irregular manner. They walk prettily and with ease. After heavy falls of rain in our Southern States, they often alight in the corn fields, in company with other Ducks, where the ploughed earth, being quite moist and soft, yields them an abundant supply of worms and insects, as well as grains of corn, pease, and other equally nutritious substances.

Dr RICHARDSON informs us that this species breeds in the woody districts of the Fur Countries, up to their most northern limits, in latitude 80°; and Dr TOWNSEND states that it is abundant on the Columbia River; but he has not furnished me with any account of its breeding, and I have not had an opportunity of observing it during the season of propagation, as I left the Texas without having found a nest or young.

ANAS AMERICANA, *Gmel.* Syst. Nat. vol. i. p. 526.—*Lath.* Ind. Ornith. vol. ii. p. 361.

—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 384.

AMERICAN WIDGEON, ANAS AMERICANA, *Wils.* Amer. Ornith. vol. viii. p. 86, pl. 69, fig. 4.

MARECA AMERICANA, *Stephens*, AMERICAN WIDGEON, *Richards.* and *Swains.* Fauna Boreali-Americana, vol. ii. p. 445.

AMERICAN WIDGEON, *Nuttall*, Manual, vol. ii. p. 339.

Adult Male. Plate CCCXLV. Fig. 1.

Bill nearly as long as the head, deeper than broad at the base, depressed towards the end, the sides nearly parallel, the tip rounded. Upper mandible with the frontal angles short and obtuse, the dorsal line at first sloping, then concave, at the end decurved, the ridge broad and flat at the base, then broadly convex, the edges soft, with about fifty-five internal lamellæ, the unguis obovate, curved abruptly at the end. Nostrils sub-basal, lateral, near the ridge, oblong, pervious.

Lower mandible flattened, its angle very long and rather narrow, the dorsal line very short, slightly convex, the edges soft, with about seventy lamellæ.

Head of moderate size, oblong, compressed. Neck rather long, slender. Body elongated and slightly depressed. Feet very short; tibia bare for about a quarter of an inch; tarsus very short, compressed, anteriorly with two series of scutella, the outer shorter, the rest covered with reticulated angular scales; toes obliquely scutellate above; first very small, free, with a narrow membrane beneath; third longest, fourth considerably shorter, second shorter than fourth; their connecting webs entire, on the edge crenate; the second or inner toe with a membranous margin. Claws small, slightly arched, compressed, rather acute; the hind one very small and more curved, that of the middle toe curved outwards, and having the inner edge dilated.

Plumage dense, soft, blended. Feathers of the head and upper neck oblong, small, those along the crown and occiput longer; of the lower parts ovate, glossy, with the extremities of the filaments stiffish. Wings rather long, little curved, narrow, pointed; the first quill longest, the next scarcely shorter, the rest rapidly graduated; secondaries very short, broad, obliquely rounded; the inner elongated and tapering; the tips of the filaments of the outer web of the first primary are separated and curved a little outwards. Tail short, rounded and pointed, of sixteen feathers, of which the middle pair are more pointed and project considerably.

Bill light greyish-blue, with the extremity including the unguis, and a portion of the margins, black. Iris hazel. Feet light bluish-grey, the webs darker, the claws dusky. The upper part of the head is white, more or less mottled with dusky on its sides; the loreal space and cheeks reddish-white, dotted with greenish-black; a broad band from the eye to behind the occiput deep green. The lower part of the hind neck, the scapulars, and the fore part of the back, are minutely transversely undulated with brownish-black and light brownish-red; the hind part similarly undulated with blackish-brown and greyish-white. The smaller wing-coverts are brownish-grey; the primary quills and coverts dark greyish-brown; the secondary coverts white, tipped with black. The speculum is duck-green anteriorly, bounded by the black tips of the secondary coverts, black behind, internally black with white streaks, the inner elongated secondaries having their

outer webs black, margined with white, their inner webs brownish-grey. The tail-feathers are light brownish-grey. The throat is brownish-black; the lower part of the neck in front, and the fore part of the breast, light brownish-red; the breast, belly, and sides of the rump, white; the sides of the body finely undulated with white and dusky; the rump beneath and the lower tail-coverts black.

Length to end of tail $20\frac{1}{2}$ inches, to end of claws 21; extent of wings $34\frac{1}{2}$; bill to frontal processes $1\frac{7}{12}$, along the edge of lower mandible $1\frac{7}{12}$; wing from flexure 11; tail $4\frac{1}{2}$; tarsus $1\frac{7}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{2}{12}$, middle toe $1\frac{8}{12}$, its claw $\frac{4}{12}$. Weight 1 lb. 14 oz.

Adult Female. Plate CCCXLV. Fig. 2.

The female is considerably smaller. The bill, feet, and iris are coloured as in the male. The head and upper part of the neck all round, are white or reddish-white, longitudinally streaked with brownish-black, the top of the head transversely barred; the lower part of the neck in front and behind, the fore part of the back, and the scapulars, are blackish-brown, the feathers broadly margined with brownish-red, and barred with the same, the bars on the back narrow; the hind part of the back dusky; the upper tail-coverts barred with white. The wings are greyish-brown; the secondary coverts tipped with white; the secondary quills are brownish-black, the inner greyish-brown, all margined with white. The tail-feathers are greyish-brown, margined with white. All the lower parts are white, excepting the feathers of the sides, and under the tail, which are broadly barred with dusky and light reddish-brown.

Length to end of tail 18 inches, to end of claws $19\frac{1}{2}$; extent of wings 30; bill along the ridge $1\frac{6}{12}$; wing from flexure $9\frac{8}{12}$; tail $3\frac{9}{12}$; tarsus $1\frac{6}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{3}{12}$. Weight 1 lb. 5 oz.

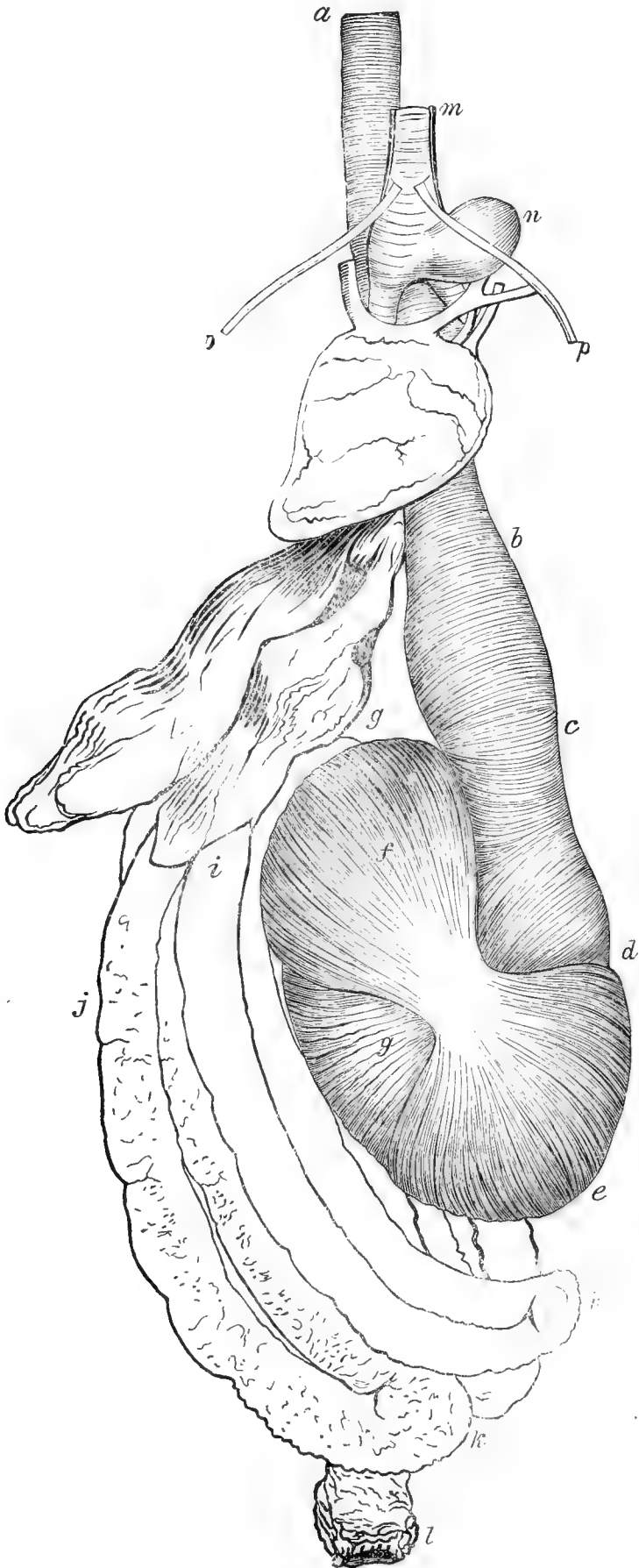
A very great diversity of colouring exists in this species, which, however, is not yet properly understood. Although males are often found as described above, and as represented in the plate, others have a very different appearance. Thus, an individual shot at the mouth of the Mississippi, in the beginning of April 1837, has the head and neck brownish-orange, the feathers all minutely tipped with dark green, the lower fore neck lilac; all the upper parts finely undulated with white and dusky, as are the sides; the wing-coverts light brownish-

grey; the other parts as described above, but the upper tail-coverts black at the end. In some individuals the top of the head is reddish-white, in others light red, in others pure white; in some, most of the smaller wing-coverts are white, in others grey or brownish-grey; in some the throat is whitish, in others black. These differences, no doubt, depend upon age and season.

The American Widgeon has been considered distinct from the European; not on account of any difference in size or form, or texture of plumage, but because it has in certain stages a green band on the side of the head, which the European bird is said not to have. The mirror is the same in both; the wing-coverts are white or grey in both; the crown is white, or cream-coloured, or orange-brown, in both; but in the European the head and neck are described as reddish-chestnut, and in the American as yellowish-white. Now, in fact, American birds sometimes have the head and neck red, and European Birds sometimes have the green streak on the side of the head. In short, on comparing specimens from America, with others from India and Norway, I cannot perceive any essential difference. At the same time, not having traced our Widgeon through all its gradations, and being equally unacquainted with all those of the European and Asiatic Widgeon, I cannot *positively* affirm that *Anas Americana* is identical with *Anas Penelope*.

A male preserved in spirits presents the following characters.

The roof of the mouth is deeply concave, with a median prominent line, and numerous irregular small tubercles on the sides, with several larger ones at the fore part. Two large branches of the supra-maxillary nerve run in this ridge, as in other ducks. The tongue is 1 inch 5 twelfths long, with numerous straight, pointed papillæ at the base, a median longitudinal groove, and a thin broadly rounded point. The œsophagus, *a b c d*, is 10 inches long, narrow, dilating a little on the lower part of the neck, where its diameter is $\frac{1}{2}$ inch. The proventriculus, *b c*, is 8 twelfths broad; its glands oblong, 2 twelfths in length, and occupying a belt 1 inch 4 twelfths in breadth. The gizzard, *e f g*, is extremely large, of a nearly regular elliptical form, placed obliquely, its length 1 inch 8 twelfths, its breadth $2\frac{1}{2}$ inches; its lateral muscles extremely large, the left, *e*, 1 inch 2 twelfths in thickness, the other, *f*, 1 inch and 1 twelfth; the inferior muscle, *g*, only 1 twelfth. In the



œsophagus are contained slender leaves of grasses ; in the gizzard some of these leaves and other vegetable matters, small seeds, and a great quantity of sand. The cuticular lining or epithelium is dense, slightly rugous, much thickened on the spaces opposite the middle of the lateral muscles. The duodenum, *g h i*, is $5\frac{1}{2}$ inches in its first curve, *g h*, and is then reflected for 7 inches, passes backwards under the kidneys and forms several convolutions. The intestine, *g h i j k l*, is 6 feet 2 inches long, $\frac{1}{2}$ inch in diameter in its duodenal portion, gradually contracts to 4 twelfths at the distance of 18 inches from the pylorus, again enlarges to 5 twelfths, and near the rectum to 7 twelfths. The rectum is $4\frac{1}{2}$ inches long ; the cœca 9 inches, their diameter for nearly 2 inches being 2 twelfths, after which they are enlarged, their greatest diameter being 4 twelfths. The liver is large, the right lobe being $3\frac{1}{2}$ inches long, the left $2\frac{1}{2}$.

The trachea, *m*, is $7\frac{1}{2}$ inches long, of moderate diameter, the rings roundish and ossified, about 140 in number, its breadth at the top $4\frac{1}{2}$ twelfths, gradually diminishing to 3 twelfths. At the lower part several of the rings are united so as to form an irregular dilatation, bulging out into a rounded sac, *n*, on the left side, its greatest diameter being 10 twelfths. The bronchi are of moderate length, wide, with about 25 half rings. The contractor muscles are rather strong ; and besides the sterno-tracheals, *o*, *p*, there is a pair of cleido-tracheals.

In a female, the gizzard is 2 inches in its greatest diameter ; the intestine is 5 feet 2 inches long. The contents of the œsophagus and stomach as in the male.

BLACK-THROATED DIVER.

COLYMBUS ARCTICUS, LINN.

PLATE CCCXLVI. MALE, FEMALE, AND YOUNG.

ONE of the most remarkable circumstances relative to this beautiful bird, which is intermediate between the Red-throated Diver and the Loon, is the extraordinary extent to which the wanderings of the young are carried in autumn and winter. It breeds in the remote regions of the north, from which many of the old birds, it would seem, do not remove far, while the young, as soon as they are able to travel, take to wing and disperse, spreading not only over the greater part of the United States, but beyond their south-western limits. In the Texas I saw individuals of this species as late as the middle of April 1837; and I find it enumerated in a list of the birds observed by my young friend Dr J. K. TOWNSEND on the Columbia River, where he also met with *Colymbus glacialis*. Its ramblings over a considerable portion of northern and eastern Europe have equally been noted, and it has been found breeding in the extreme north of Scotland.

For many years I knew the young of this bird only by the name "Imber Diver," applied by BEWICK to that of another species, and now have pleasure in looking upon a drawing of mine, made about thirty years ago, with that appellation attached to it. Very few old birds in full plumage have been procured within the limits of the United States, and none in as far as I know, farther south than the Capes of Delaware.

No sooner has the foliage of the trees that border our western waters begun to drop and float on the gentle current of the fair Ohio, than the Black-throated Diver makes its appearance there, moving slowly with the stream. The Mississippi, Missouri, and their tributaries, are at the same period supplied with these birds. Along our eastern and southern shores they are seen from the end of autumn until spring.

Whilst in Labrador, I saw a few pairs courting on wing, much in the manner of the Red-throated Diver; but all our exertions failed to procure any of the nests, which I therefore think must have been placed farther inland than those of the Loon or Red-throated Diver. I ob-

served however, that in their general habits they greatly resemble those species, for on alighting on the water, they at once immerse their bills, as if for the purpose of ascertaining whether it yields a supply of suitable food, and afterwards raise themselves and beat their wings.

This species has almost as powerful a flight as the Great Northern Diver or Loon, and I think shoots through the air with even greater velocity. When flying it moves its wings rapidly and continuously, and has the neck and feet stretched out to their full length. I well recollect that while I was standing near the shore of a large inlet in South Carolina, one of these birds, being shot while passing over my head at full speed, did not, on account of the impetus, reach the ground until upwards of twenty yards beyond me. They are equally expert at diving, and fully as much so in eluding the pursuit of their enemies when wounded. I saw my friend Mr HARRIS bring down one from on wing, on which NAPOLEON COSTE, and WILLIAM TAYLOR, Captains of the Revenue Cutter and Tender of which we had the use, paddled in pursuit of it in a light canoe; but, although they advanced with all the address of Indians, they proved unsuccessful, for after following it both in the Bay of Cayo Island, and in the Bay of Mexico, for nearly an hour, they were obliged to return without it, having found it apparently not in the least fatigued, although it had dived sufficiently often to travel above two miles, shifting its course at each immersion. It is curious to observe how carefully these birds avoid the danger of sudden storms or heavy gales. On such occasions, I have seen Divers at once seek the lee of rocks, islands, or artificial embankments, where they could not only remain in security, but also procure their accustomed food. At other times, when striving against the tempest, they dive headlong from on wing, and are sure to reappear in the smooth parts which sailors term the trough.

I once caught one of these birds on the Ohio, it having been incapacitated from diving by having swallowed a large mussel, which stuck in its throat. It was kept for several days, but refused food of every kind, exhibited much bad humour, struck with its bill, and died of inanition. The food of this species consists of fish, aquatic reptiles, testaceous mollusca, and all sorts of small crustaceous animals. Its flesh resembles that of the Loon, and is equally unfit to be eaten.

The eggs, which are sometimes two, more frequently three, average three inches in length, by two in their greatest breadth, which

is about a third of the whole length distant from the extremity. Their form is that of the Red-throated Diver, which however they exceed in size. The shell is rather thick, the surface roughish, the ground colour chocolate tinged with olive, sparingly spotted at the larger end with very dark umber and black, and sprinkled all over with very small dots of the same colour.

I have represented an adult male, a female, and a young bird.

COLYMBUS ARCTICUS, *Linn. Syst. Nat.* vol. i. p. 221.—*Lath. Ind. Ornith.* vol. ii. p. 800.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 420.

COLYMBUS ARCTICUS, BLACK-THROATED DIVER, *Richards. and Swains. Fauna Boreali-Americana*, vol. ii. p. 475.

BLACK-THROATED DIVER, *Nuttall, Manual*, vol. ii.

Adult Male. Plate CCCXLVI. Fig. 1.

Bill as long as the head, straight, stout, higher than broad at the base, much compressed toward the end, and tapering to a point. Upper mandible with the dorsal line descending and considerably convex toward the end, the ridge convex, narrowed toward the point, the sides convex beyond the nostrils, the edges involute for half their length in the middle, direct at the base and toward the end, the tip narrow and sharpish. Nasal groove rather long and narrowed; nostrils sub-basal, linear, direct, pervious. Lower mandible with the angle extremely narrow, and very long, the dorsal line ascending and very slightly convex, the ridge convex and narrow, the edges sharp and involute, the tip attenuated.

Head of moderate size, oblong, narrowed before. Neck rather long and thick. Eyes of moderate size. Body elongated, much depressed, of an elliptical form viewed from above. Wings small. Feet short, rather large, placed very far back; tibia almost entirely concealed; tarsus short, exceedingly compressed, sharp-edged before and behind, covered all over with reticulated angular scales, hind toe extremely small, externally marginate, connected with the second for half its length by a membrane, which extends, narrowing, to the end; the anterior toes connected by articulated membranes, the fourth or outer longest, the third a little shorter, the second considerably shorter than the third; all covered above with numerous narrow scutella; the second toe with a free two-lobed membrane, the claws very small, depressed, blunt.

Plumage short and dense, of the head and neck very short, soft and blended; of the lower parts short, blended, stiffish, considerably glossed; of the upper compact, glossy; the feathers on the lower part of the sides of the neck much incurved, oblong with the terminal barbs stiff; those of the fore part of the back and the scapulars straight, oblong, abrupt. Wings proportionally very small and narrow, curved; primaries strong, tapering, the first longest, the second slightly shorter, the rest rapidly graduated; secondaries very short, broad, and rounded. Tail extremely short, rounded, of eighteen feathers.

Bill black. Iris deep bright red. Feet greyish-blue, their inner sides tinged with yellow; claws black, that of the inner toe yellowish at the base. The upper part of the head and the hind neck are light grey or hoary, the fore part and sides of the head darker. The upper parts are glossy black tinged with green anteriorly, and shaded with brown behind. On the fore part of the back are two longitudinal bands of transverse white bars, the feathers being tipped with that colour; the scapulars, excepting the outer, are marked in the same manner with transverse rows of rather large square spots. Most of the wing-coverts have two roundish spots of white near the end. The quills are blackish-brown, tinged with grey externally, paler on the inner webs; the tail also blackish-brown. The fore neck, to the length of six and a half inches, is purplish-black, ending angularly below, and with a transverse interrupted band of linear white spots near the upper part; beyond which the sides of the neck are blackish-brown, with several longitudinal white streaks, formed by the edges of the feathers; on the lower part of the neck a broad space is occupied by these longitudinal, dusky, and white streaks, the former of which gradually become narrower. The lower parts are pure white, excepting a longitudinal band on the sides under the wing, which is dusky.

Length to end of tail 29 inches, to end of wings $27\frac{1}{2}$, to end of claws 33; extent of wings $39\frac{1}{2}$; wing from flexure $12\frac{3}{4}$; tail $2\frac{3}{4}$; bill along the ridge $2\frac{5}{12}$, along the edge of lower mandible $3\frac{4}{12}$; tarsus $3\frac{1}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{2}{12}$; second toe $3\frac{2}{12}$, its claw $\frac{5}{12}$; third toe $3\frac{8}{12}$, its claw $5\frac{5}{12}$; fourth toe $4\frac{1}{4}$, its claw $\frac{4}{12}$.

Adult Female. Plate CCCXLVI. Fig. 2.

The Female is smaller than the male, but is similarly coloured.

Young in Winter. Plate CCCXLVI. Fig. 3.

The texture of the plumage is less dense, the feathers on the neck being more downy, and those of the back oblong and rounded. The bill is light bluish-grey, dusky along the ridge; the iris brown; the feet more dusky. The upper part of the head and the hind neck are dark greyish-brown; the sides of the head greyish-white, minutely streaked with brown. The upper parts have a reticulated or scaly appearance, the feathers being brownish-black, with broad bluish-grey margins; the rump dull brownish-grey. The primaries and their coverts are brownish-black, the secondaries and tail-feathers dusky, margined with grey. The fore part of the neck is greyish-white, minutely and faintly dotted with brown, its sides below streaked with the same; the lower parts, including the under surface of the wing, pure white; the sides of the body and rump, with part of the lower tail-coverts, dusky, edged with bluish-grey.

When in their first downy plumage, the young are of a uniform brownish-black colour.

SMEW OR WHITE NUN.

MERGUS ALBELLUS, LINN.

PLATE CCCXLVII. MALE AND FEMALE.

The Smew is a bird of extremely rare occurrence in the United States, insomuch that it must be considered merely as a transient or accidental visitor. Indeed I have felt strong misgivings on reading WILSON'S article on this species, and cannot but think that he is mistaken when he states that it "is much more common on the coast of New England than farther south," and again "In the ponds of New England, and some of the lakes in the State of New York, where the Smew is frequently observed—." Now, although I have made diligent inquiry, not only in New England, but in every part of our country where I thought it likely that the Smew might occur, I have not met with any person well acquainted with birds of this family, who has seen it. WILSON, in short, was in all probability misinformed, and it is my opinion that his figure was made from a stuffed European specimen which was then in Peale's Museum in Philadelphia, and that he had taken the Buffel-headed Duck, seen at a distance, for this species, as I am aware has been the case with other individuals.

The only specimen procured by me was shot by myself on Lake Baratavia, not far from New Orleans, in the winter of 1819. It was an adult female in fine plumage. How it had wandered so far south is an enigma to me; but having found it, and made a drawing of it on the spot, I have taken the liberty to add one of the other sex from an equally fine specimen. After all, the Smew can scarcely be considered as belonging to the American Fauna, any more than our Fork-tailed Hawk can with propriety be called a denizen of England; and in this I am supported by all the great navigators of our Arctic Seas, such as ROSS, PARRY, and FRANKLIN, none of whom, nor any of their companions, ever met with a single individual of this beautiful bird.

MERGUS ALBELLUS, *Linn. Syst. Nat.* vol. i. p. 209.—*Lath. Ind. Ornith.* vol. ii. p. 831.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 398.

SMEW OR WHITE NUN, MERGUS ALBELLUS, *Wils. Amer. Ornith.* vol. viii. p. 126, pl. 71, fig. 4. Male.

The SMEW, or WHITE NUN, *Nuttall, Manual*, vol. ii. p. 467.

Adult Male. Plate CCCXLVII. Fig. 1.

Bill rather shorter than the head, straight, rather slender, a little higher than broad at the base, tapering, somewhat cylindrical toward the end. Upper mandible with the dorsal outline sloping gently and slightly concave to the middle, then straight, at the tip decurved, the ridge rather broad and flat at the base, then convex, the sides sloping at the base, convex toward the end, the edges serrate beneath, with about forty slightly reversed, compressed, tapering, tooth-like lamellæ, the unguis elliptical, much curved. Nasal groove oblong, sub-basal, filled by a soft membrane; nostrils oblong, submedial, direct, pervious. Lower mandible with the angle very narrow and extended to the obovate, very convex unguis, the sides rounded, with a long groove, the edges with about sixty perpendicular sharp lamellæ.

Head of moderate size, oblong, compressed. Neck of moderate length. Body full and depressed. Feet placed far behind, extremely short; tibia bare for a quarter of an inch; tarsus extremely short, much compressed, anteriorly covered with a series of very small scutella, and another row on the lower half externally, the sides reticulate. Hind toe very small, with an inferior free membrane; anterior toes double the length of the tarsus; the second shorter than the fourth, which is nearly as long as the third; all connected by reticulated webs, of which the outer is deeply emarginate. Claws short, considerably curved, compressed, acute, that of the middle toe with a thin inner edge.

Plumage full, soft, and blended; feathers of the head and upper part of the hind neck very slender, and elongated along the median line into a narrow decurved crest; those of the shoulders obovate and abrupt, of the rest of the upper parts ovate, of the lower elliptical. Wings very short, narrow, curved, and pointed; primaries narrow, tapering, the first scarcely longer than the second, the rest rapidly graduated; secondaries short, narrow, rounded, the inner tapering to an obtuse point. Tail short, graduated, of sixteen rather narrow, tapering feathers.

Bill dark greyish-blue. Iris bright red. Feet livid blue, claws dusky.

The general colour of the plumage is pure white ; a short band on each side of the hind neck bordering the crest, duck-green ; a broad patch on the lore and below the eye, a narrow band across the lower part of the hind neck, formed by single bars near the tips of the feathers, the middle of the back in its whole length, a short transverse bar under the fore edge of the wing, the anterior margin of that organ to beyond the carpal joint, the outer edges of the scapulars, the primary coverts, the secondary coverts, and the outer secondary quills, excepting the tips of both, deep black. The quills are also black, but of a less deep tint ; the hind part of the back becomes tinged with grey, and the rump and tail-feathers are dusky grey. The sides of the body and rump are white, finely undulated with blackish-grey.

Length to end of tail $17\frac{1}{2}$ inches, to end of claws $18\frac{1}{4}$, to end of wings $15\frac{1}{2}$; extent of wings 27 ; bill along the ridge $1\frac{3}{12}$, along the edge of lower mandible $1\frac{7}{12}$; wing from flexure $7\frac{3}{4}$; tail $3\frac{1}{2}$; tarsus $1\frac{1}{12}$; first toe $\frac{1}{2}$, its claw $\frac{2}{12}$; second toe $1\frac{1}{2}$, its claw $\frac{4}{12}$, third toe $1\frac{1}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{1}{12}$, its claw $\frac{5}{12}$. Weight 1 lb. 8 oz.

Adult Female. Plate CCCXLVII. Fig. 2.

The Female is much smaller. The feathers of the hind part of the head and neck are also elongated so as to form a crest. The bill, iris, and feet, are coloured as in the male. All the lower parts are white, excepting a broad band of light grey across the middle of the neck, and a narrow portion of the sides, which are of a deeper tint. There is a patch of brownish-black on the lore and beneath the eye ; the upper part of the head and half of the hind neck, are light reddish-brown ; the rest of the hind neck, and all the upper parts, bluish-grey, darker behind, and in the middle of the back approaching to black. The wings as in the male, that is black, with a large patch of white, and two narrow transverse bands of the same ; the tail dusky grey.

Length to end of tail $15\frac{1}{4}$ inches, to end of claws $16\frac{1}{2}$, to end of wings $14\frac{1}{2}$; extent of wings 25. Weight 1 lb. 4 oz.

GADWALL DUCK.

ANAS STREPERA, LINN.

PLATE CCCXLVIII. MALE AND FEMALE.

I HAVE met with this species along the whole of our Atlantic coast, from Eastport in Maine to Texas. It is, however, more abundant in the interior than in most of our maritime districts, and is particularly so on the tributaries of the Ohio, Missouri, and Mississippi. In the early part of autumn and late in spring many are found on the margins of our great lakes. Yet the Gadwall has been represented as not plentiful in the United States, probably on account of its being generally dispersed, and not congregated in particular districts.

The Creoles of Louisiana name it "Violon," on account of the whistling sound of its wings. It arrives in the neighbourhood of New Orleans and the mouths of the Mississippi along with the Widgeon, and is fond of the company of the Red-head, to which it is about equal as an article of food. The Gadwalls are usually seen in small flocks, and during winter resort to the larger lakes and the pools in the interior of the great marshes, adjoining the waters of the Gulf. In that part of the country they feed on small fish, insects, and aquatic grasses. Fewer of them are found in Massachusetts and the State of New York than elsewhere, and this probably on account of these districts being more elevated and less marshy than those farther south. My friend Dr BACHMAN informs me that they are rather plentiful in South Carolina, where they are considered good eating, and where they arrive in the beginning of October, but are more frequently met with at that season, and in early spring, than during winter, when a single individual may sometimes be seen in a flock of other ducks.

While we were in the Texas, in the latter part of April and the beginning of May, we found the Gadwall quite abundant on all the inland ponds and streams, as well as on the brackish pools and inlets of the islands and shores of Galveston Bay. Many of them had paired and separated from the other ducks; and I was assured that this species breeds there, as does the Dusky Duck, the Mallard, the Blue-

winged Teal, the Widgeon, and the Shoveller, the young of all these species being plentiful in the end of June and beginning of July. I was satisfied as to the truth of the repeated assurances I had received on this subject, by observing the manners of individuals of all these species before my departure from that country. After a continuance of rainy weather, Gadwalls are found in great numbers on the vast prairies of Opperousas and Attacapas, where I have been told they continue until very late in spring, and some remain to breed.

This species dives well on occasion, especially on being wounded. At the appearance of danger, it rises on wing—whether from the ground or from the water—at a single spring, in the manner of the Mallard, and, like it also, ascends almost perpendicularly for several yards, after which it moves off in a direct course with great celerity. I have never seen it dive on seeing the flash of the gun; but when approached it always swims to the opposite part of the pond, and, when the danger increases, flies off. On being wounded, it sometimes by diving makes its escape among the grass, where it squats and remains concealed. It walks with ease, and prettily, often making incursions upon the land, when the ponds are not surrounded by trees, for the purpose of searching for food. It nibbles the tender shoots and blades of grasses with apparent pleasure, and will feed on beech-nuts, acorns, and seeds of all kinds of gramineæ, as well as on tadpoles, small fishes, and leeches. After rain it alights in the corn-fields, like the Mallard, and picks up the scattered grains of maize. The common notes or cry of the female have a considerable resemblance to those of the female Mallard; but the cry of the male is weaker as in that species.

It is by no means shy in the Western Country, where I have often found it associating with other species, which would leave the pond before it. Near the sea, however, it is much more wary, and this no doubt on account of the greater number of persons who there follow shooting as a regular and profitable employment. From the following note of my friend Dr BACHMAN, you may judge how easily this fine species might be domesticated.

“ In the year 1812 I saw in Dutchess County, in the State of New York, at the house of a miller, a fine flock of ducks, to the number of at least thirty, which, from their peculiar appearance, struck me as differing from any I had before seen among the different varieties of the tame Duck. On inquiry, I was informed that three years before, a

pair of these ducks had been captured in the mill pond, whether in a trap, or by being wounded, I cannot recollect. They were kept in the poultry-yard, and, it was said, were easily tamed. One joint of the wing was taken off, to prevent their flying away. In the following spring they were suffered to go into the pond, and they returned daily to the house to be fed. They built their nest on the edge of the pond, and reared a large brood. The young were perfectly reconciled to domestication, and made no attempts, even at the migratory season, to fly away, although their wings were perfect. In the following season they produced large broods. The family of the miller used them occasionally as food, and considered them equal in flavour to the common duck, and more easily raised. The old males were more beautiful than any that I have examined since; and as yet domestication had produced no variety in their plumage."

The migration of this species extends to the Fur Countries, where it is said to breed. The description of a male killed on the Saskatchewan River, on the 22d of May 1827, is given in the *Fauna Boreali-Americana*; and I have a fine male procured by Dr TOWNSEND on the Columbia River.

ANAS STREPERA, *Linn. Syst. Nat.* vol. i. p. 200.—*Lath. Ind. Ornith.* vol. ii. p. 859.—

Ch. Bonaparte, *Synopsis of Birds of United States*, p. 383.

GADWALL, *ANAS STREPERA*, *Wils. Amer. Ornith.* vol. viii. p. 120, pl. 71, fig. 1.—

Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 440.

GADWALL OF GREY, *Nuttall, Manual*, vol. ii. p. 383.

Adult Male. Plate CCCXLVIII. Fig. 1.

Bill nearly as long as the head, deeper than broad at the base, depressed towards the end, the sides parallel, the tip rounded. Upper mandible with the frontal angles short and obtuse, the dorsal line at first sloping, then slightly concave and direct, the ridge broad and flat at the base, then broadly convex, the edges soft, with about fifty internal lamellæ, the unguis roundish, curved abruptly at the end. Nostrils sub-basal, lateral, rather small, oblong, pervious. Lower mandible flattened, its angle very long and narrow, the dorsal line very short, slightly convex, the edges soft, with about sixty lamellæ.

Head of moderate size, oblong, compressed. Neck rather long, slender. Body elongated, slightly depressed. Feet very short; tibia bare for about a quarter of an inch; tarsus very short, compressed, an-

teriorly with two series of scutella, the outer shorter, the rest covered with reticulated angular scales; toes obliquely scutellate above; first very small, free, with a narrow membrane beneath; third longest, fourth considerably shorter, second shorter than fourth, their connecting webs entire, on the edge crenate; the second or inner toe with a membranous margin. Claws small, slightly arched, compressed, rather acute, the hind one very small and more curved, that of the middle toe with an inner sharp edge.

Plumage dense, soft, blended. Feathers of the head short, of the occiput and nape a little elongated, of the lower parts glossy with the extremities of the filaments stiffish. Wings rather long, little curved, pointed; the first quill longest, the rest rapidly graduated; secondaries very broad, but pointed, the inner much elongated, and tapering to a point. The tips of the filaments of the outer web of the first primary are separated and curved a little forwards. Tail short, rounded, of sixteen strong pointed feathers, of which the middle pair project considerably.

Bill bluish-black. Iris reddish hazel. Feet dull orange-yellow, claws brownish-black, webs dusky. Head light yellowish-red, the upper part and nape much darker and barred with dusky; the rest dotted with the same. The lower part of the neck, the sides of the body, the fore part of the back, and the outer scapulars, undulated with dusky, and yellowish-white, the bands much larger and semicircular on the fore part of the neck and breast; the latter white, the abdomen faintly and minutely undulated with brownish-grey; the elongated scapulars brownish-grey, broadly margined with brownish-red; the hind part of the back brownish-black; the rump all round, and the upper and lower tail-coverts, bluish-black. The anterior smaller wing-coverts are light grey, undulated with dusky, the middle coverts of a deep rich chestnut-red; primary coverts brownish-grey, outer secondary coverts darker and tinged with chestnut, the rest black, excepting the inner, which are grey. Primaries and inner elongated secondaries brownish-grey, of which colour also are the inner webs of the rest, part of the outer webs of five of the outer black, and their terminal margins white, of which colour are the whole outer webs of the three next to the inner elongated quills. Tail brownish-grey, the feathers margined with paler.

Length to end of tail $21\frac{3}{4}$ inches, to end of wings 19, to end of claws $23\frac{1}{4}$; extent of wings 35; bill along the ridge $1\frac{3}{4}$, along the edge of lower mandible $1\frac{7}{8}$; wing from flexure 11; tail $4\frac{3}{8}$; tarsus $1\frac{1}{2}$; hind toe

and claw $\frac{1}{2}$; second toe $1\frac{5}{8}$, its claw $\frac{4}{12}$; third toe $1\frac{7}{8}$, its claw $\frac{4}{12}$; outer toe $1\frac{7}{12}$, its claw $\frac{2}{12}$. Weight 1 lb. 10 oz.

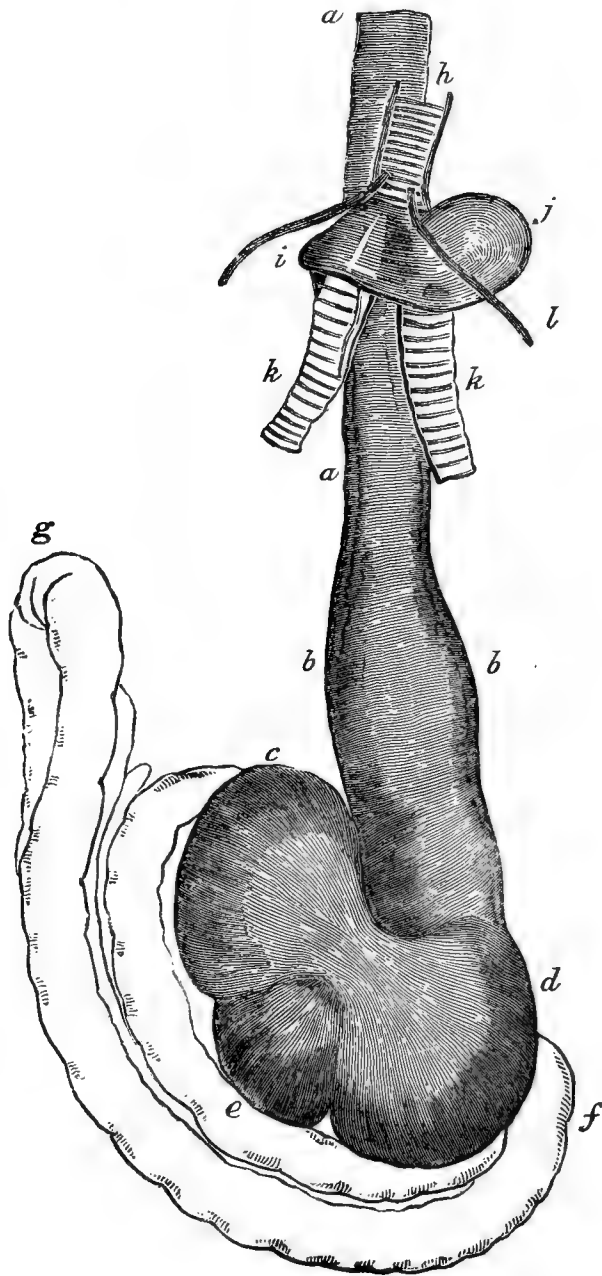
Adult Female. Plate CCCXLVIII. Fig. 2.

The female is considerably smaller. Bill dusky along the ridge, dull yellowish-orange on the sides. Iris hazel. Feet of a fainter tint than in the male. Upper part of head brownish-black, the feathers edged with light reddish-brown; a streak over the eye, the cheeks, the upper part of the neck all round, light yellowish-red tinged with grey, and marked with small longitudinal dusky streaks, which are fainter on the throat, that part being greyish-white; the rest of the neck, the sides, all the upper parts and the lower rump feathers brownish-black broadly margined with yellowish-red. Wing-coverts brownish-grey, edged with paler; the wing otherwise as in the male, but the speculum fainter. Tail-feathers, and their coverts dusky, laterally obliquely indented with pale brownish-red, and margined with reddish-white.

Length to end of tail $19\frac{1}{4}$ inches, to end of wings $18\frac{3}{4}$, to end of claws $19\frac{1}{2}$; extent of wings 31; wing from flexure $8\frac{1}{4}$; tail $3\frac{3}{4}$; tarsus $1\frac{4}{12}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

In a male, the roof of the mouth is deeply concave, with a prominent median ridge, and oblique grooves toward the end. The tongue is 1 inch 10 twelfths long, fleshy, with a deep longitudinal groove, two lateral series of filaments, and a thin broadly rounded tip, as in other ducks. The œsophagus, *a, b*, is $10\frac{1}{2}$ inches long, 5 twelfths in diameter for about four inches, then enlarged to 10 twelfths, and again contracted as it enters the thorax. The proventriculus, *b b*, is 1 inch and two twelfths long, its greatest diameter 8 twelfths. The stomach, *c d e*, is a very large and powerful gizzard, of an elliptical form, compressed, 1 inch and 9 twelfths long, 2 inches in its greatest breadth, or in the direction of the lateral muscles, of which the right, *c*, is 10 twelfths thick, the left, *d*, 9 twelfths. The epithelium is thick and rugous; much thickened and forming two roundish, flat or slightly concave grinding surfaces, opposite the muscles. The intestine, *e f g*, is 6 feet 10 inches long, wide, its diameter for 2 feet being $4\frac{1}{2}$ twelfths, towards the rectum enlarging to 6 twelfths. It forms first a very long duodenal curve, *c e f g*, and is then convoluted or coiled in numerous folds. The rectum is $5\frac{1}{4}$ inches long; the cœca 11 inches, their greatest diameter

6 twelfths, for 2 inches at the commencement 2 twelfths, towards the end $2\frac{1}{2}$ twelfths, their extremity rounded.



The trachea, *h*, is $7\frac{1}{2}$ inches long ; its diameter at the upper part 4 twelfths, gradually diminishing to $3\frac{1}{2}$ twelfths ; it then enlarges to 5 twelfths, and contracts to $3\frac{1}{2}$ twelfths at the commencement of the dilatation of the inferior larynx, which is extremely similar to that of the Widgeon, but larger ; there being an enlargement, *i*, formed by a number of the lower rings united, and to the left side a rounded bony tympanum *j* ; the greatest transverse diameter of this part, from *i* to *j*, is 1 inch 1 twelfth. The bronchi, *k k*, are of moderate size, covered with a dense layer of adipose matter.

LEAST WATER RAIL.

RALLUS JAMAICENSIS, GMEL.

PLATE CCCXLIX. MALE AND YOUNG.

MY knowledge of this pretty little species is altogether derived from TITIAN PEALE, Esq., of Philadelphia, by whom, in October 1836, I was favoured with the following letter :—

“ I herewith send you the ‘ Little Rail’ of which we were speaking yesterday, and the letter of Dr ROWAN which relates to it. The young died soon after I received them, but the old one lived with me until the 26th of July (four days after its capture), evincing considerable anxiety for the young, as long as they lived. Both young and old partook sparingly of Indian meal and water, or bread and water, and soon became quite at home, and probably might have been domesticated, had they been properly accommodated.

“ The most remarkable part of the history of this individual is, that after its death we should have discovered on dissection that it was a male, rendering it singularly curious that *he* should have suffered himself to be captured by hand while in defence of the young brood.

“ There is now in the Museum a specimen of this species, which has been in the collection for about thirty years, said to have been caught in the vicinity of the city. It stands labelled ‘ Little Rail, *Rallus minutus*, Turton’s Linn ;’ but the authenticity of the specimen has always been disputed by BONAPARTE and others, because none else had been found; and the author just named expressed a belief that it was an immature specimen of *Rallus (Crex) Porzana* of Europe.

“ I regret that I should have mislaid the measurements of the specimen when recent, if any were taken, and cannot lay my hands on them, or any thing more than the above notes. Respectfully yours, &c.

TITIAN R. PEALE.”

Inclosed in Mr PEALE’s letter was the following note from Dr ROWAN “ to the Messrs PEALES.”

“ On Saturday last I wrote to you of the Rail Bird breeding near this place. I then described one that I caught last summer, which was unlike the Rail in the fall season, and I presumed that all in the wet ground were the same, but this day my men mowing around the pond started up two of the usual kind. The hen flew a few rods, and then flew back to her young in an instant, when they caught her together with her four young, which I herewith send you. Many more can be caught. I have seen them in our meadow every month of the year, but they never make a great noise except when very fat on the wild oat's seed. From the above you will conclude that they do not migrate to the south, but breed here. Respectfully,

THOMAS ROWAN.”

RALLUS JAMAICENSIS, *Brisson* Sup. p. 140.—*Gmel.* Syst. Nat. vol. 7 p. 718.—*Lath.* Ind. Ornith. vol. ii. p. 761.

Adult Male. Plate CCCXLIX. Fig. 1.

Bill shorter than the head, rather stout, compressed, tapering. Upper mandible with the dorsal line nearly straight, being slightly convex toward the end, the ridge narrow and convex in its whole length, the sides convex towards the end, the edges sharp, the tip rather acute. Nasal groove extending to a little beyond the middle of the bill; nostrils linear, lateral, submedial, pervious. Lower mandible with the angle long and narrow, the sides erect, the dorsal line sloping upwards, the edges a little inflected, the tip narrowed, the gape line straight.

Head rather small, oblong, compressed. Neck shortish. Body compact, deeper than broad. Feet of moderate length, rather slender; tibia bare a short way above the joint; tarsus of ordinary length, compressed, anteriorly covered with broad scutella, posteriorly with smaller, and on the sides reticulated. Hind toe small and very slender; middle toe longest, and longer than the tarsus; inner toe considerably shorter than the outer; toes free, with numerous scutella above. Claws of moderate length, compressed, slightly arched, acute.

Plumage blended, slightly glossy above. Wings short and broad; tapering, rounded, the first and second nearly equal and longest. Tail very short, much rounded, of twelve feeble rounded feathers; the upper and lower tail-coverts nearly as long as the tail-feathers.

Bill black. Iris red. Feet bright yellowish-green, claws dusky. The head and all the lower parts are very dark purplish-grey, on the upper part of the head approaching to black, on the fore part of the neck faintly undulated with paler, on the sides and hind parts barred with greyish-white; the lower wing-coverts barred with grey and white; the lower tail-coverts of the latter colour. The hind neck and fore part of the back dark chestnut; the rest of the back and tail-coverts greyish-black, transversely barred with white. Wing-coverts and inner secondaries reddish-brown, with white spots; the other quills more dusky. The tail-feathers also reddish-brown, barred with dusky and marked with white spots.

Length to end of tail 6 inches; wing from flexure $3\frac{7}{8}$; tail $1\frac{1}{8}$; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $\frac{4}{8}$; bare part of tibia $\frac{1}{4}$; tarsus 1; hind toe and claw $\frac{1}{2}$; middle toe and claw 1, outer toe and claw $\frac{7}{8}$; inner toe and claw $\frac{5}{8}$.

Young a few days old. Plate CCCXLIX. Fig. 2.

While yet covered with down, the young is black all over; the bill bright yellow, with the point of the upper mandible, and a band across the middle of the lower, black; the feet dull yellowish-green, the claws dusky.

Since the above was written, I have received a letter from my friend J. TRUDEAU, M. D., in which he says that his father shot a considerable number of these Rails last winter in the vicinity of New Orleans.

ROCKY-MOUNTAIN PLOVER.

CHARADRIUS MONTANUS, TOWNSEND.

PLATE CCCL. FEMALE.

FOR the following brief account of this bird, I am indebted to my learned and obliging friend, THOMAS NUTTALL.

“ This remarkable species, so much allied to the *Charadrius Wilsoni*, was scarcely seen by us for more than one or two days, and then on the central table-land of the Rocky Mountains, in the plains near the last of the streams of the Platte, pursued in our western and northern route. It being the month of July when we saw it, there is little doubt but that it was breeding in this subalpine region. The only individual shot, was seen skulking and running through the wormwood bushes which so generally clothe those arid and dry wastes. After running some time, it would remain perfectly still, as if conscious of the difficulty of distinguishing it from the colour of the grey soil on which it stood. All that we saw were similar to the present individual, and none, however flushed, took to the wing. We do not recollect hearing from it the slightest complaint or note of any kind, being intent probably on concealing its young or eggs by a perfect silence.”

The skin from which I made my drawing was that of a female ; and it is my opinion, that the male, when found, will have as distinct markings as those exhibited by *Charadrius melodus* or *Ch. semipalmatus*.

CHARADRIUS MONTANUS, ROCKY-MOUNTAIN PLOVER. *Townsend*, Journ. Acad. of Natural Sciences of Philadelphia, vol. vii. p. 192.

Adult Female. Plate CCCL.

Bill shorter than the head, straight, somewhat cylindrical. Upper mandible with the dorsal line straight to beyond the middle, then bulging a little and curving to the rather acute tip, which projects beyond that of the lower mandible, the sides flat and sloping at the base, convex towards the end. Nasal groove extended to the middle of the bill ;

nostrils basal, linear, open and pervious. Lower mandible with the angle rather short, the sides at the base sloping outwards; the dorsal line ascending and slightly convex, the edges sharp, the tip rather acute.

Head of moderate size, oblong, the forehead rounded. Legs rather long and slender; tibia bare half an inch above the joint; tarsus slender, compressed, covered with angular scales, of which the anterior are much larger; toes short, slender, with numerous scutella above, marginate, the outer connected with the middle by a short membrane. Claws small, compressed, slightly arched, rather acute.

Plumage soft, the feathers rather distinct on the upper parts, blended on the lower. Wings long and pointed; primary quills tapering, the first longest by a quarter of an inch, the rest rapidly graduated; inner secondaries tapering and elongated, one of them nearly as long as the outer primary when the wing is closed. Tail of moderate length, even, of twelve feathers.

Bill black. Feet light dull brownish-yellow. Forehead, a band over the eye, fore part of neck, and all the rest of the lower surface, white; top of the head and nape dark yellowish-brown, sides and hind part of the neck dull ochre-yellow, which is the prevailing colour on the upper parts, the feathers being broadly margined with it while their central portion is greyish-brown. Wing-coverts lighter; primary coverts and quills dusky, their shafts and margins white, that colour becoming more extended on the inner and on some of the secondaries, so as to form a conspicuous patch on the wing; inner secondaries like the back. Tail yellowish-brown, tipped with yellowish-white, the two outer broadly margined with the same.

Length to end of tail about $8\frac{1}{4}$ inches, to end of wings the same, to end of claws $9\frac{1}{4}$; wing from flexure $6\frac{1}{8}$; tail $2\frac{1}{2}$; tarsus $1\frac{4}{8}$; middle toe $\frac{3}{4}$, claw $\frac{1}{4}$.

GREAT CINEREOUS OWL.

STRIX CINEREA, GMELIN.

PLATE CCCLI.

THIS fine Owl, which is the largest of the North American species, is nowhere common with us, although it ranges from the north-eastern coast of the United States to the sources of the Columbia River. It has been procured near Eastport in Maine, and at Marble Head in Massachusetts, where one of them was taken alive, perched on a wood pile, early in the morning, in February 1831. I went to Salem for the purpose of seeing it, but it had died, and I could not trace its remains. The gentleman, Mr IVES, in whose keeping it had been for several months, fed it on fish and small birds, of which it was very fond. Besides shewing me various marks of attention, he gave me a drawing of it made by his wife, which is still in my possession. It uttered at times a tremulous cry not unlike that of the Little Screech Owl, *Strix Asio*, and shewed a great antipathy to cats and dogs. In the winter of 1832, I saw one of these Owls flying over the harbour of Boston, Massachusetts, amid several Gulls, all of which continued teasing it until it disappeared. I have seen specimens procured on the Rocky Mountains by Dr TOWNSEND, and several brought to London by the medical officer who accompanied Captain BACK in his late Arctic journey. Among the individuals which I have examined I have found considerable differences as to size and markings, which may be attributed to age and sex. My drawing was taken from a remarkably fine specimen in the collection of the Zoological Society of London.

The comparatively small size of this bird's eyes renders it probable that it hunts by day, and the remarkable smallness of its feet and claws induces me to think that it does not prey on large animals. Dr RICHARDSON says that "it is by no means a rare bird in the Fur Countries, being an inhabitant of all the woody districts, lying between Lake Superior and latitudes 67° or 68°, and between Hudson's Bay and the Pacific. It is common on the borders of Great Bear Lake; and there, and in the higher parallels of latitude, it must pursue its prey, during the summer months, by day-light. It keeps however within the woods,

and does not frequent the barren grounds, like the Snowy Owl, nor is it so often met with in broad day light as the Hawk Owl, but hunts principally when the sun is low ; indeed, it is only at such times, when the recesses of the woods are deeply shadowed, that the American hare and the murine animals, on which the Cinereous Owl chiefly preys, come forth to feed. On the 23d of May I discovered a nest of this Owl, built on the top of a lofty balsam poplar, of sticks, and lined with feathers. It contained three young, which were covered with a whitish down. We got them by felling the tree, which was remarkably thick ; and whilst this operation was going on, the two parent birds flew in circles round the objects of their cares, keeping, however, so high in the air as to be out of gunshot ; they did not appear to be dazzled by the light. The young ones were kept alive for two months, when they made their escape. They had the habit, common also to other Owls, of throwing themselves back, and making a loud snapping noise with their bills, when any one entered the room in which they were kept."

STRIX CINEREA, *Linn. Syst. Nat.* vol. i. p. 291.—*Lath. Ind. Ornith.* vol. i. p. 58.—

Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 77.

Adult Female. Plate CCCLI.

Bill short, stout, broader than high at the base, its dorsal outline convex to the end of the cere, which is covered with stiffish linear feathers having their barbs separated, the ridge very broad, the sides sloping and nearly flat, the tip compressed, decurved, acute ; lower mandible small, with the angle long and wide, the dorsal line convex, the edges sharp, the tip narrow ; the gape-line straight, at the end decurved. Nostrils large, elliptical ; eyes large, but proportionally smaller than in most other Owls.

The body is slender, anteriorly broad, but seems large and full on account of the great mass of plumage ; the neck short ; the head extremely large. Feet rather short ; the tarsi very short, and feathered ; the toes very short and feathered, there being only two or three bare scutella at their extremity. Claws slightly curved, long, slender, compressed, tapering to an extremely narrow point.

Plumage very full, soft, and downy ; the feathers generally oblong. Those on the face linear, stiffish, with loose barbs, and disposed in two

large disks surrounding the eyes ; besides which there is a ruff of softer linear, denser feathers from the forehead, behind the ears, to the chin. The conch of the ear is very large, although greatly exceeded by that of many other Owls, and furnished with an anterior semicircular operculum, beset with slender feathers. Wings very large, concave ; primaries, decurved toward the end, the first with the tips of the filaments separated, and recurved in its whole length, the second in its terminal half ; the first quill short, being of the same length as the sixth, the second $2\frac{1}{2}$ inches longer, the third $1\frac{1}{2}$ inch longer than the second, $\frac{1}{4}$ inch shorter than the fourth, which is the longest, or equals the next. The first five have their outer webs more or less cut out towards the end, and the first seven have their inner webs sinuate. The tail is long, ample, rounded, of twelve broad rounded feathers.

Bill yellow. Iris bright yellow. Claws brownish-black. The general colour of the upper parts is greyish-brown, variegated with greyish-white in irregular undulated markings ; the feathers on the upper part of the head with two transverse white spots on each web ; the smaller wing-coverts of a darker brown, and less mottled than the back ; the outer scapulars with more white on their outer webs ; the primary quills blackish-brown toward the end, marked in the rest of their extent with few broad light-grey oblique bands, which are dotted and undulated with darker. Tail-feathers similarly barred, darker towards the end, the middle ones more intricately marked. The feathers of the ruff are white towards the end, dark-brown in the centre. The disks are on their inner side grey, with black tips ; in the rest of their extent greyish-white, with six bars of blackish-brown very regularly disposed in a concentric manner ; feathers on the chin or upper part of throat greyish-white. All the under parts are greyish-brown, variegated with greyish and yellowish white ; the feet barred with the same.

Length to end of tail $30\frac{1}{2}$ inches, to end of wings $27\frac{1}{4}$, to end of claws 22 ; extent of wings $48\frac{1}{2}$; wing from flexure $19\frac{1}{4}$; tail $12\frac{3}{4}$; bill along the ridge 1, along the edge of lower mandible $1\frac{3}{4}$; breadth of gape $1\frac{1}{2}$; tarsus $2\frac{1}{2}$; hind toe $1\frac{7}{8}$, its claw $\frac{7}{8}$; middle toe 1, its claw $1\frac{5}{8}$.

BLACK-SHOULDERED HAWK.*FALCO DISPAR*, TEMM.

PLATE CCCLI. MALE AND FEMALE.

I HAVE traced the migration of this beautiful Hawk from the Texas as far east as the mouth of the Santee River in South Carolina. CHARLES BONAPARTE first introduced it into our Fauna, on the authority of a specimen procured in East Florida, by TITIAN PEALE, Esq. of Philadelphia, who it seems had some difficulty in obtaining it. On the 8th of February 1834 I received one of these birds alive from Dr RAVENEL of Charleston, who had kept it in his yard for eight days previously, without being able to induce it to take any food. The beauty of its large eyes struck me at once, and I immediately made a drawing of the bird, which was the first I had ever seen alive. It proved to be a male, and was in beautiful plumage. Dr RAVENEL told me that it walked about his yard with tolerable ease, although one of its wings had been injured. On the 23d of the same month I received another fine specimen, a female, from FRANCIS LEE, Esq., who had procured it on his plantation, forty miles west of Charleston, and with it the following note. "When first observed, it was perched on a tree in an erect posture. I saw at once that it was one of the birds which you had desired me to procure for you, and went to the house for my gun. On returning I saw the Hawk very high in the air, sailing beautifully over a large wet meadow, where many Common Snipes were feeding. It would now and then poise itself for a while, in the manner of our Little Sparrow Hawk, and suddenly closing its wings plunge towards its prey with great velocity, making a rumbling noise as it passed through the air. Now and then, when about half-way, it suddenly checked its descent, recommenced hovering, and at last marking its prey, rushed upon it and secured it. Its cries, on being wounded, so much resembled those of the Mississippi Kite, that I thought, as I was going to pick it up, that I had only got one of that species. It was so shy that I was obliged to get on horseback before I could approach it within gun shot."

Mr H. WARD, who accompanied me on my expedition to the Floridas

found this species breeding on the plantation of ALEXANDER MAYZCK, Esq., on the Santee River, early in the month of March, and shot three, two of which, a male and a female, are now in my possession. Their nests were placed on low trees near the margins of the river, and resembled those of the American Crow, but had none of the substantial lining of that bird's nest. Mr WARD states, that at this time they were seen flying over the cane brakes in pursuit of large insects, somewhat in the manner of the Mississippi Kite, and that they were very shy.

My friend JOHN BACHMAN has seen this species fly in groups, at a very great height, in the beginning of March, and thinks that it is only of late years that they have located themselves in South Carolina, where, however, five of them have been procured in one year.

The Black-shouldered Hawk appears to give a decided preference to low lands, not distant from the shores of the Atlantic. On our way toward the Texas, several of these birds were seen over the large marshes, flying at a small elevation, and coursing in search of prey, much in the manner of the Hen-harrier or Marsh Hawk, but all evidently bent on proceeding to the eastward. Whether this species winters there or not, I am unable to say, but that some remain all the year in Florida, and even in South Carolina, I am quite confident.

The difference between the food of this species and that of the Mississippi Kite is surprising to me. I have never seen the latter seize any bird, whereas the Black-shouldered Hawk certainly does so, as in the stomachs of two individuals which I examined were remains of birds as well as of coleopterous insects. These two birds agree nearly with the description of the one procured by Mr TITIAN PEALE, excepting in the length of the wings, which in them and in several others that have come under my notice, have their tips fully an inch shorter than the end of the tail. A breeding female differed from the rest in having the eyes dull yellowish-red; the tail-feathers had all been ash-grey, all the primaries were edged with white, and many of the secondaries were still of a light brownish-grey; the black spots under the wings were smaller than usual; the abdomen was also tinged with brownish-grey. I am therefore of opinion, that these birds undergo as many changes of plumage as the Mississippi Kite.

BLACK-WINGED HAWK, *FALCO MELANOPTERUS*, *Ch. Bonaparte*, *Amer. Orn.* vol. ii. pl. 11. fig. 1. Female,

FALCO MELANOPTERUS, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 31.

FALCO DISPAR, *Temm. Ch. Bonaparte*, *Synopsis.* Append. p. 435.

Adult Male. Plate CCCLII. Fig. 1.

Bill short, broader than deep at the base, with the gape very wide. Upper mandible with the cere covered at the base with bristly feathers, the dorsal line convex and declinate to the end of the cere, then curved downwards in about the third of a circle, the sides at the base sloping, towards the end convex and erect, the sharp edges with a distinct festoon, the tip narrow and acute. Lower mandible with the angle very wide and long, the dorsal outline very short, ascending and slightly convex, the sharp edges inflected, the tip obliquely truncate and narrow. Nostrils elliptical, rather large, in the fore part of the cere.

Head rather large, broad, flattened above, with the superciliary ridges prominent. Eyes large, directed obliquely forwards. Neck short; body compact. Legs of moderate length; tibia long and muscular; tarsus very short, stout, roundish, covered anteriorly with feathers for half its length, the rest with small roundish scales, toes short, thick, tuberculate and papillate beneath, scaly above, like the tarsus, but with three large scutella at the end. Claws long, curved, conical, extremely pointed, that of middle toe with an inner edge.

Plumage soft, blended, full, on the back rather compact. Feathers of the cere, lore, and eyelids, bristle-pointed. Wings very long and pointed, the second quill longest, the third nearly as long, the first longer than the fourth; the first, second, and third with the outer web attenuated toward the end; the first and second with the inner web sinuated; secondaries very broad, rounded, the inner web exceeding the outer. Tail of twelve feathers, of moderate breadth, long, emarginate and rounded, the middle and lateral feathers being about equal, and eight-twelfths of an inch shorter than the second feather from the side.

Bill black; the cere and soft basal margins yellow. Iris bright red. Tarsi and toes yellow, of a darker tint than the cere; claws black. All the lower parts are pure white, with the exception of a patch on five or six of the larger wing-coverts; the forehead is also white, as are the cheeks; the superciliary bristles black, the white of

the head gradually blends into the general colour of the upper parts, which is ash-grey; the smaller wing-coverts bluish-black; the shafts of the quills brownish-black; all the feathers of the tail, excepting the two middle, white; the shafts of the two middle feathers blackish-brown, of the rest white towards the end, the whole of that of the outer pure white.

Length to end of tail 16 inches, to end of claws $12\frac{1}{4}$, to end of wings $14\frac{7}{8}$; extent of wings 40 ; wing from flexure 13 ; tail $7\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{5}{8}$; tarsus $1\frac{4}{8}$; first toe $\frac{7}{8}$, its claw $\frac{3}{4}$; second toe $\frac{10}{8}$, its claw $\frac{1}{2}$; third toe $\frac{1}{4}$, its claw $\frac{9}{12}$; fourth toe $\frac{10}{8}$, its claw $\frac{8}{8}$. Weight 14 oz.

Adult Female. Plate CCCLII. Fig. 2.

The female is rather larger than the male, but in other respects similar.

Length to end of tail $16\frac{3}{4}$ inches, to end of wings $15\frac{3}{4}$, to end of claws $12\frac{3}{8}$; extent of wings $41\frac{1}{2}$; tail 8 ; wing from flexure $13\frac{1}{2}$; bill along the ridge $1\frac{1}{8}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $1\frac{3}{8}$; hind toe $\frac{3}{4}$, its claw $\frac{7}{8}$; outer toe $\frac{7}{8}$, its claw $\frac{1}{2}$; middle toe $1\frac{3}{8}$, its claw $\frac{5}{8}$; inner toe $\frac{7}{8}$, its claw $\frac{3}{4}$. Weight $17\frac{1}{4}$ oz.

The young when fledged have the bill and claws black, the cere and feet dull yellow; the upper parts brownish-grey, the scapulars and quills tipped with white, the former also margined with yellowish-brown; the primary and secondary coverts are also tipped with white; the smaller wing-coverts are brownish-black; the outer webs of all the tail-feathers are more or less brownish-grey toward the end. The lower parts are white, the feathers on the breast tinged with brownish-yellow at the end, and with the shaft yellowish-brown. The lower wing-coverts are all white.

CHESTNUT-BACKED TITMOUSE.

PARUS RUFESCENS, TOWNSEND.

PLATE CCCLIII. MALE AND FEMALE.

You have before you on the same plate three species of *Parus*, two of which are new to science. Of specimens of these I obtained possession in consequence of the purchase which I made of part of Dr TOWNSEND's hard-earned collection, made during his laborious expedition over the Rocky Mountains, and the valley of the Columbia River. For an account of the habits of those which are not found to the east of the Rocky Mountains, I am indebted to my friends THOMAS NUTTALL, Esq., and J. K. TOWNSEND, M.D. Mr NUTTALL's notice respecting the present species is as follows:—

“The Chestnut-backed Titmouse is seen throughout the year in the forests of the Columbia, and as far south as Upper California, in all which tract it breeds, forming, as I have some reason to believe, a pendulous, or at least an exposed nest, like some of the European species. It is made of large quantities of hypna and lichens, and copiously and coarsely lined with deer's hair and large feathers, such as those of the Grouse and the Jay. They are commonly seen in small flocks of all ages in the autumn and winter, when they move about briskly, and emit a number of feeble querulous notes, after the manner of the Chickadee, or common species, *Parus atricapillus*, but seldom utter any thing like a song, though now and then, as they glean about, they utter a *t'she, de, de,* or *t'dee, t'dee, dee,* their more common querulous call, however, being like *t'she, dé, de, vait, t'she, de, de, vait,* sometimes also a confused warbling chatter. The busy troop, accompanied often by the common species, the *Regulus tricolor*, and the small yellow-bellied *Parus*, are seen flitting through bushes and thickets, carefully gleaning insects and larvæ for an instant, and are then off to some other place around, proceeding with restless activity to gratify the calls of hunger and the stimulus of caprice. Thus they are seen to rove along for miles together, until satisfied or fatigued, when they retire to rest in the recesses of the darkest forests, situations which they eventually choose for their temporary domicile, where in solitude and

retirement they rear their young, and for the whole of the succeeding autumn and winter remain probably together in families. When the gun thins their ranks, it is surprising to see the courage, anxiety, and solicitude of these little creatures: they follow you with their wailing scold, and entreat for their companions in a manner that impresses you with a favourable idea of their social feelings and sympathy."

Dr TOWNSEND says, that "the Chinook Indians call this species *a kul*. It inhabits the forests of the Columbia River, where it breeds and goes in flocks in the autumn, more or less gregarious through the season. The legs and feet are light blue."

PARUS RUFESCENS, CHESTNUT-BACKED TITMOUSE, *Townsend*, Journ. Acad. of Natural Sciences of Philadelphia, vol. vii. p. 190.

Adult Male. Plate CCCLIII. Fig. 1.

Bill very short, straight, strong, compressed, rather acute; both mandibles with the dorsal line slightly convex, the sides sloping and convex, the edges sharp, the tip of the upper scarcely longer. Nostrils basal, roundish, concealed by the recumbent feathers. Head large, ovate; neck short; body rather robust. Feet of ordinary length, robust; tarsus compressed, with seven anterior scutella, and two lateral plates meeting behind so as to form a thin edge; toes large, the three anterior united as far as the second joint, the hind one much stronger, and with its claw as long as the third. Claws large, arched, much compressed, acute.

Plumage blended, tufty, un glossed. Wings of moderate length, the fourth and fifth quills equal and longest, the sixth scarcely shorter, the third and seventh equal, the second and eighth equal, the first very short, being only half the length of the second. Tail long, slender, arched, very slightly emarginate, or with its tip divaricate, of twelve rather narrow feathers.

Bill brownish-black, with the edges and tip paler. Feet greyish-blue; claws paler. Head and neck, and fore part of the sides, dark-brown, with a broad longitudinal band of white on each side, from the bill under the eye, curving up on the shoulder, and almost meeting on the back; which, including the rump, is bright chestnut, as are the sides under the wings; the middle of the breast and abdomen greyish-

white, the lower tail-coverts tinged with chestnut. Wings and tail brownish-grey, the smaller coverts tinged with chestnut, the secondary coverts margined and tipped with greyish-white, of which colour also are the outer edges of the quills, except the first; tail feathers faintly margined with bluish-grey.

Length to end of tail $4\frac{1}{2}$ inches; wing from flexure $2\frac{3}{8}$; tail $1\frac{1}{2}$; bill along the ridge $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; tarsus $\frac{7\frac{1}{2}}{1\frac{1}{2}}$; hind toe $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{4}{1\frac{1}{2}}$; middle toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{2\frac{3}{4}}{1\frac{1}{2}}$.

Adult Female. Plate CCCLIII. Fig. 2.

The Female is similar to the male.

BLACK-CAP TITMOUSE.

PARUS ATRICAPILLUS, LINN.

PLATE CCCLIII. MALE AND FEMALE.

THE opinion generally entertained respecting the extensive dispersion of the Black-cap Titmouse, has in all probability originated from the great resemblance which it bears to the Carolina Titmouse, *Parus Carolinensis*, described at p. 341 of the second volume of this work ; that species being now known to extend its spring and summer migrations as far eastward as the State of New Jersey, where it has been found breeding by my friend EDWARD HARRIS, Esq. of Moorestown. The Black-cap, on the other hand, is rarely observed farther south, and then only in winter, when it proceeds as far as beyond the middle portions of Maryland. from whence I have at that season received specimens in spirits, collected by my friend Colonel THEODORE ANDERSON of Baltimore. Westward of the Alleghanies it extends as far as Kentucky in winter, but at the approach of spring returns northward. In Pennsylvania and New Jersey some are known to breed ; but as the Carolina Titmouse breeds there also, it is difficult to say which of them is the most numerous, they being so like each other that one is apt to confound them. In the State of New York it is abundant, and often rears two broods in the season ; as you proceed eastward you may observe it in all places favourable to its habits ; and, according to Dr RICHARDSON, it is found as far north as Lat. 65°, it being in the Fur Countries the most common bird, “ a small family inhabiting almost every thicket.” None were seen by Dr TOWNSEND either on the Rocky Mountains or about the Columbia River, where, on the contrary, *Parus Carolinensis* is abundant, as it is also in the Texas, where I found it breeding in the spring of 1837. Although bearing a considerable resemblance to the Marsh Titmouse of Europe, *P. palustris*, it differs from that species not only in colour, but more especially in its habits and notes.

Hardy, smart, restless, industrious, and frugal, the Black-cap Titmouse ranges through the forest during the summer, and retiring to its more secluded parts, as if to ensure a greater degree of quiet, it usu-

ally breeds there. Numerous eggs produce a numerous progeny, and as soon as the first brood has been reared, the young range hither and thither in a body, searching for food, while their parents, intent on forming another family, remain concealed and almost silent, laying their eggs in the hole deserted by some small Woodpecker, or forming one for themselves. As it has been my fortune to witness a pair at this work, I will here state what occurred, notwithstanding the opinion of those who inform us that the bill of a Titmouse is "not shaped for digging." While seated one morning under a crab-apple tree (very hard wood, Reader), I saw two Black-cap Titmice fluttering about in great concern, as if anxious to see me depart. By their manners indeed I was induced to believe that their nest was near, and, anxious to observe their proceedings, I removed to the distance of about twenty paces. The birds now became silent, alighted on the apple-tree, gradually moved towards the base of one of its large branches, and one of them disappeared in what I then supposed to be the hole of some small Woodpecker; but I saw it presently on the edge, with a small chip in its bill, and again cautiously approached the tree. When three or four yards off I distinctly heard the peckings or taps of the industrious worker within, and saw it come to the mouth of the hole and return many times in succession in the course of half an hour, after which I got up and examined the mansion. The hole was about three inches deep, and dug obliquely downward from the aperture, which was just large enough to admit the bird. I had observed both sexes at this labour, and left the spot perfectly satisfied as to their power of boring a nest for themselves.

The Black-cap Titmouse, or Chickadee, as it is generally named in our Eastern States, though exceedingly shy in summer or during the breeding season, becomes quite familiar in winter, although it never ventures to enter the habitations of man; but in the most boisterous weather, requiring neither food nor shelter there, it may be seen amidst the snow in the rugged paths of the cheerless woods, where it welcomes the traveller or the woodcutter with a confidence and cheerfulness far surpassing the well-known familiarity of the Robin Redbreast of Europe. Often, on such occasions, should you offer it, no matter how small a portion of your fare, it alights without hesitation, and devours it without manifesting any apprehension. The sound of an axe in the woods is sufficient to bring forth several of these busy

creatures, and having discovered the woodman, they seem to find pleasure in his company. If, as is usually the case, he is provided with a dinner, the Chickadee at once evinces its anxiety to partake of it, and loses no opportunity of accomplishing its object, although it sets about it with much circumspection, as if it were afraid of being detected, and brought to punishment. A woodcutter in Maine assured me, that one day he happened to be at work, and had scarcely hung up his basket of provisions, when it was observed by a flock of these birds, which, having gathered into it at once, attacked a piece of cold beef; but after each peck, he saw their heads raised above the edge, as if to guard against the least appearance of danger. After picking until they were tired or satisfied, they left the basket and perched directly over his fire, but out of the direction of the smoke. There they sat enjoying themselves and ruffling their feathers to allow the warmth more easy access to their skin, until he began his dinner, when they immediately alighted near him, and in the most plaintive tones seemed to solicit a portion.

WILSON and others have spoken of this species as being addicted to moving in the company of our smaller Woodpeckers and Brown Creepers, and this in such a way as to induce most readers to believe the act to be customary; but I have often found groups of them, at times composed of more than a dozen, without any such companions, and I should be more inclined to think that the Downy Woodpecker, and the Brown Creeper, seek the company of the Titmice, rather than that the latter associate with them. Often indeed have I watched the busy Chickadees, as they proceeded from tree to tree, and from branch to branch, whether by the road-side or in the interior of the forest, when no other birds were with them. The light rustling sound of their concave wings would intimate their approach as well as their retreat, as gaily one after another they passed onwards from one spot to another, chattering, peeping everywhere, and determined as it were, not to suffer a chink to pass without inspection. Now hanging, back downward, at the extremity of a twig, its feet almost up to its bill, it would peck at a berry or a seed until it had devoured it, or it had fallen to the ground: should the latter be the case, the busy bird would at once fly down, and hammer at the fruit. To the Black-cap Titmouse the breaking of a hazel nut is quite a pleasure, and I have repeated seen the feat accomplished not only by a bird in its natural state, but by one kept in confinement.

Courageous and at times exceedingly tyrannical, it will attack young birds, break their skulls, and feed upon their flesh, as I have more than once witnessed. In this habit they resemble the Jays, but in every other they differ entirely from those birds, although the PRINCE of MÜSIGNANO has thought fit to assimilate the two groups. The Chickadee feeds on insects, their larvæ, and eggs, as well as on every sort of small fruit, or berries, including grapes, acorns, and the seeds of various pines. I have seen them eat the seeds of the sun-flower, the poke-berry, and pears, as well as flesh of all kinds. Indeed it may be truly called omnivorous. Often, like Jays, you may see them perched as it were upon their food, and holding it beneath their feet while pecking at it; but no Jays are seen to hang head downwards*at the end of a branch.

My friend THOMAS M'COLLOCH, Esq. of Pictou, in Nova Scotia, has favoured me with the following interesting remarks having reference to this species. " Sometimes I have been inclined to think, that the sight of this bird is comparatively imperfect, and that it is chiefly indebted to some of the other senses for its success in obtaining subsistence. This idea may not be correct, but it seems to derive some support from the little incident which I am about to mention. While standing at the edge of a patch of newly-felled wood, over which the fire had recently passed, and left every thing black in its course, I observed a small flock of these birds coming from the opposite side of the clearing. Being dressed in black and aware of their familiarity, I stood perfectly motionless, for the purpose of ascertaining how near they would approach. Stealing from branch to branch, and peering for food among the crevices of the prostrate trunks, as they passed along, onward they came until the foremost settled upon a small twig a few feet from the spot upon which I stood. After looking about for a short time it flew and alighted just below the lock of a double-barrelled gun which I held in a slanting direction below my arm. Being unable however to obtain a hold, it slid down to the middle of the piece, and then flew away, jerking its tail, and apparently quite unconscious of having been so near the deadly weapon. In this country these birds seem to be influenced by a modification of that feeling by which so many others are induced to congregate at the close of autumn and seek a more congenial clime. At that period they collect in large flocks and exhibit all the hurry and bustle of travellers, who are bent upon a distant journey.

If these flocks do not migrate, their union is soon destroyed, for when the Black-cap Titmice again appear, it is in small flocks ; their former restlessness is gone, and they now exhibit their wonted care and deliberation in searching for food."

The nest of this species, whether it be placed in the hole of a Woodpecker or Squirrel, or in a place dug by itself, is seldom found at a height exceeding ten feet. Most of those which I have seen were in low broken or hollowed stumps only a few feet high. The materials of which it is composed vary in different districts, but are generally the hair of quadrupeds, in a considerable quantity, and disposed in the shape of a loose bag or purse, as in most other species which do not hang their nests outside. Some persons have said that they lay their eggs on the bare wood, or on the chips left by Woodpeckers ; but this is not the case, in so far as I have examined them ; and in this my observations are confirmed by those of Dr BREWER of Boston and Mr M'CULLOCH of Pictou, who also have inspected nests of this species. The eggs rarely exceed eight in number ; they measure five-eighths of an inch in length, by three-eighths and three-quarters, are rather pointed at the smaller end, white, slightly sprinkled with minute dots and markings of light reddish. Those of the first brood are deposited from the middle of April to that of May ; for the second about two months later. The parents I have thought generally move along with the young of the second brood.

Dr BREWER says, " on the 20th of June, I found in a single Titmouse's hole a mass of the hair of the Common Skunk and moss large enough to weigh two or more ounces, and sufficient to construct a nest for some of our larger birds, such for instance as Wilson's Thrush."

Mr M'CULLOCH found a nest of this bird placed about two feet from the ground in a small stump, which seemed to have been excavated by the birds themselves. It contained six young, and was lined entirely with the hair which cattle, in rubbing themselves, had left upon the stump.

The flight of this species, like that of all our American Titmice, is short, fluttering, generally only from tree to tree, and is accompanied with a murmuring sound produced by the concavity of the wings. It is seldom seen on the ground, unless when it has followed a fruit that has fallen, or when searching for materials for its nest. It usually

roosts in its nest during winter, and in summer amid the close foliage of firs or evergreens. In winter, indeed, as well as often in autumn, it is seen near the farm-houses, and even in villages and towns, busily seeking for food among the trees.

“ On seeing a cat, or other object of natural antipathy,” says Mr NUTTALL, “ the Chickadee, like the peevish Jay, scolds in a loud, angry, and hoarse note, *'tshe, dáigh dáigh dáigh*. Among the other notes of this species, I have heard a call like *tshe-de-jay, tshe-de-jay*, the two first syllables being a slender chirp, with the *jay* strongly pronounced. The only note of this bird which may be called a song, is one which is frequently heard at intervals in the depths of the forest, at times of day usually when all other birds are silent. We then may sometimes hear in the midst of this solitude two feeble, drawling, clearly whistled, and rather melancholy notes like *'te-derry*, and sometimes *ye-përrit*, and occasionally, but more rarely in the same wiry, whistling, solemn tone, *'phēbé*. The young in winter also sometimes drawl out these contemplative strains. In all cases the first syllable is very high and clear, the second word drops low, and ends like a feeble plaint. This is nearly all the quaint song ever attempted by the Chickadee. On fine days, about the commencement of October, I have heard the Chickadee sometimes, for half an hour at a time, attempt a lively, petulant warble, very different from his ordinary notes. On these occasions he appears to flirt about, still hunting for his prey, in an ecstasy of delight and vigour. But after a while the usual drawling note again occurs. These birds, like many others, are very subject to the attacks of vermin, and they accumulate in great numbers around that part of the head and front which is least accessible to their foot.”

PARUS ATRICAPILLUS, *Linn. Syst. Nat.* vol. i. p. 341.

PARUS ATRICAPILLUS, *Lath. Ind. Ornith.* vol. ii. p. 566.

BLACK-CAPT TITMOUSE, PARUS ATRICAPILLUS, *Wils. Amer. Ornith.* vol. i. p. 134, pl. 8, fig. 4.

PARUS ATRICAPILLUS, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 100.

BLACK-CAPT TITMOUSE, *Nuttall, Manual*, vol. ii. p. 241.

Adult Male. Plate CCCLIII. Fig. 3.

Bill short, straight, strong, compressed, rather obtuse ; both man-

dibles with the dorsal line slightly convex, the sides sloping and convex, the edges sharp, that of the upper mandible slightly sinuate. Nostrils basal, roundish, concealed by the recumbent feathers. Head large, neck short, body robust. Feet of ordinary length, rather robust; tarsus compressed, with seven anterior scutella; toes large, the three anterior united as far as the second joint; the hind one much stronger, and with its claw nearly as long as the middle toe. Claws large, arched, much compressed, acute.

Plumage blended. tufty; feathers of the head glossy. Wings of moderate length, the first quill scarcely half the length of the second, which is equal to the first secondary, the third and seventh about equal, the fourth and fifth equal and longest. Tail long, a little arched, emarginate and rounded, of twelve slender rounded feathers.

Bill brownish-black. Iris dark brown. Feet greyish-blue, as are the claws. The whole upper part of the head and the hind neck pure black, as is a large patch on the throat and fore-neck. Between these patches of black is a band of white, from the base of the bill down the sides of the neck, becoming broader behind, and encroaching on the back, which, with the wing-coverts, is ash-grey tinged with brown. Quills dark greyish-brown, margined with bluish-white, the secondary quills so broadly margined as to leave a conspicuous white dash on the wing; tail of the same colour, the feathers similarly edged. Lower parts brownish-white, the sides pale yellowish-brown.

Length to end of tail $5\frac{1}{8}$ inches, to end of wings $3\frac{7}{8}$, to end of claws $4\frac{1}{2}$; extent of wings $8\frac{1}{4}$: wing from flexure $2\frac{10}{12}$; tail $2\frac{9}{12}$; these measurements taken from three males. In another, the bill along the ridge $\frac{4\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{7}{12}$; tarsus $\frac{7}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{5}{12}$.

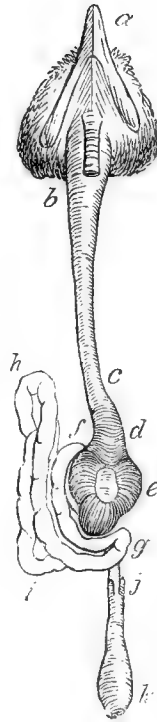
Adult Female. Plate CCCLIII. Fig. 4.

The Female is similar to the male.

Male examined. The tongue is $4\frac{1}{2}$ twelfths long, emarginate and papillate at the base, flat above, depressed, tapering, the point horny, slit, with four bristly points. Œsophagus, *b*, *c*, *d*, $1\frac{1}{2}$ inch long, tapering at the commencement to the diameter of 2 twelfths, and then continuing nearly uniform, without dilatation; the proventriculus, *c*, *d*,

is not much enlarged. The stomach, *d, e*, is a strong gizzard, of an oblong form or ovate, 4 twelfths long, 3 twelfths broad, with strong lateral muscles; its epithelium longitudinally rugous, and of a dark reddish-brown colour. Intestine $7\frac{1}{4}$ inches long, the diameter of its duodenal portion, *f, g, h*, $2\frac{1}{2}$ twelfths. The rectum, *g, k*, is $7\frac{1}{2}$ twelfths long; the cœca, *j*, 1 twelfth long, and $\frac{1}{4}$ twelfth in diameter.

The trachea is $1\frac{2}{3}$ inch long, its diameter uniform, $\frac{3}{4}$ twelfths, its rings 42. It is furnished with lateral or contractor muscles, sterno-tracheal, and four pairs of inferior laryngeal. Bronchi short, of about 10 rings.



CHESTNUT-CROWNED TITMOUSE.

PARUS MINIMUS, TOWNSEND.

PLATE CCCLIII. MALE AND FEMALE.

MY friend NUTTALL's account of this Titmouse is as follows. " We first observed the arrival of this plain and diminutive species on the banks of the Wahlamet, near to its confluence with the Columbia, about the middle of May. Hopping about in the hazel thickets which border the alluvial meadows of the river, they appeared very intent and industriously engaged in quest of small insects, chirping now and then a slender call of recognition. They generally flew off in pairs, but were by no means shy, and kept always in the low bushes or the skirt of the woods. The following day I heard the males utter a sort of weak monotonous short and quaint song, and about a week afterwards I had the good fortune to find the nest, about which the male was so particularly solicitous as almost unerringly to draw me to the spot, where hung from a low bush, about 4 feet from the ground, his little curious mansion, formed like a long purse, with a round hole for entrance near the summit. It was made chiefly of moss, down, lint of plants, and lined with some feathers. The eggs, six in number, were pure white, and already far gone towards being hatched. I saw but few other pairs in this vicinity, but on the 21st of June, in the dark woods near Fort Vancouver, I again saw a flock of about twelve, which, on making a chirp something like their own call, came around me very familiarly, and kept up a most incessant and querulous chirping. The following season (April 1836) I saw numbers of these birds in the mountain thickets around Santa Barbara, in Upper California, where they again seemed untiringly employed in gleaning food in the low bushes, picking up or catching their prey in all postures, sometimes like the common Chickadee, head downwards, and letting no cranny or corner escape their unwearied search. As we did not see them in the winter, they migrate in all probability throughout Mexico and the Californian peninsula at this season."

According to Dr TOWNSEND, " the Chinooks name it *a-ha-ke-lok*.

It is a constant resident about the Columbia River ; hops about in the bushes, and frequently hangs from the twigs in the manner of other Titmice, twittering all the while with a rapid enunciation resembling the words *thshish, tshist, tsee, twee*. The irides are bright yellow."

PARUS MINIMUS, *Townsend*, Journal of Acad. Nat. Sciences of Philadelphia, vol. vii. p. 190.

Adult Male. Plate CCCLIII. Fig. 5.

Bill short, strong, compressed ; upper mandible with its outline arched, the sides sloping and convex. The edges sharp, the tip descending, acute, and considerably exceeding that of the lower ; which has the angle short, the dorsal line ascending and very slightly convex, the edges sharp, the tip acute. Nostrils round, basal. Head rather large, broadly ovate, convex in front ; neck short ; body slender. Feet of moderate length, tarsus proportionally longer than in any other American species, stout, compressed, with seven anterior scutella, and two lateral plates, forming a very sharp edge behind. Toes moderately stout, the first with its claw equal to the third, the anterior united as far as the first web. Claws rather large, arched, compressed, acute.

Plumage soft and blended. Wings, short, very broad, concave, rounded ; first quill half the length of the second, which is a quarter of an inch shorter than the outer secondaries. Tail very long, being half the entire length of the bird, slightly arched, much rounded, and a little emarginate.

Bill black ; feet and claws dusky or blackish brown. Upper part of the head, and hind neck dull greyish brown ; upper parts brownish-grey ; wings and tail dusky brown, tinged with grey, the margins of the quills and tail-feathers greyish-white. Cheeks of a paler tint than the head ; all the lower parts brownish-white, the sides tinged with reddish.

Length to end of tail $4\frac{1}{2}$ inches ; wing from flexure $1\frac{10}{12}$; tail $2\frac{2}{12}$; bill along the ridge $\frac{4\frac{1}{2}}{12}$; tarsus $\frac{7}{12}$; hind toe $\frac{2\frac{3}{4}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$; middle toe $\frac{4}{12}$, its claw $\frac{2}{12}$.

Adult Female. Plate CCCLIII.

The Female is rather smaller, and its colours are somewhat paler.

A nest presented to me by Mr NUTTALL is of a cylindrical form nine inches long, three and a half in diameter. It is suspended from the fork of a small twig, and is composed externally of hypna, lichens, and fibrous roots, interwoven so as to present a smoothish surface, and with a few stems of grasses, and some feathers of *Garrulus Stelleri* intermixed. The aperture, which is at the top, does not exceed seven-eighths of an inch in diameter; but for two-thirds of the length of the nest, the internal diameter is two inches. This part is lined with the cottony down of willows, carefully thrust into the interstices, and contains a vast quantity of soft feathers chiefly of Steller's Jay, with some others, among which can be distinguished those of *Tetrao urophasianus*, *Columba fasciata*, and *Tanagra ludoviciana*. The eggs, nine in number, are pure white, $\frac{49}{8}$ of an inch in length, by $\frac{33}{8}$ broad, and are rather pointed at the small end.

LOUISIANA TANAGER.

TANAGRA LUDOVICIANA, WILS.

PLATE CCCLIV. MALE.

WILSON was the first ornithologist who figured this handsome bird. From his time until the return of Dr TOWNSEND from the Columbia River no specimen seems to have been procured. That gentleman forwarded several males in much finer condition than those brought by LEWIS and CLARKE. Some of these I purchased, and, on his return to Philadelphia, I was presented with a female by my young friend Dr TRUDEAU, of Louisiana, a representation of which you will find in Plate CCCC. fig. 4. The only account of this species is by THOMAS NUTTALL, who, however, was unacquainted with the female.

“ We first observed this fine bird in a thick belt of wood near Lormier’s Fork of the Platte, on the 4th of June, at a considerable distance to the east of the first chain of the Rocky Mountains (or Black Hills), so that the species in all probability continues some distance down the Platte. We have also seen them very abundant in the spring, in the forests of the Columbia, below Fort Vancouver. On the Platte they appeared shy and almost silent, not having there apparently commenced breeding. About the middle of May we observed the males in small numbers scattered through the dark pine forests of the Columbia, restless, shy, and flitting when approached, but at length more sedentary when mated. We frequently traced them out by their song, which is a loud, short, slow, but pleasing warble, not much unlike the song of the Common Robin, delivered from the tops of the lofty fir-trees. This music continues at short intervals throughout the whole forenoon, during which time our songster is busily engaged in quest of such coleopterous insects and larvæ as are to be found on the young branches of the trees he frequents, and which require an assiduous and long-continued search to gratify his wants. Of the female and nest we are still ignorant, though they are in all probability very similar to those of our other known species. We have not seen this bird as far south as Upper California, though it may exist in the thicker forests remote from the coast, which we had no opportunity of visiting.”

LOUISIANA TANAGER, TANAGRA LUDOVICIANA, *Wils. Amer. Ornith.* vol. iii. p. 27, pl. 20, fig. 1.

TANAGRA LUDOVICIANA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 105.

LOUISIANA TANAGER, *Nuttall, Manual*, vol. i. p. 471.

Adult Male, in Spring. Fig. 1, 2.

Bill rather short, robust, tapering, compressed toward the end, acute. Upper mandible with its dorsal outline declinate and slightly convex, the ridge rather narrow, the sides convex, the edges sharp, overlapping, with two slightly prominent small festoons about the middle, and a distinct notch close to the tip, which is a little declinate. Lower mandible strong, with the angle short and wide, the dorsal line straight, the back broadly convex, the sides convex, the edges sharp, the tip acute. Nostrils round, basal.

Head rather large, ovate, flattish above; neck very short; body ovate, compact. Legs shortish; tarsus short, compressed, rather stout, with seven anterior scutella, and two lateral plates forming an acute edge behind; toes of moderate length; middle toe longer than tarsus, lateral toes much shorter and equal, hind toe stout. Claws rather large, arched, much compressed, acute.

Plumage soft, blended; feathers of the head stiffish with silky lustre; bristles at the base of the upper mandible small. Wings of ordinary length, the second quill longest, the first four having the outer web attenuated towards the end; secondaries slightly emarginate. Tail rather long, straight, emarginate, of twelve feathers.

Bill dull greenish-yellow, brown along the ridge. Feet greyish-blue. The head all round is of a beautiful rich carmine, fading gradually on the nape, paler on the throat and fading on the fore neck; the rest of the neck, all the lower parts, two bands on the wing, formed by the middle coverts, and the extremities of the secondary coverts, together with the rump and upper tail-coverts pure bright yellow. The anterior half of the back, the scapulars, two bands on the wings, and the inner secondaries black, the latter broadly margined at the end and tipped with yellowish-white; alula, primary coverts, and primary quills chocolate-brown, margined with yellowish-white; tail black, the feathers narrowly tipped with greyish-white, and slightly margined toward the end with yellowish-white.

Length to end of tail $7\frac{1}{4}$ inches; wing from flexure $3\frac{9}{12}$; tail 3; bill

along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{8\frac{1}{2}}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{5}{12}$.

The female which has not been described or figured before, will be seen on Plate CCCC, Fig. 4. The bill is dusky brown above, light greyish-yellow beneath. The head, ear-coverts, and hind neck, dull green, as is the rump; the middle of the back and the scapulars greyish-brown tinged with green. Anterior wing-coverts greyish-brown; middle coverts black with the extremities dull yellow, secondary coverts and inner secondaries blackish-brown, tipped with greyish-white; alula, primary coverts, and primary quills chocolate-brown, slightly edged with brownish-white; tail-feathers similar, but margined with yellowish-green. The lower parts are light dull greenish-yellow, the sides tinged with grey.

Length to end of tail $6\frac{3}{4}$ inches; wing from flexure $3\frac{9}{12}$; tail $2\frac{10}{12}$; bill along the ridge $\frac{7}{12}$; tarsus $\frac{8}{12}$; middle toe and claw $\frac{9}{12}$.

SCARLET TANAGER.

TANAGRA RUBRA, LINN.

PLATE CCCLIV. MALE AND FEMALE.

You have now before you representations of one of the most richly coloured of our birds, and one whose history is in some degree peculiar. The Scarlet Tanager enters the United States from Mexico, through the Texas, in the beginning of April. On several of the islands in the Bay of Mexico, I found it exceedingly abundant, and restrained in a great measure from proceeding eastward by the weather, which was unseasonably cold. Many were procured in their full dress, and a few in the garb of the females. These plain-coloured individuals turned all out to be males, which in so far confirmed my former observations respecting this and several other species, in which the males precede the females by about a fortnight in their spring migrations. It was at the same period that I observed the wonderful rapidity in the change of the plumage from its winter aspect to its summer colouring, in the Red-breasted Snipe, *Scolopax Noveboracensis*; and I became convinced that nearly the same phenomenon took place in the Tanagers. In them, in fact, the older individuals, being stronger, had attained their full colouring, while the younger were later in changing. As we advanced, I procured many specimens partially coloured, and when the males had mostly passed, the females made their appearance; manifesting similar gradations in the changes of their colours. I knew that many of the males of this species reach our Middle Districts in a spotted dress, and soon after acquire their full colours; and I am disposed to think that in the autumnal months, the young males of the year become of a much purer tint than that of the young or old females. The latter themselves improve materially in this respect as they advance in age, and I have some nearly twice as richly coloured as birds only a year old. The same observations apply to our Summer Red Bird, *Tanagra aestiva*, of which I have females, procured by my valued friend EDWARD HARRIS, Esq., exhibiting tints nearly as bright as those of their mates obtained at the same time, when they had nests. In the Scarlet Tanager it is remarkable, moreover, that some males

acquire a beautiful transverse band of glowing red on the smaller wing-coverts; and I have several specimens in this state, presented to me by Mr HARRIS and Dr TRUDEAU.

The Scarlet Tanager proceeds as far northward as Lake Huron, where it was observed by Dr RICHARDSON; but this must happen rarely, as it is very sensible to cold, so much so indeed, that in the State of Massachusetts, should a sudden change take place in the weather, during the time of their spring migrations, hundreds die in the course of a night, not only in the woods and orchards, but even in the towns and villages. I witnessed a like occurrence at Eastport in Maine late in May, when I was on my way to Labrador; and as I was proceeding to the Texas, I observed that they sought the shelter of the low bushes, when the weather was damp or chill. None were seen after we left the former place, though they are at times found breeding in the British provinces of New Brunswick and Nova Scotia. In the United States they seem extremely partial to certain districts, generally preferring sandy soils and undulating grounds. Thus, I found them breeding abundantly in Louisiana, but rarely there in the lower parts. My friend Dr BACHMAN informs me that they are seldom met with in the maritime districts of South Carolina; and that there they follow the mountain range as it were for a guide. Yet they are plentiful in the Jerseys, where they usually arrive about the middle of May, in Kentucky, and along the Missouri; and, in short, are generally dispersed over the Union.

The migrations of this species are performed by night. Its flight on ordinary occasions is even and swift, and it passes through the woods in a gliding manner, when the glowing colours of the males render them as conspicuous as pleasing to the sight. On the branches their movements are rather sedate, and it is but seldom that they emit their usual notes when in motion. These are by no means musical, although oft repeated. They have been well imitated by WILSON, who represents them by the syllables "*chip, churr.*" I have not, however, thought them pensive in any degree, but rather lively; and when emitting them, the bird often inflates his throat, stands erect, and vibrates his body, as if in perfect ecstasy.

It is by no means true, as authors allege, that the Scarlet Tanager retires from the sight of man, and prefers the deepest recesses of the forest to the neighbourhood of the husbandman's cottage; at least, this is not the case in those parts of our country where the population is not very dense; for I have observed it to take up its abode for a

season in the very vicinity of the squatter's cabin, to the patch of open ground near which it constantly resorted to search for coleoptera and other insects, forming its slightly-built nest on the lower branch of a spreading oak, or on a tree close to the road-side. It is composed externally of a few dry weeds and small twigs, and scantily lined with fibrous roots or slender grasses. In Louisiana the eggs are deposited by the first of May, about a month later in our central districts, but in the State of Maine frequently not until the middle of June. It never raises more than one brood in the season; and I have observed that, notwithstanding the difference in the temperature of our Southern and Northern States, the young are no sooner able to travel than they are at once led off, so that families may be seen travelling southward for many weeks in succession, and by the end of September all have left the United States. The eggs are from three to five, smooth, of a dull greenish-blue colour, speckled with reddish-brown and light purple, and measure a little more than 7 eighths of an inch in length, by 5 eighths in breadth. The young are fed with insects and fruits of many sorts. At this period the old birds feed also on insects and larvæ, but toward the latter period of their stay they all subsist chiefly on the smaller berries and grapes.

The parental affection of this bird has been so beautifully and truly described by WILSON, that, in presenting the following statement regarding it, I must contribute to the gratification of your kindly feelings as much as of my own. "Passing through an orchard one morning, I caught one of the young birds that had but lately left the nest. I carried it with me about half a mile, to shew it to my friend, Mr WILLIAM BARTRAM; and, having procured a cage, hung it upon one of the large pine trees in the Botanic Garden, within a few feet of the nest of an Orchard Oriole, which also contained young; hopeful that the charity or tenderness of the Orioles would induce them to supply the cravings of the stranger. But charity with them, as with too many of the human race, began and ended at home. The poor orphan was altogether neglected, notwithstanding its plaintive cries; and, as it refused to be fed by me, I was about to return it back to the place where I found it, when, towards the afternoon, a Scarlet Tanager, no doubt its own parent, was seen fluttering round the cage, endeavouring to get in. Finding this impracticable, he flew off, and soon returned with food in his bill; and continued to feed it till after sunset, taking up his lodgings on the higher branches of the same tree. In the

morning, almost as soon as day broke, he was again seen most actively engaged in the same affectionate manner; and, notwithstanding the insolence of the Orioles, continued his benevolent offices the whole day, roosting at night as before. On the third or fourth day, he appeared extremely solicitous for the liberation of his charge, using every expression of distressful anxiety, and every call and invitation that nature had put in his power, for him to come out. This was too much for the feelings of my venerable friend; he procured a ladder, and, mounting to the spot where the bird was suspended, opened the cage, took out the prisoner, and restored him to liberty and to his parent, who, with notes of great exultation, accompanied his flight to the woods. The happiness of my good friend was scarcely less complete, and shewed itself in his benevolent countenance; and I could not refrain saying to myself,—If such sweet sensations can be derived from a single circumstance of this kind, how exquisite—now unspeakably rapturous—must the delight of those individuals have been, who have rescued their fellow beings from death, chains, and imprisonment, and restored them to the arms of their friends and relations! Surely in such godlike actions, virtue is its own most abundant reward.”

TANAGRA RUBRA, *Linn. Syst. Nat.* vol. i. p. 314.—*Lath. Ind. Ornith.* vol. i. p. 420.

SCARLET TANAGER, TANAGRA RUBRA, *Wilson, Amer. Ornith.* vol. ii. p. 42, pl. 11, fig. 3. Male; fig. 4. Female.

TANAGRA RUBRA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 105.

SCARLET TANAGER, or BLACK-WINGED SUMMER RED-BIRD.

PYRANGA RUBRA, SCARLET BLACK-WINGED TANAGER, *Richards. and Swains. Fauna Bor.-Americana*, vol. ii. p. 273.

Adult Male in Spring. Plate CCCLIV. Fig. 3.

Bill rather short, robust, compressed toward the end, acute. Upper mandible with its dorsal outline declinate and slightly convex, the ridge rather narrow, the sides convex, the edges sharp, overlapping, with two slightly prominent small festoons about the middle, and a faint notch close to the tip, which is a little declinate. Lower mandible strong, with the angle short and wide, the dorsal line straight, the back broadly convex, the sides convex, the edges sharp, the tip acute. Nostrils round, basal.

Head rather large, ovate, flattish above; neck very short; body ovate, compact. Legs shortish; tarsus short, compressed, rather stout,

with seven anterior scutella, and two lateral plates forming an acute edge behind; toes of moderate length; middle toe longer than the tarsus, lateral toes much shorter and equal, hind toe stout. Claws rather large, arched, much compressed, acute.

Plumage soft and blended; very small bristles at the base of the upper mandible. Wings of ordinary length, the second quill longest, the first four having the outer web attenuated toward the end; secondaries slightly emarginate. Tail rather long, straight, emarginate, of twelve feathers.

Bill dull greenish-yellow, brown above. Iris hazel. Feet greyish-blue, claws greyish-yellow. The general colour of the plumage is pure scarlet; the wings and tail black; the axillar feathers, inner lower wing-coverts, and more or less of the inner webs of nearly all the quills, white.

Length to end of tail 7 inches, to end of wings $5\frac{3}{4}$, to end of claws $6\frac{3}{8}$; extent of wings $11\frac{3}{4}$; wing from flexure $4\frac{1}{2}$; tail $2\frac{1}{2}$; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{1}{2}$; tarsus $\frac{9}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{3}{12}$; middle toe $\frac{7}{12}$, its claw $\frac{4}{12}$.

Adult Female. Plate CCCLIV. Fig. 4.

Bill and feet as in the male. The general colour of the upper parts is yellowish-green, tinged with grey, of the lower parts greenish-yellow; the feathers of the wings and tail greyish-brown, margined with yellowish-green, the secondaries and tail-feathers narrowly tipped with greyish-white, the lower wing-coverts and the edges of all the quills white.

Length to end of tail $6\frac{1}{2}$ inches, to end of wings $5\frac{3}{4}$, to end of claws $6\frac{1}{4}$; extent of wings $10\frac{3}{4}$.

The young when fledged resemble the female; the males being, however, distinguishable from the females by their brighter tints.

The young male in autumn, after the first moult, has the lower parts of a much brighter yellow, the upper of a lighter green, but with all the feathers having a central black mark, those on the head oblong, on the middle of the back broad, on the rump linear. The wing-coverts are black; the quills and tail-feathers brownish-black, margined with yellowish-green.

Two males in my possession, shot by Dr TRUDEAU, are remarkable

for having the first row of small coverts scarlet, forming a conspicuous band amidst the black of the wing, and the lower wing-coverts tipped and margined with the same. In all other respects, however, these individuals agree with the others.

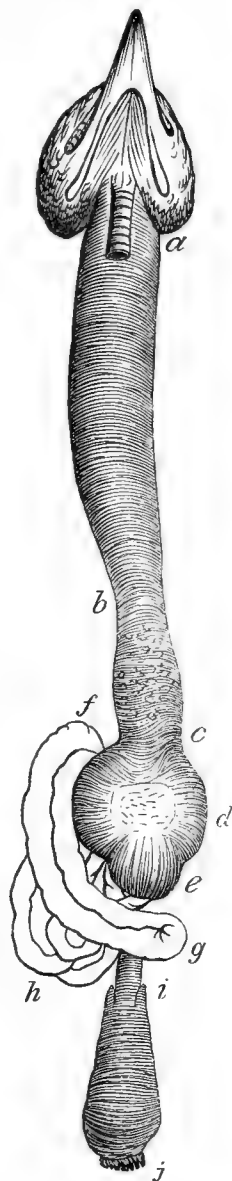
An adult male examined. The roof of the mouth is concave, with a median prominent ridge and two more prominent lateral ridges, between which and the edges is a broad groove for the reception of the lower mandible. The tongue is 6 twelfths long, deeply emarginate and papillate at the base, flat above, with a median groove, the tip horny and pointed, but terminated by several flattened bristles or shreds. Œsophagus, *a b c*, $2\frac{1}{2}$ inches long, its diameter $4\frac{1}{2}$ twelfths, until its entrance into the thorax, when it contracts a little. Proventriculus, *b c*, $\frac{1}{2}$ inch long, and $3\frac{1}{2}$ twelfths in diameter. The stomach, *c d e*, is a strong gizzard, 8 twelfths long, 7 twelfths in breadth, its lateral muscles moderately thick; the epithelium rugous and dark reddish-brown. Intestine, *f g h*, $7\frac{1}{2}$ inches long, its average diameter $2\frac{1}{2}$ twelfths, its narrowest part 2 twelfths. The rectum *i j*, 10 twelfths long; the cœca, *i*, $\frac{3}{4}$ of a twelfth long, and $\frac{1}{2}$ twelfth in diameter.

The trachea is 2 inches long, its diameter $1\frac{1}{2}$ twelfths, and nearly uniform; the rings about 60. The contractor and sterno-tracheal muscles are slender; and there are four pairs of inferior laryngeal.

In a female the intestine is $7\frac{1}{4}$ inches long.

The contents of the stomach in both were remains of insects and seeds.

The digestive organs of this bird, and probably of all the Tanagers of the same group, are thus not essentially different from those of the Passerine tribe, including Finches, Buntings, &c. The œsophagus has a more elongated dilatation than in most of the species of that tribe, of which, however, the Corn Bunting of Europe is very similar in this respect.



MACGILLIVRAY'S FINCH.

FRINGILLA MACGILLIVRAII.

PLATE CCCLV. MALE AND FEMALE.

WHILST BACHMAN'S Finch resides in the pine forests of the Carolinas and other Southern States, preferring dry and sandy lands covered with grasses; and whilst HENSLOW'S Bunting or Finch, and the Yellow-winged Bunting, are fond of open prairies and ploughed fields, in which they nestle; the species, on which I have bestowed the name of my friend MACGILLIVRAY, chooses for its residence the salt marshes of our Southern Atlantic shores, in which also are found the Sharp-tailed and Seaside Finches of WILSON and other authors. The three former spend the greater part of the winter in the forests, perch occasionally on trees, and feed principally on seeds; whereas the latter three are never found elsewhere than in the salt marshes, and feed chiefly on minute shells and aquatic insects. Were I therefore to adopt the minimum generic groups which have become prevalent, I would place the three birds of the interior in a genus apart from that containing the three marsh-birds.

MACGILLIVRAY'S Finch is as yet very rare within the United States, and has not been observed farther eastward than Sullivan Island, about six miles from Charleston in South Carolina; but it is very abundant in the Texas, occurring on all the low islands that are much intersected by salt-water bayous, and interspersed with ponds of brackish water, seldom leaving these localities unless whilst travelling, or passing from one island to another, which they do by flying at the height of only a few feet above the surface. They run among the rankest weeds with uncommon celerity, and do not seem to mind being followed by a dog, which they very easily elude amongst the thick grass. Whilst breeding they often start from a little distance, and pursue a singularly irregular or zigzag flight, much resembling that of the Jack Snipe of Europe, and yet performed with apparently slow beats of the wings. They fall as it were among the grass as suddenly as they rise from it, and by these manœuvres save their nests from the searching eye of the keenest student of nature. They very seldom alight on the stems

of grasses, although when they do they climb with facility, occasionally using their tail as a support, in the same manner as the Rice-bird. Their strong tarsi and toes enable them to walk on the ground with great vigour. When they take wing deliberately, their flight resembles that of a young partridge, and, if over the land, is seldom extended between forty or fifty yards at a time. The males appear very jealous of each other, and frequently one pursues another on wing, but usually abandons the chase before the conquered bird has alighted, leaving it to pursue its course as it pleases after it has been driven beyond the assailant's jurisdiction. The notes of this species are few and unmusical, consisting of a sort of roll of five or six syllables, which it seems to me impossible to imitate. They are usually heard early in the morning. My friend Dr BACHMAN informs me that none of these Finches remain in South Carolina during winter, and that they generally disappear early in November, when the weather is still very pleasant in the maritime portions of that state. Many, however, spend the winter in the salt marshes about the mouths of the Mississippi, and I have no doubt that they are constant residents there, as they are in the Texas.

This species has already been described at p. 285 of the second volume of the present work.

MARSH HAWK.

FALCO CYANEUS, LINN.

PLATE CCCLVI.

WITH ease and elegance of flight, guided by an uncommon acuteness of what I would call short-sightedness, the Marsh Hawk, like an experienced gleaner, ranges over the wide extent of the prairie. The pure white of the hind part of the female's back, and the pale blue of the male, attract your eye so long as the pair remain within sight. The diligence and industry which they exhibit remind you of the search of a well-trained pointer.

This species visits the greater part of the United States. Dr RICHARDSON procured some specimens in latitude 65° north, and Dr TOWNSEND found it on the plains of the Columbia River, as well as on the extensive prairies bordering on the Missouri. I have met with it in Newfoundland and Labrador on the one hand, in Texas on the other, and in every intermediate portion of the country.

In the *Fauna Boreali-Americana*, Mr SWAINSON has published an excellent paper relating to such birds as have and have not been considered as identical with this bird and the European one bearing the same name. I perfectly agree with that gentleman when he says that "the typical structure of the wing in the present group must unquestionably be that most prevalent among the species. It must, however, be remembered, that even this character is subject to variation, according to the age and perhaps the locality of the bird, and that it must not be insisted upon with too much rigour." I regret that this learned ornithologist did not introduce the word *sex* into the above well-founded remark, as in the sexes of birds, as well as in individuals of different ages, remarkable differences are often observed.

It is to MONTAGU that we are indebted for our first knowledge of the differences that exist between the male and the female of the European Hen Harrier, with which WILSON believed the Marsh Hawk of America to be identical. The Prince of MUSIGNANO, in his continuation of Wilson's *American Ornithology*, also considered these birds as the same; although he has since altered his opinion. For my part, having

carefully observed the habits, and compared specimens of both, I have come to the conclusion of their being the same species.

The flight of the Marsh Hawk, although light and elegant, cannot be said to be either swift or strong ; but it is well sustained, and this may be accounted for on comparing the small size and weight of its body with the great extent of its wings and tail, which are proportionally larger than those of any other American Hawk. While searching for prey, it performs most of its rambles by rather irregular sailings ; by which I mean that it frequently deviates from a straight course peeping hither and thither among the tall grasses of the marshes, prairies, or meadows, or along the briary edges of our fields. It is seldom indeed seen to chase birds on wing, although I have met with a few instances ; nor is it much in the habit of carrying its quarry to any distance ; for generally as it observes an object suited to its appetite, it suddenly checks its speed, and almost poisoning itself by a few flaps of its wings, drops with astonishing quickness on its unfortunate victim, which it usually tears to pieces and devours on the spot. If disappointed, however, it rises as quickly as it dropped, and proceeds as before. Whilst engaged in feeding, it may very easily be approached, surprised, and shot, by an experienced sportsman, for it rises in a flurried manner, and generally cuts a few curious zigzags at the outset. To obtain it, one has only to mark the spot with accuracy, keep his eye upon it, and advance with his gun in readiness, for he will probably get within a few yards before the bird rises. I have frequently seen it shot in this manner. At other times, by watching its beats over a field or meadow, one may obtain a good opportunity by concealing himself near a spot where he has seen it miss its object, as it is sure to re-pass there in a short time. at all events before it removes to another field. When wounded and brought to the ground, it makes off on the approach of its enemy by great leaps, and at times so swiftly that great exertion is requisite to overtake it ; and when this is accomplished, it throws itself on its back, strikes furiously, and can inflict pretty severe wounds with its very sharp claws.

This species flies very high at times, and in a direct course, as if intent on proceeding to some great distance ; but as I observed that this frequently occurred when the bird was satiated with food, I have thought that it preferred this method of favouring digestion, to its more usual mode of sitting on the top of a fence rail, and there remaining

quiet until again roused by the feeling of hunger. I have often seen it, after sailing about in circles for a long while, half-close its wings, and come towards the ground, cutting curious zigzags, until within a few feet of it, when it would resume its usual elegant and graceful mode of proceeding.

I have observed it in our western prairies in autumn moving in flocks of twenty, thirty, or even so many as forty individuals, and appearing to be migrating, as they passed along at a height of fifty or sixty yards, without paying any attention to the objects below; but on all these occasions I could never find that they were bent on any general course more than another; as some days a flock would be proceeding southward, on the next to the northward or eastward. Many times I have seen them follow the grassy margins of our great streams, such as the Ohio and Mississippi, at the approach of winter, as if bent on going southward, but have become assured that they were merely attracted by the vast multitudes of Finches or Sparrows of various sorts which are then advancing in that direction.

In winter, the notes which the Marsh Hawk emits while on wing, are sharp, and sound like the syllables *pee, pee, pee*, the first slightly pronounced, the last louder, much prolonged, and ending plaintively. During the love-season, its cry more resembles that of our Pigeon Hawk, especially when the males meet, they being apparently tenacious of their assumed right to a certain locality, as well as to the female of their choice.

The Marsh Hawk breeds in many parts of the United States, as well as beyond our limits to the north and south in which it finds a place suited to its habits; as is the case with the Blue-winged Teal, and several other species, which have until now been supposed to retreat to high latitudes for the purpose. That many make choice of the more northern regions, and return southward in autumn, is quite certain; but in all probability an equal number remain within the confines of the United States to breed.

It is by no means restricted to the low lands of the sea-shores during the breeding season, for I have found its nest in the Barrens of Kentucky, and even on the cleared table-lands of the Alleghany Mountains and their spurs. In one instance, I found it in the high-covered pine-barrens of the Floridas, although I have never seen one on a tree; and the few cases of its nest having been placed on low trees

or bushes, may have been caused by the presence of dangerous quadrupeds, or their having been more than once disturbed or robbed of their eggs or young, when their former nests had been placed on the ground.

Many birds of this species breed before they have obtained their full plumage. I have several times found a male bird in brown plumage paired with a female which had eggs; but such a circumstance is not singular, for the like occurs in many species of different families. I have never met with a nest in situations like those described by some European writers as those in which the Hen-harrier breeds; but usually on level parts of the country, or flat pieces of land that are sometimes met with in hilly districts. As I am well aware, however, that birds adapt the place and even the form and materials of their nests to circumstances, I cannot admit that such a difference is by any means sufficient to prove that birds similar in all other respects, are really different from each other. If it be correct, as has been stated, that the male of the European bird deserts the female, as soon as incubation commences, this indeed would form a decided difference; but as such a habit has not been observed in any other Hawk, it requires to be confirmed. Our Marsh Hawks, after being paired, invariably keep together, and labour conjointly for the support of their family, until the young are left to shift for themselves. This is equally the case with every Hawk with which I am acquainted.

Having considerable doubts as to whether any American writer who has spoken of the Marsh Hawk ever saw one of its nests, I will here describe one found on Galveston Island by my son JOHN WOODHOUSE, and carefully examined by him as well as by my friend EDWARD HARRIS and myself. As is usually the case when in a low and flat district, this was placed about a hundred yards from a pond, on the ground, upon a broom-sedge ridge, about two feet above the level of the surrounding salt marsh. It was made of dry grass, and measured between seven and eight inches in its internal diameter, with a depth of two inches and a half, while its external diameter was twelve inches. The grass was pretty regularly and compactly disposed, especially in the interior, on which much care seemed to have been bestowed. No feathers or other materials had been used in its construction, not even a twig. The eggs were four, smooth, considerably rounded, or broadly elliptical, bluish-white, an inch and three-quarters in length, an inch and a

quarter in breadth. The two birds were procured, and their measurements carefully entered in my journal, as well as those of others obtained in various parts of the United States and of the British Provinces. A nest found on the Alleghanies was placed under a low bush, in an open spot of scarcely half an acre. It was constructed in the same manner, as the one described above, but was more bulky, the bed being about four inches from the earth. The eggs, although of the same form and colour, were slightly sprinkled with small marks of pale reddish-brown. In general, the Marsh Hawks scoop the ground, for the purpose of fixing their nest to the spot. On returning to London, in the summer of 1837, I shewed several of the eggs of the American bird to WILLIAM YARBELL, Esq., who at once pronounced them to belong to the Hen Harrier; and on comparing their measurements with those of the eggs described by my friend WILLIAM MACGILLIVRAY, I find that they agree perfectly.

The young are at first covered with soft yellowish-white down, but in a few weeks shew the brownish and ferruginous tints of their female parent, the young males being distinguishable from the females by their smaller size.

I have found a greater number of barren females in this species than in any other; and to this I in part attribute their predominance over the males. The food of the Marsh Hawk consists of insects of various kinds, especially crickets, of small lizards, frogs, snakes, birds, principally the smaller sorts, although it will attack Partridges, Plovers, and even Green-winged Teals, when urged by excessive hunger. The only instance in which I have seen this bird carry any prey in its talons on wing, happened on the 2d of April 1837, at the south-west Pass of the Mississippi, when I was in company with EDWARD HARRIS, Esq. and my son JOHN WOODHOUSE. A Marsh Hawk was seen to seize a bird on its nest, perhaps a Marsh Wren, *Troglodytes palustris*, and carry it off in its talons with the nest! A pair were hovering over the marsh during the whole of our stay, and probably had a nest thereabout. It is rather a cowardly bird, however, for on several occasions, when I was in the Floridas, where it is abundant, I saw it chase a Salt-water Marsh Hen, *Rallus crepitans*, which courageously sprung up, and striking at its enemy, forced it off. My friend JOHN BACHMAN has frequently observed similar occurrences in the neighbourhood of Charleston. Whenever it seizes a bird on wing, it almost at once drops to

the ground with it, and if in an exposed place, hops off with its prey to the nearest concealment.

In autumn, after the young have left their parents, they hunt in packs. This I observed on several occasions when on my way back from Labrador. In Nova Scotia, on the 27th of August, we procured nearly a whole pack, by concealing ourselves, but did not see an adult male. These birds are fond of searching for prey over the same fields, removing from one plantation to another, and returning with a remarkable degree of regularity, and this apparently for a whole season, if not a longer period. My friend JOHN BACHMAN observed a beautiful old male which had one of its primaries cut short by a shot, regularly return to the same rice-field during the whole of the autumn and winter, and believes that the same individual revisits the same spot annually. When satiated with food, the Marsh Hawk may be seen perched on a fence-stake for more than an hour, standing motionless. On horseback I have approached them on such occasions near enough to see the colour of their eyes, before they would reluctantly open their wings, and remove to another stake not far distant, where they would probably remain until digestion was accomplished.

I have never seen this species searching for food in the dusk. Indeed, in our latitudes, when the orb of day has withdrawn from our sight, the twilight is so short, and the necessity of providing a place of safety for the night so imperious in birds that are not altogether nocturnal, that I doubt whether the Marsh Hawk, which has perhaps been on wing the greater part of the day, and has had many opportunities of procuring food, would continue its flight for the sake of the scanty fare which it might perchance procure at a time when few birds are abroad, and when quadrupeds only are awakening from their daily slumber.

WILSON must have been misinformed by some one unacquainted with the arrival and departure of this species, as well as of the Rice Bird, in South Carolina, when he was induced to say that the Marsh Hawk "is particularly serviceable to the rice-fields of the Southern States, by the havoc it makes among the clouds of Rice Buntings that spread such devastation among the grain, in its early stages. As it sails low, and swiftly, over the surface of the field, it keeps the flocks in perpetual fluctuation, and greatly interrupts their depredations. The planters consider one Marsh Hawk to be equal to several Negroes for

alarming the Rice Birds." Now, good Reader, my friend JOHN BACHMAN, who has resided more than twenty years in South Carolina, and who is a constant student of nature, and perhaps more especially attentive to the habits of birds, informs me that the Marsh Hawk is proportionally rare in that State, and that it only makes its appearance there *after* the Rice Birds have left the country for the south, and retires at the approach of spring, *before* they have arrived.

European writers have generally considered our Marsh Hawk as larger than their *Circus cyaneus*; but this opinion must have originated from a want of specimens for comparison, and perhaps also a want of books on which one might depend. Were all ornithological works characterized by the accuracy and detail to be found in those of my friend WILLIAM MACGILLIVRAY, the case might be different. The measurements which he has taken from recent specimens correspond with those which I also have taken from individuals newly killed, as nearly as is usual in birds of other species. Indeed, should you measure as accurately as possible a hundred specimens of any bird as large as our Marsh Hawk, I am persuaded you would not find many of them to agree in all their proportions. Instead of the American exceeding the European bird in size, I think it will generally be found to be as nearly equal as possible.

FALCO CYANEUS and F. PYGARGUS, *Linn. Syst. Nat.* vol. i. p. 126.

FALCO CYANEUS, *Lath. Ind. Ornith.* vol. i. p. 39.—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 33.

MARSH HAWK, FALCO ULIGINOSUS, *Wils. Amer. Ornith.* vol. vi. p. 67, pl. 1, fig. 1., young female.

FALCO CYANEUS, *Ch. Bonaparte*, Amer. Ornith. vol. ii. p. 30, pl. xi. fig. 1., male.

BUTEO (CIRCUS) CYANEUS? VAR? AMERICANUS, AMERICAN HEN-HARRIER, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 55.

HEN-HARRIER, OR MARSH HAWK, *Nuttall*, Manual, vol. ii. p. 109.

Adult Male. Plate CCCLVI. Fig. 1.

Bill short, compressed. Upper mandible with its dorsal line a little tumid at the base, sloping to beyond the cere, then decurved in the fourth of a circle, the sides sloping, towards the end a little convex, the edge with a festoon a little anterior to the nostril, the tip acute, concave beneath. Lower mandible with the angle broad, the dorsal

line ascending and convex, the edges a little inflected, the tip rounded, with the edges decurved. Nostrils large, ovato-oblong, in the middle and fore part of the cere, and having an oblique ridge from the upper edge.

Head of moderate size, oblong; neck short; body slender, much compressed behind. Legs long and slender; tibia long but muscular; tarsi long, compressed, with seventeen or eighteen large oblique scutella on the fore and outer side, oval or subhexagonal scales on the sides, and scutella behind, excepting at the upper and lower parts; toes small, slender, the outer with a short web at the base, connecting it with the third; first considerably shorter than second, fourth a little longer than the latter, third much longer; all covered above with scutella, unless at the base, where there are small scales, beneath tuberculate and papillate, there being a long fleshy tubercle on the last joint of each toe, and one on the next joint of the two outer. Claws long, compressed, rounded above, flat beneath, curved into the fourth of a circle, those of the first and second toes largest, that of the third with a slight internal edge, of the fourth much smaller and less curved.

Plumage very soft, generally blended. Cere covered on the sides with rather long bristle-tipped feathers, which curve upwards and partially conceal the nostrils; space between the bill and eye with radiating feathers of the same nature. A distinct ruff of narrow feathers, which are decurved, but with the tips recurved, extends from behind the eye on each side to the chin. Wings long, much rounded; the fourth quill longest, the third two-twelfths of an inch shorter, the second a quarter of an inch shorter than the fifth, the first and seventh about equal. The outer webs of the first five are attenuated towards the end; and the outer four have their inner webs sinuate; the secondaries are broad and rounded. Tail straight, long, of moderate breadth, and slightly rounded, the middle feathers longest (in perfect specimens, but often worn). The quills and tail-feathers are extremely soft, being covered with a velvety down.

Bill bluish-black, cere yellow; inside of mouth dark bluish-grey. Iris yellow. Tarsi and toes yellow, tinged with orange; claws black. The general colour of the plumage above is light greyish-blue, the head and scapulars of a deeper tint, the hind part of the back paler; the bases of the occipital and ruff feathers white; the bristles of the cere and lores black, their downy bases white. The fore neck and

anterior part of the breast are also greyish-blue; the middle of the breast and the sides white, tinged with blue, the feathers having their shafts dusky, and some very faint indications of bars; those of the legs, the lower wing-coverts, and lower and upper tail-coverts, pure white. The seven outer primaries are black, tipped with pale brown, at the base white, and on the outer edge tinged with grey; the rest and the secondaries of the general colour, but with more or less brown towards the end, their inner webs white, and obscurely barred with dark grey. The two middle tail-feathers are of a lighter tint than the back, and the colour on the outer webs of the rest gradually fades into white; the inner webs of all but the two middle more or less white, with eight irregular narrow bars of darkish grey.

Length to end of tail $19\frac{3}{4}$ inches, to end of wings $16\frac{1}{2}$, to end of claws $16\frac{1}{2}$; extent of wings 44; wing from flexure $14\frac{4}{12}$; tail $8\frac{9}{12}$; bill along the ridge $1\frac{2}{12}$, along the edge of lower mandible $1\frac{2}{12}$; tarsus $2\frac{8}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{1}{12}$; middle toe $1\frac{2}{12}$, its claw $\frac{8}{12}$. Weight 16 oz.

Adult Female. Plate CCCLVI. Fig. 2.

The female is larger than the male, and differs extremely in the colours of the plumage, although those of the bare parts are the same. The general colour of the upper parts is umber-brown, of the lower light yellowish-red. The upper part of the head is deep brown, the feathers edged with light yellowish-red; the anterior part of the forehead, a band over the eye, and the loreal space, pale greyish-yellow, the bristle-tips of the latter black. The cheek feathers are dull brown, slightly edged with yellowish-red; the ruff feathers light yellowish-red, with a narrow brown central band. The upper hind part, sides, and fore part of the neck, the breast and sides, are light reddish-yellow, each feather with an oblong-lanceolate umber-brown mark. Some of the hypochondrial feathers have four light spots; the central part of the outer tibial feathers is light brownish-red; the feathers of the middle of the breast, the abdomen, and the lower tail-coverts, are of a uniform light yellowish-red. On some of the scapulars, as well as many of the wing-coverts, are one or two round light red or whitish spots; and the bases of the occipital feathers are white. The primary and secondary quills are of the same colour as the back, slightly edged with paler, the greater part of the inner webs whitish, the primaries with broad bands of deeper brown. Upper tail-coverts white. Tail

light greyish-brown, white at the base, with six broad bands of deep brown on the middle feathers, four on the lateral, the last band much larger, the tips brownish or reddish white, the inner webs, excepting the two middle feathers, reddish-grey or whitish, the shafts light brown. Lower wing-coverts reddish-white, with central lanceolate brown markings; lower surface of primary quills greyish-white, with very conspicuous broad blackish-brown bands; tail reddish-grey beneath, with the dark bands more distinct.

Length to end of tail $20\frac{1}{2}$ inches, to end of wings $18\frac{3}{4}$, to end of claws $15\frac{3}{4}$; extent of wings $46\frac{3}{8}$; wing from flexure $15\frac{1}{4}$; tail $9\frac{1}{2}$; bill along the ridge $1\frac{5}{12}$, along the edge of lower mandible $1\frac{2}{12}$; tarsus $3\frac{2}{12}$; hind toe $\frac{1}{2}$, its claw $1\frac{2}{12}$; middle toe $1\frac{1}{2}$, its claw $\frac{1}{2}$.

Young fully fledged. Plate CCCLVI. Fig. 3.

The young of both sexes when fully fledged, resemble the adult female, but have the colours of a richer or deeper tint; all the lower parts with an elongated brown streak on each feather; the upper tail-coverts white, with a lanceolate reddish-brown spot.

After the first moult, the male still resembles the adult female. At least, such is the case with a specimen presented to me by Dr RICHARDSON, and marked "*Buteo (Circus) cyaneus*. Spec. N. 6. Male. May 31. 1826. Fort Franklin," being the one elaborately described at p. 63 of the second volume of the *Fauna Boreali-Americana*. In this specimen the colours are much faded, and the feathers worn, the upper tail-coverts in particular being reduced almost to the shafts. It is valuable as indicating by two feathers on the leg, which are new, the next state of plumage of the male, which is as follows:—

The upper part of the head and the hind neck are light brownish-red, with dusky streaks, the white of the nuchal feathers conspicuous. The upper parts are brown, with a tinge of grey, more apparent on the wings, the scapulars and some of the smaller wing-coverts still marked as in the young and females; the upper tail-coverts pure white; the tail-feathers grey, with a tinge of brown, the lateral reddish-grey; the dark bars much diminished in breadth, and the inner webs still tinged with yellowish-red. The ruff is brownish-grey, margined with reddish-white; the fore part of the neck and breast pale brownish-red, tinged with grey, each feather marginally spotted or

edged with dull white. The rest of the lower parts are white, the feathers generally with several spots of light red along the centre; these spots assuming the appearance of transverse bars on the sides and legs; the smaller wing coverts are similarly spotted, but those near the edge have only a dusky streak, and the secondary coverts are barred with dusky. The inner webs of the quills toward the base are white, with narrow bars of brownish-black, and the extremities of the primaries are as in the adult.

After a very careful comparison of seven skins of American birds with an equal number of European, no essential differences can be observed. I am therefore compelled to conclude, that the Marsh Hawk of America is the Hen-Harrier of Europe. The following measurements are obtained from a comparison of eight individuals.

	Amer.		Europ.		Amer.		Europ.	
	M.	M.	M.	M.	F.	F.	F.	F.
Length to end of tail,	$19\frac{3}{4}$	$16\frac{1}{2}$	18	$18\frac{1}{4}$	$20\frac{1}{2}$	$20\frac{1}{4}$	21	21
..... wings,	$16\frac{1}{2}$	$14\frac{1}{2}$	$15\frac{3}{4}$	—	$18\frac{3}{4}$	$18\frac{1}{2}$	$18\frac{1}{2}$	19
Extent of wings,	44	$40\frac{1}{2}$	40	$39\frac{1}{2}$	$46\frac{3}{8}$	$45\frac{1}{2}$	46	46
Wing from flexure,	$14\frac{4}{12}$	13	$13\frac{1}{2}$	13	$15\frac{1}{4}$	$14\frac{9}{12}$	$14\frac{1}{4}$	$15\frac{1}{4}$
Tail,	$8\frac{9}{12}$	$8\frac{7}{12}$	9	$8\frac{1}{2}$	$9\frac{10}{12}$	$9\frac{9}{12}$	$9\frac{9}{12}$	10
Bill along the ridge,	$1\frac{2}{12}$	$1\frac{14}{12}$	$1\frac{1}{12}$	$1\frac{1}{12}$	$1\frac{5}{12}$	$1\frac{5}{12}$	$1\frac{2}{12}$	$1\frac{5}{12}$
Tarsus,	$2\frac{8}{12}$	$2\frac{9}{12}$	$2\frac{1}{2}$	$2\frac{8}{12}$	$3\frac{2}{12}$	$3\frac{2}{12}$	$2\frac{9}{12}$	$2\frac{9}{12}$
Hind toe,	$7\frac{1}{12}$	$7\frac{1}{12}$	$\frac{8}{12}$	$\frac{7}{12}$	$\frac{10}{12}$	$7\frac{1}{12}$	$7\frac{1}{12}$	$\frac{9}{12}$
Its claw,	$\frac{10}{12}$	$\frac{10\frac{1}{2}}{12}$	$\frac{9}{12}$	$\frac{9\frac{1}{2}}{12}$	$1\frac{2}{12}$	1	$1\frac{1}{12}$	$\frac{11}{12}$
Middle toe,	$1\frac{2\frac{1}{2}}{12}$	$1\frac{2\frac{1}{2}}{12}$	$1\frac{1}{2}$	$1\frac{2}{12}$	$1\frac{1}{2}$	$1\frac{4}{12}$	$1\frac{4}{12}$	$1\frac{5}{12}$
Its claw,	$\frac{8\frac{1}{2}}{12}$	$\frac{8\frac{1}{2}}{12}$	$\frac{8}{12}$	$\frac{8\frac{1}{2}}{12}$	$\frac{10}{12}$	$\frac{9\frac{1}{2}}{12}$	$\frac{10}{12}$	$\frac{11}{12}$
Anterior tarsal scutella,	17	18	18	15	19	17	18	—
Scutella on first toe,	7	6	6	6	7	5	6	—
..... second,	5	5	5	5	5	5	5	—
..... third,	16	17	18	15	16	16	17	—
..... fourth,	7	8	7	7	8	7	8	—

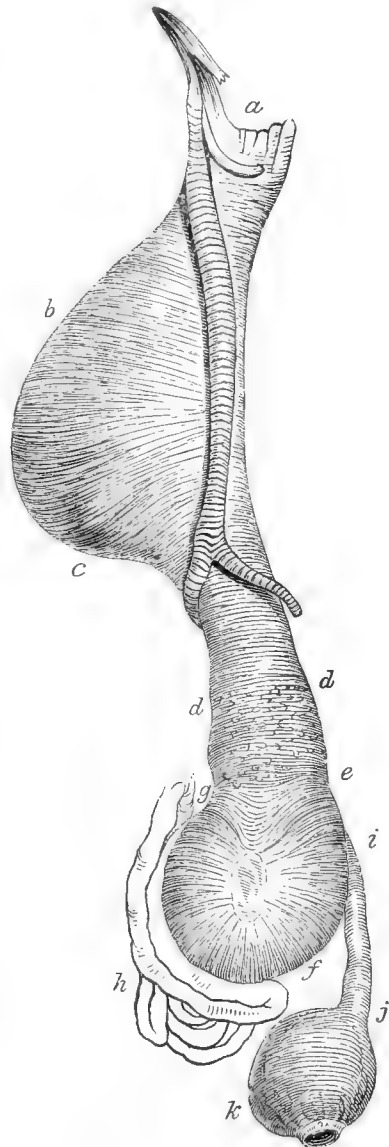
If measurements of this kind are calculated to throw light on the subject, the collectors of skins are welcome to the above, which have been made with as much accuracy as possible.

An adult male examined. On the roof of the mouth are two lateral and a median prominent ridge, the intervening space covered with

small papillæ. The posterior aperture of the nares is oblong, 4 twelfths of an inch in length, but with an anterior slit $7\frac{1}{2}$ twelfths long. The tongue, *a*, is $8\frac{1}{2}$ twelfths long, fleshy, emarginate and papillate at the base, concave above, rounded and slightly emarginate at the tip. The mouth is 1 inch in breadth. The œsophagus, *abcde*, which is 6 inches long, is very wide, with very thin parietes, and on the lower part of the neck is dilated into a sac or crop, *bc*, which on being distended has a diameter of 2 inches at the widest part. It then contracts to 10 twelfths as it enters the thorax; its proventricular portion, *de*, has a diameter of 1 inch. The stomach, *efg*, is roundish, $1\frac{1}{2}$ inch in diameter, somewhat compressed; its muscular coat extremely thin, being reduced to small parallel fasciuli converging toward two tendinous spaces of an elliptical form, and about half an inch long. The intestine, *gh*, is 3 feet 2 inches long; its diameter at the upper part 3 twelfths, towards the cœca 2 twelfths. The rectum, *ij*, is 2 inches long, not including the cloaca, *j*, which is globular and 1 inch in diameter. The cœca are extremely small, being $2\frac{1}{4}$ twelfths long, and 1 twelfth in diameter. The pylorus has no valve properly so called, but two ridges run from it into the intestine to the length of about 3 twelfths of an inch. The gall-bladder is 7 twelfths long and 4 twelfths in breadth.

In a very small male, the œsophagus is $4\frac{3}{4}$ inches long; the intestine 3 feet 4 inches. In a female, the intestine is 3 feet 9 inches long.

The trachea is $4\frac{8}{12}$ inches long, flattened, $4\frac{1}{4}$ twelfths broad at the upper part, gradually contracting to $2\frac{3}{4}$ twelfths; its rings 95, extremely thin and unossified. The bronchi are of moderate length, with about 20 half-rings. The lateral muscles are thin, the sterno-tracheal slender.



THE COMMON MAGPIE.

CORVUS PICA, LINN.

PLATE CCCLVII. MALE AND FEMALE.

ALTHOUGH Magpies are abundant in the north-western portions of the United States, and are met with as far north as the Saskatchewan River, where, according to Dr RICHARDSON, some of them spend the winter, none have yet been seen nearer the shores of the Atlantic than the head waters of the Red River in Louisiana, where they were seen in abundance by the lamented Colonel PIKE, then a lieutenant in the United States' army. His notice, although already published by WILSON, so well describes the habits of this species, that I repeat it here with pleasure. "Our horses," he says, "were obliged to scrape the snow away to obtain their miserable pittance; and, to increase their misfortune, the poor animals were attacked by the Magpies, who, attracted by the scent of their sore backs, alighted on them, and, in defiance of their wincing and kicking, picked many places quite raw; the difficulty of procuring food rendering those birds so bold as to alight on our men's arms, and eat meat out of their hands." To CLARKE and LEWIS, however, is due the first introduction of this bird into the Fauna of the United States. These intrepid travellers first observed the Magpie near the great bend of the Missouri, although it was known to have been obtained at the fur-trading factories of the Hudson's Bay Company.

There is a difference of opinion as to the identity of the Magpie of America and that of Europe. THOMAS NUTTALL, who has seen those of both countries, as well as their nests, and observed their habits, assures me, that he looks upon them as clearly of the same species. Captain SABINE thought differently, and CHARLES BONAPARTE, after remarking in his "Observations on the Nomenclature of WILSON," that "it is not a little singular that this species, which is so common in every part of Europe, should be confined in its range on this continent to the western and northern regions," thus plainly indicating his belief of their identity, names it, in a list of European and North American

Birds, published in London in April 1838, "*Pica Hudsonica*. Nob." the European bird being at the same time ticketed "*Pica melanoleuca*." Mr SWAINSON, in the *Fauna Boreali-Americana*, remarks on comparing them :—" We cannot perceive the slightest difference whereon to build even the character of a variety, much less a species;" and this truly is my own opinion.

The following notice regarding our bird was given me by my friend THOMAS NUTTALL :—" On the 15th of July, arriving at the borders of the Shoshonee, or Snake River, we first met with the Common Magpie on our route, mostly accompanied by the Raven, but there were no Crows. The young birds were so familiar and greedy, approaching the encampment in quest of food, as to be easily taken by the Indian boys, when they soon become reconciled to savage domesticity. The old birds were sufficiently shy, but the young were observed hopping and croaking around us, and tugging at any offal of flesh meat thrown out, like so many vultures. Differing so far from the proscribed and persecuted Magpies of Europe, these, at least the young, seemed evidently to court the advantages of society in supplying them with food, and betrayed scarcely any alarm on our approach. If chased off for an instant, they returned the next, and their monotonous and gluttonous croak was heard around us at all hours of the day. The dryness of the season, and the scarcity of insects and small birds, urged them no doubt to this unusual familiarity with their doubtful friend and frequent enemy, man. By the borders of streams in the central table-land of the Rocky Mountains, in several places we saw the old nests of the Magpie, made usually in low but thick bushes in the usual manner, barricaded over and floored with interlaced twigs. We scarcely ever saw them at all in the heavy forests of the Lower Columbia, any more than the Platte and Missouri, in all which places they are merely accidental visitors. They are not uncommon, however, in the vicinity of Monterey in Upper California. Their common call is *pay pay*, and the usual low social chatter when approaching their companions. I one day observed a small flock, and among the fraternity heard one chattering familiarly in the varied tune of the Cat-bird, as he sat on a bough by the water, where birds might become his prey. At another time I observed a flock of young Magpies boldly persecuting other birds, and chasing even Pigeon Hawks."

The following characteristic account of the habits of the Magpie as observed in Scotland, I have extracted from my friend MACGILLIVRAY'S

‘History of British Birds.’ “It is generally distributed in Britain, being more or less common in all the cultivated and wooded districts of England and Scotland, both in the interior and along the coast, although nowhere numerous, on account of the hostility of gamekeepers, gardeners, and sportsmen of all degrees. There, on the old ash that overshadows the farm-yard, you may see a pair, one perched on the topmost twig, the other hopping among the branches, uttering an incessant clatter of short hard notes, scarcely resembling any thing else in nature, but withal not unpleasant, at least to the lover of birds. How gracefully she of the top twig swings in the breeze! Off she starts, and directing her flight towards the fir wood opposite, proceeds with a steady, moderately rapid, but rather heavy flight, performed by quick beats of her apparently short wings, intermitted for a moment at intervals. Chattering by the way, she seems to call her mate after her; but he, intent on something which he has spied, hops downwards from twig to branch, and descends to the ground. Raising his body as high as possible, and carrying his tail inclined upwards, to avoid contact with the moist grass, he walks a few paces, and spying an earthworm half protruded from its hole, drags it out by a sudden jerk, breaks it in pieces, and swallows it. Now, under the hedge he has found a snail, which he will presently detach from its shell. But something among the bushes has startled him, and lightly he springs upwards, chattering the while, to regain his favourite tree. It is a cat, which, not less frightened than himself, runs off toward the house. The Magpie again descends, steps slowly over the green, looking from side to side, stops and listens, advances rapidly by a succession of leaps, and encounters a whole brood of chickens, with their mother at their heels. Were they unprotected, how deliciously would the Magpie feast, but alas, it is vain to think of it, for with fury in her eye, bristled plumage, and loud clamour, headlong rushes the hen, overturning two of her younglings, when the enemy suddenly wheels round, avoiding the encounter, and flies off after his mate.

There again, you perceive them in the meadow, as they walk about, with elevated tails, looking for something eatable, although apparently with little success. By the hedge afar off are two boys with a gun, endeavouring to creep up to a flock of plovers on the other side. But the Magpies have observed them, and presently rising fly directly over the field, chattering vehemently, on which the whole flock takes to wing, and the disappointed sportsmen sheer off in another direction.

The food of the Magpie consists of testaceous mollusca, slugs, larvæ, worms, young birds, eggs, small quadrupeds, carrion, sometimes grain and fruits of different kinds, in search of which it frequents the fields, hedges, thickets, and orchards, occasionally visits the farm-yard, prowls among the stacks, perches on the house-top, whence it sallies at times, and examines the dunghill and places around. Although it searches for larvæ and worms in the ploughed fields, it never ventures, like the Rook, and several species of Gull, to follow the plough as it turns over each successive furrow. It has been accused of picking the eyes of lambs and sickly sheep, I think with injustice; but it sometimes carries off a chicken or duckling, and sucks an egg that may have been dropt abroad.

It is extremely shy and vigilant in the vicinity of towns, where it is much molested, but less so in country places, although even there it is readily alarmed. When one pursues it openly, it flits along the walls and hedges, shifts from tree to tree, and at length flies off to a distance. Yet it requires all its vigilance to preserve its life; for, as it destroys the eggs and young of game birds, it is keenly pursued by keepers and sportsmen, so that one might marvel to find it maintaining its ground as a species, and yet it is not apparently diminishing in most parts of the country.

On the ground it generally walks in the same manner as the Crows, but occasionally leaps in a sidelong direction. The sounds which it emits are a sort of chuckling cry or chatter, which it utters when alarmed, as well as when it wishes to apprize other birds of danger. On the appearance of a fox, a cat, or other unfriendly animal, it never ceases hovering about it, and alarming the neighbourhood by its cries, until the enemy has slunk away out of sight.

It generally keeps in pairs all the year round, accompanies its young for some weeks after they first come abroad, and after the breeding season retires at night to the copses or woods, where sometimes a considerable number meet together. It begins to construct its nest early in March, selecting as its site the top of some tall tree, a poplar, an ash, an elm, sometimes a willow, or a beech; or, in defect of such in a favourite locality, placing it in a thick bush of hawthorn, holly, or other low tree, or even in a hedge. It is a large, and therefore generally very conspicuous fabric, of a spheroidal or elliptical form, composed first of a layer of twigs, on which is laid a quantity of mud; then a dome of twigs, frequently hawthorn or sloe, but as often of any other kind,

loosely but securely interlaced; while the bottom of the interior is lined with fibrous roots; and there is left in the side an aperture not much larger than is barely sufficient to admit the bird. The eggs are from three to six, and differ considerably in form and colouring. In general, they are regularly ovate, or a little pointed, about an inch and five-twelfths long, eleven and a half twelfths or an inch across; but sometimes more elongated by one-twelfth of an inch, or abbreviated by nearly the same quantity. Frequently they are pale green freckled all over with umber-brown and light purple, and sometimes pale blue or bluish-white, or greenish-white, with smaller spots and dots of the same dark colours, so as very nearly to resemble the eggs of the Jay, which however are smaller."

CORVUS PICA, *Lin.* Syst. Nat. vol. i. p. 157.—*Lath.* Ind. Ornith. vol. i. p. 162.—

Ch. Bonaparte, Synopsis of Birds of United States, p. 57.—*Richards.* and *Swains.*

Fauna Bor.-Amer. vol. ii. p. 292.

CORVUS HUDSONIUS, *Sabine*, Frankl. Journ. p. 671.

MAGPIE, *Nuttall*, Manual, vol. i. p. 219.

Adult Male. Plate CCCLVII. Fig. 1.

Bill rather shorter than the head, straight, robust, compressed; upper mandible with the dorsal line convex and declinate, the sides convex, the edges sharp, with a slight notch close to the tip, which is rather sharp; lower mandible straight, the angle rather long and wide, the dorsal outline very slightly convex and ascending, the sides convex, the edges sharp and inclinate. Nostrils basal, lateral, roundish, covered by bristly feathers, which are directed forwards.

Head large, ovate; eyes of moderate size; neck rather short; body compact. Legs of moderate length, strong; tarsus with seven large anterior scutella, and two long plates behind, meeting so as to form a sharp edge. Toes stout, with large scutella, separated almost to the base; first very strong; lateral toes nearly equal, third considerably longer. Claws strong, arched, compressed, sharp, the third with the inner edge somewhat dilated.

Plumage full, soft, blended; stiff bristly feathers with disunited barbs over the nostrils, some of them extending nearly half the length of the bill; feathers on the throat with the shaft downy, and prolonged. Wings of moderate length, much rounded; the first quill very short, extremely narrow, and falciform, the second two inches and four-twelfths

longer, and about the same length as the ninth ; the third an inch and a quarter longer than the second, and four-twelfths shorter than the fourth, which is the longest by half a twelfth or so. The tail is very long, much graduated, the lateral feather being four inches and nine-twelfths shorter than the middle.

Bill and feet black. Iris dark brown. The plumage of the head, neck, fore part of the breast and back, black, the feathers on the latter part being very long, and although rising between the shoulders extending nearly to the rump ; the top of the head, and the back, glossed with green, the neck tinged with blue, the shafts of the throat-feathers grey. The feathers on the middle of the back are greyish-white, those behind tipped with black ; rump and tail-coverts bluish-black. The scapulars are white ; the smaller wing-coverts black, the secondary coverts, allula, and primary coverts splendid with bronzed green ; primaries black, glossed with green, their inner webs white excepting at the end, and for some way along the margin ; secondaries bright blue changing to green, their inner webs greenish-black. Tail splendid with bright green, changing to greenish-yellow, purplish-red, bluish-purple and dark green at the end ; the inner webs chiefly greenish-black, but with various tints. The breast and sides are pure white ; legs, abdominal region, lower tail-coverts, and lower wing-coverts black.

Length to end of tail $18\frac{1}{2}$ inches, to end of wings $11\frac{3}{8}$; extent of wings $22\frac{1}{2}$; wing from flexure 8 ; tail $10\frac{1}{2}$; bill along the ridge $1\frac{4\frac{1}{2}}{1\frac{1}{2}}$; tarsus $1\frac{1\frac{0}{2}}{1\frac{1}{2}}$; first toe $\frac{8}{1\frac{1}{2}}$, its claw $\frac{1}{1\frac{1}{2}}$; middle toe $1\frac{2}{1\frac{1}{2}}$, its claw $\frac{6}{1\frac{1}{2}}$.

Adult Female. Plate CCCLVII.

The Female is similar to the male, and little inferior in size.

Five American specimens compared with several European, present no appearances indicative of a specific difference. Some individuals of both countries are larger than others, and the tail differs much in length, according to age, or the growth of the feathers. The largest specimen in my possession, presented to me by Dr RICHARDSON, and marked as shot by Mr DRUMMOND, measures as follows :—Length to end of tail $20\frac{1}{2}$ inches ; bill along the ridge $1\frac{7}{1\frac{1}{2}}$; tail $11\frac{3}{4}$; wing from flexure $8\frac{0}{1\frac{1}{2}}$; tarsus 2 ; middle toe $1\frac{1}{1\frac{1}{2}}$, its claw $\frac{7\frac{1}{2}}{1\frac{1}{2}}$. In this individual the feathers on the fore neck are white for more than half their length from the base. In the other specimens this white part is fainter or light grey, and of less extent.

PINE GROSBEAK.

PYRRHULA FNUCLEATOR. TEMM.

PLATE CCCLVIII. MALE AND FEMALE.

IN WILSON'S time, this beautiful bird was rare in Pennsylvania; but since then it has occasionally been seen in considerable numbers, and in the winter of 1836 my young friend J. TRUDEAU, M.D. procured several in the vicinity of Philadelphia. That season also they were abundant in the States of New York and Massachusetts. Some have been procured near the mouth of the Big Guyandotte on the Ohio; and Mr NUTTALL has observed it on the lower parts of the Missouri. I have ascertained it to be a constant resident in the State of Maine, and have met with it on several islands in the Bay of Fundy, as well as in Newfoundland and Labrador. Dr RICHARDSON mentions it as having been observed by the Expedition in the 50th parallel, and as a constant resident at Hudson's Bay. It is indeed the hardiest bird of its tribe yet discovered in North America, where even the Rose-breasted Grosbeak, though found during summer in Newfoundland and Labrador, removes in autumn to countries farther south than the Texas, where as late as the middle of May I saw many in their richest plumage.

The Pine Grosbeak is a charming songster. Well do I remember how delighted I felt, while lying on the moss-clad rocks of Newfoundland, near St George's Bay, I listened to its continuous lay, so late as the middle of August, particularly about sunset. I was reminded of the pleasure I had formerly enjoyed on the banks of the clear Mohawk, under nearly similar circumstances, when lending an attentive ear to the mellow notes of another Grosbeak. But, Reader, at Newfoundland I was still farther removed from my beloved family; the scenery around was thrice wilder and more magnificent. The stupendous dark granite rocks, fronting the north, as if bidding defiance to the wintry tempests, brought a chillness to my heart, as I thought of the hardships endured by those intrepid travellers who, for the advancement of science, had braved the horrors of the polar winter. The glowing tints of the western sky, and the brightening stars twinkling over the waters

of the great Gulf, rivetted me to the spot, and the longer I gazed, the more I wished to remain; but darkness was suddenly produced by the advance of a mass of damp fog, the bird ceased its song, and all around seemed transformed into chaos. Silently I groped my way to the beach, and soon reached the Ripley.

The young gentlemen of my party, accompanied by my son JOHN WOODHOUSE, and a Newfoundland Indian, had gone into the interior in search of Rein Deer, but returned the following afternoon, having found the flies and mosquitoes intolerable. My son brought a number of Pine Grosbeaks, of different sexes, young and adult, but all the latter in moult, and patched with dark red, ash, black and white. It was curious to see how covered with sores the legs of the old birds of both sexes were. These sores or excrescences are, I believe, produced by the resinous matter of the fir-trees on which they obtain their food. Some specimens had the hinder part of the tarsi more than double the usual size, the excrescences could not be removed by the hand, and I was surprised that the birds had not found means of ridding themselves of such an inconvenience. One of the figures in my plate represents the form of these sores.

I was assured that during mild winters, the Pine Grosbeak is found in the forests of Newfoundland in considerable numbers, and that some remain during the most severe cold. A lady who had resided there many years, and who was fond of birds, assured me that she had kept several males in cages; that they soon became familiar, would sing during the night, and fed on all sorts of fruits and berries during the summer, and on seeds of various kinds in winter; that they were fond of bathing, but liable to cramps; and that they died of sores produced around their eyes and the base of the upper mandible. I have observed the same to happen to the Cardinal and Rose-breasted Grosbeaks.

The flight of this bird is undulating and smooth, performed in a direct line when it is migrating, at a considerable height above the forests, and in groups of from five to ten individuals. They alight frequently during the day, on such trees as are opening their buds or blossoms. At such times they are extremely gentle, and easily approached, are extremely fond of bathing, and whether on the ground or on branches, move by short leaps. I have been much surprised to see, on my having fired, those that were untouched, fly directly towards me, until within a few feet, and then slide off and alight on the lower branches of

the nearest tree, where, standing as erect as little Hawks, they gazed upon me as if I were an object quite new, and of whose nature they were ignorant. They are easily caught under snow-shoes put up with a figure of four, around the wood-cutters camps, in the State of Maine, and are said to afford good eating. Their food consists of the buds and seeds of almost all sorts of trees. Occasionally also they seize a passing insect. I once knew one of these sweet songsters, which, in the evening, as soon as the lamp was lighted in the room where its cage was hung, would instantly tune its voice anew.

My kind friend THOMAS M'CULLOCH of Pictou in Nova Scotia, has sent me the following notice, which I trust will prove as interesting to you as it has been to me. "Last winter the snow was exceedingly deep, and the storms so frequent and violent that many birds must have perished in consequence of the scarcity of food. The Pine Grosbeaks being driven from the woods, collected about the barns in great numbers, and even in the streets of Pictou they frequently alighted in search of food. A pair of these birds which had been recently taken were brought me by a friend, but they were in such a poor emaciated condition, that I almost despaired of being able to preserve them alive. Being anxious, however, to note for you the changes of their plumage, I determined to make the attempt; but notwithstanding all my care, they died a few days after they came into my possession. Shortly after, I received a male in splendid plumage, but so emaciated that he seemed little else than a mass of feathers. By more cautious feeding, however, he soon regained his flesh, and became so tame as to eat from my hand without the least appearance of fear. To reconcile him gradually to confinement, he was permitted to fly about my bedroom, and upon rising in the morning, the first thing I did was to give him a small quantity of seed. But three mornings in succession I happened to lie rather later than usual, and each morning I was aroused by the bird fluttering upon my shoulder, and calling for his usual allowance. The third morning, I allowed him to flutter about me some time before shewing any symptom of being awake, but he no sooner observed that his object was effected than he retired to the window and waited patiently until I arose. As the spring approached, he used to whistle occasionally in the morning, and his notes, like those of his relative the Rose-breasted Grosbeak, were exceedingly rich and full. About the time, however, when the species began to remove to the north, his for-

mer familiarity entirely disappeared. During the day he never rested a moment, but continued to run from one side of the window to the other, seeking a way of escape, and frequently during the night, when the moonlight would fall upon the window, I was awakened by him dashing against the glass. The desire of liberty seemed at last to absorb every other feeling, and during four days I could not detect the least diminution in the quantity of his food, while at the same time he filled the house with a piteous wailing cry, which no person could hear without feeling for the poor captive. Unable to resist his appeals, I gave him his release; but when this was attained he seemed very careless of availing himself of it. Having perched upon the top of a tree in front of the house, he arranged his feathers, and looked about him for a short time. He then alighted by the door, and I was at last obliged to drive him away, lest some accident should befall him.

“These birds are subject to a curious disease, which I have never seen in any other. Irregularly shaped whitish masses are formed upon the legs and feet. To the eye these lumps appear not unlike pieces of lime; but when broken, the interior presents a congeries of minute cells, as regularly and beautifully formed as those of a honey-comb. Sometimes, though rarely, I have seen the whole of the legs and feet covered with this substance, and when the crust was broken, the bone was bare, and the sinews seemed almost altogether to have lost the power of moving the feet. An acquaintance of mine kept one of these birds during the summer months. It became quite tame, but at last it lost the power of its legs and died. By this person I was informed that his Grosbeak usually sang during a thunder-storm, or when rain was falling on the house.”

While in the State of Maine, I observed that these birds, when travelling, fly in silence, and at a considerable height above the trees. They alight on the topmost branches, so that it is difficult to obtain them, unless one has a remarkably good gun. But, on waiting a few minutes, you see the flock, usually composed of seven or eight individuals, descend from branch to branch, and betake themselves to the ground, where they pick up gravel, hop towards the nearest pool or streamlet, and bathe by dipping their heads and scattering the water over them, until they are quite wet; after which they fly to the branches of low bushes, shake themselves with so much vigour as to produce a smart rustling sound, and arrange their plumage. They then search for food among the boughs of the taller trees.

LOXIA ENUCLEATOR, *Linn. Syst. Nat.* vol. i. p. 299.—*Lath. Ind. Ornith.* vol. i. p. 372.

PINE GROSBEEK, LOXIA ENUCLEATOR, *Wils. Amer. Ornith.* vol. i. p. 80, pl. 5, fig. 2.

PYRRHULA ENUCLEATOR, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 119.

PYRRHULA (CORYTHUS) ENUCLEATOR, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 262.

PINE GROSBEEK OF BULLFINCH, *Nuttall, Manual*, vol. i. p. 535.

Adult Male. Plate CCCLVIII. Fig. 1.

Bill short, robust, bulging at the base, conical, acute; upper mandible with its dorsal outline convex, the sides convex, the edges sharp and overlapping; lower mandible with the angle short and very broad, the dorsal line ascending and slightly convex, the sides rounded, the edges inflected; the acute decurved tip of the upper mandible extending considerably beyond that of the lower; the gape-line deflected at the base.

Head rather large, ovate, flattened above; neck short; body full. Legs short, of moderate strength; tarsus short, compressed, with six anterior scutella, and two plates behind, forming a thin edge; toes short, the first proportionally stout, the third much longer than the two lateral, which are about equal; their scutella large, their lower surface with large pads covered with prominent papillæ. Claws rather long, arched, much compressed, laterally grooved, and acute.

Plumage soft, full, rather blended, the feathers oblong. At the base of the upper mandible are strong bristly feathers directed forwards. The wings of moderate length; the primaries rounded, the second and third longest, and with the fourth and fifth having their outer webs slightly cut out. Tail rather long, emarginate, of twelve strong, broad, obliquely rounded feathers.

Bill reddish-brown. Iris hazel. Feet blackish-brown, claws black. The general colour of the plumage is bright carmine tinged with vermilion; the feathers of the fore part of the back and the scapulars greyish-brown in the centre; the bristly feathers at the base of the bill blackish-brown; the middle of the breast, abdomen, and lower tail-coverts, light grey, the latter with a central dusky streak. Wings blackish-brown; the primaries and their coverts narrowly edged with reddish-white, the secondaries more broadly with white; the secondary coverts and first row of small coverts tipped with reddish-white, the smaller coverts edged with red.

Length to end of tail $8\frac{1}{2}$ inches, to end of wings $6\frac{1}{4}$, to end of claws $6\frac{3}{4}$; extent of wings 14; wing from flexure $4\frac{3}{4}$; tail 4; bill along the ridge $7\frac{1}{2}$, along the edge of lower mandible $7\frac{1}{2}$; tarsus $9\frac{1}{2}$; first toe $4\frac{1}{2}$, its claw $1\frac{5}{8}$; middle toe $8\frac{1}{8}$, its claw $1\frac{5}{8}$.

Female. Plate CCCLVIII. Fig. 2.

The female is scarcely inferior to the male in size. The bill is dusky, the feet as in the male. The upper part of the head and hind neck are yellowish-brown, each feather with a central dusky streak; the rump brownish-yellow; the rest of the upper parts light brownish-grey. Wings and tail as in the male, the white edgings and the tips tinged with grey; the cheeks and throat greyish-white or yellowish; the fore part and sides of the neck, the breast, sides, and abdomen ash-grey, as are the lower tail-coverts.

Length to end of tail $8\frac{1}{4}$ inches, to end of wings $6\frac{1}{4}$, to end of claws $6\frac{3}{4}$; extent of wings $13\frac{1}{2}$; wing from flexure $4\frac{1}{2}$; tail $3\frac{1}{2}$; tarsus $9\frac{1}{2}$; middle toe and claw $1\frac{1}{2}$.

Young fully fledged. Plate CCCLVIII. Fig. 3.

The young, when in full plumage, resemble the female, but are more tinged with brown.

An adult male from Boston examined. The roof of the mouth is moderately concave, its anterior horny part with five prominent ridges; the lower mandible deeply concave. Tongue $4\frac{1}{2}$ twelfths long, firm, deflected at the middle, deeper than broad, papillate at the base, with a median groove; for the distal half of its length, it is cased with a firm horny substance, and is then of an oblong shape, when viewed from above, deeply concave, with two flattened prominences at the base, the point rounded and thin, the back or lower surface convex. This remarkable structure of the tongue appears to be intended for the purpose of enabling the bird, when it has insinuated its bill between the scales of a strobilus, to lay hold of the seed by pressing it against the roof of the mandible. In the Crossbills, the tongue is nearly of the same form, but more slender, and these birds feed in the same manner, in so far as regards the prehension of the food. In the present species, the tongue is much strengthened by the peculiar form of the basi-hyoid bone, to which there is appended as it were above a thin longitudinal

crest, giving it great firmness in the perpendicular movements of the organ. The œsophagus *a b c d*, Fig. 1. is two inches 11 twelfths long, dilated on the middle of the neck so as to form a kind of elongated dimidiate crop, 4 twelfths of an inch in diameter, projecting to the right side, and with the trachea passing along that side of the vertebræ. The proventriculus *c*, is 8 twelfths long, somewhat bulbiform, with numerous oblong glandules, its greatest diameter $4\frac{1}{2}$ twelfths. A very curious peculiarity of the stomach *e*, is, that in place of having its axis continuous with that of the œsophagus or proventriculus, it bends to the right nearly at a right angle. It is a very powerful gizzard, $8\frac{1}{2}$ twelfths long, 8 twelfths broad, with its lateral muscles $\frac{1}{4}$ inch thick, the lower very distinct, the epithelium longitudinally rugous, of a light

Fig. 1.

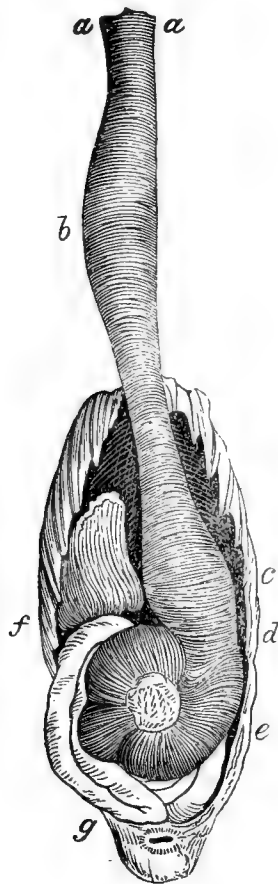
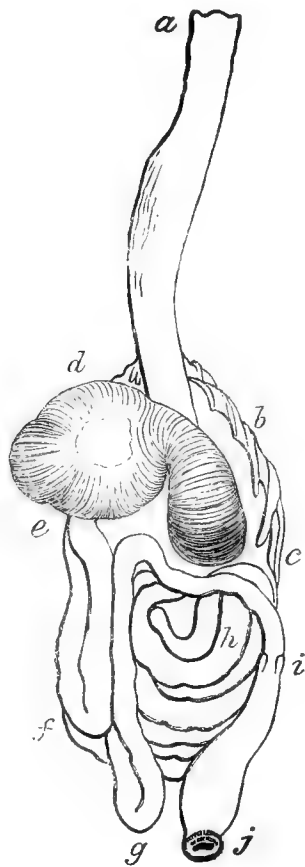


Fig. 2.



reddish colour. The duodenum, *f*, *g*, first curves backward to the length of $1\frac{1}{4}$ inch, then folds in the usual manner, passing behind the right lobe of the liver; the intestine then passes upwards and to the left, curves along the left side, crosses to the right, forms about ten

circumvolutions, and above the stomach terminates in the rectum, which is 11 twelfths long. The cœca are $1\frac{1}{4}$ twelfth in length and $\frac{1}{4}$ twelfth in diameter. The entire length of the intestine from the pylorus to the anus is $31\frac{1}{2}$ inches (in another male 31); its greatest breadth in the duodenum $2\frac{1}{2}$ twelfths, gradually contracting to $1\frac{1}{4}$ twelfth. Fig. 2. represents the convoluted appearance of the intestine. The œsophagus *a b c*; the gizzard *d*, turned forwards; the duodenum, *e f*; the rest of the intestine, *g h*; the cœca, *i*; the rectum, *i j*, which is much dilated at the end.

The trachea is 2 inches 2 twelfths long, of uniform diameter, $1\frac{1}{2}$ twelfth broad, with about 60 rings; its muscles like those of all the other species of the Passerinæ or Fringillidæ.

In a female, the œsophagus is 2 inches 10 twelfths long; the intestine 31 inches long.

In all these individuals and several others, the stomach contained a great quantity of particles of white quartz, with remains of seeds; and in the œsophagus of one was an oat seed entire.

Although this bird is in its habits very similar to the Crossbills, and feeds on the same sort of food, it differs from them in the form and extent of its crop, in having the gizzard much larger, and the intestines more than double the length, in proportion to the size of the bird.

ARKANSAW FLYCATCHER.

MUSCICAPA VERTICALIS, BONAP.

PLATE CCCLIX. MALE AND FEMALE.

THIS species extends its range from the mouth of the Columbia River, across our continent, to the shores of the Gulf of Mexico ; but how far north it may proceed is as yet unknown. On the 10th of April 1837, whilst on Cayo Island, in the Bay of Mexico, I found a specimen of this bird dead at the door of a deserted house, which had recently been occupied by some salt-makers. From its freshness I supposed that it had sought refuge in the house on the preceding evening, which had been very cold for the season. Birds of several other species we also found dead on the beaches. The individual thus met with was emaciated, probably in consequence of a long journey and scanty fare ; but I was not the less pleased with it, as it afforded me the means of taking measurements of a species not previously described in full. In my possession are some remarkably fine skins, from Dr TOWNSEND'S collection, which differ considerably from the figure given by BONAPARTE, who first described the species. So nearly allied is it to the Green-crested Flycatcher, *M. crinita*, that after finding the dead bird, my son and I, seeing many individuals of that species on the trees about the house mentioned, shot several of them, supposing them, to be the same. We are indebted to the lamented THOMAS SAY for the introduction of the Arkansaw Flycatcher into our Fauna. Mr NUTTALL has supplied me with an account of its manners.

“ We first met with this bold and querulous species, early in July, in the scanty woods which border the north-west branch of the Platte, within the range of the Rocky Mountains ; and from thence we saw them to the forests of the Columbia and the Wahlamet, as well as in all parts of Upper California, to latitude 32°. They are remarkably noisy and quarrelsome with each other, and in the time of incubation, like the King Bird, suffer nothing of the bird kind to approach them without exhibiting their predilection for battle and dispute. About the middle of June, in the dark swamped forests of the Wahlamet, we every day heard the discordant clicking warble of this bird, somewhat

like *tsh'k*, *tsh'k*, *tshirait*, sounding almost like the creaking of a rusty door-hinge, somewhat in the manner of the King Bird, with a blending of the notes of the Blackbird or Common Grackle. Although I saw these birds residing in the woods of the Columbia, and near the St Diego in Upper California, I have not been able to find the nest, which is probably made in low thickets, where it would be consequently easily overlooked. In the Rocky Mountains they do not probably breed before midsummer, as they are still together in noisy quarrelsome bands until the middle of June."

Dr TOWNSEND'S notice respecting it is as follows: "This is the *Chlow-ish-pil* of the Chinooks. It is numerous along the banks of the Platte, particularly in the vicinity of trees and bushes. It is found also, though not so abundantly, across the whole range of the Rocky Mountains; and along the banks of the Columbia to the ocean, it is a very common species. Its voice is much more musical than is usual with birds of its genus, and its motions are remarkably quick and graceful. Its flight is often long sustained, and like the Common King Bird, with which it associates, it is frequently seen to rest in the air, maintaining its position for a considerable time. The males are wonderfully belligerent, fighting almost constantly, and with great fury, and their loud notes of anger and defiance remind one strongly of the discordant grating and creaking of a rusty door hinge. The Indians of the Columbia accuse him of a propensity to destroy the young, and eat the eggs of other birds."

TYRANNUS VERTICALIS, *Say*, Long's Exped. vol. ii. p. 60.

MUSCICAPA VERTICALIS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 67.

ARKANSAW FLYCATCHER, MUSCICAPA VERTICALIS, *Ch. Bonaparte*, Amer. Ornith. vol. i. p. 18, pl. 2, fig. 2.

ARKANSAW FLYCATCHER, *Nuttall*, Manual, vol. ii. p. 273.

Adult Male. Plate CCCLIX. Fig. 1.

Bill rather long, stout, tapering, broader than high, unless toward the end. Upper mandible with its dorsal outline straight and declinate, until at the tip, where it is deflected, the ridge narrow, the sides convex, the edges sharp, with a slight notch close to the very narrow tip. Lower mandible with the angle short and broad, the dorsal line ascending and very slightly convex, the ridge broad and flat at the base, the sides convex, the edges sharp, the tip acute. The gape-line al-

most straight. Nostrils basal, elliptical, partly covered by the bristly feathers.

Head rather large; neck short; body slender. Feet very short; tarsus slender, compressed, with six anterior scutella, which are so large below as almost to meet behind; toes free, slender, of moderate length. Claws moderately arched, much compressed, acute.

Plumage soft and blended. Strong bristles along the basal margin of the upper mandible, and over the nostrils. Wings rather long, broad; the first five primaries much attenuated toward the end, the first more so, the fifth least; this attenuation being chiefly produced by an incision on the first web; the first four are nearly equal, the third longest, the fourth half a twelfth shorter, the third one-twelfth shorter than the hind, and exceeding the first by nearly two-twelfths; the other primaries gradually broader and more rounded; outer secondaries abrupt and slightly emarginate. Tail rather long, almost even, of twelve broad, abruptly rounded and acuminate feathers.

Bill black. Iris brown. Feet and claws black. The general colour of the upper parts is ash-grey, the back tinged with yellow; the wing-coverts and quills chocolate-brown, with brownish-white edges, those of the inner secondaries broader. Upper tail-coverts and tail black, excepting the outer web of the lateral feather on each side, and the basal margin of the next. There is a patch of bright vermilion on the top of the head, tinged with orange-yellow behind. Throat greyish-white, the sides and fore part of the neck pale ash-grey, shaded on the fore part of the breast into pure yellow, which is the prevalent colour of the lower parts; lower wing-coverts yellow, the middle ones tinged with grey.

Length to end of tail 9 inches, to end of wings 7, to end of claws 7, extent of wings $15\frac{1}{4}$; tail $3\frac{7}{8}$; wing from flexure $5\frac{1}{2}$; bill along the ridge $\frac{9}{12}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $\frac{31}{12}$; first toe $\frac{31}{12}$, its claw $\frac{41}{12}$; third toe $\frac{7}{12}$, its claw $\frac{4}{12}$.

Adult Female. Plate CCCLIX. Fig. 2.

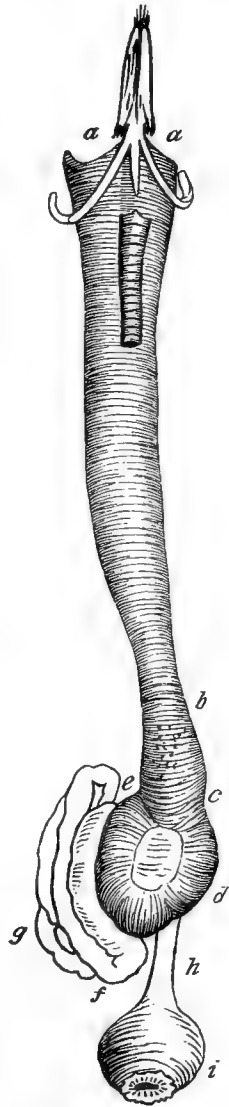
The Female is rather smaller, but is similar to the male in colouring.

The young also is similar to the adult, but wants the red patch on the head.

In the female mentioned above as having been found in Texas, the mouth is half an inch wide, its roof anteriorly slightly concave, with three median prominent lines, the palate flat, with its membrane or skin diaphanous, as in Goatsuckers. The tongue is 7 twelfths long, deeply emarginate and papillate at the base; triangular, extremely depressed, tapering to a thin slit and bristly point. The posterior aperture of the nares is 4 twelfths long, linear, papillate on the edges, ending abruptly at its fore part, without a prolonged fissure. Œsophagus, *a, a, b*, 2 inches 9 twelfths long, funnel-shaped for half an inch, then cylindrical and nearly 4 twelfths in diameter, until it enters the thorax. Proventriculus, *c*, $3\frac{1}{2}$ twelfths in diameter, and with a belt of oblong glandules. Stomach *c, d*, elliptical, $7\frac{1}{2}$ twelfths long, 6 twelfths broad, its lateral muscles of moderate strength, the lower not distinct; the epithelium with broad longitudinal rugæ, and of a dark reddish-brown colour. Intestine, *e, f, g*, 7 inches long, its diameter at the anterior part $3\frac{1}{2}$ twelfths, gradually diminishing to $1\frac{1}{2}$ twelfth. Cæca extremely small, 1 twelfth long, $\frac{1}{2}$ twelfth broad, and $1\frac{1}{4}$ inch distant from the anus; cloaca *i*, globular.

Trachea 1 inch 10 twelfths long, tapering from a diameter of 2 twelfths to 1 twelfth; the rings ossified and firm, about 70 in number; the lateral and sterno-tracheal muscles slender; the inferior laryngeal muscles are strong but very short, forming a prominent knob, and attached to the first bronchial ring. Bronchi wide, of about 20 half-rings.

The digestive organs of this bird, and of the Flycatchers in general, do not differ materially from those of the Thrushes and Warblers. The pharynx and œsophagus, however, are much wider.



SWALLOW-TAILED FLYCATCHER.

MUSCICAPA FORFICATA, GMEL.

PLATE CCCLIX. MALE.

Not having seen this handsome bird alive, I am unable to give you any account of its habits from my own observation ; but I have pleasure in supplying the deficiency by extracting the following notice from the " Manual of the Ornithology of the United States and of Canada," by my excellent friend THOMAS NUTTALL.

" This very beautiful and singular species of Flycatcher is confined wholly to the open plains and scanty forests of the remote south-western regions beyond the Mississippi, where they, in all probability, extend their residence to the high plains of Mexico. I found these birds rather common near the banks of Red River, about the confluence of the Kiamesha. I again saw them more abundant, near the Great Salt River of the Arkansa in the month of August, when the young and old appeared, like our King Birds, assembling together previously to their departure for the south. They alighted repeatedly on the tall plants of the prairie, and were probably preying upon the grasshoppers, which were now abundant. At this time also, they were wholly silent, and flitted before our path with suspicion and timidity. A week or two after, we saw them no more, having retired probably to tropical winter-quarters.

In the month of May, a pair, which I daily saw for three or four weeks, had made a nest on the horizontal branch of an elm, probably twelve or more feet from the ground. I did not examine it very near, but it appeared externally composed of coarse dry grass. The female, when first seen, was engaged in sitting, and her mate wildly attacked every bird which approached their residence. The harsh chirping note of the male, kept up at intervals, as remarked by Mr SAY, almost resembled the barking of the Prairie Marmot, 'tsh, 'tsh, 'tsh. His flowing kite-like tail, spread or contracted at will while flying, is a singular trait in his plumage, and rendered him conspicuously beautiful to the most careless observer."

MUSCICAPA FORFICATA, *Gmel. Linn. Syst. Nat.* vol. i. p. 931.—*Lath. Ind. Ornith.* vol. ii. p. 485.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 275.

SWALLOW-TAILED FLYCATCHER, MUSCICAPA FORFICATA, *Bonap. Amer. Ornith.* vol. i. p. 15, pl. 2, fig. 1.

SWALLOW-TAILED FLYCATCHER, *Nuttall, Manual*, vol. i. p. 275.

Adult Male. Plate CCCLIX. Fig. 3.

Bill of moderate length, rather stout, subtrigonal, depressed at the base, straight; upper mandible with its dorsal outline nearly straight, and declinate, to near the tip, which is deflected, slender, compressed, and acute, the edges sharp and overlapping, with a slight notch close to the tip; lower mandible with the angle rather long and wide, the back broad at the base, the dorsal line ascending and very slightly convex, the edges sharp, the tip acute. Nostrils basal, roundish, partly covered by the bristly feathers.

Head rather large; neck short; body ovate. Feet short; tarsus with six anterior very broad scutella. Toes free, slender; the first stout, the lateral equal; claws rather long, arched, slender, much compressed, very acute.

Plumage soft and blended. Bristles at the base of the upper mandible strong. Wings rather long, the first four quills longest, with their inner webs emarginate and attenuate at the end. Tail very long, deeply forked, of twelve broad, rounded feathers.

Bill and feet black. Iris hazel. Upper part of the head, the cheeks, and the hind part and sides of the neck, ash-grey; scapulars and back darker and tinged with reddish-brown; the rump darker, the upper tail-coverts black. Wings brownish-black, all the feathers margined with greyish-white, the anterior wing-coverts scarlet; tail-feathers deep black, with their terminal margins white, the three outer on each side pale rose-coloured to near the end. The throat, fore part of neck and breast, pure white; the sides, abdomen, and lower tail-coverts, and lower wing-coverts, pale rose-colour; the axillary feathers bright scarlet.

Length to end of tail $11\frac{1}{2}$ inches, to end of wings $7\frac{1}{2}$; tail to the fork $2\frac{2}{12}$, to the end $5\frac{1}{2}$; wing from flexure $5\frac{1}{8}$; bill along the ridge $\frac{5}{8}$, along the edge of lower mandible $\frac{7}{8}$; tarsus $\frac{3}{4}$; hind toe $\frac{3}{8}$, its claw $\frac{4}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

SAY'S FLYCATCHER.

MUSCICAPA SAYA, BONAP.

PLATE CCCLIX. MALE AND FEMALE.

THIS species was first discovered by TITIAN PEALE, Esq. of Philadelphia, and named after Mr THOMAS SAY by BONAPARTE, who described and figured it in his continuation of WILSON'S American Ornithology. It appears to range over a very extensive portion of country, lying between Mexico and the settlements of the British Fur Companies, a pair having been procured at Carlton House, as mentioned by Dr RICHARDSON. Little is yet known of the habits of this species, but it would seem, from Mr NUTTALL'S remarks, to be a rupestrine Flycatcher, and not strictly arboreal, as supposed by Mr SWAINSON.

"We first observed this bird," says Mr NUTTALL, "in our route westward, about the 14th of June, within the first range of the Rocky Mountains called the Black Hills, and in the vicinity of that northern branch of the Platte known by the name of Larimie's Fork. At the time, we saw a pair perched as usual on masses of rocks, from which, like the Pewee, though occasionally alighted, they flew after passing insects, without uttering any note that we heard; and from their predilection, it is probable they inhabit among broken hills and barren rocks, where we have scarcely a doubt, from their behaviour, they had at this time a brood in a nest among these granite cliffs. They appeared very timorous on our approach, and seemed very limited in their range. Except among the Blue Mountains of the Columbia, we scarcely ever saw them again. Their manners appear to be very much like those of the Common Pewee; but they are much more silent and shy."

MUSCICAPA SAYA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 67.—*Amer. Ornith.* vol. i. p. 20, pl. 2, fig. 3.

TYRANNULA SAYA, *Richards. and Swains.* Fauna Bor.-Amer. vol. ii. p. 142.

Adult Male. Plate CCCLIX. Fig. 4.

Bill of moderate length, rather slender, broader than high at the

base, straight; upper mandible with its dorsal outline nearly straight and declinate, to near the tip, which is deflected, slender, compressed, and acute, the edges sharp and overlapping, with a slight notch close to the tip; lower mandible with the angle short and rounded, the back broad, the dorsal line ascending and almost straight, the edges sharp, the tip acute. Nostrils basal, elliptical, partly covered by the bristly feathers.

Head of moderate size, ovate; neck of moderate length; body slender. Feet short; tarsus with six very broad anterior scutella; toes free, slender; the first stout, the lateral equal; claws long, arched, slender, much compressed, very acute.

Plumage soft and blended. Bristles at the base of the upper mandible slender. Wings rather long, rounded; primaries tapering, rounded, the outer not sinuated on the inner web, the first half an inch shorter than the second, which is half a twelfth shorter than the third, the fourth about the same length as the second, the rest moderately graduated; secondaries long, broad, rounded. Tail rather long, very slightly divaricate and emarginate, of twelve rounded feathers.

Bill and feet black, basal margin of lower mandible yellow. Iris hazel. Upper parts brownish-grey, the head more tinged with brown; upper tail-coverts and tail brownish-black; wings of a darker tint than the back, the feathers margined with greyish-white; a dusky spot before the eye; fore part and sides of neck light brownish-grey, shaded into pale brownish-red on the breast and abdomen; lower wing-coverts reddish-white.

Length to end of tail 7 inches, to end of wings $5\frac{8}{12}$; wing from flexure $4\frac{2}{12}$; tail $3\frac{1}{4}$; bill along the ridge $\frac{7\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{10\frac{1}{2}}{12}$; tarsus $\frac{9\frac{1}{2}}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

WINTER WREN.

TROGLODYTES HYEMALIS, VIEILL.

PLATE CCCLX. MALE, FEMALE, AND YOUNG.

THE extent of the migratory movements of this diminutive bird, is certainly the most remarkable fact connected with its history. At the approach of winter it leaves its northern retreats, perhaps in Labrador or Newfoundland, crosses the inlets of the Gulf of St Lawrence on tiny concave wings, and betakes itself to warmer regions, where it remains until the beginning of spring. Playfully and with alacrity it performs the task, hopping from one stump or fallen log to another, flitting from twig to twig, from bush to bush, here and there flying a few yards; feeding, singing, and bustling on, as if quite careless as to time or distance. It has reached the shore of some broad stream, and here a person ignorant of its habits might suppose it would be stopped; but no, it spreads its wings, and glides over like a meteor.

I have found the Winter Wren in the lower parts of Louisiana, and in the Floridas, in December and January, but never saw one there after the end of the latter month. Their stay in those parts rarely exceeds three months; two more are employed in forming a nest and rearing their broods; and as they leave Labrador by the middle of August at the latest, they probably spend more than half of the year in travelling. It would be interesting to know whether those which breed along the Columbia River, near the Pacific Ocean, visit the shores of our Atlantic States. My friend THOMAS NUTTALL informs me that he occasionally saw the Winter Wren feeding its young in the woods, along the north-west coast.

At Eastport, in Maine, when on my way to Labrador, I found this species in full song, and extremely abundant, although the air was chill, and icicles hung from every rock, it being then the 9th of May. On the 11th of June, I found it equally plentiful in the Magdalen Islands, and wondered how it could have made its way there, but was assured by the inhabitants that none were ever seen in winter. On the 20th of July, I met with it at Labrador, and again asked myself, how it could possibly have reached those remote and rugged

shores? Was it by following the course of the St Lawrence, or by flying from one island to another across the Gulf? I have seen it in almost every State of the Union, but only twice found it breeding there, once near the Mohawk River in New York, and again in the Great Pine Swamp in Pennsylvania. It breeds abundantly in Maine, and probably in Massachusetts, but few spend the winter even in the latter State.

The song of the Winter Wren excels that of any other bird of its size with which I am acquainted. It is truly musical, full of cadence, energetic, and melodious; its very continuance is surprising, and dull indeed must be the ear that thrills not on hearing it. When emitted, as it often is, from the dark depths of the unwholesome swamp, it operates so powerfully on the mind, that it by contrast inspires a feeling of wonder and delight, and on such occasions has usually impressed me with a sense of the goodness of the Almighty Creator, who has rendered every spot of earth in some way subservient to the welfare of his creatures.

Once when travelling through a portion of the most gloomy part of a thick and tangled wood, in the Great Pine Forest, not far from Maunchunk in Pennsylvania, at a time when I was intent on guarding myself against the venomous reptiles which I expected to encounter, the sweet song of this Wren came suddenly on my ear, and with so cheering an effect, that I instantly lost all apprehension of danger, and pressed forward through the rank briars and stiff laurels, in pursuit of the bird, which I hoped was not far from its nest. But he, as if bent on puzzling me, rambled here and there among the thickest bushes with uncommon cunning, now singing in one spot not far distant, and presently in another in a different direction. After much exertion and considerable fatigue, I at last saw it alight on the side of a large tree, close to the roots, and heard it warble a few notes, which I thought exceeded any it had previously uttered. Suddenly another Wren appeared by its side, but darted off in a moment, and the bird itself which I had followed disappeared. I soon reached the spot, without having for an instant removed my eyes from it, and observed a protuberance covered with moss and lichens, resembling those excrescences which are often seen on our forest trees, with this difference, that the aperture was perfectly rounded, clean, and quite smooth. I put a finger into it, and felt the pecking of a bird's bill, while a queru-

lous cry was emitted. In a word, I had, the first time in my life, found the nest of our Winter Wren. Having gently forced the tenant from his premises, I drew out the eggs with a sort of scoop which I formed. I expected to find them numerous, but there were not more than six, and the same number I afterwards found in the only other nest of this species ever discovered by me. The little bird called upon its mate, and their united clamour induced me to determine upon leaving their treasures with them; but just as I was about going off, it struck me that I ought to take a description of the nest, as I might not again have such an opportunity. I hope, Reader, you will believe, that when I resolved to sacrifice this nest, it was quite as much on your account as my own. Externally it measured seven inches in length, four and a half in breadth; the thickness of its walls, composed of moss and lichen, was nearly two inches; and thus it presented internally the appearance of a narrow bag, the wall, however, being reduced to a few lines where it was in contact with the bark of the tree. The lower half of the cavity was compactly lined with the fur of the American Hare, and in the bottom or bed of the nest there lay over this about half a dozen of the large downy abdominal feathers of our Common Grouse, *Tetrao Umbellus*. The eggs were of a delicate blush-colour, somewhat resembling the paler leaves of a partially decayed rose, and marked with dots of reddish-brown, more numerous towards the larger end.

The nest which I found near the Mohawk was discovered by mere accident. One day in the beginning of June, and about noon, feeling fatigued, I sat down on a rock overhanging the water, where, while resting, I might have the pleasure of watching the motions of some fishes in sight. The damp of the place produced a sudden chillness, and caused me to sneeze aloud, when from beneath my feet there flew off a Winter Wren. The nest, which I soon found, was attached to the lower parts of the rock, and presented the same form and structure as that already described; but it was smaller, the eggs, six in number, contained young far advanced.

The motions of this interesting bird are performed with great rapidity and decision. While searching for food it hops, creeps, and leaps about from one spot to another, as if it derived pleasure from exercise. At each movement it bends its breast downward, so as almost to touch the object on which it stands, and by a sudden exten-

sion of its strong feet, aided by the action of its half drooping concave wings, jerks itself forward, keeping its tail elevated all the while. Now through a hollow log it passes like a mouse, now it clings to the surface in various attitudes, suddenly disappears, but presently shews itself by your side ; at times it chirrup in a querulous rolling tone, then emits single clear sharp chirps resembling the syllables *tshick, tshick*, and again remains silent for a time. It will now and then reach the upper branches of a small tree or a bush, by hopping and leaping from twig to twig ; in the course of this transit it will present its opposite sides to you a score of times ; and when at length it has gained the summit, it will salute you with its delicate melody, and then dash headlong and be out of sight in a moment. This is almost constantly observed during the spring season, when more than ever its alertness is displayed. On all such occasions however, whilst in the act of singing, its tail is seen to be depressed. In winter, when it takes possession of the wood-pile, close to the husbandman's dwelling, it will challenge the cat in querulous tones, and peeping out here and there, as it frisks in security, wear out Grimalkin's patience.

The food of the Winter Wren consists chiefly of spiders, caterpillars, and small moths, as well as larvæ. Towards autumn it eats small juicy berries.

Having lately spent a winter, at Charleston in South Carolina, with my worthy friend JOHN BACHMAN, I observed that this little Wren made its appearance in that city and its suburbs in December. On the 1st January I heard it in full song in the garden of my friend, who informed me that in that State it does not appear regularly every winter, but is sure to be found during very cold weather.

With the view of enabling you to compare the habits of our Winter Wren and the Common Wren of Europe, the manners of birds being a subject on which, as you are well aware, I have always bestowed particular attention, I here present you with those of the latter bird, as observed in Britain, by my learned friend, WILLIAM MACGILLIVRAY : —“ With us the Wren is not migratory, but is found during winter in the most northern parts of the island, as well as in the Hebrides. Its flight is effected by a rapid and continuous motion of the wings, and therefore is not undulated, but direct ; nor is it usually sustained, for the bird merely flits from one bush to another, or from stone to stone. It is most frequently met with along stone-walls, among fragments of

rocks, in thickets of gorse, and by hedges, where it attracts notice by the liveliness of its motions, and frequently by its loud chirring noise. When standing, it keeps its tail nearly erect, and jerks its whole body ; then hops about with alacrity, using its wings at the same time, and continually enunciating its rapid *chit*. In spring and summer, the male has a very pleasing, full, rich, and mellow song, which it repeats at intervals ; and even in autumn and on fine days in winter, it may often be heard hurrying over its ditty, the loudness and clearness of which, as proceeding from so diminutive a creature, is apt to excite surprise, even after it has been long familiar.

“ During the breeding season, Wrens keep in pairs, often in unfrequented parts, such as bushy dells, mossy woods, the banks of streams, and stony places overgrown with brambles, sloes, and other shrubs ; but they are also to be found in shrubberies, gardens, and hedges in the immediate vicinity of human habitations, to which the wilder individuals also approach in winter. They are not properly speaking shy, as they conceive themselves to be secure at the distance of twenty or thirty yards ; but on the approach of a person, they conceal themselves in holes among stones, or the roots of bushes.

“ I know not a more pleasant object to look at than the Wren : it is always so smart and cheerful. In gloomy weather, other birds often seem melancholy, and in rain the Sparrows and Finches stand silent on the twigs, with drooping wings and ruffled plumage. But to the Wren all weathers are alike. The big drops of the thunder-shower no more wet it than the drizzle of an easterly haar ; and as it peeps from beneath the bramble, or glances from a hole in the wall, it seems as snug as a kitten frisking on the parlour rug.

“ It is amusing to watch the motions of a young family of Wrens just come abroad. Walking among furze, or broom, or juniper, you are attracted to some bush by hearing issue from it a lively and frequent repetition of a sound which resembles the syllable *chit*. On going up you perceive an old Wren flitting about the twigs, and presently a young one flies off, uttering a stifled chirr, to conceal itself among the bushes. Several follow in succession, while the parents continue to flutter about, in great alarm, uttering their loud *chit, chit, chit*, with indications of varied degrees of excitement. On open ground a young Wren might easily be run down, and I have heard it asserted that an old one may soon be tired out in time of snow, when it cannot

easily conceal itself. And yet, even in such a case, it is by no means easy to keep it in sight, for on the side of a bank, or by a wall, or in a thicket, it will find a hole where one least expected it, and creeping in some crevice beneath the snow, reappear at a considerable distance.

“The food of birds can be determined only by opening their crops or stomachs, or by observation directed to living individuals, the former, however, being the only sure method. The Wrens which I have opened generally contained remains of insects of various kinds, with larvæ, and sometimes pupæ; but I have also found in them seeds, and Mr NEVILLE WOOD states that they sometimes eat red currants. In the stomach of an individual examined in December 1830, I found many small hard seeds, an entire pupæ, and numerous fragments of the shells of pupæ, and elytra of coleopterous insects. So small a bird having so slender a bill, might doubtless be taken for a typical entomophagist; but it is probable that no species of this order confines itself exclusively to insects.

“The Wren pairs about the middle of spring, and begins early in April to construct its nest, which varies much in form and composition, according to the locality. One brought me by my son is of astonishing size compared with that of its architect, its greatest diameter being seven inches, and its height five. Having been placed on a flat surface under a bank, its base is of a corresponding form, and is composed of layers of decayed ferns and other plants, mixed with twigs of herbaceous and woody vegetables. Similar materials have been employed in raising the outer wall of the nest itself, of which the interior is spherical, and three inches in diameter. The wall is composed of mosses of several species, quite fresh and green, and it is arched over with fern leaves and straws. The mosses are curiously interwoven with fibrous roots and hair of various animals, and the inner surface is even and compact, like coarse felt. To the height of two inches there is a copious lining of large soft feathers, chiefly of the Wood Pigeon, but also of the Pheasant and Domestic Duck, with a few of the Blackbird. The aperture, which is in front, and in the form of a low arch, two inches in breadth at the base, and an inch and a half in height, has its lower edge formed of slender twigs, strong herbaceous stalks, and stems of grasses, the rest being felted in the usual manner. It contained five eggs of an elongated oval form, averaging eight lines in length, and six lines in breadth, pure white, with some scat-

tered dots of light red at the larger end, one of them with scarcely any, and another with a great number. Of three nests presented to me by my friend THOMAS DURHAM WEIR, Esq. one is extremely beautiful, being composed entirely of fresh green hypna, without any internal layer, although, no eggs having been found in it, it possibly had not been completed. It is of an oblong form, seven inches in length, and four in its transverse diameter. The mouth measures an inch and eight-twelfths across, an inch and a twelfth in height. Its lower part is formed of small twigs of larch laid across and interwoven, so as to present a firm pediment. The longitudinal diameter of the interior is three inches and a half. Another, formed on a decayed tuft of *Aira cuspitosa*, is globular, six inches in diameter, and composed of moss, with a lining of hair and feathers, chiefly of the domestic fowl. The third is globular, and externally formed almost entirely of ferns, like that described above. In all the nests of this species which I have seen, the lower part of the mouth was composed of twigs of trees, or stems of herbaceous plants laid across, and kept together with moss and hair.

“The nests are found in a great variety of situations: very often in a recess overhung by a bank, sometimes in a crevice among stones, in the hole of a wall, or of a tree, among the thatch of a cottage or outhouse, on the top of a shed or barn, the branch of a tree, whether growing along a wall, or standing free, among ivy, honeysuckle, clematis, or other climbing plants. When the nest is on the ground, its base is generally formed of leaves, twigs, and straws, and its exterior is often similar; but when otherwise, the outer surface is generally smooth and chiefly composed of moss.

“The number of eggs which it lays has been variously stated by authors. Mr WEIR says that, although it is commonly seven or eight, so many as sixteen or seventeen have been found in its nest. “ROBERT SMITH, weaver in Bathgate, told me, that a few years ago, he saw in a nest, which was built on the bank of a rivulet about two miles from Linlithgow, seventeen eggs; and JAMES D. BAILLIE, Esq. informed me, that in June last, he took out of one which he discovered in a spruce tree, near Polkemmet House, sixteen eggs.”

My friend THOMAS M'CULLOCH of Pictou has presented me with the following curious account of a European individual of this species.

“During my residence at Spring Vale in the vicinity of Hammer-

smith, I was amusing myself one afternoon with the movements of a pair of Water-hens, which were flirting about the edge of the tall reeds so abundant in that neighbourhood, when my attention was arrested by a Wren, carrying a straw, darting into a small hedge directly beneath the window at which I stood. In a few minutes the bird reappeared, and flew to a piece of old thatch which was lying near, and having disengaged another straw he immediately returned with it to the place in which the first had been deposited. For about two hours this operation was continued by the bird with the greatest diligence. He then abandoned his task, and ascending the highest twig of the hedge, he poured forth his sweet and merry notes, until driven away by some person passing near. For the remainder of the evening I saw no more of the little architect, but on the following morning, being drawn to the window by his song, I observed him leave his favourite perch and resume with ardour the employment of the previous day. During the forenoon I was not able to pay much attention to the movements of the Wren, but from an occasional glance I observed that his task, with the exception of a few intervals of relaxation, when his merry warble fell upon the ear, was plied with a degree of bustling activity which was worthy of the important undertaking. On examining his labours at the close of the second day, I observed that the exterior of a large spherical nest was nearly finished, and that from the old thatch, though exceedingly moist and black from decay, all the materials had been obtained. By the afternoon of the ensuing day his visits to the thatch were discontinued, and he kept bustling and flirting about the spot. He seemed from his lengthened intervals of song rather to be exulting in the progress, than to be making any addition to the work. In the evening I inspected the nest, and found the exterior complete, and by carefully inserting my finger, I ascertained that no lining had yet been applied, in consequence most probably of the moisture which still remained in the straw. Returning to the spot in about half an hour afterwards, with one of my cousins, to look at the nest, I observed with no small surprise that the little bird had not only resented the intrusion by closing up the aperture, but also had opened another passage from the opposite side of the hedge. The aperture was closed with pieces of the old thatch, and the work was so neatly executed that no traces of the former entrance were perceptible. The nest was altogether the work of one bird, and during the time he spent

in building we never observed another Wren in his company. In the choice of the materials, as well as in the situation of the nest, there was something exceedingly curious. Though the bottom and sides of the garden were enclosed by a thick hedge, in which he could have built in perfect security, and where, from the vicinity of the stables, abundance of fresh materials could have been easily obtained, yet the old thatch and the hedge at the head of the garden were preferred. This part of the hedge was young and thin, and separated from the buildings by a narrow path, which was constantly frequented by the servants of the establishment. Interruptions from this source, however, he did not seem to mind, for though often driven from his task he returned the next moment with as much confidence as if he had never been disturbed. Even when his nest was destroyed by the wantonness of a stranger, he did not abandon the place, but continued to carry straws from the old thatch with as much diligence as before. From the extreme caution, however, which he subsequently displayed, and the circuitous routes which he took, I never could discover the spot which he selected for his second nest."

The Winter Wren so closely resembles the European Wren, that I was long persuaded of their identity; but a careful comparison of a great number of specimens, has convinced me that permanent differences in colouring may be pointed out, although still, I am not by any means persuaded that they are specifically different.

TROGLODYTES HYEMALIS, *Vieill. Encycl. Meth.*, ii. p. 470.

TROGLODYTES EUROPEUS, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 93.

WINTER WREN, SYLVIA TROGLODYTES, *Wils. Amer. Ornith.* vol. i. p. 139, pl. 8, fig. 6.

TROGLODYTES HYEMALIS, WINTER WREN, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 318.

WINTER WREN, *Nuttall, Manual*, vol. i. p. 427.

Adult Male. Plate CCCLX. Fig 1.

Bill rather long, slender, tapering, acute, nearly straight, subtrigonal at the base, compressed towards the end. Upper mandible with the dorsal outline slightly arched, the ridge narrow, the sides sloping at the base, towards the end slightly convex and erect, the edges sharp, direct, without notæ; lower mandible with the angle narrow and ra-

ther acute, the dorsal outline straight, the back narrow, the edges sharp, and inflected, the tip very narrow; the gape-line very slightly arched. Nostrils linear-oblong, basal.

Head ovate, of moderate size, neck short; body ovate. Feet of ordinary length; tarsus compressed, with seven anterior scutella, of which the upper are indistinct; toes rather large compressed; first large, and much longer than the two lateral which are equal, the third much longer; the third and fourth coherent as far as the second joint of the latter. Claws long, arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended; no bristle-feathers at the base of the bill. Wing shortish, broad, much rounded; first quill very small, being little more than half the length of the second, which is $2\frac{1}{4}$ twelfths shorter than the third; the fourth longest, and exceeding the third by half a twelfth, and the fourth by somewhat less; secondaries long, rounded. Tail short, much rounded, of twelve slightly arched, weak rounded feathers.

Bill dusky brown, with the basal edges of the upper and two-thirds of the lower mandible paler. Iris brown. Tarsi and toes pale greenish-brown, as are the claws. The general colour of the upper parts is reddish-brown, darker on the head, brighter on the tail-coverts, quills, and tail. There is a white spot near the tips of the posterior dorsal feathers. The secondary coverts, and the first small coverts, have each a white spot at the tip. The wing-coverts and quills banded with blackish-brown and brownish-red, the bands of the latter colour becoming reddish-white on the outer five quills. Tail with twelve dusky-bands. The dorsal feathers and scapulars are more faintly barred in the same manner. A brownish-white band from the upper mandible over the eye; the cheeks brown, spotted with brownish-white, the margins of the feathers being of the former colour; the lower parts pale reddish-brown, the sides and abdomen barred with brownish-black and greyish-white; the fore neck and breast more faintly barred; the lower wing-coverts and axillars greyish-white, barred with dusky; the lower tail-coverts brownish-red, barred with dusky and having the tip white.

Length to end of tail $3\frac{7}{8}$ inches, to end of wings $3\frac{1}{8}$, to end of claws $4\frac{3}{8}$; extent of wings $6\frac{1}{8}$; wing from flexure $1\frac{7}{8}$; tail $1\frac{5}{12}$; bill along the ridge $\frac{5}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{2}{12}$. Weight 6 dr.

Female. Plate CCCLX. Fig. 2.

The Female is somewhat smaller than the male.

Length to end of tail $3\frac{5}{8}$ inches, to end of wings 3, to end of claws $4\frac{2}{8}$; extent of wings $5\frac{3}{8}$; wing from flexure $1\frac{7}{8}$; tail $1\frac{4}{12}$. Weight 4 dr.

Young in Autumn. Plate CCCLX. Fig. 3.

The upper parts are much darker than in the adult; the lower parts of a deeper tint.

Length to end of tail $3\frac{1}{2}$ inches, to end of wings $3\frac{1}{8}$, to end of claws $4\frac{1}{8}$; extent of wings $5\frac{2}{8}$; wing from flexure $1\frac{5}{8}$.

The young bird just ready to fly, has the bill bright yellow, excepting the ridge of the upper mandible, which is brown; the feet yellowish-brown. The upper parts are reddish-brown, faintly barred with dusky; the wings as in the adult, but the secondary coverts with only a very small dull white spot at the tip, and the first row of coverts with a line of the same colour along the shaft. The lower parts are dull greyish-brown, with the terminal margin of each feather darker, and the sides and hind parts barred with dusky.

On comparing numerous specimens of American and European birds, it is found that the proportions of the parts are nearly the same, and the colours generally similar. But the American birds generally have the lower parts more tinged with red, their general colour being pale reddish-brown, whereas those of the European birds are pale greyish-brown; in the former the bars on the sides and hind parts are much darker, advance farther on the breast, and in some specimens are seen even on the neck; in the latter the bars are dusky, and never appear on the middle of the breast, much less on the neck. In old European birds, the axillars and lower wing-coverts are greyish-white, without spots; in old American birds, even those of which the neck is unbarred, the axillars and lower wing-coverts are always barred with dusky. As to the two rows of white spots on the wings, they seem to be quite similar in the birds of both continents, and in those of each exhibit variations in form, sometimes being short and somewhat triangular, sometimes also extending along the shaft. The tarsi, toes, and claws are precisely similar, as are the wings, and it does not appear that in the American bird the claws are larger, or the wings

longer, as might be supposed by a person desirous of proving the one to be more scansorial and migratory than the other. Perhaps the European bird is somewhat larger, and it certainly differs a little in colour. After one has studied the differences, he can easily select from a promiscuous assemblage of skins the European or the American specimens. But, after all, the differences are very slight, and certainly not such as to form good essential characters. Were the two species to be comparatively characterized, they might be described as follows.

T. europæa. In the male the upper parts reddish-brown, faintly barred with dusky, the lower parts pale greyish-brown, the sides and abdomen barred with dusky and greyish-white, the fore neck and breast without bars, the lower wing-coverts and axillars greyish-white.

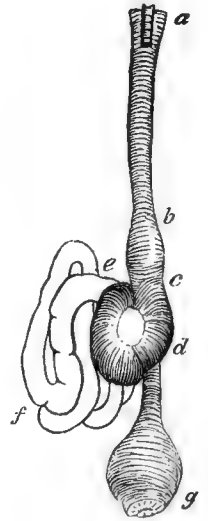
T. hyemalis. In the male the upper parts reddish-brown, faintly barred with dusky, the lower parts pale reddish-brown, the sides and abdomen barred with brownish-black and greyish-white, the fore neck and breast more faintly barred, the lower wing-coverts and axillars greyish-white, barred with dusky.

The following is a comparative view of the measurements of several American and European birds.

	American.			European.		
	M.	M.	F.	M.	M.	F.
Length to end of tail, .	$3\frac{7}{8}$	$3\frac{1}{2}$	$3\frac{5}{8}$	4	$4\frac{1}{4}$	$3\frac{6}{8}$
..... wings, .	$3\frac{1}{8}$	—	$3\frac{1}{8}$	$3\frac{1}{4}$	—	$3\frac{1}{8}$
..... claws, .	$4\frac{3}{8}$	—	$4\frac{2}{8}$	$4\frac{1}{2}$	—	$4\frac{1}{4}$
Extent of wings, . .	$6\frac{1}{8}$	—	$5\frac{3}{8}$	$5\frac{7}{8}$	$6\frac{1}{2}$	$5\frac{3}{4}$
Wing from flexure, .	$1\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{7}{8}$	$1\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{7}{8}$
Tail,	$1\frac{5}{8}$	$1\frac{5}{12}$	$1\frac{4}{12}$	$1\frac{5}{12}$	$1\frac{1}{2}$	$1\frac{4}{12}$
Bill,	$\frac{5}{12}$	$\frac{5}{12}$	$\frac{4\frac{1}{2}}{12}$	$\frac{5}{12}$	$\frac{5\frac{1}{2}}{12}$	$\frac{5}{12}$
Tarsus,	$\frac{8}{12}$	$\frac{8\frac{1}{2}}{12}$	$\frac{8}{12}$	$\frac{8}{12}$	$\frac{8}{12}$	$\frac{8}{12}$
Hind toe,	$\frac{4}{12}$	$\frac{4\frac{1}{2}}{12}$	$\frac{4}{12}$	$\frac{4}{12}$	$\frac{4\frac{1}{2}}{12}$	$\frac{4}{12}$
Its claw,	$\frac{4}{12}$	$\frac{3\frac{1}{2}}{12}$	$\frac{3}{12}$	$\frac{3\frac{1}{2}}{12}$	$\frac{4}{12}$	$\frac{3}{12}$
Middle toe,	$\frac{6}{8\frac{1}{2}}$	$\frac{6}{12}$	$\frac{5\frac{1}{2}}{12}$	$\frac{6}{12}$	$\frac{6\frac{1}{2}}{12}$	$\frac{6}{12}$
Its claw,	$\frac{2\frac{1}{2}}{12}$	$\frac{2\frac{1}{2}}{12}$	$\frac{2}{12}$	$\frac{2\frac{1}{2}}{12}$	$\frac{2\frac{1}{2}}{12}$	$\frac{2\frac{1}{2}}{12}$

In a male shot at Charleston in January, the upper mandible has a prominent median line beneath, the palate is flat, the mouth $2\frac{3}{4}$ twelfths in breadth. The tongue is 5 twelfths long, emarginate and papillate at the base, slender, flattened, very narrow, tapering to a lacerated point. The œsophagus, *a, b, c*, is $1\frac{1}{2}$ inch long, of uniform diameter, being $1\frac{1}{2}$ twelfths in breadth. The stomach, *d, e*, is oblong, 5 twelfths in length, $3\frac{1}{2}$ twelfths in breadth, its muscles of moderate strength, the lower not distinct from the right; the cuticular lining longitudinally rugous, and of a dark brown colour. The intestine, *f, g, h*, is 8 inches long, the duodenum 2 twelfths in diameter; the cœca 1 twelfth long, $1\frac{1}{4}$ twelfth broad; the neck 9 twelfths long; the cloaca large, globular, 3 twelfths in diameter.

The trachea is 1 inch 3 twelfths long, of nearly uniform diameter, $1\frac{1}{2}$ twelfths broad; the lateral muscles strong, sterno-tracheal, and four pairs of inferior laryngeal muscles; the rings ossified.



ROCK WREN.

TROGLODYTES OBSOLETUS, SAY.

PLATE CCCLX. ADULT FEMALE.

THIS species was discovered by some of Major LONG's exploring party, and first described by Mr THOMAS SAY. My friend THOMAS NUTTALL, who had opportunities of studying its habits, during his recent journey in company with Dr TOWNSEND, has assured me that they are very similar to those of the other Wrens. The figure in the plate was taken from an adult female, given to me by Mr NUTTALL; and I have since then obtained two males. In my drawing the bird was represented on a stone, but for the reasons mentioned in my Introduction, my son VICTOR GIFFORD attached it to the drawing of the Winter Wren, so that it now appears perched on a twig, which, however, is not a common practice with this species.

"On the 21st of June," says Mr NUTTALL, "on the ledges of the bluffs which border the bottom of Hare's Fork of the Siskadee (or Colorado of the West), I heard, and at length saw this curious Mountain Wren. Its actions are those of the Carolina species, *Troglodytes ludovicianus*. The old female (as I supposed) sat upon a ledge of rock at the head of a high ravine in the bluff, cocking her tail, and balancing herself, at the same time uttering a *tshurr*, *tshurr*, and *té.igh*, with a strong guttural accent, and now and then, when approached, like the common Short-billed Marsh Wren, *Troglodytes brevirostris*, a quick guttural *tshé de de*. It has also a shrill call at times, as it perches on a stone on the summit of some hill, again similar to the note of the Carolina Wren, occasionally interrupted by a *tshurr*. Among these arid and bare hills of the central table-land they were quite common. The old ones were feeding and watching a brood of four or five young, which, though fully grown, were protected and cherished with the querulous assiduity so characteristic of the other Wrens. They breed under the rocky ledges where we so constantly observed them, under which they skulk at once when surprised, and pertinaciously hide in security, like so many rats. Indeed so suddenly do they disappear among the rocks, and remain so silent in their retreat, that it is scarcely possible to believe them beneath your feet till

after a lapse of a few minutes you begin to hear a low cautious chirp, and the next moment, at the head of the ravine, the old female probably again appears, scolding and jerking in the most angry attitudes she is capable of assuming. In the same rocky retreats they are commonly accompanied by a kind of small striped Ground Squirrel, like that of the eastern coast in many respects, but much smaller. These little animals, which are numerous, the White-chinned Buzzard, *Buteo vulgaris* of RICHARDSON and SWAINSON, and the Raven frequently hover over and pounce upon. We met with this species as far west as the lowest falls of the Columbia, or within a few miles of Fort Van Couver, but among rocks and cliffs as usual."

TROGLODYTES OBSOLETA, *Say*.

MYOTHERA OBSOLETA, *Ch. Bonap.* Amer. Ornith. vol. i. p. 6, pl. 1, fig. 2.

ROCKY MOUNTAIN WREN, *Nuttall*, Manual, vol. i. p. 435.

Adult Female. Plate CCCLX. Fig. 4.

Bill nearly as long as the head, slender, slightly arched, compressed toward the end; upper mandible with the sides convex towards the end, flat and declinate at the base, the edges sharp and overlapping, with a very slight notch close to the declinate tip; lower mandible with the angle long and narrow, the dorsal line very slightly concave, the sides sloping outwards and concave, the tip narrow. Nostrils oblong, basal, with a cartilaginous operculum, open and bare.

Head oblong; neck short; body slender. Legs of ordinary length; tarsus longer than the middle toe, compressed, with eight anterior distinct scutella, and two lateral plates forming a sharp edge behind. Toes of moderate size, the third and fourth united at the base, the first large, the outer considerably longer than the inner. Claws rather long, moderately arched, much compressed, with an abruptly tapering, very acute tip.

Plumage soft and loose. Wings of moderate length, convex, broad and rounded; the first quill very short, the second a quarter of an inch shorter than the third; the fourth longest, but scarcely exceeding the third and fifth. Tail rather long, much rounded, of twelve broad, rounded feathers.

Bill dusky, with the edges pale yellow. Iris hazel. Feet dusky. Upper parts light dull yellowish-brown, and, excepting the rump,

transversely barred with greyish-brown ; the wings barred in the same manner, excepting the primaries, which are plain ; the secondary coverts with a small white spot near the tip. Tail-coverts barred like the back, as are the two middle tail-feathers ; the others broadly tipped with pale yellowish-red, undulated with dusky ; behind which is a broad band of brownish-black ; the remaining or basal part banded like the central feathers, the outer feather with four reddish-white spots or bars on the outer web, the intervals being brownish-black, and a spot of white on the inner web. The lower parts are greyish-white, tinged with sienna, the sides inclining to yellowish-red. The lower tail-coverts are barred with brownish-black.

Length to end of tail 6 inches, wing from flexure $2\frac{1}{2}$; tail $2\frac{1}{4}$; bill along the ridge $\frac{9}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{3}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{2}{12}$.

DUSKY GROUS.

TETRAO OBSCURUS, SAY.

PLATE CCCLXI. MALE AND FEMALE.

As I have never seen this species in its native haunts, I am obliged to have recourse to the observations of those who have had opportunities of studying its habits. The only accounts that can be depended upon are those of Dr RICHARDSON, Dr TOWNSEND, and Mr NUTTALL, which I here give in order, beginning with what is stated respecting it in the *Fauna Boreali-Americana* by the first of these naturalists.

“ This large Grouse inhabits the Rocky Mountains from latitude 40° to 60°, and perhaps to a greater extent, for the limits of its range either northward or southward have not been ascertained. It has been known to the fur-traders for nearly thirty years; but it was first introduced to the scientific world by Mr SAY, who, in 1820, accompanied Major LONG to the source of the Missouri; and a female specimen, deposited by him in the Philadelphia Museum, has lately been figured by the Prince of MUSIGNANO in his continuation of Wilson’s Ornithology. I had no opportunity of observing the habits of this bird myself, but was informed by Mr DRUMMOND that, in the mornings during pairing time, “ the usual station of the male is on some rocky eminence or large stone, where he sits swelling out the sides of his neck, spreading his tail, and repeating the cry of “ Coombe, Coombe,” in a soft hollow tone. Its food consists of various berries, and its flesh is very palatable. Mr ALEXANDER STEWART, a chief-factor of the Hudson’s Bay Company, who has often crossed the mountains, informs me that the males of this species fight each other with such animosity, that a man may take one of them up in his hand before it will quit its antagonist.”

Dr RICHARDSON adds in a note, that “ the description and figure of Mr SAY’s specimen agree so completely with our younger female specimens, that there can be no doubt of their specific identity; but it is proper to observe that there is some discrepancy in the dimensions. The Prince of MUSIGNANO states the total length of the bird to be eighteen inches, that of the wing nine inches and a half. The wing

of the largest of our males is scarcely so long; while the biggest of our females, measuring twenty-one inches in total length, has a wing barely eight inches long. This, perhaps, merely indicates the uncertainty of measurements taken from prepared specimens. Mr DOUGLAS's specimens in the Edinburgh Museum are of younger birds than ours, but evidently the same species." These remarks correspond with what I have so often repeated, that age, sex, and different states of moult, produce disparities in individuals of the same species.

Dr TOWNSEND, in the notes with which he has favoured me, has the following observations:—"Dusky Grouse, *Tetrao obscurus*. *Qul-al-lalleun* of the Chinooks. First found in the Blue Mountains, near Wallah Wallah, in large flocks, in September. Keep in pine woods altogether, never found on the plains; they perch on the trees. Afterwards found on the Columbia River in pairs in May. The eggs are numerous, of a cinereous brown colour, blunt at both ends, and small for the size of the bird. The actions of the female, when the young are following her, are precisely the same as the Ruffed Grouse, using all the arts of that bird in counterfeiting lameness, &c. Female smaller than the male, lighter coloured, and wants the yellow warty skin upon the sides of the neck."

Mr NUTTALL's notice is as follows:—"The Dusky Grouse breeds in the shady forests of the Columbia, where we heard and saw them throughout the summer. The male at various times of the day makes a curious uncouth tooting, almost like the sound made by blowing into the bung-hole of a barrell, *boo wh'h, wh'h, wh'h, wh'h*, the last note descending into a kind of echo. We frequently tried to steal on the performer, but without success, as, in fact, the sound is so strangely managed that you may imagine it to come from the left or right indifferently. They breed on the ground, as usual, and the brood keep together nearly all winter. The Ruffed Grouse also breeds here commonly, and I one day found the nest concealed near a fallen log, but it was at once forsaken after this intrusion, though I did not touch the eggs."

From the examination of specimens in my possession, I am persuaded that this species, like *Tetrao Cupido*, has the means of inflating the sacs of bare skin on the sides of the neck, by means of which, in the breeding season, are produced the curious sounds above described.

TETRAO OBSCURUS, DUSKY GROUS, *Ch. Bonaparte*, Amer. Ornith. vol. iii pl. 18.—*Id.*

Synopsis of Birds of United States, p. 127.—*Richards*. and *Swains*. Fauna Bor.-Amer. vol. ii. p. 344.

DUSKY GROUS, *Nuttall*, Manual, vol. i. p. 666.

Adult Male. Plate CCCLXI. Fig. 1.

Bill short, robust, slightly arched, rather obtuse, the base covered by feathers. Upper mandible with the dorsal line convex and declinate, the ridge convex, the sides convex, the edges sharp and overlapping, the tip thin-edged and rounded; lower mandible with the angle long and wide, the dorsal line ascending and convex, the ridge broad, the sides convex, the edges inflected, the tip rounded. Nostrils in the fore part of the large and feathered nasal depression, roundish.

Head small, ovate; neck of ordinary length; body large and full. Feet stout, of moderate length; tarsus short, feathered; toes stout; the first very small, the lateral about equal, and much shorter than the third; the anterior toes connected by basal scaly membranes, partially covered with feathers; all with broad and short scutella, margined, but scarcely pectinate, the lateral scales not being prominent. Claws rather large, arched, compressed, rather obtuse.

Plumage full, soft, rather blended, the feathers broad and rounded. A bare papillate space around the eye. Feathers on the upper part of the head narrow and elongated. Wings rather short, convex, much rounded; the quills very strong; the third longest, the fourth next, the third and sixth about equal, as are the first and seventh. Tail large, of ordinary length, rounded, of twenty feathers, which are broader toward the end, and abruptly rounded.

Bill brownish-black, lighter at the base. Iris dark hazel. Toes bluish-grey, claws wood-brown. Papillar space around the eye vermilion. Upper parts blackish-brown, the wings lighter. The elongated feathers on the head greyish-brown; the hind neck minutely undulated with bluish-grey; the scapulars, inner secondaries, and smaller wing-coverts also minutely undulated with grey and brownish-red, and most of the latter with a small greyish tip; the rump and upper tail-coverts obscurely undulated with grey. Alula, primary coverts and quills, clove-brown, the secondaries bordered and tipped with yellowish-grey; the primaries mottled with grey on their outer webs. The tail is black. The sides of the head, fore part and sides of the neck, and fore part of the breast greyish-black; the lore and throat are barred with

white; the greyish-black of the breast passes into blackish-grey, and finally into dull bluish-grey; the feathers of the abdomen tipped with greyish-white, as are the lower rump and tail-coverts, which have more-over one or two narrow bars of the same; the flanks undulated with black and marked with an elongated white spot along the central part and on the tip; axillary feathers white, as are the inner wing-coverts; the tarsal feathers brownish-grey. The concealed part of the plumage is light grey, unless on the feathers around the bare space on each side of the neck, which is of an orange colour, and which the bird inflates.

Length to end of tail 22 inches, to end of wings $15\frac{1}{5}$, to end of claws $18\frac{1}{2}$; extent of wings 30; wing from flexure $9\frac{1}{2}$; tail $7\frac{1}{2}$; bill along the ridge 1, along the edge of lower mandible $1\frac{2}{12}$; tarsus $1\frac{9}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{6}{12}$; second toe $1\frac{2}{12}$ its claw $\frac{7}{12}$; third toe $1\frac{9}{12}$, its claw $\frac{8}{12}$; fourth toe $1\frac{3}{12}$, its claw $\frac{6}{12}$.

Female. Plate CCCLXI. Fig. 2.

The female is considerably smaller than the male. The bare papillar space over the eye is of much less extent, but, as well as the bill and feet, is coloured as in the male. The upper parts are dark greyish-brown, barred on the neck with grey, on the other parts barred and minutely undulated with yellowish-brown; the wings as in the male, but lighter and more mottled; the tail greyish-brown, becoming black toward the end, the middle feathers undulated like the back, and having four grey bands with a terminal white one. The sides of the head and the throat are greyish-white, undulatingly barred with brown; the general colour of the fore neck is greyish-brown, with pale sienna bands; on the breast the colour is brownish-grey, and the colours and markings of the rest of the under parts are as in the male, but paler.

Length to end of tail $19\frac{1}{4}$ inches; wing from flexure 9; tail $6\frac{1}{4}$; bill along the ridge $\frac{1}{2}$.

In a specimen in my possession, killed by Dr TOWNSEND on the "Columbia River, Sept. 26. 1834," the tail is considerably rounded, the lateral feathers being 7 twelfths shorter than the longest remaining, the middle feathers being lost. The tail is deep black, with a terminal band of ash-grey, half an inch in breadth. It is therefore probable, that when the tail is unworn, it is distinctly rounded, and tipped with grey.

YELLOW-BILLED MAGPIE.

CORVUS NUTTALLI.

PLATE CCCLXII. ADULT.

I HAVE conferred on this beautiful bird the name of a most zealous, learned, and enterprising naturalist, my friend THOMAS NUTTALL, Esq., to whom the scientific world is deeply indebted for the many additions to our zoological and botanical knowledge which have resulted from his labours. It is to him alone that we owe all that is known respecting the present species, which has not hitherto been portrayed. In a note inserted by him in my journal, he says :

“As we proceed to the south in Upper California, around the village of Sta. Barbara, we find the Common Magpie substituted by this remarkable species, which is much more shy and cautious, as well as more strictly insectivorous. It utters, however, nearly if not quite the same chatter. In the month of April they were everywhere mated, and had nearly completed their nests in the evergreen oaks of the vicinity (*Quercus agrifolia*). The only one I saw was situated on a rather high tree, towards the summit, and much concealed among the thick and dark branches. Their call was *pait, pait*; and on approaching each other, a low congratulatory chatter was heard. After being fired at once, it seemed nearly impossible again to approach them within gun-shot. When alighted in the thick oaks, they remained for a considerable time silent, and occasionally even wholly hid themselves; but after a while the call of recognition was again renewed, and if the pair then met, they would often fly off a mile or more, without stopping, in quest of insects. We often saw them on the ground, but never near the offal of the oxen, so attractive to the Crows and Ravens around.”

CORVUS NUTTALLI.

Adult. Plate CCCLXII. Fig. 1.

Bill almost as long as the head, straight, robust, compressed; upper

mandible with the dorsal line convex and declinate, the sides sloping and slightly convex, the edges sharp, with a slight notch close to the tip, which is rather sharp; lower mandible straight, the angle rather long and wide, the dorsal outline very slightly convex and ascending, the sides sloping outwards and slightly convex, the edges sharp and inclinate, the tip narrow. Nostrils basal, lateral, roundish, covered by bristly feathers, which are directed forwards.

Head large, ovate; eyes of moderate size; neck rather short; body compact. Legs of moderate length, strong; tarsus with seven large scutella in front, and two long plates behind, meeting so as to form a sharp edge. Toes stout, with large scutella, and separated almost to the base; first very strong; lateral toes nearly equal, third considerably longer. Claws strong, arched, compressed, sharp, the third with the inner edge somewhat dilated.

Plumage full, soft, blended; stiff bristly feathers, with disunited filaments over the nostrils, some of them extending nearly half the length of the bill; feathers on the throat with the shaft downy and prolonged. Wings of moderate length, much rounded; the first quill very short, extremely narrow, and falciform; the second two inches and four and a half twelfths longer, and a little longer than the ninth; the third an inch and one twelfth longer than the second, and three twelfths shorter than the fourth, which is the longest. The tail is very long, much graduated, the lateral feathers being four inches and seven twelfths shorter than the middle.

Bill pure yellow, as is a bare space under and behind the eye. Iris hazel. Feet black. The plumage of the head, neck, fore part of the breast and back, brownish-black, the feathers on the latter part being very long, those on the upper part of the head strongly glossed with green; the shafts of the throat-feathers greyish, and those of the feathers on the middle of the neck white. The feathers on the middle of the back are light grey, some of them whitish, and those behind tipped with black; rump and tail-coverts brownish-black. The scapulars are white; the smaller wing-coverts splendid with bronzed green; primaries black, glossed with shining green, their inner webs white, excepting at the end, and for some way along the margin; secondaries bright blue, changing to green, their inner webs greenish-black. Tail splendid with bright green, changing to greenish-yellow, purplish-red, bluish-purple, and dark green at the end; the inner webs

chiefly greenish-black, but with various tints. The breast and sides are pure white; the legs, abdominal region, lower tail coverts, and lower wing-coverts, black.

Length to end of tail 18 inches, to end of wings $11\frac{1}{2}$; wing from flexure $7\frac{3}{4}$; tail $9\frac{1}{2}$; bill along the ridge $1\frac{4}{8}$; tarsus $1\frac{1}{2}$; first toe $1\frac{7}{8}$, its claw $\frac{7}{8}$; middle toe $1\frac{2}{8}$, its claw $\frac{6}{8}$.

In form, proportion, and size, this Magpie is precisely similar to the common species. Its bill has the sides less convex; the bare space under the eye is of much greater extent, and the feathers of the tail are much narrower. The colours are similar, and distributed in the same manner; but the bill of the present species is yellow, instead of black, and the black of the back and fore neck is tinged with brown. The two species are wonderfully closely allied; but on comparing my specimen with several others in the Museum of the Zoological Society of London, I found that they all precisely agreed with it.

I have represented in the plate a twig of a species of *Platanus* discovered by the excellent naturalist after whom I have named the bird perched upon it.

STELLER'S JAY.

CORVUS STELLERI, GMEL.

PLATE CCCLXII. ADULT.

OF this Jay, discovered by STELLER, whose name it bears, Dr RICHARDSON states that it "is not uncommon in the summer time on the Pacific coast of America, from the mouth of the Columbia to the 56th parallel. It also frequents the Rocky Mountains, where Mr DRUMMOND procured a specimen. In its manner it greatly resembles the *Garrulus cristatus*." Mr NUTTALL's account of it is as follows:—

"We first observed this bird in our Western route in the Blue Mountains of the Columbia, east of Wallah Wallah. Here they were scarce and shy, but we met them in sufficient abundance in the majestic pine forests of the Columbia, where, in autumn, their loud and trumpeting clangour was heard at all hours of the day, calling out *djay, djay*, and sometimes chattering and uttering a variety of other notes scarcely recognisable as distinct from the calls of our common Blue Jay. They are, however, far more bold, irritable, and familiar. Watchful as dogs, a stranger no sooner shews himself in their vicinity than they neglect all other employment to come round, follow, peep at and scold him, sometimes with such pertinacity and irritability as to provoke the sportsman intent on other game to level his gun against them in mere retaliation. At other times, stimulated by mere curiosity, they will be observed to follow you in perfect silence, until something arouses their ready ire, when the *djay, djay, pay, pay*, is poured upon you without intermission, till you are beyond their view. So intent are they on vociferating, that it is not uncommon to hear them busily scolding even while engaged with a large acorn in the mouth. Of their geographical limits we are as yet uncertain. They were first found by STELLER at Nootka; but they do not extend into upper California, and scarcely to the west as far as the most western of the true Rocky Mountain Chains. They feed on insects, acorns, and the seeds of the gigantic pines which form a belt along the Pacific and the rivers of the Oregon Territory. In the month of May, I found a nest of this species in a small sapling of Douglas's Fir, on the

borders of a dark and dense forest, and again some time after a second nest with young, in an elevated branch of the same pine, on the border of a rocky cliff. On approaching the nest, which contained four eggs, of a pale green colour, with small olive-brown specks, varied with others of rather a violet hue, both the male and female flew at me with the utmost anger and agitation, deafening me almost with their cries and entreaties. But though I took only two of their eggs, I found next day that they had forsaken the nest, being too fearful and jealous of the intrusion to remain any longer in the same place. The nest as usual was bulky, made of interlaced twigs, and roots, with a stout layer of mud, and lined with black root-fibres. I saw the nest about ten days previous to the time of taking two of the four eggs. On that occasion the female (probably) only followed me in silence."

CORVUS STELLERI, *Gmel. Linn. Syst. Nat.* vol. i. p. 370.—*Lath. Ind. Ornith.* vol. i. p. 158.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 438.

STELLER'S JAY, *GARRULUS STELLERI*, *Ch. Bonaparte Amer. Ornith.* vol. ii. p. 44.

GARRULUS STELLERI, *STELLER'S JAY*, *Fauna Bor.-Amer.* vol. ii. p. 294.

STELLER'S JAY, *Nuttall, Manual*, vol. ii. p. 229.

Adult Male. Plate CCCLXII. Fig. 2.

Bill shorter than the head, strong, straight, a little compressed; upper mandible with the dorsal line declinate and convex toward the end, the sides sloping and becoming more convex toward the tip, which is declinate, thin edged and obtuse, the edges sharp and overlapping, with a slight notch; lower mandible straight, the angle short and broad, the dorsal outline ascending and slightly convex, the sides convex, the edges sharp and directed outwards, the tip narrow. Nostrils basal, roundish, covered by reversed bristly feathers.

Head large, ovate, eyes of moderate size; neck rather short; body compact. Legs of moderate length, strong; tarsus much compressed, with seven large anterior scutella, and two long plates behind, meeting so as to form a sharp edge. Toes stout, with large scutella, the outer adherent as far as its second joint to the middle toe; first very strong; lateral toes nearly equal, third much longer. Claws strong, arched, compressed, sharp.

Plumage full, soft, blended; stiff bristly feathers with disunited barbs over the nostrils, some of them extending a third of the length of the bill; at the base of the upper mandible several longish slender

bristles. The feathers on the top of the head and occiput linear-oblong, slightly recurved, and forming an erectile crest an inch and a half in length. Wings of moderate length, convex, and much rounded; the first quill very short, the second an inch and a quarter longer, the third nine-twelfths longer than the second, and three-twelfths shorter than the fourth, which is one-twelfth shorter than the fifth, the latter being the longest, although scarcely exceeding the sixth. Tail long, rounded, of twelve rather broad, rounded, and acuminate feathers, of which the shafts are undulated.

Bill and feet black. Iris hazel. Head and neck, with the fore part and middle of the back brownish-black, of a lighter tint on the back, and on the throat streaked with dull grey; the feathers on the forehead tipped with bright blue; the hind part of the back, the rump, and the upper tail-coverts, light blue; as are the lower tail-coverts, the sides and lower parts of the rump, the sides of the body, and the whole of the breast; the middle of the abdomen paler, the tibial feathers, and the lower wing-coverts dusky, tinged with blue. Wings blue, the secondary coverts and quills rich indigo and ultra-marine, narrowly barred with black, the outer coverts of the primaries pale; the inner webs of the primaries and outer secondaries dusky; tail blue with numerous narrow, inconspicuous dusky bars; the lower surface of the wings and tail dusky.

Length to end of tail 13 inches; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{4}{12}$; wing from flexure $5\frac{1}{12}$; tail 6; tarsus $1\frac{8}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{7}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{5}{12}$.

The Female is similar to the male, and scarcely inferior in colouring, but somewhat smaller.

Length to end of tail 12 inches; bill along the ridge $1\frac{1}{2}$; wing from flexure $5\frac{1}{2}$; tail $5\frac{1}{2}$; tarsus $1\frac{8}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{5}{12}$.

Dr TOWNSEND informs me that it is called *Ass-ass* by the Chinooks, who regard it with a superstitious feeling, believing that should a person hear it enunciating certain notes, which resemble the syllables *jaa-jaa*, he will shortly die, whereas its other notes, *kuc, kuc, kuc, kuc*, rapidly repeated, portend good. He further states that it is gregarious, like the Blue Jay, and corroborates some of the particulars above given.

Two eggs presented to me by Mr NUTTALL measure an inch and an eighth in length, and seven-eighths in breadth.

ULTRAMARINE JAY.

CORVUS ULTRAMARINUS.

PLATE CCCLXII. ADULT.

ALTHOUGH the Ultramarine Jay has been described by Mr SWAINSON, in his Synopsis of the Birds of Mexico, under the name of *Garrulus sordidus*, I retain the specific name "*ultramarinus*," previously given by the Prince of MUSIGNANO. The only observations respecting its habits that I am aware of having been made, are the following, for which I am indebted to my friend THOMAS NUTTALL.

"Early in October, on arriving in the forests of the Columbia, near Fort Vancouver, an establishment of the Hudson's Bay Company, we saw in the same situations with the Steller's Jay, the present species. Its habits are much like those of the Common Jay. It usually flies out to the tops of the lofty pines, jerks its tail, and perches playfully on some extreme branch, where it utters at times, as if excited by petulant anger, a strong *whoit, woit, woit, woit*, after which expression it emits a sort of recognition-call at short intervals, *twee*, and sometimes a shorter *'twee 'twee*. When much pursued, it sits still in the concealing shade of the lofty branches on which it seeks refuge. It feeds on insects, acorns broken up, and probably pine seeds. They appear to associate in roving families throughout the fall and winter, like the other species, seldom if ever associating with the more Common Steller's Jay, though now and then perhaps in the same tree. It is a graceful, active, and rather shy species, flying out straight from tree to tree, remarkable by its long tail and rather short wings; and its note is much less harsh and loud than that of Steller's Jay. They breed in the dark pine woods probably where we so frequently saw them alight, and on the 15th of June they were feeding their fully fledged young, two of which I pursued for some time, but they skulked so effectually as to escape me after a long and doubtful chase. The young had a great predominance of grey on the back. The same species also extends into Upper California."

Adult Male. Plate CCCLXII. Fig. 3.

Bill shorter than the head, strong, straight, compressed toward the end; upper mandible with the dorsal line declinate and convex toward the end, the sides sloping and becoming convex toward the tip, which is declinate, thin-edged and obtuse, the edges sharp and overlapping, with a slight notch; lower mandible straight, the angle rather short and broad, the dorsal outline ascending and slightly convex, the sides convex, the edges sharp and directed outwards, the tip narrow. Nostrils basal, roundish, covered by the reversed bristly feathers.

Head large, ovate; eyes of moderate size; neck rather short; body compact. Legs of moderate length, strong; tarsus much compressed, with seven large anterior scutella, and two long plates behind, meeting so as to form a sharp edge. Toes stout, with large scutella, the outer adherent as far as its second joint to the middle toe; first very strong; inner toe shorter than outer, third much longer. Claws strong, arched, compressed, acute.

Plumage full, soft, blended. Stiff feathers with disunited barbs over the nostrils, the longest scarcely extending to a third of the length of the bill; at the base of the upper mandible several longish slender bristles. Wings of moderate length, convex, and much rounded; the first quill very short, an inch and two-twelfths shorter than the second, which is eight-twelfths shorter than the third, the fourth three-twelfths longer than the third, and a twelfth and a half shorter than the fifth, which is the longest, but scarcely exceeds the sixth. Tail long, much rounded, of twelve rather narrow, rounded and acuminate feathers, of which the lateral is an inch and a quarter shorter than the longest.

Bill and feet brownish-black. Iris hazel. Upper part of the head, sides and hind part of the neck, wings, upper tail-coverts, and tail, light blue; back light greyish-brown, the feathers of the rump whitish and tinged with blue at the end; the inner webs of the quills dusky; the tail transversely undulated, and having the appearance of being faintly barred with a darker tint. A white band over the eye formed by the tips of the feathers there; the cheeks dusky; the fore neck greyish-white faintly streaked with dusky; and bounded below by a narrow semilunar band of light blue continuous with that of the neck. The lower parts are pale purplish-grey, passing into white on the abdomen; lower tail-coverts tinged with blue.

Length to end of tail 12 inches; bill along the ridge $1\frac{11}{12}$, along the

edge of lower mandible $1\frac{4}{12}$; wing from flexure $5\frac{8}{12}$; tail $6\frac{2}{12}$; tarsus $1\frac{8}{12}$; hind toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{7}{12}$; middle toe $1\frac{1}{12}$, its claw $\frac{6\frac{1}{2}}{12}$.

The Female is considerably smaller, but resembles the male in colour.

Length to end of tail $11\frac{1}{2}$ inches; wing from flexure $5\frac{3}{12}$; tail $6\frac{2}{12}$; tarsus $1\frac{7}{12}$; middle toe 1, its claw $\frac{6\frac{1}{2}}{12}$.

The resemblance which this species bears to the Florida Jay is so close that one might readily confound the two. That species, however, is distinguishable by its smaller size and its more rounded tail; by its having a band of whitish across the forehead and extended over the eye, where it is not in dots as in the Ultramarine Jay.

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CLARKE'S NUTCRACKER.

NUCIFRAGA COLUMBIANA.

PLATE CCCLXII. ADULT.

No sooner had I examined perfect specimens of this somewhat singularly coloured bird, than I felt assured, more especially from the form of its bill, that it is with us a representative of the Nutcracker of Europe ; and I was much surprised, on comparing it with the figure given of it by ALEXANDER WILSON, to find the latter very defective, the bill being nearly half an inch shorter than in four specimens which I have inspected. All that is known of its habits is contained in the following notes from Mr NUTTALL and Dr TOWNSEND.

“ We first observed this species in a small pine grove, on the borders of Bear River, in the table-land of the Rocky Mountains, where they were probably breeding, in the month of July. We again saw a considerable flock of the young birds early in August, in a lofty ravine near the summit of one of the three belts or isolated mountains, about thirty or forty miles west of the Shoshonee River. They appeared somewhat shy, and scattered through a grove of aspens, flying with a slight chatter, scarcely a caw, from the tops of the bushes or trees, on to the ground, probably in quest of insect food. We never saw this species either on the lower plains or forests of the Columbia, or in any part of Upper California. It appears never to descend below the mountain plains.” T. N.

“ CLARKE'S CROW, *Corvus columbianus*. First found on Bear River, and afterwards on the Blue Mountains, plentiful. Its flight is very unlike that of the Common Crow, being performed by jerks, like that of the Woodpecker. When sitting, it is almost constantly screaming ; its voice is very harsh and grating, and consists of one rather prolonged note. It breeds here in very high pine trees. The White Pelican also seen here in July, no doubt breeds ; also the Canvass-backed Duck, the Shoveller, and Dusky Duck ; found young of all of them. The *Corvus columbianus* is never seen within five hundred miles of the mouth of the Columbia. It appears generally to prefer a mountainous country and pine trees ; and feeds chiefly on insects and their larvæ.” J. K. T.

CLARKE'S CROW, *CORVUS COLUMBIANUS*, *Wils. Amer. Ornith.* vol. iii. p. 29, pl. 20, fig. 2.

CORVUS COLUMBIANUS, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 57.

COLUMBIAN CROW, *Nuttall*, *Manual*, vol. ii. p. 218.

Adult Male. Plate CCCLXII. Fig. 4.

Bill as long as the head, stout, somewhat conical, compressed, at the tip rather depressed. Upper mandible with its dorsal line slightly arcuato-declinate, the ridge convex, the sides rounded, the edges sharp and overlapping, without notæ, the tip flattened and obtuse; lower mandible with the angle short and rounded, the dorsal line straight, the sides convex, the edges sharp and a little inflexed, the tip flattened, and rather obtuse. Nostrils basal, lateral, roundish, covered by bristly feathers, which are directed forwards.

Head large, broadly ovate; eyes of moderate size; neck rather short; body compact. Legs of moderate length, stout; tarsus compressed, with seven large anterior scutella and two plates behind, meeting so as to form a sharp edge. Toes stout, with large scutella; the first toe very large, the inner a little shorter than the outer, the hind much longer; the third and fourth united as far as the second joint of the latter. Claws large, arched, much compressed, acute.

Plumage full, very soft and blended; the stiff bristly feathers over the nostrils extend about one-fifth of the length of the bill; and there are no distinct bristles at the base of the upper mandible; the feathers on the head are very short. The wings are long, and much rounded; the first quill two inches shorter than the second, which is ten-twelfths shorter than the third, the latter exceeded two-twelfths by the fourth, which is the longest; the outer primaries being narrow, give the wing, when closed, the appearance of being pointed. Tail of moderate length, rounded, of twelve rather broad feathers, of which the lateral is half an inch shorter than the middle.

Bill and feet brownish-black. Iris hazel. The general colour above and below is light brownish-grey, the forehead, throat, fore part of cheeks, and a space around the eye white, tinged with yellow. Wings black, glossed with blue; seven of the secondaries largely tipped with white, upper tail-coverts greyish-black; tail pure white, excepting the two middle feathers and the greater part of the inner webs of the next

pair, which are black glossed with blue; lower wing-coverts dusky, some tipped with white; lower tail-coverts pure white.

Length to end of tail 12 inches; bill along the ridge $1\frac{8}{12}$, along the edge of lower mandible $1\frac{10}{12}$; wing from flexure $7\frac{1}{12}$; tail $5\frac{1}{4}$; tarsus $1\frac{4}{12}$; hind toe $\frac{7}{12}$; its claw $\frac{8}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{6}{12}$.

Adult Female. Plate CCCLXII. Fig. 5.

The Female is similar to the male.

BOHEMIAN CHATTERER.

BOMBYCILLA GARRULA, VIEILL.

PLATE CCCLXIII. MALE AND FEMALE.

THE first intimations of the occurrence of this beautiful bird in North America, were made by Mr DRUMMOND and Dr RICHARDSON, by the former of whom it was found in 1826, near the sources of the Athabasca, or Elk River, in the spring, and by the latter, in the same season, at Great Bear Lake, in latitude 50°. Dr RICHARDSON states, in the *Fauna Boreali-Americana*, that “specimens procured at the former place, and transmitted to England, by the servants of the Hudson’s Bay Company, were communicated, by Mr LEADBEATER to the Prince of MUSIGNANO, who had introduced the species into his great work on the Birds of the United States.” “In its autumn migration southwards,” he continues, “this bird must cross the territory of the United States, if it does not actually winter within it; but I have not heard of its having been hitherto seen in America to the southward of the fifty-fifth parallel of latitude. The mountainous nature of the country skirting the Northern Pacific Ocean being congenial to the habits of this species, it is probably more generally diffused in New Caledonia and the Russian American Territories, than to the eastward of the Rocky Mountain chain. It appears in flocks at Great Bear Lake about the 24th of May, when the spring thaw has exposed the berries of the alpine arbutus, marsh vaccinium, &c., that have been frozen and covered during winter. It stays only for a few days, and none of the Indians of that quarter with whom I conversed had seen its nests; but I have reason to believe, that it retires in the breeding season to the rugged and secluded mountain-limestone districts, in the sixty-seventh and sixty-eighth parallels, where it feeds on the fruit of the common juniper, which abounds in those places.” In a note, he further states:— “I observed a large flock, consisting of at least three or four hundred individuals, on the banks of the Saskatchewan at Carlton House, early in May 1827. They alighted in a grove of poplars, settling all on one or two trees, and making a loud twittering noise. They stayed only

about one hour in the morning, and were too shy to allow me to approach within gunshot."

I am informed by Dr TOWNSEND, who has spent about four years in the Columbia River district and on the Rocky Mountains, that he did not observe there a single bird of this species. In the autumn of 1832, whilst rambling near Boston, my sons saw a pair, which they pursued more than an hour, but without success. The most southern locality in which I have known it to be procured, is the neighbourhood of Philadelphia, where, as well as on Long Island, several were shot in 1830 and 1832. The specimens from which I made the figures of the male and female represented in the plate, were given to me by my friend THOMAS M'CULLOCH of Pictou, in Nova Scotia, who procured several others in the winter of 1834. The following account of the affection displayed by one towards its companion, with which he has also favoured me, will be found highly interesting.

"During the winter of 1834, many species of the northern birds were more than usually abundant in the province of Nova Scotia, being driven, no doubt, from their customary places of resort by the cold which was very intense at the commencement of the season. Large flocks of the *Loxia Eucleator* appeared in every part of the country, while the *Fringilla Linaria*, of which we had not seen a single specimen for upwards of two years, could be shot at almost any hour of the day, in the streets of Pictou; and we were often told of birds being seen, which from the description we could not recognise as belonging to any species with which we were already acquainted. The first day of the year having proved uncommonly mild, I went out, accompanied by my father, with the expectation of obtaining something new for our collection of birds. We had scarcely left our own door when we observed a small flock alight in a thicket of evergreens a short distance from where we stood. Thinking they were Pine Grosbeaks, we directed the man who was with us to push on and obtain a shot. He did so, and we just arrived in time to pick up a pair of birds which he had killed. One glance was sufficient to shew us that they were not what we had supposed, but a species we had never previously seen or heard of as visiting that portion of the Continent. You, my dear Sir, have often enjoyed such moments, and therefore can easily conceive the intense delight with which we surveyed our prize, and how anxiously we watched the progress of the remainder, as they flew to an adjoining

thicket, where one immediately disappeared, while the other took its station on the top of a spruce, from which its simple *tze tze tze* was uttered with the greatest vehemence, as if calling on its companions to hasten from the danger which it had recently escaped. Seeing the bird so very watchful, we made a small circuit with the view of diverting its attention, and at the same time of looking for the one by which it was accompanied, as I conceived it to be severely wounded, from the apparent difficulty of its flight. After a careful examination of the bush we at length observed it upon a low twig, and from its inattention to the calls of its mate, and the covering position in which it sat, I concluded that it was unable to make another attempt to escape. Giving it an occasional glance, we turned towards the other, which still retained its former station on the top of the spruce, though its uneasiness seemed to increase at every step. While the man was cautiously working his way through the thick alder, in order to get within shot, I carefully examined the bird, which certainly presented a very interesting object. It stood almost as upright as the top on which it was perched, its height being much increased by its long and graceful crest being quite erect, while at the same time its wings were kept in a constant jerking motion, as if in readiness to remove at a moment's notice. Independent of the mere beauty of the bird, there was something deeply interesting in the anxiety for the safety of its mate, so touchingly displayed by the force and rapidity of its simple but affectionate warning. The motion of the alders frightened the bird, and I had the mortification of seeing it rise in the air, as if about to commence a lofty and long-continued flight. Unwilling to give it up, I watched its progress with longing eyes, but at last, when about turning away in despair, it suddenly wheeled about, dashed by with great velocity, gently brushed its companion, and thus by dispelling its stupor induced it to make another effort to escape the danger which threatened its destruction. Though surprised and delighted with this singular display of fidelity and affection, I felt not a little disappointed to see them both about to elude our grasp. The weakness of the wounded bird, however, soon induced it to seek concealment in another thicket, while the other, still faithful to a friend in distress, alighted as formerly on a spruce top, whence it could both see and warn it of approaching danger. As we again drew near, its anxiety seemed to be redoubled, while its notes were uttered with corresponding quickness and energy; but before we could get within

reach, it again launched into the air, and made off, calling on the other to follow with all possible speed. After flying for some time, and finding itself unattended, it again returned and alighted on a top near the one it had just left. The opportunity was too good to be lost, and notwithstanding our admiration of this additional instance of its fidelity, we shot it down, affection for its species being the occasion of its ruin. These, my dear Sir, are all the observations I was enabled to make upon these interesting birds, during the short and only time they ever came under my notice. From the man I learned that before the first shot they were quite mute, and unsuspecting of danger. Some days after these were obtained, a single one was observed by my father repeatedly to come and sit for a considerable time on some willows at the bottom of our garden, but not being accustomed to the use of a gun, he did not procure it. Whether this was the wounded one or not, we could not tell, but from the affection of the bird for its kind, we thought that possibly it might be that one in search of its lost companions."

AMPELIS GARRULUS, *Linn. Syst. Nat.* vol. i. p. 297.—*Lath. Ind. Ornith.* vol. i. p. 363.

BOMBYCILLA GARRULA, *Ch. Bonap. Amer. Ornith.* vol. iii. pl. 16, fig. 2.—*Synopsis of Birds of United States*, p. 438.

BOMBYCILLA GARRULA, *Richards. and Swains. Fauna Bor.-Americana*, vol. ii. p. 237.

EUROPEAN WAXEN-CHATTERER, *Nuttall, Manual*, vol. ii. p. 579.

Adult Male. Plate CCCLXIII. Fig. 1.

Bill short, rather stout, straightish, broader than high at the base, compressed towards the end; upper mandible with its dorsal line convex and declinate towards the tip, which is deflected, narrow, and rather acute, its sides convex, its edges sharp and overlapping, with a distinct notch; lower mandible with the angle short and wide, the dorsal line convex and ascending, the edges sharp and inflected, the tip very small, acute, ascending, with a small sinus behind. Gape-line nearly straight, the upper mandible having a wide festoon near the base. Nasal membrane large, feathered; nostrils oval, partially concealed.

Head ovate, of ordinary size; neck short; body full. Feet rather short; tarsus short, rather stout, compressed, with six anterior scutella, and two plates behind, meeting so as to form an edge, except at the lower part; toes of moderate size, first stout, third and fourth

slightly connected at the base; inner toe a little shorter than outer; third much longer. Claws rather long, arched, much compressed, acute.

Plumage blended, very soft, silky, but with little gloss. A tuft of linear, oblong, erectile, decurved feathers on the head; no bristles at the base of the bill. Wings rather long, broad, and pointed; first quill longest, the second slightly shorter, the other primaries pretty equally graduated; secondaries, excepting the inner two, broad and abruptly rounded, with the shaft projecting and enlarged into a flat, oblong, horny appendage, of the colour of red sealing-wax. Tail of moderate length, even, or very slightly emarginate, the middle feathers being shorter, by a twelfth of an inch, than the one next the lateral.

Bill black, the base of the lower mandible whitish. Iris hazel. Feet and claws black. The general colour of both surfaces is ash-grey, becoming more tinged anteriorly with brownish-orange, of which colour are the forehead, a patch on each side of the throat near the base of the bill, and the feathers under the tail. A band of deep black from the nasal membrane, along the lore, and over the eye, to the top of the head, where it is concealed by the crest; feathers at the base of the lower mandible, and a narrow streak below the eye white; the upper part of the throat deep black. Alula, primary coverts, and quills greyish-black, the secondaries more grey; the primary coverts largely tipped with white, the primary quills with a bright yellow, the secondary with a white elongated spot at the end of the outer web. Tail light grey at the base, gradually shaded into deep black, with a broad terminal band of bright yellow.

Length to end of tail $9\frac{3}{4}$ inches; extent of wings $16\frac{1}{4}$; wing from flexure $4\frac{8}{12}$; tail 3; bill along the ridge $\frac{6}{12}$, along the edge of lower mandible $\frac{9}{12}$; tarsus $\frac{9\frac{1}{2}}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{3\frac{3}{4}}{12}$.

Female. Plate CCCLXIII. Fig. 2.

The Female is similar to the male, but somewhat smaller.

The wax-like appendages vary from seven, which is the greatest number, to four or three, and are sometimes wanting, especially in young birds, of which, however, some possess them. In some specimens the yellow tips of the tail-feathers and primary quills are very pale yellow or whitish.

WHITE-WINGED CROSSBILL.

LOXIA LEUCOPTERA, GMEL.

PLATE CCCLXIV. MALE, FEMALE, AND YOUNG.

I FOUND this species quite common on the islands near the entrance of the Bay of Fundy, which I visited early in May 1833. They were then journeying northwards, although many pass the whole year in the northern parts of the State of Maine, and the British provinces of New Brunswick and Nova Scotia, where, however, they seem to have been overlooked, or confounded with our Common American Crossbill. Those which I met with on the islands mentioned above were observed on their margins, some having alighted on the bare rocks, and all those which were alarmed immediately took to wing, rose to a moderate height, and flew directly eastward. On my passage across the Gulf of St Laurence to Labrador, in the same month, about a dozen White-winged Crossbills, and as many Mealy Redpolls, one day alighted on the top-yards of the Ripley; but before we could bring our guns from below, they all left us, and flew ahead of the vessel, as if intent on pointing out to us the place to which we were bound. On the 30th of June, a beautiful male was shot, on a bunch of grass growing out of the fissure of a rock, on a small island a few miles from the coast of Labrador; and on the 23d of July, my young friend Dr GEORGE SHATTUCK, procured a fine adult female on the Murre Islands, whilst she was feeding among the scanty herbage.

Within the limits of the United States, I have obtained some during winter along the hilly shores of the Schuylkill River in Pennsylvania; also in New Jersey, and in one instance in Maryland, a few miles from Baltimore, beyond which southward I have never met with this species, nor have I heard of any having been seen there. According to Dr TOWNSEND, who resided about four years on the Columbia River, none are met with in that region. As it appears that individuals accidentally visit Europe, I am led to think that the true summer haunts of this species are as yet not better known than those of the Bohemian Chatterer and Common Crossbill. The latter has been shot in

winter by my son JOHN WOODHOUSE, within a few miles of Charleston in South Carolina, where several were seen, and the specimen he procured there is now in the collection of my friend the Reverend JOHN BACHMAN.

The southward migration of this Crossbill, as well as of the other, is extremely irregular. Being evidently hardy birds, they appear to prefer northern to temperate climates, and to shift their station only during the most severe cold. The comparatively small number that spend the year in Maine and the British Provinces adjoining, may be forced to do so by wounds or other accidents, as in general I have found them moving toward the north as soon as the chill blasts of winter were tempered by the warmer rays of the vernal sun.

The habits of the White-winged Crossbill are in general similar to those of our common species. Its flight is well sustained and undulated; it is easily approached, is fond of saline substances, uses its bill and feet in the manner of Parrots, and procures its food from the cones of pines. Its song is at times mellow and agreeable, and in captivity it becomes gentle and familiar.

Mr HUTCHINS says that this species reaches Hudson's Bay in the month of March, and breeds in May, forming a nest of grass, mud, and feathers, about midway up pine trees, and laying five white eggs, marked with yellowish spots. The young are abroad in the end of June, and the species remains in that country until the latter part of November. Dr RICHARDSON states that it "inhabits the dense white spruce forests of the Fur Countries, feeding principally on the seeds of cones. It ranges through the whole breadth of the continent, and probably up to the sixty-eighth parallel, where the woods terminate, though it was not observed by us higher than the sixty-second. It is mostly seen on the upper branches of the trees, and, when wounded, clings so fast, that it will remain suspended after death. In September it collects in small flocks, which fly from tree to tree, making a chattering noise; and in the depth of winter it retires from the coast to the thick woods of the interior."

LOXIA LEUCOPTERA, *Gmel. Linn. Syst. Nat.* vol. i. p. 844.

LOXIA FALCIROSTRA, *Lath. Ind. Ornith.* vol. i. p. 371.

WHITE-WINGED CROSSBILL, LOXIA LEUCOPTERA, *Wils. Amer. Ornith.* vol. iv. p. 48, pl. 41, fig. 4. Male.

WHITE-WINGED CROSSBILL, *Ch. Bonaparte, Amer. Ornith.* vol. ii. pl. 14, fig. 3. Female.

LOXIA LEUCOPTERA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 117.

LOXIA LEUCOPTERA, WHITE-WINGED CROSSBILL, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 263.

WHITE-WINGED CROSSBILL, *Nuttall, Manual*, vol. i. p. 540.

Adult Male. Plate CCCLXIV. Figs. 1, 2.

Bill rather long, stout at the base, where it is higher than broad, extremely compressed toward the end, the mandibles towards their extremity deflected to opposite sides, so as to cross each other. Upper mandible with the dorsal line convex and deflected, the sides slightly convex, the edges sharp, and towards the end united, as in *Rhynchops nigra*, the tip excessively compressed, decurved, and extending far beyond that of the other. Lower mandible with its angle very short and broad, the dorsal outline ascending and convex, the edges sharp, inflected, and approximated at the tip, which is extremely acute. Nostrils small, basal, round, covered by the short, bristly feathers.

Head large, broadly ovate ; eyes small ; neck short ; body compact. Feet rather short, strong ; tarsus short, compressed, with seven anterior scutella, and two posterior plates meeting so as to form a thin edge ; toes of moderate size, the outer united at the base, the first strong, the lateral toes nearly equal, the third much longer ; the pads and papillæ of the soles very large. Claws long, arched, very slender, much compressed, tapering to a fine point.

Plumage blended. Wings of ordinary length, pointed, the outer three primaries longest (in one specimen the first longest, in three the second) ; secondaries slightly emarginate. Tail of moderate length, deeply emarginate, the feathers curved outwards at the point.

Bill dusky, tinged with greyish-blue, especially on the edges. Iris hazel. Feet dark reddish-brown. The general colour of the plumage is rich carmine, inclining to crimson ; the feathers on the fore part and middle of the back dusky, excepting the tips ; the scapulars, wings, upper tail-coverts, and tail black ; two broad bands of white on the

wing, the anterior formed by the first row of small coverts and several of those adjoining, the other by the secondary coverts, of which the basal half only is black; the inner secondaries are tipped with white, as are the tail-coverts, and the quills and tail-feathers are very slightly margined with whitish. Bristly feathers at the base of the bill yellowish-white; sides brownish, and streaked with dusky, axillar feathers whitish; lower tail-coverts brownish-black, broadly margined with reddish-white.

Length to end of tail $6\frac{1}{2}$ inches, to end of wings $5\frac{1}{4}$, to end of claws 5; extent of wings $10\frac{5}{8}$; bill along the ridge $\frac{9}{12}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure $3\frac{7}{12}$; tail $2\frac{7}{12}$; tarsus $\frac{7}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{5}{12}$.

Female. Plate CCCLXIV. Fig. 3.

The female has the upper parts dusky, the feathers margined with greyish-yellow, the rump wax-yellow; the lower parts are yellowish-grey, streaked with dusky, the fore part of the breast wax-yellow; the wings and tail are as in the male, but paler, and with the white bands on the former of less breadth. Bill and feet darker than those of the male.

Length to end of tail $6\frac{1}{4}$ inches, to end of wings 5, to end of claws $5\frac{1}{4}$; extent of wings 10.

Young. Plate CCCLXIV. Fig. 4.

The young resemble the female, but the lower parts are dull yellowish-grey, spotted and streaked with dark brown.

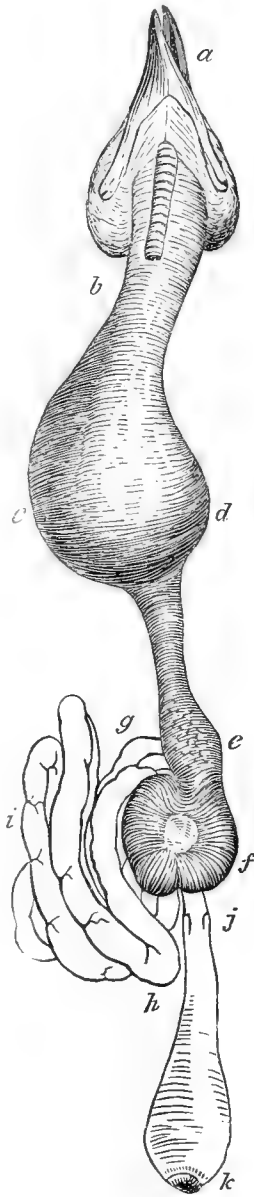
After the first moult the male still resembles the female, but is more yellow. At the next moult it acquires the red colour, which becomes richer and purer the older the bird.

In this species there are three longitudinal ridges on the roof of the mouth, and the palate is bent in the same manner as in Buntings. The tongue is of the same general form as that of the Pine Grosbeak, $3\frac{1}{2}$ twelfths long, compressed and slender at the base, with the basihyoid bone of a similar form, concave above, dilated and rounded at the end, so as to resemble a scoop or spoon. The œsophagus, *b c d e*, is

2 inches and 8 twelfths long, when dilated forms a crop of vast size, *c d*, which lies chiefly on the right side of the neck, but also passes behind so as to appear on the left side. This form occurs equally in the Common Crossbill, and seems to be peculiar to this genus. The greatest breadth of the crop is 10 twelfths. On entering the thorax, the œsophagus contracts to 2 twelfths. The proventriculus, *e*, is bulbiform, with a diameter of 3 twelfths. The stomach, *f*, is a strong gizzard of rather small size, somewhat bent in the same manner as that of the Pine Grosbeak, $4\frac{3}{4}$ twelfths long, 6 twelfths broad; its muscles distinct; the cuticular lining very firm but thin, longitudinally rugous, and of a light red colour. The intestine, *g h i j k*, is $10\frac{1}{2}$ inches long, its greatest diameter 2 twelfths, its least $1\frac{1}{2}$ twelfth. The rectum, *j k*, is 1 inch 2 twelfths long, including the cloaca. The cœca, *j*, are $1\frac{1}{4}$ twelfth long, and $\frac{1}{4}$ twelfth broad.

The trachea is 1 inch 9 twelfths long, $1\frac{1}{2}$ twelfth broad at the upper part, gradually diminishing to 1 twelfth; its rings firm, and about 75 in number. The inferior laryngeal muscles are large. The bronchi are formed of about 15 half-rings.

The twigs represented in the plate are those of a species of Alder common in Newfoundland.



LAPLAND LONGSPUR.

EMBERIZA LAPPONICA, NILSSON.

PLATE CCCLXV. MALE AND FEMALE.

My first acquaintance with this species took place on the 15th of February 1819. Walking with my wife, on the afternoon of that day, in the neighbourhood of Henderson, in Kentucky, I saw immense flocks scattered over the open grounds on the elevated grassy banks of the Ohio. Having my gun with me, as usual, I procured more than sixty in a few minutes. All the youths of the village turned out on this occasion, and a relative of mine, in the course of the next day killed about six hundred. Although in rather poor condition, we found them excellent eating. Three days after they disappeared as suddenly as they had arrived, for although on the previous evening they seemed as numerous as ever, none but wounded birds were to be seen in the morning. Whilst at Shippingport, near Louisville, in the same State, I found a good number of these birds on the commons, feeding in company with Shore Larks and Snow Buntings, and obtained some dozens. Among all the specimens which I procured in that part of the country, none were in perfect or summer plumage, most of them being in the garb of the male, as represented by the second figure of my plate.

In their movements they resemble the Snow Bunting. They run and hop on the ground with ease and celerity, many making towards a tuft of withered grass at the same time, to search for the few seeds that may yet be procured around or beneath it, and all the while uttering a repetition of *chips*, in a rather low and plaintive accent. When on wing, to which they resorted after each discharge of the gun, or when nearly approached, they formed into compact bodies, wheeled and cut to and fro through the air, now high, now low, in the manner of Larks, alighting suddenly, and perhaps immediately flying off again to renew their curious evolutions. At times flocks composed of hundreds would settle on the top-rails of fences, or on the lower large branches of the trees in the fields; but on such occasions they appeared as much discontented as the Snow Buntings are, when they also alight on trees, fences, or houses.

The Lapland Longspur visits the neighbourhood of Louisville in Kentucky almost every year, but seldom appears when the weather is not intensely cold. I found it also in the vicinity of St Genevieve in Missouri; and it seems surprising that none were observed near the Columbia River by Dr TOWNSEND.

The best account of this species, as observed in the northern latitudes of America where it breeds, is that given by Dr RICHARDSON, in the *Fauna Boreali-Americana*. After stating that it is common in the northern regions of both continents, he says:—"I never met with this species in the interior of the Fur Countries during winter, and I suspect that its principal retreats in that season are on the borders of Lakes Huron and Superior, and in the country extending to the westward on the same parallel. In the year 1827, it appeared on the plains at Carlton House, about the middle of May, in very large flocks, among which were many Shore Larks (*Alauda alpestris*) and a few individuals of *Emberiza picta*. During their stay of ten or twelve days, they frequented open spots, where recent fires had destroyed the grass. They came to Cumberland House a few days later in the same season, and there kept constantly in the furrows of a newly ploughed field. In the preceding year they were seen, though in smaller flocks, in the vicinity of Fort Franklin (lat. $65\frac{1}{2}^{\circ}$) in the beginning of May; and the crops of those that were then killed were filled with the seeds of the *Arbutus alpina*. They breed in the moist meadows on the shores of the Arctic Sea. The nest, placed on a small hillock, among moss and stones, is composed externally of the dry stems of grass, interwoven to a considerable thickness, and lined very neatly and compactly with Deer's hair. The eggs, usually seven, are pale ochre-yellow, spotted with brown.

The figure of the male in summer plumage represented in my plate, was drawn from a beautiful specimen in the collection of my esteemed friend, Captain JAMES ROSS of the British Navy.

FRINGILLA LAPPONICA, *Linn. Syst. Nat.* vol. i. p. 317.—*Lath. Ind. Ornith.* vol. i. p. 440.

LAPLAND LONGSPUR, EMBERIZA LAPPONICA, *Ch. Bonaparte. Amer. Ornith.* vol. i. p. 53, pl. 13, fig. 2, Male, fig. 3, Female.

EMBERIZA LAPPONICA, *Ch. Bonaparte, Synopsis*, p. 440.

EMBERIZA (PLECTROPHANES) LAPPONICA, LAPLAND BUNTLING, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 248.

LAPLAND LONGSPUR, *Nuttall, Manual*, vol. i. p. 463.

Adult Male in Summer. Plate CCCI.XV. Fig 1.

Bill short, robust, tapering, somewhat compressed ; the upper mandible nearly as large as the lower, its dorsal outline very slightly convex, the sides rounded, the sharp edges inflected, the marginal outline slightly angulate ; lower mandible broader, with involute sharp edges. The palate with a prominent knob. Nostrils basal, round, partly concealed by the feathers.

Head of moderate size, ovate ; eyes rather small ; neck short, body compact. Feet of ordinary length ; tarsus compressed, anteriorly covered with seven large scutella, sharp behind ; toes of moderate size ; the lateral toes equal, the hind toe stout. Claws long, slightly arched, laterally grooved, compressed toward the end, very acute, that of the hind toe much elongated.

Plumage soft and blended, the feathers somewhat distinct on the back and wings. Wing long, pointed ; first quill longest, second scarcely shorter ; secondaries emarginate. Tail rather long, deeply emarginate.

Bill yellow tipped with dusky ; iris hazel ; feet and claws black. The head and fore part of the neck are black ; a band of white passes from the base of the upper mandible over the eye, becomes broader, and, descending on the neck, margins the black of that part. The lower parts are white, the sides streaked with black. A brownish-red crescent on the hind neck ; the feathers of the upper parts black, broadly margined with yellowish-red ; the first row of smaller wing-coverts margined with white, the secondary coverts tipped with the same ; the primary quills narrowly edged with reddish-white, the secondary with yellowish-red ; as are the tail-feathers, of which the two outer have a wedge-shaped white spot at the end.

Length to end of tail $6\frac{5}{12}$ inches ; wing from flexure $3\frac{10}{12}$; tail $2\frac{1}{12}$; bill along the ridge $\frac{6}{12}$, along the edge of lower mandible $\frac{8}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{7}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{4}{12}$.

Male in winter. Plate CCCLXV. Fig. 2.

Bill dull yellow, tipped with dusky ; feet and claws black. Upper part of the head black, the feathers edged with brownish-red ; the cheeks greyish-brown ; the throat, and fore part of the neck, greyish-white, a reddish-white band from the bill, over the eye, and down the side of the neck ; the upper parts light brownish-red with black spots. The tips of the first row of small coverts, and of the secondary coverts, white ;

the quills and coverts blackish-brown, edged with light red; the tail brownish-black, the feathers edged with reddish-grey.

Female in summer. Plate CCCLXV. Fig. 3.

The female has the bill yellowish-brown, tipped with dusky, the feet and claws brownish-black, the upper part of the head, the hind neck, and the back, are reddish-grey, spotted with black; the wings and tail as in the male. A reddish-white band over the eye, and down the neck; the lore dusky; a black band from behind the eye; the cheeks light yellowish-brown; a black band from the lower mandible margining the throat, which is white; as are the lower parts generally; but the lower part of the neck is spotted with black, and the sides streaked with dusky.

Length to end of tail $5\frac{9}{12}$ inches; wing from flexure $3\frac{8}{12}$; tail 2.

ICELAND OR JER FALCON.

FALCO ISLANDICUS, LATH.

PLATE CCCLXVI. ADULT FEMALE.

THE figures of the adult female of this superb Falcon now before you were taken from the bird described by Mr JOHN HEPPESTALL, at page 554 of the second volume of this work. It was kept by him upwards of six years; and it was his intention to have sent it to me alive from Sheffield; but it died of an affection of the œsophagus, which had for some days rendered it unable to swallow its food. My kind and most worthy friend, however, sent it to me immediately, so that after having received it in good condition, I was enabled not only to make it the subject of the present plate, and to take accurate measurements of all its parts, but also to institute a comparison between it and one of the specimens obtained in Labrador, which, with its consort, is represented in Plate CXCVI.

In all essential respects it agrees with the Labrador bird. The festoon on the edge of the lower mandible is however more prominent, and on the other hand, the tooth which is prominent in the young bird from Labrador, is in the old Iceland bird broken off and worn on both sides. In like manner, several of the claws, which are larger and stronger in this individual, are worn and blunted. These are the accidents of domestication or long use, and shew that no dependence can be placed on the prominence of either the festoon or the tooth of the bill as indicating a difference of species. The tarsi, toes, their scales and scutella, are the same as in the Labrador specimen. The wing, however, is more pointed, although the feathers are of the same form; but this arises from the first quill of the Labrador bird not having completed its growth, as both it and some of the other quills are still sheathed at the base. In Mr HEPPESTALL'S bird the second quill is longest, the third very little shorter, and the first nearly as long, and three quarters of an inch longer than the fourth. The tail is slightly rounded, as in the Labrador bird, the lateral feathers being three quarters of an inch shorter than the longest, and the feathers are similarly though less distinctly pointed, they having been considerably worn.

The plumage is compact, and the feathers are of the same form in both birds, but those of the head are a little broader in the Iceland bird. On the whole, however, no differences are observable beyond what might be expected between a young and an old individual of the same species. The colouring of the Iceland bird, however, is very different.

The bill is very pale blue, the extremity of the upper mandible black, that of the lower yellowish; the eyes greyish-black; the cere, superciliary ridge, edges of eyelids, tarsi and toes, pale yellow; the eyelids pale blue; the claws black. The plumage is pure white, but all the feathers of the back and rump, the scapulars, the wing-coverts, and the secondary quills, have near their extremity a brownish-black spot, generally arrow-shaped. The anterior feathers of the back have, moreover, a black streak on the shaft, which on those farther back becomes larger and lanceolate, and on the rump is accompanied by a third spot; the larger coverts and secondary quills have also three or more spots, and the primary quills have seven spots or partial bars toward their extremity, besides a large subterminal black space, their tips however being white. On the inner margin of the two middle tail-feathers are eight, and on the outer four dusky spots, and their shafts are also dusky, as are those of all the quills on their upper surface. There are also a few slight lanceolate dark spots on the sides of the body, and on the tibial feathers.

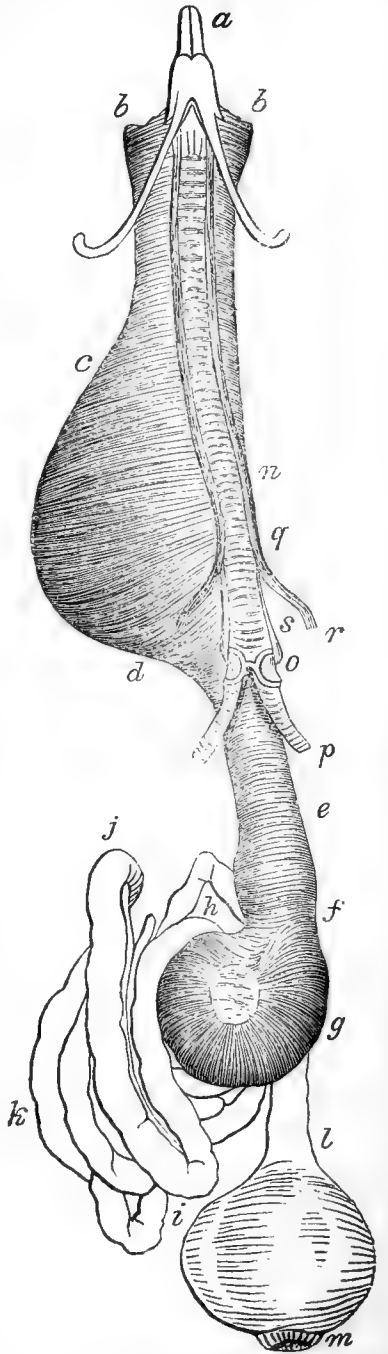
Length to end of tail $23\frac{1}{2}$ inches, to end of wings $21\frac{1}{2}$, to end of claws $18\frac{3}{4}$, to carpal joint $5\frac{1}{2}$; extent of wings $51\frac{1}{4}$; breadth of gape $1\frac{1}{8}$; wing from flexure 17; tail $9\frac{3}{4}$; bill along the ridge $1\frac{5}{8}$; tarsus $2\frac{4}{8}$; hind toe $1\frac{1}{8}$, its claw $1\frac{5}{8}$; middle toe $2\frac{1}{8}$, its claw (worn) $\frac{1}{2}$. Weight 2 lb., it being much emaciated.

The tongue, *a*, is $10\frac{1}{2}$ twelfths long, fleshy, deeply emarginate at the base, having on its upper surface numerous orifices of mucous crypts, towards the end narrowed, deeply concave, horny, with the extremity rounded and very slightly emarginate. The œsophagus, *bcd*, is $7\frac{1}{2}$ inches long, wide, dilated into a large crop, *cd*, lying on the right side; the proventriculus, *f*, is $\frac{1}{2}$ inch in diameter, with a belt of oblong glandules, arranged into four very prominent longitudinal ridges, with deep grooves between them. The stomach, *fgh*, is round, compressed, $1\frac{1}{2}$ inch in length, 1 inch 5 twelfths in breadth; its muscular coat thin, composed of large fasciculi, not arranged into distinct muscles; its inner coat soft, with-

out horny epithelium, but irregularly rugous, especially towards the pylorus, which has three knobs or valves. The intestine, *h i j k*, is $36\frac{1}{2}$ inches long, 5 twelfths in diameter at its anterior part, gradually contracting to 4 twelfths. The rectum is $3\frac{1}{2}$ inches long, $\frac{1}{2}$ inch in diameter at the commencement; the cæca 2 twelfths long, $1\frac{1}{2}$ twelfth in diameter; the cloaca, *l m*, globular. The right lobe of the liver is 2 inches 4 twelfths long, the left 2 inches 1 twelfth; the gall-bladder large.

The crop or dilatation of the œsophagus was nearly filled by two excrescences from its inner surface, of a soft spongy texture, but not ulcerated, or in any part scirrhus. The inner surface of the stomach was similarly affected, but in a much less degree, and the pyloric region was indurated. The intestines quite sound.

The trachea, *m n o*, is 6 inches long, considerably flattened, $5\frac{1}{2}$ twelfths in breadth at the upper part, gradually diminishing to 4 twelfths. Its rings, about 78 in number, are ossified, the last large, divided, arched, and with a broad membrane, *o*, intervening between them and the first bronchial ring. The lateral or contractor muscles, *p*, are very strong, as are the sterno-tracheal, *q r*, and there is a single pair of inferior laryngeal muscles, *s*, inserted into the membrane between the last ring of the trachea and the first of the bronchi. The bronchial half rings 15, slender and cartilaginous.



BAND-TAILED PIGEON.

COLUMBA FASCIATA, SAY.

PLATE CCCLXVII. MALE AND FEMALE.

IN the course of Colonel SAY's expedition to the Rocky Mountains, a single specimen of this large and handsome Pigeon was procured. This individual was afterwards figured in the continuation of WILSON's American Ornithology. Many specimens however have more recently been obtained by Dr TOWNSEND, from whom I have procured three pairs of adult and some young birds. Comparing them with the figure above alluded to, I should consider it as having been taken from a young male. In my plate are represented two adult birds, placed on the branch of a superb species of Dogwood, discovered by my learned friend, THOMAS NUTTALL, Esq., when on his march toward the shores of the Pacific Ocean, and which I have graced with his name! The beautiful drawing of this branch was executed by Miss MARTIN, the amiable and accomplished sister of my friend Dr BACHMAN. Seeds of this new species of *Cornus* were sent by me to Lord RAVENSWORTH, and have germinated, so that this beautiful production of the rich valley of the Columbia River may now be seen in the vicinity of London, and in the grounds of the nobleman just mentioned, near Newcastle-upon-Tyne. Dr TOWNSEND's notice respecting the bird here spoken of is as follows :—

“ The Band-tailed Pigeon is called by the Chinook Indians ‘*akoigh homin.*’ It ranges from the eastern spurs of the Rocky Mountains across to the Columbia River, where it is abundant. It arrived in 1836 in very great numbers, on the 17th of April, and continued in large flocks while breeding. Their breeding places are on the banks of the river. The eggs are placed on the ground, under small bushes, without a nest, where numbers congregate together. The eggs are two, of a yellowish-white colour, inclining to bluish-white, with minute spots at the great end. These Pigeons feed upon the berries of the black elder and the buds of the balsam poplar. When sitting in the trees, they huddle very close together in the manner of the Carolina

Parrot, and many may be killed at a single discharge of the fowling-piece. The flesh is tender and juicy, and therefore fine eating."

MR NUTTALL has favoured me with an equally interesting notice "This large and fine Pigeon, always moving about in flocks, keeps in Oregon only in the thick forests of the Columbia and the Wahlamet, and during the summer is more particularly abundant in the alluvial groves of the latter river, where throughout that season we constantly heard their cooing, or witnessed the swarming flocks feeding on the berries of the elder tree, those of the Great Cornel (*Cornus Nuttalli*), or, before the ripening of berries, on the seed-germs or the young pods of the Balsam poplar. The call of this species is somewhat similar to that of the Carolina Dove, but is readily distinguishable, sounding like a double suppressed syllable, as *h 'koo, h 'koo, h 'koo, h 'koo*, uttered at the usual intervals, and repeated an hour or two at a time, chiefly in the morning and evening. They are said to breed on the ground, or in the low bushes, but I did not find the nest, although I saw the birds feeding around every day near Watpatot Island. During the whole of this time they keep in flocks, either in the poplars or elder bushes, and on being started, sweep about like flocks of domestic pigeons, soon returning to their fare, when they feed in silence, keeping a strict watch for intruders. They remain on the lower part of the Columbia nearly the whole year, late in the season (October and November) feeding mostly on the berries of the Tree Cornel, but still they seem to migrate some distance to the south, as the severity of the winter approaches."

COLUMBA FASCIATA, Say, in Long's Exped. to Rocky Mountains, vol. ii. p. 10.

BAND-TAILED PIGEON, COLUMBA FASCIATA, Ch. Bonaparte, Amer. Ornith. pl. viii, fig. 3, vol. i. p. 77.

COLUMBA FASCIATA, Bonap. Synops. p. 119.

BAND-TAILED PIGEON, Nuttall, Manual, vol. i. p. 64.

Adult Male. Plate CCCLXVII. Fig. 1.

Bill straight, rather short, slender, compressed; upper mandible with a tumid fleshy covering at the base, where it is straight in its dorsal outline, convex towards the end, with a sharp-edged, declinate, rather obtuse tip; lower mandible with the angle long and pointed,

the sides erect at the base, sloping outwards toward the end, the edges sharp, the tip narrow but blunt. Nostrils medial, oblique, linear.

Head small, oblong, compressed; neck of moderate length; body full. Feet short, strong; tarsus very short, rounded, with two anterior rows of large hexagonal scales; the hind part fleshy with very small scales; toes broad and flat beneath, marginate, with large scutella above; the hind toe smallest, the lateral nearly equal, the middle toe much longer. Claws of moderate size, arched, compressed, grooved beneath, rather acute.

Plumage rather compact above, blended beneath, on the hind neck strong, with metallic gloss. Wings long, the second quill longest, the third only a twelfth of an inch shorter, the first six-twelfths shorter, and a little longer than the fourth, the rest rather quickly graduated; secondaries of moderate breadth and rounded. First quill with the outer web narrower at the base than toward the end, the second and third quills with their outer webs having a slight sinus and attenuated toward the end. Tail of moderate length, rounded, of twelve broad abruptly rounded feathers, of which the lateral is half an inch shorter than the longest.

Bill yellow, with the tips black. Feet yellow, claws greyish-black. Bare space around the eyes carmine. The head, fore neck, and breast are of a light reddish-purple or wine-colour, which on the abdomen and lower tail-coverts fades into whitish; a narrow half-ring of white on the hind neck, the lower part of which is of a metallic brownish-green tint. The upper parts are greyish-blue, darker, and tinged with brown on the fore part of the back and scapulars; sides of the body and rump greyish-blue. Alula, primary coverts, primary quills, and outer secondaries brownish-black, very narrowly margined with brownish-white. Tail greyish-blue at the base, much paler and tinged with yellow toward the end, these colours being separated at the distance of two inches from the tip by a band of black.

Length to end of tail 16 inches, to end of wings $13\frac{3}{4}$; wing from flexure 9; tail $6\frac{1}{4}$; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $1\frac{1}{2}$; hind toe $\frac{8}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; middle toe $1\frac{4\frac{1}{2}}{12}$, its claw $\frac{7}{12}$.

Adult Female. Plate CCCLXVII. Fig. 2.

The female differs from the male only in having the tints a little

duller, and on the upper parts somewhat darker, with the black band on the tail less decided, the middle feathers being but faintly marked with it.

Length to end of tail $15\frac{1}{2}$ inches.

It was omitted to mention that the minute spots on the eggs are white.

NUTTALL'S DOG-WOOD.

CORNUS NUTTALLI, *Audubon*.

This very beautiful tree, which was discovered by Mr NUTTALL, on the Columbia River, attains a height of fifty feet or more, and is characterized by its smooth reddish-brown bark ; large, ovate, acuminate leaves, and conspicuous flowers, with six obovate, acute, involueral bracteas, which are rose-coloured at the base, white towards the end, veined and reticulated with light purple The berries are oblong, and of a bright carmine.

ROCK GROUS.

TETRAO RUPESTRIS, GMEL.

PLATE CCCLXVIII. MALE AND FEMALE.

WHILST at Labrador, I was informed by Mr JONES, of whom I have made mention on several occasions, that a smaller species of Ptarmigan than that called the Willow Grouse, *Tetrao Saliceti*, was abundant on all the hills around Bras d'Or, during the winter, when he and his son usually killed a great number, which they salted and otherwise preserved; and that in the beginning of summer they removed from the coast into the interior of the country, where they bred in open grounds, never, like the Willow Grouse, retreating to the wooded parts. They seldom appear at Bras d'Or until the last of the Wild Geese have passed over, or before the cold has become intense, and the plains deeply covered with snow. While about his house, they repair to the most elevated hill-tops, from which the violence of the winds has removed the snow. There they feed on the mosses and lichens attached to the rocks, as well as on the twigs and grasses scantily found in such places at that season. They keep in great packs, and when disturbed are apt to fly to a considerable distance, shifting from one hill to another often half a mile off.

Not having seen this species alive, and my drawing having been taken from specimens kindly presented to me by my friend Captain JAMES ROSS, R. N., I cannot do better than present you here with the observations of Dr RICHARDSON, as recorded in the *Fauna Boreali-Americana*. "HUTCHINS reports that the Rock Grouse is numerous at the two extremities of Hudson's Bay, but does not appear at the middle settlements (York and Severn Factories), except in very severe seasons, when the Willow Grouse are scarce, and Captain SABINE informs us that they abound on Melville Peninsula, Lat. 74° to 75°, in the summer. It arrived there in its snow-white dress, on the 12th of May 1820; at the end of that month the females began to assume their coloured plumage, which was complete by the first week in June, the change at the latter period being only in its commencement with the males. Some of the males were killed as late as the middle of June in their

unaltered winter plumage. In this respect the species differs from the Willow Grouse, whose males first assume the summer colour. The Rock Grouse is found also on Melville Peninsula and the Barren Grounds, seldom going farther south in winter than latitude 63° in the interior, but descending along the coast of Hudson's Bay to latitude 58°, and in severe seasons still farther to the southward. It also occurs on the Rocky Mountains as far south as latitude 55°. It exists in Greenland, is common in Norway, is known in Sweden by the name of *Sno Rissa*, and is the species most frequent in the Museums of France and Italy under the name of *Tetrao Lagopus*. It is not a native of Scotland. The Rock Grouse in its manners and mode of living resembles the Willow Grouse, except that it does not retire so far into the woody country in winter. Contrary, however, to what HEARNE says, it is frequent in open woods on the borders of lakes in that season, particularly in the 65th parallel of latitude, though perhaps the bulk of the species remains on the skirts of the Barren Grounds. It hatches in June. The ground colour of the egg is, according to Captain SABINE, a pale reddish-brown, and is irregularly spotted and blotched with darker brown." Specimens in my possession, coloured as here described, average one inch and five-eighths in length, by an inch and an eighth in breadth.

TETRAO RUPESTRIS, *Gmel. Syst. Nat. vol. i. p. 751.—Lath. Ind. Ornith. vol. ii. p. 640.*

TETRAO (LAGOPUS) RUPESTRIS, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 354.*

ROCK GROUSE, *Nuttall, Manual, vol. ii. p. 610.*

Adult Male in Winter. Plate CCCLXVIII. Fig. 1.

Bill short, robust; upper mandible with the dorsal outline curved, the ridge and sides convex, the edges overlapping, the tip declinate, thin edged, but rounded; lower mandible with the angle short and wide, the dorsal line convex, the back broadly convex, the sides rounded, the edges inflected, the tip blunt. Nostrils basal, roundish, concealed by feathers.

Head small, ovate; neck of moderate length; body bulky. Feet of ordinary length, robust; tarsus feathered, as are the toes, the first toe very small, the middle toe much longer than the lateral, which are

nearly equal, the inner being a little longer. Claws slightly arched, depressed, broad, with thin edges and rounded at the tip.

Plumage compact, the feathers generally ovate and rounded; those on the tarsi, toes, and soles oblong, with loose stiffish barbs. Wings rather short, concave; the primaries strong, narrow, tapering, pointed; the first an inch and seven-twelfths shorter than the second, which is four-twelfths shorter than the third, this being the longest, but only exceeding the fourth by a twelfth and a half. Tail rather short, nearly even, of sixteen broad feathers, of which two are incumbent, less strong, and longer than the rest by two-twelfths of an inch.

Bill black; superciliary membrane scarlet; claws dusky, towards the end yellowish. The plumage is pure white, with the exception of a broad band of black from the upper mandible to the eye, and for a short space behind it; the shafts of the six outer quills, which are brownish-black, and all the tail-feathers, the two middle excepted, they being of a deep greyish-black colour, with a terminal narrow band of white.

Length to end of tail $13\frac{1}{2}$ inches, to end of wings 12; wing from flexure 8; tail $4\frac{1}{2}$; tarsus $1\frac{2}{12}$; hind toe $\frac{2}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{8}{12}$.

Male in Summer. Plate CCCLXVIII. Fig. 2.

In summer, the plumage differs little in texture, with the exception of that on the feet, which is short and thin on the tarsi, worn on the base of the toes, of which the soles and half of the upper surface are denuded. The bill and claws are of the same colour as in winter; but the plumage is variegated with black, reddish-yellow, and white. The upper parts may be described as black, transversely and irregularly banded and spotted with yellowish-red, the feather terminally margined with white, there being on each feather several bars of yellowish-red running from the margin inwards, but leaving a black space in the centre. The lower parts are lighter, more broadly and regularly barred with brownish-black and light reddish-yellow. The feathers along the edge of the wing, the alula, primary coverts, nearly all the secondary coverts, primaries and outer secondaries, white; as are the lower surface of the wing, the axillar feathers, and some of the feathers on the abdomen, as well as those on the feet, the latter being soiled or tinged with yellowish or grey. The shafts of the primaries are brownish-

black, and the tail is black as in winter, tipped with white, and with the lateral feathers having part of their outer web white; the two middle feathers barred like the back. The dimensions of an individual are as follows:

Length to end of tail $13\frac{1}{2}$ inches, to end of wings $11\frac{1}{2}$; wing from flexure $7\frac{1}{2}$; tail $4\frac{1}{2}$; bill along the ridge $\frac{7}{12}$; tarsus $1\frac{2}{12}$; middle toe $\frac{1}{12}$, its claw $\frac{6}{12}$.

Female in Summer. Plate CCCLXVIII. Fig. 3.

The female does not differ materially from the male, the yellow bands being only broader and lighter.

Very great differences are observed in the length and form of the claws, they being in some individuals very long, thin-edged, and tapering, to a rounded point; in others very short, being worn down to the stump. This species is considerably smaller than the Ptarmigan of Scotland, which it precisely resembles in its winter plumage. In its summer plumage, however, it differs in having the markings larger; and as yet no specimens have been obtained marked with undulated slender, ash-grey, and dusky lines, in any degree approaching those characteristic of the British bird in its autumnal plumage. The bill of the Rock Grouse is shorter and thicker than that of the Ptarmigan, although the reverse has been alleged.

MOUNTAIN MOCKING BIRD.

TURDUS MONTANUS.

PLATE CCCLXIX. MALE.

THIS interesting and hitherto unfigured species was procured on the Rocky Mountains by Dr TOWNSEND, who forwarded a single specimen to Philadelphia, where I made a drawing of it. The following notice by Mr NUTTALL shews that it is nearly allied in its habits to the Mocking Bird:—

“On the arid plains of the central table-land, betwixt the northern sources of the Platte and the Colorado of the West, in the month of June, we frequently heard the cheering song of this delightful species, whose notes considerably resemble those of the Brown Thrush, with some of the imitative powers of the Mocking Bird. For a great part of the day, and especially early and late, its song resounds through the desert plains, as it warbles to its mate from some tall weed or bush of wormwood, and continues with little interruption nearly for an hour at a time. We met with it in the plains exclusively, till our arrival at Wallah Wallah, but we are not certain of having seen it in any part of California, it being apparently entirely confined to the cooler and open regions of the Rocky Mountains. Just before arriving at Sandy Creek of the Colorado, while resting for refreshment at noon, I had the good fortune to find the nest in a wormwood bush, on the margin of a ravine, from whence the male was singing with its usual energy. It contained four almost emerald green eggs, spotted with dark olive of two shades, more numerous towards the greater end, the spots large and roundish. The nest itself was made of small twigs and rough stalks, lined with stripes of bark and bison wool. The female flew off to a little distance, and looked on her unwelcome and unexpected visitor, without uttering either call or complaint.”

ORPHEUS MONTANUS, MOUNTAIN MOCKING BIRD, *Townsend, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 192.*

Adult Male. Plate CCCLXIX. Fig. 1.

Bill of moderate length, rather slender, compressed, straightish, pointed; upper mandible with the dorsal line slightly declinato-arcuate, the sides convex toward the end, the edges sharp, with a slight sinus close to the narrow declinate tip; lower mandible with the angle short and narrow, the dorsal line straight, the edges sharp and a little declinate at the end, the tip narrow; the gape-line very slightly arched.

Head oblong, of ordinary size; neck rather short, but somewhat slender. Feet longish, rather strong; tarsus compressed, anteriorly covered with seven large scutella, sharp-edged behind; toes of moderate length, slender, the hind toe stout, the lateral nearly equal, the anterior united for a short space at the base. Claws slender, arched, compressed, acute.

Plumage soft and blended. Wings of moderate length, rounded, the first quill short, the third and fourth longest, the second and fifth equal, and about a quarter of an inch shorter than the fourth. Tail long, rounded, of twelve rather narrow rounded feathers.

Bill dark-brown, the base of the lower mandible paler. Feet yellowish-brown, claws dusky. The general colour of the upper parts is greyish-brown, the tips of the secondary coverts, the edges of the primary quills, and a large spot at the end of the three lateral tail-feathers, white; the lower parts whitish, marked with triangular dusky spots, of which there is a distinct line from the base of the bill; the throat, the middle of the breast, the abdomen, and lower tail-coverts unspotted.

Length to end of tail 8 inches, to end of wings $5\frac{3}{4}$; wing from flexure $3\frac{9}{12}$; tail $3\frac{1}{2}$; bill along the ridge $\frac{7\frac{1}{2}}{12}$; tarsus $1\frac{2}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

VARIED THRUSH.

TURDUS NÆVIUS, GMEL.

PLATE CCCLXIX. ADULT MALE.

OF this beautiful Thrush, of which a figure not having the black band running quite across the breast, as is the case in the adult male, is given by Mr SWAINSON, in the *Fauna Boreali-Americana*, Dr RICHARDSON speaks as follows:—"This species was discovered at Nootka Sound, in Captain Cook's third voyage, and male and female specimens, in the possession of Sir JOSEPH BANKS, were described by LATHAM: PENNANT has also described and figured the same male. The specimen represented in this work was procured at Fort Franklin, lat. $65\frac{1}{4}^{\circ}$, in the spring of 1826. We did not hear its song, nor acquire any information respecting its habits, except that it built its nest in a bush, similar to that of the *Merula migratoria*. It was not seen by us on the banks of the Saskatchewan; and, as it has not appeared in the list of the Birds of the United States, it most probably does not go far to the eastward of the Rocky Mountains in its migrations north and south. It may perhaps be more common to the westward of that ridge."

Dr RICHARDSON's conjecture as to the line of march followed by it has proved to be correct, Dr TOWNSEND and Mr NUTTALL having found it abundant on the western sides of the Rocky Mountains. The former of these zealous naturalists informs me that he "first found this Thrush on the Columbia River in the month of October, and that it becomes more numerous in winter, which it spends in that region, though some remove farther south. It there associates with the Common Robin, *Turdus migratorius*, but possesses a very different note, it being louder, sharper, and quicker than those of the latter, and in the spring, before it sets out for its yet unascertained breeding-place, it warbles very sweetly. It is called *Ammeskuk* by the Chinooks."

Mr NUTTALL's notice respecting it is as follows:—"Of this bird, whose manners so entirely resemble those of the Common Robin, we know almost nothing. They probably breed as far north as Nootka, where they were first seen by the naturalists of Cook's expedition. On the

Columbia they are only winter birds of passage, arriving about October, and continuing more or less frequently throughout the winter. At this time they flit through the forest in small flocks, frequenting usually low trees, on which they perch in perfect silence, and are at times very timorous and difficult of approach, having all the shy sagacity of the Robin, and appearing at all times in a very desultory manner."

The numerous specimens of this Thrush in my possession have enabled me to compare it with *Turdus migratorius*, and another new Thrush from Chili. On examining the tail, from the shape of which Mr SWAINSON considers this species allied to our Mocking Bird, I found its form, length, and extent beyond the wings, to correspond almost exactly with those of the tail of our Robin; and, if it proves true that the Varied Thrush forms a nest bedded with mud, it will strengthen my opinion that both these and the Chilian species are as nearly allied as possible, and therefore ought to be considered as true Thrushes, of which, to assume the language of systematic writers, *Turdus migratorius* is the type in America, whilst *Turdus Merula* is that of Europe:

The two figures in my plate were taken from adult males shot in spring. You will find a figure of the female in Plate CCCCXXXIII.

TURDUS NÆVIUS, *Gmel. Syst. Nat. vol. i. p. 817.*—*Lath. Ind. Ornith. vol. i. p. 331.*

ORPHEUS MERULOIDES, THRUSH-LIKE MOCK-BIRD, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 187.*

Adult Male. Plate CCCLXIX. Figs. 2, 3.

Bill of moderate length, rather strong, compressed, acute; upper mandible with its dorsal outline slightly arched, the ridge narrow, the sides convex toward the end, the edges sharp, overlapping, destitute of notch, there being in its place an extremely slight sinus, the tip a little declinate; lower mandible with the angle rather long and narrow, the dorsal line very slightly convex, the ridge narrow, the sides erect and convex, the edges sharp and slightly decurved towards the narrow, rather obtuse tip. Nostrils basal, oblong, half closed by a horny operculum. Head of moderate size, ovate, convex anteriorly; neck rather short, body moderately full. Feet of ordinary length, rather stout; tarsus compressed, anteriorly covered with a long plate and four inferior scutella, posteriorly with two long plates meeting at a very acute angle. Toes rather large, the first strongest, the lateral nearly equal, the

third and fourth united as far as the second joint of the latter. Claws rather large, moderately arched, much compressed, acute.

Plumage soft and rather blended. Wings of moderate length, broad, rounded; the first primary extremely short, being about a fifth of the length of the third, which is longest, but scarcely exceeds the fourth; the second four-twelfths shorter than the third. Tail large, rather long, nearly even, of twelve broad rounded feathers.

Bill black, with the basal half of the lower mandible yellow; iris hazel; feet and claws flesh-coloured. The general colour of the upper parts is a deep leaden-grey, darker on the head, the feathers very narrowly margined with brown; the quills and tail-feathers dusky, the outer webs of the latter tinged with grey, and their tips white; the lore dusky; a band of reddish-orange passes from over the fore part of the eye down the side of the neck, and almost meets its fellow on the hind part; two conspicuous bands of the same cross, the wing obliquely being formed of the tips of the first row of small coverts, and those of the secondary coverts; the outer webs of the primary coverts about the middle, a band on the primaries near the base, part of the outer webs towards the end, and the tips of the secondaries, also pale reddish-orange. The lower parts in general are reddish-orange, paler behind; a band of greyish-black passes down the side, and crosses the lower part of the neck, where it is almost pure black; the feathers of the sides are tipped with light grey; those of the middle of the abdomen are white; and the lower tail-coverts are tipped with the latter colour. The axillary feathers are white, tipped with grey; the smaller coverts grey, tipped with reddish-white, the primary coverts grey, the secondary nearly white, of which also there is a bar formed by part of the inner webs of the quills.

Length to end of tail $10\frac{1}{4}$ inches; wing from flexure $5\frac{1}{4}$; tail $3\frac{1}{2}$; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{2}$; tarsus $1\frac{1}{4}$; hind toe $\frac{5}{8}$, its claw $\frac{5}{8}$; middle toe $\frac{1}{2}$, its claw $\frac{1}{2}$.

Adult Female. Plate CCCCXXXIII. Fig. 6.

The female, which is scarcely smaller than the male, is coloured in the same manner; but the upper parts are strongly tinged with olive-brown; the reddish-orange bands are much paler, the tail-feathers are margined with dull reddish-brown; the band on the lore, down the sides of the neck, and across it, is light greyish-brown; the orange tint

of the lower parts is much paler ; the lower wing-coverts have no tinge of red, and part of the breast and abdomen is nearly pure white.

Length to end of tail 10 inches ; wing from flexure $5\frac{2}{12}$; tail $3\frac{8}{12}$; bill along the ridge $\frac{1}{12}$; tarsus $1\frac{1}{4}$; middle toe and claw $1\frac{5}{12}$.

The plant represented on the plate is the American Mistletoe, *Viscum verticillatum*, on the berries of which several of our Thrushes occasionally feed, as the Mistle thrush, *Turdus viscivorus*, is said to do on those of *Viscum album*. It is found in almost every part of the United States, growing chiefly on oaks and apple-trees.

AMERICAN DIPPER.

CINCLUS AMERICANUS, SWAINSON.

PLATE CCCLXX. MALE AND FEMALE.

The specimens from which the figures here given have been taken, were procured on the Rocky Mountains, on the 15th of June, when they were supposed to be breeding, so that they were probably adults in full plumage. Having little taste for critical discussions, I shall refrain from inflicting on the reader a long and elaborate review of all that has been said on the subject of this interesting but little-known bird, which was figured by the Prince of MUSIGNANO from a specimen obtained near the sources of the Athabasca River, under the name of *Cinclus Pallasii*; and has been described by Mr SWAINSON, first as *C. Mexicanus*, and again, in the Fauna Boreali-Americana, as *C. Americanus*. The latter name I prefer to that of *C. unicolor*, which is in fact incorrect, the bird not being of one single colour. Unfortunately very little is known respecting the habits of the American Dipper, which however, being in form and size so very similar to that of Europe, probably resembles it in its mode of life. I therefore cannot do better than endeavour to supply the deficiency by presenting you with the history of the latter species, as given in detail by my friend WILLIAM MACGILLIVRAY, who, among the wild hills of his native country, has studied its habits with a zeal and acuteness certainly not exceeded by those of any ornithologist. His account, which first appeared in a periodical named "The Naturalist," and which he has revised and amended for insertion here, is in truth a model of histories of this kind.

"The Dipper is in many respects one of the most interesting of our native birds. Residing chiefly in the wild glens of the mountainous districts, it now and then presents itself to the wandering naturalist as it flits along the streams, or is seen perched on a stone in the midst of the water, the white patch on its breast rendering it conspicuous at a great distance. Even the mere collector of plants, who, of all men, seems to be the least capable of comprehending the harmonies of nature, pauses to gaze upon it, as it shoots past him in its rapid and even flight; the solitary shepherd, wending his way to the

mountain corry, meets it with delight ; and the patient and contemplative angler, as he guides his tackle over the deep pool, smiles upon the tiny fisher, whose frequent becks have attracted his notice. The singular circumstance of its obtaining its food under the surface of the water, although in form and structure it is allied to the Thrushes, Wrens, and other land birds, has especially drawn the attention of ornithologists to it ; and the explanation of its mode of progression in that element has exercised their ingenuity, although very few have based their conjectures on actual observation. Lastly, the land-proprietor, or his factor, too much occupied with other pursuits to inquire for themselves, and trusting to the reports of prejudiced persons, direct their gamekeepers and shepherds to destroy the lively and harmless creature, whenever an opportunity occurs, because it has been supposed to destroy the eggs and fry of the salmon.

“ This bird having in a particular manner engaged my attention in the course of my many rambles, I have been enabled to trace its history in a satisfactory degree, so that the account here presented of it I consider as among the most accurate of those which I have written.

“ It frequents the sides of rivers and streams of inferior magnitude, especially such as are clear and rapid, with pebbly or rocky margins. I have met with it in every part of Scotland, as well as in the hilly parts of Cumberland and Westmoreland, and it is said by MONTAGU to occur in Wales and Devonshire. In Scotland it is not peculiar to the mountainous regions, being found in the lowest parts of the Lothians, as well as on the alpine rills of the Grampians, and other elevated tracts, but it is generally more abundant in hilly ground, and, although never common in any district, is nowhere more plentiful than on the Tweed and its tributaries, in the pastoral counties of Peebles and Selkirk. It is also a well-known inhabitant of all the larger Hebrides. It is not only a permanent resident, but seldom shifts its station to any great extent, excepting during continued frosts, when it descends along the streams, and is seen flitting about by the rapids and falls. Mill-dams are also favourite resorts, especially in winter and spring. On lakes having a muddy or peaty bottom I have never observed it ; but it may sometimes be seen on those which are shallow and pebbly at the margins, as on St Mary’s Loch in Yarrow, where I have shot it.

“ The flight of the Dipper is steady, direct, and rapid, like that of the

Kingfisher, being effected by regularly timed and quick beats of the wings, without intermissions or sailings. It perches on stones or projecting crags by the sides of streams, or in the water, where it may be seen frequently inclining the breast downwards, and jerking up the tail, much in the manner of the Wheatear and Stonechat, and still more of the Wren; its legs bent, its neck retracted, and its wings slightly drooping. It plunges into the water, not dreading the force of the current, dives, and makes its way beneath the surface, generally moving against the stream, and often with surprising speed. It does not, however, immerse itself head foremost from on high like the Kingfisher, the Tern, or the Gannet; but either walks out into the water, or alights upon its surface, and then plunges like an Auk or a Guillemot, slightly opening its wings, and disappearing with an agility and dexterity that indicate its proficiency in diving. I have seen it moving under water in situations where I could observe it with certainty, and I readily perceived that its actions were precisely similar to those of the Divers, Mergansers, and Cormorants, which I have often watched from an eminence, as they pursued the shoals of sand-eels along the sandy shores of the Hebrides. It in fact flew, not merely using the wing, from the carpal joint, but extending it considerably and employing its whole extent, just as if advancing in the air. The general direction of the body in these circumstances is obliquely downwards; and great force is evidently used to counteract the effects of gravity, the bird finding it difficult to keep itself at the bottom, and when it relaxes its efforts coming to the surface like a cork. MONTAGU has well described the appearance which it presents under such circumstances:—

“ In one or two instances, where we have been able to perceive it under water, it appeared to tumble about in a very extraordinary manner, with its head downwards, as if picking something; and at the same time great exertion was used, both by the wings and legs.” This tumbling, however, is observed only when it is engaged in a strong current, and its appearance is greatly magnified by the unequal refraction caused by the varying inequalities of the surface of the water. When searching for food, it does not proceed to great distances under water; but, alighting on some spot, sinks, and soon reappears in the immediate neighbourhood, when it either dives again, or rises on wing to drop somewhere else on the stream, or settle on a stone. Often from a shelving crag or large stone it may be seen making short incur-

sions into the water, running out with quiet activity, and presently bobbing up to the surface, and regaining its perch by swimming or wading. The assertion of its walking *in* the water, *on* the bottom, which some persons have ventured, is not made good by observation, nor countenanced by reason and the nature of things. The Dipper is by no means a walking bird: even on land I have never seen it move more than a few steps, which it accomplished by a kind of leaping motion. Its short legs and curved claws are very ill adapted for running, but admirably calculated for securing a steady footing on slippery stones, whether above or beneath the surface of the water. Like the Kingfisher, it often remains a long time perched on a stone, but in most other respects its habits are very dissimilar.

“ The first opportunity which I had of observing this bird advancing under water occurred in Braemar, in 1819, when, from the bank of the stream which passes by Castletown, I noticed one “ tumbling about ” in the rapid current. In September 1832 I watched a Dipper for some time, on a part of the Tweed, where the current was very rapid. It flew off from the shore, and alighted in the middle of the stream, where it immediately dived. Reappearing a little way farther up the river, it floated for a few seconds, dived, emerged, and flew to the opposite bank, on reaching which it again disappeared under water for a short time, and thus continued its exertions. When perched on a stone near the shore, especially if the water be not much agitated around, it usually makes short incursions into it, apparently for the purpose of procuring food, and returns to its station. On these occasions it is not difficult to approach it, provided due precaution be used; but in general it is shy and easily alarmed. I have several times shot at an individual which observed me as I was quietly walking up to it; but it is not often that one remains until you come within shot. A method which I have often successfully practised was to mark the position of the bird at a distance, taking note of an object on the bank opposite to it, then make a circuit, and suddenly come upon the spot. When one has been pursued either up or down a stream for a quarter of a mile or so, it usually turns, to regain its ordinary station, when it may be shot as it dashes past.

“ In August 1834, while ascending White Coom, the highest mountain in Dumfriesshire, accompanied by my son, I observed a Dipper retreating behind a large stone, over which the water fell, in the midst

of a streamlet that flowed along the bottom of a narrow scar or rut. Imagining that its nest or young might be concealed there, we went up to the place, and, on perceiving the bird behind the little waterfall, endeavoured to catch it, on which it sallied forth, plunged into a pool, and attempted to escape down the stream, but without success, for we met it at every turn, and it was obliged to betake itself again to its retreat. We now turned off the water from the stone, when it again plunged into the pool, and after some windings, at length effected its escape. On emerging at some distance it flew off, and I considered it strange that it had not used its wings at first, as it certainly could more easily have escaped through the air than through the water. The chase afforded another rare opportunity of viewing its subaqueous flight, which in all probability was caused by excessive alarm. It flew about in the pool, just as a bird would fly in a confined space in the air, but of course with less velocity, and on diving at first seemed covered with small air-bubbles which adhered to its surface.

On being wounded the Dipper commonly plunges into the water, flies beneath its surface to the shore, and conceals itself among the stones or under the bank. In fact, on all such occasions, if enough of life remains, it is sure to hide itself, so that one requires to look sharply after it. In this respect it greatly resembles the Common Gallinule. In the winter of 1829, I shot one on the Almond, which flew to the other side, walked deliberately out into the water, disappeared, and slowly emerged under a bank at some distance, where I found it after wading through the stream, which was partially frozen. Another had just strength sufficient to fly into a deep hole under a bridge on the Yarrow, partially filled with water, on which it was found floating dead. In August 1834, I shot a Dipper on Manor Water in Tweeddale, which flew off, dived, and hid itself under a bank, on which I forded the stream and endeavoured to secure it, but it slipped out under water, swam down the current twenty yards or so, and got under a large stone, where it was traced. The introduction of the gun-rod only caused the persecuted bird to retreat as far as it could, and when I was employed in removing some pebbles and gravel from behind the stone, it slipped out under water, and proceeded down the stream a considerable way before it rose to breathe. I noticed the place where it dived in under the bank, and it being at length obliged to come up to respire, I met the bird with my hand and so secured it.

When wounded and caught, it struggles hard, grasping firmly with the feet, but does not attempt to bite. I mention this circumstance as common to certain species of birds, such as the Fieldfare, Blackbird, and Starling, which, without possessing the power of annoying their enemy, yet do not tamely suffer themselves to be destroyed, but struggle to the last, undismayed, and ready to use the slightest chance of escape. Other species, equal in strength, such as the Snipe, the Golden Plover, and the Lapwing, do not struggle so vigorously, but meet their fate in a quiet and apparently stupid manner. Some birds, again, such as the Tits and Warblers, although evidently extremely frightened on being seized, watch every opportunity of biting. I need scarcely add that some, as the Kestrel and Sparrowhawk, grasp and bite with as much good-will as effect.

The most melancholy ornithological exhibition that I remember to have witnessed, was that of a wounded Dipper which was shot through the lungs, above Cramond Bridge, near Edinburgh. It stood still, without attempting to fly off, apparently insensible to all external objects, its legs bent, its wings drooping, its head declined. The blood was oozing from its side, and gurgling in its windpipe, which the poor bird made ineffectual efforts to clear. At intervals, a convulsive heaving of the chest took place, followed by an effort to vomit; and in that state the sufferer stood for five minutes until I got over the stream to it, when it expired in my hand. In the agony of death, the pupil became contracted to a mere point, and presently after dilated, when the lower eyelid gradually rose and covered the eye. This is commonly the case in birds, which do not expire with their eyes open, like man and most quadrupeds.

The food of the Dipper is said by authors to consist of small fishes, roe, and water-insects. Thus, according to WILLUGHBY, "*Pisces predatur, nec insecta aversatur.*" MONTAGU states that he saw an "old bird flying in with a fish in its bill," and that "these birds will sometimes pick up insects at the edge of the water." M. TEMMINCK alleges that its food consists of "*insectes d'eau, demoiselles et leurs larves; souvent du frai de truite.*" Mr SELBY judiciously combines these statements, informing us that "water-insects and the fry and spawn of fish form its food." Mr JENYNS, more wary, confines it to "aquatic insects." It would answer no good purpose to bring forward the notions of other compilers. There is nothing incredible in all these statements, al-

though it is to be remarked that no one states that he has actually observed fishes, or their eggs, in the stomach of this bird. I have opened a great number of individuals, at all seasons of the year, but have never found any other substances in the stomach than *Lymnææ*, *Ancylis*, Coleoptera, and grains of gravel. As to the ova and fry of the salmon, there is no evidence whatever that the Dipper ever swallows them; and, therefore, the persecution to which this bird has been subjected in consequence of the mere suspicion, ought to cease until the fact be proved. That the mollusca above mentioned form a principal part of its food was never suspected, and therefore I was much pleased with making the discovery, which satisfactorily accounted to me for all the subaqueous excursions of the species.

The Dipper is generally seen in pairs, sometimes singly, and, for a short period, at the breeding season, in families, but never in flocks. In some favourite places, such as a water-fall, or a series of rapids, one may in winter find so many as four or five individuals, but always scattered. Its song is short, but lively, and continued at intervals. It bears no resemblance to the full song of the Thrushes, but closely resembles the subdued winter warble of the Redwing and Starling, or the first notes of a young Song Thrush. This gentle warble is not confined to any period of the year, but may be heard during sunny weather at all seasons. Its common note, which it frequently utters while perched on a stone or while flying along the stream, resembles the syllable *chit*.

About the middle of spring it begins to form its nest, so that its first brood is abroad at the same time with that of the Blackbird. The nest, which is placed among the moss on the bank of a stream, or among the roots of a tree in a concealed place overhanging the water, sometimes in a crevice of a rock, or under a bridge, or even in the space behind a waterfall, varies considerably in form and size, according to its position; but is always very bulky, arched over, and resembles that of the Wren more than of any other bird. A perfect specimen found by my friend Mr WEIR, in the county of Linlithgow, presents externally the appearance of a flattened elliptical mass, measuring ten inches from the front to the back part, eight and a half in breadth, and six in height. The aperture is in front, of a transversely oblong form, three inches and a quarter wide, and one inch and a half high. The exterior is composed of various species of mosses, chiefly

hypna, firmly felted, so as to form a mass not easily torn asunder, especially in its lower part. This portion may be considered as forming a case for the nest properly so called, and in this respect resembles the mud case of the swallows. The nest itself is hemispherical, five and a half inches in diameter, composed of stems and leaves of grasses, and very copiously lined with beech-leaves. I have examined several other nests, which were similarly constructed, and all lined with beech-leaves, one having a few of ivy, and another one or two of the plane, intermixed. MONTAGU describes the nest as "very large, formed of moss and water plants externally, and lined with dry oak leaves; and others have stated that the lining is of leaves of various trees, which may depend upon the locality. The eggs, five or six in number, are of a regular oval form, rather pointed, pure white, varying from eleven-twelfths to an inch and one-twelfth in length, and averaging nine-twelfths in their greatest breadth. They are somewhat smaller than those of the Song Thrush.

The genus *Cinclus* may be considered as placed on the limits of the families of Turdinæ and Myrmotherinæ, being in fact more allied to *Turdus* than to *Pitta*, although through *Chamaeza* perhaps more obviously related to the latter. The digestive organs of the Common Dipper are entirely analogous to those of the Thrushes and allied genera, but bear no resemblance to those of the piscivorous birds, the œsophagus being narrow, and the stomach a true gizzard. The bird, being destined to feed upon aquatic insects and mollusca, which adhere to the stones under the water, is fitted for making its way to the bottom at small depths, and maintaining itself there for a short time, a minute or more; in conformity with which design its plumage is rather short and dense, its tail abbreviated, its wings short, broad, and strong, its bill unencumbered by bristles, and of the proper form for seizing small objects, as well as for detaching them from stones. Having its feet constructed like those of the Thrushes, but proportionally stronger, the Dipper thus forms a connecting link between the slender-billed land birds and the diving palmipedes, as the Kingfisher seems to unite them with the plunging birds of the same order."

The only original observations respecting the habits of the American Dipper that I have to present here are the following, with which I have been favoured by DR TOWNSEND:—"This bird inhabits the clear mountain streams in the vicinity of the Columbia River. When

observed it was swimming among the rapids, occasionally flying for short distances over the surface of the water, and then diving into it, and reappearing after a long interval. Sometimes it will alight along the margin, and jerk its tail upwards like a Wren. I did not hear it utter any note. The stomach was found to contain fragments of fresh-water snails. I observed that this bird did not alight on the surface of the water, but dived immediately from the wing."

CINCLUS PALLASII, *Ch. Bonaparte*, Amer. Ornith. vol. iii. p. 1, pl. 16, fig. 1.

CINCLUS AMERICANUS, *Swains. and Richards*. Fauna Bor.-Amer. vol. ii. p. 173.

BLACK WATER-OUSEL, OR DIPPER, *Nuttall*, Manual, vol. ii. p. 358.

Adult Male. Plate CCCLXX. Fig. 1.

Bill rather short, slender, slightly ascending, much compressed toward the end; upper mandible with its dorsal line slightly arched, the ridge rounded, the sides convex, the edges sharp and inflected, with an obscure notch close to the narrow slightly deflected tip; lower mandible slightly bent upwards, the angle medial and very narrow, the dorsal line ascending and slightly convex, the tip narrow and rather acute, the gape-line straight. Nostrils linear, direct, in the lower and fore part of the nasal membrane which is covered with very short feathers. Eyes rather small; eyelids densely feathered.

The general form is short, full, and compact; the head oblong, compressed, rather small; the neck rather short; the body rather deeper than broad. Legs strong, of ordinary length; tarsus compressed, covered anteriorly with a long undivided plate and four inferior scutella, posteriorly with two long plates meeting at a very acute angle. Toes rather large and strong; the first, second, and fourth, nearly equal in length, but the first much stronger, the third much longer; the third and fourth united as far as the second joint of the latter. Claws rather long, arched, much compressed, that of the hind toe considerably larger.

Plumage very soft and blended, the feathers oblong and rounded; those about the base of the bill very short and velvety. No bristles at the base of the bill. Wings rather short, broad, convex, and rounded; the first quill very short and narrow, being about a third of the length of the second, which is shorter than the fourth, the third longest, and with the next three slightly cut out on the outer web towards the end;

secondary quills long, broad, and rounded. Tail short, even, of twelve rather broad feathers, which are slightly decurved. Legs feathered to the joint, but the tarsus entirely bare.

Bill brownish-black; iris hazel; feet flesh-coloured, toes dusky towards the end; claws yellowish-grey. The general colour of the plumage is blackish-grey or deep bluish-grey; the head and neck chocolate-brown, that colour extending lower on the fore part of the neck than behind; the downy feathers of both eyelids white; the quills and tail-feathers dusky; the secondaries terminally margined with white.

Length to end of tail $7\frac{1}{2}$ inches; extent of wings $10\frac{1}{2}$; wing from flexure $3\frac{3}{4}$; tail $2\frac{1}{4}$; bill along the ridge $\frac{9}{12}$, along the edge of lower mandible $\frac{11}{12}$; tarsus $1\frac{1}{2}$; hind toe $\frac{5}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{4}{12}$.

Adult Female. Plate CCCLXX. Fig. 2.

The Female is in all respects similar to the male.

In form, size, and proportion, the American Dipper is almost precisely similar to the European.

COCK OF THE PLAINS.

TETRAO UROPHASIANUS. BONAPARTE.

PLATE CCCLXXI. MALE AND FEMALE.

ALTHOUGH the Cock of the Plains has long been known to exist within the limits of the United States, the rugged and desolate nature of the regions inhabited by it has hitherto limited our knowledge of its habits to the cursory observations made by the few intrepid travellers, who, urged by their zeal in the cause of science, have ventured to explore the great ridge of mountains, that separate our western prairies from the rich valleys bordering on the Pacific Ocean. Two of these travellers, my friends Dr TOWNSEND and Mr NUTTALL, have favoured me with the following particulars respecting this very remarkable species, the history of which, not being myself personally acquainted with it, I shall endeavour to complete by adding some notes of Mr DOUGLAS.

“ *Tetrao Urophasianus*, *Pi-imsh* of the Wallah Wallah Indians, *Mak-esh-too-yoo* of the Nezpercee Indians, is first met with about fifty miles west of the Black Hills. We lose sight of it in pursuing the route by the Snake River until we reach Wallah Wallah, on the banks of the Columbia, near the mouth of Lewis River. This bird is only found on the plains which produce the worm-wood (*Artemisia*), on which plant it feeds, in consequence of which the flesh is so bitter that it is rejected as food. It is very unsuspecting, and easily approached, rarely flies unless hard pressed, runs before you at the distance of a few feet, clucking like the common Hen, often runs under the horses of travellers when disturbed, rises very clumsily, but when once started flies with rapidity to a great distance, and has the sailing motion of the Pinnated Grouse. In the autumn they frequent the branches of the Columbia River, where they feed on a narrow-leaved plant. At this time they are considered good food by the natives, who take great quantities of them in nets. J. K. TOWNSEND.”

“ On the north branch of the Platte (Larimie’s Fork) we begin to meet with the *Tetrao Urophasianus* in considerable numbers, always on the ground in small flocks or pairs, by no means shy, but when too nearly approached arising with a strong whirring noise, and uttering at the

same time a rather loud but very short alarmed guttural cackle. The notes of the female indeed at such times almost resemble those of a common Hen. The old male when killed by Dr TOWNSEND turned out so different from the imperfect and unadult specimens figured, that we could scarcely recognise it for the same species. Its size seemed to promise a fine meal, but appearances are often deceitful, and after being nicely broiled, it truly deserved to be treated like the well-prepared plate of cucumbers, proving so very bitter, though delicately white, that our hungry hunters could scarcely swallow more than a morsel. In short, it feeds by choice on the bitterest shrubs of these sterile plains, and under-wood (several species of *Artemisia*) is literally its favourite food. Of its nest and breeding habits we ascertained nothing, but cannot for a moment hesitate to say that some mistake must exist in either asserting or supposing that a bird so constantly confined to the open desert plains, could retire to the shady forests and dark alluvial thickets of the Columbia to rear its young apart from their usual food and habits. We met with this very fine Grouse near to the plains around Wallah Wallah, on the south side of the Columbia, but never saw it either in the forests of the Columbia or the Wahlamet, nor, so far as we know, has it ever been found on the coast of California, or in the interior of Mexico. T. NUTTALL."

Mr DOUGLAS's statement is as follows:—"The flight of these birds is slow, unsteady, and affords but little amusement to the sportsman. From the disproportionately small, convex, thin-quilled wing,—so thin that a vacant space half as broad as a quill appears between each,—the flight may be said to be a sort of fluttering, more than any thing else: the bird giving two or three claps of the wings in quick succession, at the same time hurriedly rising; then shooting or floating, swinging from side to side, gradually falling, and thus producing a clapping, whirring sound. When started, the voice is *cuck, cuck, cuck*, like the Common Pheasant. They pair in March and April. Small eminences on the banks of streams are the places usually selected for celebrating the weddings, the time generally about sunrise. The wings of the male are lowered, buzzing on the ground; the tail, spread like a fan, somewhat erect; the bare yellow œsophagus inflated to a prodigious size,—fully half as large as his body, and, from its soft, membranous substance, being well contrasted with the scale-like feathers below it on the breast, and the flexile, silky feathers on the neck, which on these

occasions stand erect. In this grotesque form he displays, in the presence of his intended mate, a variety of attitudes. His love-song is a confused, grating, but not offensively disagreeable tone,—something that we can imitate, but have a difficulty in expressing—*Hurr-hurr-hurr-r-r-r-hoo*, ending in a deep, hollow tone, not unlike the sound produced by blowing into a large reed. Nest on the ground, under the shade of *Purshia* and *Artemisia*, or near streams, among *Phalaris arundinacea*, carefully constructed of dry grass and slender twigs. Eggs, from thirteen to seventeen, about the size of those of a common fowl, of a wood-brown colour, with irregular chocolate blotches on the thick end. Period of incubation twenty-one to twenty-two days. The young leave the nest a few hours after they are hatched. In the summer and autumn months these birds are seen in small troops, and in winter and spring in flocks of several hundreds. Plentiful throughout the barren, arid plains of the river Columbia; also in the interior of North California. They do not exist on the banks of the River Missouri; nor have they been seen in any place east of the Rocky Mountains.”

TETRAO UROPHASIANUS, *Ch. Bonap. Amer. Ornith.* vol. iii. pl. 21, fig. 1. Female.

TETRAO (CENTROCERCUS) UROPHASIANUS, *Richards. and Swains. Fauna Bor.-Americana*, vol. ii. p. 358.

COCK of the PLAINS, *Nuttall, Manual*, vol. ii. p. 665.

Adult Male. Plate CCCLXXI. Fig. 1.

Bill shortish, strong, somewhat compressed; upper mandible with the dorsal line arcuato-declinate, the ridge flattened at the base and narrowed on account of the great extent of the nasal sinus, which is feathered, the sides convex toward the end, the edges inflected, the tip narrow and rounded; lower mandible with the angle of moderate length and width, the dorsal line ascending and convex, the edges sharp and inflected, the tip obtuse, but like the upper thin-edged. Head rather small, oblong; neck of moderate length; body full. Feet rather short, stout; tarsus roundish, feathered, bare and reticulated behind. Toes of moderate size, covered above with numerous scutella, laterally pectinated with slender projecting flattened scales; first toe small, second a little shorter than fourth, third much longer. Claws stout, slightly arched, moderately compressed, obtuse.

Plumage dense, soft, rather compact, the feathers in general broadly ovate ; those on the head very short, on the sides of the neck anteriorly at its lower part and across the fore part of the breast, small, very short, broad, stiff, and imbricated like scales ; higher up on the sides of the neck a tuft of feathers having their shafts elongated, bristle-like, and terminated by a few filaments. On each side of the lower part of the neck in front is a large bare space capable of being inflated into a hemispherical sac. On the fore part of the breast the feathers, although long, have the shaft thickened and elongated ; the rest of the feathers are of ordinary structure. Wings rather short, concave, much rounded, the primaries stiff and very narrow, so as to leave a large interval when the wing is extended ; the third, fourth, and fifth quills longest. Tail long, graduated, of twenty stiffish feathers, each tapering to a very elongated point.

Bill black ; iris light hazel ; superciliary membrane vermilion ; toes brownish-grey ; claws brownish-black. The upper parts are light yellowish-brown, variegated with brownish-black and yellowish-white ; the feathers of the head and neck transversely barred, of the back barred, undulated and dotted, with a whitish longitudinal line along the shafts of the wing-feathers. The quills chocolate-brown, their outer webs and part of their inner margins mottled with yellowish-white. Tail with about ten bands of yellowish-white on the outer webs, which are otherwise variegated like the back, the inner webs nearly plain brown. The throat and fore part of neck whitish, longitudinally spotted with brownish-black ; a narrow white band across the throat ; the sides of the neck and fore part of the breast white ; the elongated shafts of the tuft-feathers, black ; the sides variegated like the back with a broad line of white along the middle of each feather ; the axillars and lower wing-coverts pure white ; the hind part of the breast and the abdomen, brownish-black ; the sides of the rump like the back, the lower tail-coverts brownish-black, largely tipped with white, the feathers of the tibiæ and tarsi pale brownish-grey, faintly barred with brown.

Length to end of tail 30 inches ; extent of wings 36 ; wing from flexure 13 ; tail 12, shortest feathers 7 ; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible $1\frac{4}{12}$; tarsus $2\frac{1}{2}$; hind toe $\frac{1}{2}$, its claw $\frac{4}{12}$; middle toe $2\frac{1}{4}$, its claw $\frac{6}{12}$.

Adult Female. Plate CCCLXXI. Fig. 2.

The female is much smaller than the male, and differs in being destitute of the bare skin on the fore neck, in having the superciliary membranes smaller, the plumage entirely of ordinary texture; the tail less elongated, with the feathers less narrow and ending in a rounded point. All the upper parts, fore neck and sides are variegated with brownish-black, yellowish-grey and whitish disposed nearly as in the male; the throat whitish, the fore part of the breast white, the middle part brownish-black, the legs and tarsi as in the male, as are the quills; the tail-feathers mottled like the back and tipped with white.

Length to end of tail 22 inches; wing from flexure $10\frac{1}{2}$; tail $7\frac{3}{4}$; bill along the ridge $1\frac{4}{12}$; tarsus $1\frac{10\frac{1}{2}}{12}$; middle toe $1\frac{9\frac{1}{2}}{12}$, its claw $\frac{6}{12}$.

The size of this species has been exaggerated, it having been by some compared to the Turkey, and by others to the Great Wood Grouse of Europe, *Tetrao Urogallus*, whereas, in fact, it seems not much to exceed *Tetrao hybridus*. In some individuals, as I am informed by Dr TOWNSEND, the hair-like shafts of the feathers on the sides of the neck, are considerably longer than in my figure of the male.

COMMON BUZZARD.

FALCO BUTEO, LINN.

PLATE CCCLXXII. FEMALE.

THE specimen from which the figure before you was taken, was shot by Dr TOWNSEND on a rock near the Columbia River, on which it had its nest. Unfortunately, however, he has not supplied me with any account of this species, and the only notice respecting its habits that I have seen, is that in the Fauna Boreali-Americana, by Dr RICHARDSON:—"The Common Buzzard arriving in the Fur Countries in the middle of April very soon afterwards begins to build its nest; and, having reared its young, departs about the end of September. It haunts the low alluvial points of land which stretch out under the high banks of a river; and may be observed sitting for a long time motionless on the bough of a tree, watching patiently for some small quadruped, bird, or reptile, to pass within its reach. As soon as it espies its prey, it glides silently into the air, and, sweeping easily and rapidly down, seizes it in its claws. When disturbed, it makes a short circuit, and soon settles on another perch. It builds its nest on a tree, of short sticks, lining it sparingly with deer's hair. The eggs, from three to five in number, are equal in size to those of the domestic fowl, and have a greenish-white colour, with a few large dark brown blotches at the thick end. It was seen by the Expedition as far north as the fifty-seventh parallel of latitude, and it most probably has a still higher range."

FALCO BUTEO, *Linn. Syst. Nat.* vol. i. p. 127.—*Lath. Ind. Ornith.* vol. i. p. 23.

BUTEO VULGARIS, COMMON BUZZARD, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 47.

Female. Plate CCCLXXII.

-Bill short, strong, as broad as deep at the base, compressed toward the end. Upper mandible cerate, its dorsal outline declinate and a little convex as far as the cere, then decurved, the sides rapidly sloping, towards the end nearly perpendicular but convex, the edge with a slight

festoon, the tip trigonal, acute ; lower mandible with the angle short and rounded, the dorsal line convex and ascending, the edges sharp, arched, at the end deflected, the tip rounded. Nostrils irregularly obovate, in the fore part of the cere, nearer the ridge than the margin.

Head large, roundish, flattened above ; neck rather short ; body full. Feet short, robust ; tarsi roundish, anteriorly feathered half-way down, anteriorly scutellate, laterally reticulate, posteriorly also scutellate ; the lower part all round covered with series of small scales, as are the toes for half their length, the terminal portion being scutellate ; they are strong, of moderate length, the hind toe stouter, with four large scutella, the inner with four, the middle with about eight, and connected at the base by a web with the outer, which has four large scutella. Claws long, arched, compressed, tapering to a point, flat beneath.

Plumage ordinary, full, rather blended beneath. Space between the bill and eye covered with bristly feathers ; eyelids with soft downy feathers, and ciliate ; the superciliary ridge prominent. Feathers of the head and neck ovato-oblong, of the back and breast ovate and rounded, of the sides and outer part of the leg elongated, of the rest of the leg short. Wings long, broad, the fourth quill longest, the third next, the fifth very little shorter, the second longer than fifth, the first and seventh about equal ; first four abruptly cut out on the inner web ; secondaries broad and rounded. Tail rather long, broad, slightly rounded.

Bill light blue at the base, with the margins yellowish, the tip black ; the cere yellow. Iris hazel. Feet yellow ; claws black, at the base bluish. The general colour of the upper parts is chocolate-brown. The quills are of the general colour externally, but the primaries are black toward the tip, a great part of the inner web, with the shaft, white, and barred with brownish-black, the bars more extended on the secondaries. The tail is marked with about ten dusky bars on a reddish-brown ground, tinged with grey, the last dark bar broader, the tips paler. The eyelids are whitish, as is the throat, which is longitudinally streaked with dusky. The rest of the lower parts are yellowish or brownish white, barred with brown. The lower wing-coverts are white, barred or spotted with dusky ; the white of the inner webs of the primaries forms a conspicuous patch, contrasted with the greyish-black of their terminal portion.

Length to end of tail 23 inches ; wing from flexure 17 ; tail $10\frac{1}{2}$; bill along the ridge $1\frac{8}{12}$, along the edge of lower mandible $1\frac{7}{12}$; tarsus $3\frac{5}{12}$; hind toe 1, its claw $1\frac{1}{12}$; middle toe $1\frac{1}{12}$, its claw $1\frac{1}{12}$.

Another specimen in my possession, procured by Dr TOWNSEND on the plains of Snake River, has the upper parts brown, streaked and spotted with reddish-white ; the upper tail-coverts white, barred with dusky, the lower parts as above described. The colours however vary, and in some the upper parts are deep brown, the lower reddish or brownish white, barred with reddish-brown.

When compared with European specimens, mine have the bill somewhat stronger ; but in all other respects, including the scutella and scales of the feet and toes, and the structure of the wings and tail, the parts are similar.

MARSH HARE.

LEPUS PALUSTRIS, *Bachman.*

The Hare figured in the plate is thus described by my learned friend Dr BACHMAN, in his excellent observations on the different species of the genus *Lepus* inhabiting the United States and Canada, inserted in the seventh volume of the Journal of the Academy of Natural Sciences of Philadelphia :—

“ Smaller than the American Hare. Ears much shorter than the head ; eyes rather small ; tail very short ; feet small, thinly clothed with hair. Upper surface yellowish-brown ; beneath, grey.

$$\text{Incisors } \frac{4}{2}, \quad \text{Canines } \frac{0-0}{0-0}, \quad \text{Molars } \frac{6-6}{5-5} = 28.$$

“ The upper incisors are longer and broader than those of the American Hare, marked, like all the rest of the species, with a deep longitudinal furrow. The small accessory incisors are smaller and less flattened than those of the last mentioned species, and the molars are narrower and a little shorter. The transverse diameter of the cranium

is much smaller, the vertical diameter about equal. Orbits of the eyes one-third smaller. This is a striking peculiarity, giving it a smaller and less prominent eye than that of any other American species. The pterygoid processes of the temporal bone project downwards nearly in a vertical line, whilst those of the American Hare are almost horizontal.

“Head and ears shorter than those of the *Lepus Americanus*; legs short, and rather small; body short and thick; feet small, thinly clothed with hair beneath, so as not to cover the nails, which are larger than those of the American Hare. Tail shorter than that of any other species of true hare inhabiting the United States, except the *Lepus Nuttalli*. Hair on the back long and somewhat rough. From the short legs and ears of this species, and its general clumsy habit, it has the appearance when running through the marshes, splashing through mud and mire, and plunging into creeks and ponds of water, of some large Norway Rat, hastening to escape from its pursuers.

“The teeth are yellowish-white; the eyes are dark brown, appearing in certain lights quite black. Upper parts of the head brown and greyish-ash. Around the orbits of the eyes slightly fawn-coloured. Whiskers black. Ears dark greyish-brown. The back and whole upper parts yellowish-brown, intermixed with many strong black hairs. The hairs, when examined singly, are bluish-grey at the roots, then light brown, and are tipped with black. The fur, beneath, is light plumbeous; under the chin grey; throat yellowish-brown; belly light grey, the fur beneath bluish. Under surface of the tail ash-colour, edged with brown. During winter the upper surface becomes considerably darker than in summer.

Dimensions, taken from a specimen in the flesh:

Length, from point of nose to insertion of tail,	13 inches
Height, from the top of the fore-shoulder to the end of the middle claw,	7
Length of the head,	$3\frac{1}{2}$
... .. ears,	$2\frac{1}{2}$
... .. hind foot,	3
... .. tail (vertebræ),	$\frac{5}{8}$
... .. tail, including the fur,	$1\frac{1}{2}$

Weight $2\frac{1}{2}$ lb.

“I have not heard of the existence of this small species of Hare to the north of the State of South Carolina, nor is it found in the upper parts of this State,—confining itself to the maritime districts, to low marshy grounds partially inundated, to the borders of rivers subject to the overflowing of their banks, and to the ponds, usually termed reserves, where the waters intended to overflow the rice-fields are preserved. In these situations, rendered almost inaccessible on account of mud, entangled vines, and stagnant waters, sending up poisonous miasmata, the fruitful source of disease, surrounded by frogs, water-snakes, and alligators, this species resides through the whole year, scarcely molested by man. In these forbidden retreats, frequented by Herons (*Ardea*), Snake-birds (*Plotus Anhinga*), and Ibises. this almost aquatic quadruped finds a home suited to its habits; making up for its want of speed in eluding pursuit, by its facility in winding through miry pools and marshes overgrown with rank weeds and willows. In such situations, I have met with it fifty miles north of Charleston; but, as soon as the traveller arrives at the high grounds of the middle country, where the marshes disappear, this Hare is no longer seen. It is common in all the lower parts of Georgia, and I have observed it for sale in the market of Savannah. It is abundant in East Florida, even at its farthest southern extremity. I received a living animal of this species, taken on one of the islands near Indian Key, called Rabbit Key, separated from the main-land by several miles of sea; where it could have proceeded only by swimming, but where it is now found in great numbers. In all the low grounds of Florida, this species takes the place of the American Hare, which has not been observed in those situations.

“The Marsh Hare is one of the most singular in its habits of all the species. It runs low on the ground, and cannot be said to possess the fine leaping gait of the American Hare. It is so slow of foot, that nothing but the sheltered and miry situations in which it resides can save it from being easily overtaken and captured. I have, indeed, observed the domestics on a plantation, during a holiday, setting fire to a piece of marsh ground, in a very dry season, and armed with clubs, waiting till the flames drove these Hares from their retreats, when they were run down and killed in considerable numbers. I noticed that when the American Hare made its appearance it was suffered to pass, on account of the speed they knew it to possess, but no sooner

did the Marsh Hare appear, than with a whoop, they gave chase, and seldom failed to overtake it.

The feet of the Marsh Hare are admirably adapted to its aquatic habits. A thick covering of hair on its soles, like that on the other species, would be inconvenient; they would not only be kept wet for a considerable length of time, but would retard them in swimming. All quadrupeds that frequent the water, such as the Beaver, Otter, Muskrat, Mink, &c., and aquatic birds, have nearly naked palms; and it is this peculiar structure, together with the facility of distending its toes, that enables this quadruped to swim with such ease and rapidity. The track, when observed in moist or muddy situations, differs very much from that of the other species. Its toes are spread out, each leaving a distinct impression, like those of the rat.

“ The Marsh Hare deposits its young in a pretty large nest, composed of a large species of rush (*Juncus effusus*) growing in a convenient situation. These appeared to have been cut into pieces of about a foot in length. I have seen these nests nearly surrounded by, and almost floating on, the water. They were generally arched, by carefully bending the rush-grass over them, admitting the mother by a pretty large hole in the side. A considerable quantity of hair was found lining the nest, but whether plucked out by the parent, or the effect of the season, (it being late in spring when these animals shed their coat) I was unable to ascertain. The young were from five to seven. They evidently breed several times in the season, but I have observed that the females usually produce their young two months later, at least, than the American Hare. Twenty-one specimens were obtained from the 9th to the 14th day of April; none of the females had produced young that season, although some of them would have done so in a very few days. On one occasion only, have I seen the young in March. These bear a strong resemblance to the adults, and may almost at a glance be distinguished from those of the last-mentioned species.

“ This species possesses a strong marshy smell at all times, even when kept in confinement, and fed on the choicest food. Its flesh, however, although dark, is fully equal, if not superior, to that of the American Hare. The Marsh Hare never visits gardens or cultivated fields, confining itself throughout the year to the marshes. It is occasionally found in places overflowed by salt or brackish water, but seems

to prefer fresh-water marshes, where its food can be most conveniently obtained. It feeds on various grasses, gnaws off the twigs of the young sassafras, and of the pond spice (*Laurus geniculata*). I have seen many places in the low grounds dug up, the foot-prints indicating that it was the work of this species in search of roots. It frequently is found digging for the bulbs of the wild potato (*Apios tuberosa*), as also for those of a small species of *Amaryllis* (*Amaryllis Atamasco*).

“ I possess a living animal of this species, which was sent me a few weeks ago, having been captured when full grown. It became so gentle in a few days that it freely took its food from the hand. It is fed on turnip and cabbage leaves, but prefers bread to any other food that has been offered to it. It is fond of lying for hours in a trough of water, and seems restless and uneasy when the trough is removed, scratching the sides of its tin cage until it has been replaced, when it immediately plunges in, burying the greater part of its body in the water.

“ It has already shed a great portion of its summer, and resumed its winter, dress. The hairs on the upper surface, instead of becoming white at the point, as in the American Hare, have grown long and black, through which the brownish parts beneath are still distinctly visible.

“ This species, like others of the genus existing in this country, as well as in the deer and squirrels, is infested with a troublesome larva of an œstrus in the summer and autumn, which, penetrating into the flesh, and continually enlarging, causes pain to the animal, and renders it lean. One of these larvæ dropped from an orifice in the throat of the hare which I have in confinement. It was of the usual cylindrical shape, but appears to differ in some particulars from the *Æstrus cuniculi*.”

EVENING GROSBEAK.

FRINGILLA VESPERTINA, COOPER.

PLATE CCCLXXIII. MALE.

THIS fine species of Grosbeak was first introduced to the notice of ornithologists by Mr WILLIAM COOPER, who published an account of it in the *Annals of the Lyceum of New York*. Mr SCHOOLCRAFT observed a few individuals, in the beginning of April 1823, near the Sault Sainte Marie in Michigan, from which the species was traced to the Rocky Mountains. Dr RICHARDSON mentions it as a common inhabitant of the maple groves on the Saskatchewan plains, whence "its native appellation of Sugar-bird." The female remained utterly unknown until it was obtained by Dr TOWNSEND, who found this Grosbeak abundant about the Columbia River, and procured a great number of specimens, several of which are in my possession. The following note from him contains all the information respecting its habits that I can lay before you.

"Columbia River, May 27, 1836.—The Evening Grosbeak, *Fringilla vespertina*, is very numerous in the pine-woods at this time. You can scarcely enter a grove of pines at any hour in the day without seeing numbers of them. They are very unsuspecting and tame, and I have, in consequence, been enabled to procure a fine suite of specimens. The accounts that have been published respecting them by the only two authors to whom I have access, Mr NUTTALL and Prince BONAPARTE, are, I think, in many respects incorrect. In the first place, it is stated that they are retiring and silent during the day, and sing only on the approach of evening. Here they are remarkably noisy during the whole of the day, from sunrise to sunset. They then retire quietly to their roosts in the summits of the tall pines, and are not aroused until daylight streaks the east, when they come forth to feed as before. Thus I have observed them *here*, but will not say but that at other seasons, and in other situations, their habits may be different. They are now, however, very near the season of breeding, as the organs of the specimens I have examined sufficiently indicate. They appear fond of going in large bodies, and it is rare to see one alone in a tree.

They feed upon the seeds of the pine and other trees, alighting upon large limbs, and proceeding by a succession of hops to the very extremities of the branches. They eat, as well as seeds, a considerable quantity of the larvæ of the large black ant, and it is probable that it is to procure this food that they are not uncommonly seen in the tops of the low oaks which here skirt the forests. Their ordinary voice, when they are engaged in procuring food, consists of a single rather screaming note, which from its tone I at first supposed to be one of alarm, but soon discovered my error. At other times, particularly about mid-day, the male sometimes selects a lofty pine branch, and there attempts a song; but it is a miserable failure, and he seems conscious of it, for he frequently pauses and looks discontented, then remains silent sometimes for some minutes, and tries it again, but with no better success. The note is a single warbling call, exceedingly like the early part of the Robin's song, but not so sweet, and checked as though the performer were out of breath. The song, if it may be so called, is to me a most wearisome one: I am constantly listening to hear the stave continued, and am as constantly disappointed. Another error of the books is this,—they both state that the female is similar to the male in plumage. Now, this is entirely a mistake: she is so very different in colour and markings, that were it not for the size and colour of the bill, and its peculiar physiognomy, one might be induced to suppose it another species. The specimens in possession of Mr LEADBEATER of London, and from which Prince BONAPARTE drew up his descriptions, must have been all males."

In the present plate you will find the figure of a male only; but in Plate CCCCXXIV. are representations of the young male and adult female, which are however here described.

FRINGILLA VESPERTINA, *Cooper*, Ann. Lyc. New York, vol. i. p. 220.—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 113.

EVENING GROSBEAK, FRINGILLA VESPERTINA, *Ch. Bonaparte*, Amer. Orn. vol. ii. pl. 14. fig. 1.

COCCOTHAUSTES VESPERTINA, EVENING GROSBEAK, *Richards. and Swains.* Fauna Bor.-Amer. vol. ii. p. 269.

EVENING GROSBEAK, *Nuttall*, Manual, vol. ii. Appendix, p. 594.

Adult Male. Plate CCCLXXIII.

Bill of moderate length, extremely thick, conical, pointed; upper

mandible with the dorsal line very slightly convex, the sides rounded; the edges sharp, overlapping, with a slight sinus close to the acute tip; lower mandible with the angle very short and broad, the dorsal line straight, or very slightly concave, the back very broad, the sides rounded, the edges inflected, the tip acute. Nasal sinus extremely short and broad; nostrils round, basal, concealed by short reflected bristly feathers.

Head large, roundish-ovate; neck short; body moderately full. Feet short, of moderate strength; tarsus short, compressed, with seven anterior scutella, and two plates behind forming a sharp edge; hind toe large, outer toe somewhat longer than inner; claws rather large, moderately arched, much compressed, acute.

Plumage full, soft, blended, the feathers oblong. Wings rather long, broad, abruptly pointed; the outer three primaries almost equal, the first longest; outer secondaries emarginate. Tail of moderate length, rather narrow, emarginate, of twelve rather narrow feathers.

Bill yellow; iris hazel; feet flesh-colour, claws brown. The upper part of the head and the occiput are brownish-black, bounded anteriorly by a broadish band of bright yellow across the forehead, and laterally by a streak of the same, passing over the eye; the stiff feathers over the nostrils black, as is the loreal space. The cheeks, hind neck, and throat are dark yellowish-olive, and that colour gradually brightens until, on the outer edges of the scapulars, the rump, the axillars and inner lower wing-coverts, the abdomen and lower tail-coverts, it becomes pure yellow. The smaller wing-coverts, alula, primary coverts, three outer secondaries, outer web of the next, and the bases of the inner secondaries, black; as is the tail; six of the inner secondaries, inner web of the next, and inner margin of the rest, as well as their coverts white, the basal part excepted.

Length to end of tail 8 inches; wing from flexure $4\frac{3}{4}$; tail 3; bill along the ridge $\frac{10}{12}$, along the edge of lower mandible $\frac{11}{12}$; tarsus $\frac{9\frac{1}{2}}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{3\frac{3}{4}}{12}$.

Adult Female. Plate CCCCXXIV. Fig. 5.

The adult female, which is here figured and described for the first time, from a specimen obtained from Dr TOWNSEND, and marked "Black Hills, Female, June 3, 1834," wants the yellow band on the forehead, the streak of the same colour over the eye, the black line

along the basal margin of the upper mandible, and the large patch of white on the wings. The bill and feet are as in the male, but paler. The upper part of the head is dark brownish-olive; the cheeks lighter; the hind neck, back, and scapulars light brownish-grey, with a slight olivaceous tint, shaded into brownish-yellow on the rump. The wings are black; a portion of the edge of the wing, the tips and part of the margins of the secondary coverts, a concealed band on the basal part of the primaries, the outer three excepted, and the edges of all the quills toward the end, white, which is broader on the secondaries, and forms a band on them. Tail-coverts black, tipped with a triangular spot of white; tail-feathers also black, with a white spot on the inner web at the tip, eight-twelfths long on the outermost feather, gradually diminishing towards the central feathers, which are slightly tipped. Throat greyish-white, margined on either side by a longitudinal band of black, from the base of the lower mandible, and ten-twelfths in length; the lower parts yellowish-grey; abdomen and lower tail-coverts white, axillars and some of the lower wing-coverts yellow.

Length to end of tail $7\frac{1}{2}$ inches; wing from flexure $4\frac{1}{4}$; tail $2\frac{1}{2}$; bill along the ridge $\frac{9}{12}$.

Young Male. Plate CCCXXIV. Fig. 6.

The young male bears a considerable resemblance to the female, differing chiefly in wanting the black bands on the throat, and in having the upper parts much lighter, and the lower more yellow. Bill yellow; iris hazel; feet flesh-colour, claws dusky. Head and cheeks light greyish-brown, the rest of the upper parts of a paler tint, slightly tinged with yellow on the margins. The wings and tail are black, as in the female, and similarly spotted with white, but tinged with yellow. The lower parts are yellowish-grey, the sides of the neck and the axillars pale yellow, the abdomen and lower tail-coverts white.

The young male has been described as the adult female by Mr SWAINSON in the *Fauna Boreali-Americana*, and has been made a distinct species by M. LESSON, under the name of *Coccothraustes Bonapartii*. The Prince of MUSIGNANO, it is observed, has erred in stating that "no difference of any consequence is observable between the sexes; though it might be said that the female is a little less in size, and rather duller in plumage."

BLACK-HEADED GROSBEEK.*FRINGILLA MELANOCEPHALA.*

PLATE CCCLXXIII. MALE AND FEMALE.

THE following account of this Grosbeak affords another proof of the ardent zeal of my excellent friend THOMAS NUTTALL, who, though more especially engaged with botany on his recent journey to the Columbia, has not neglected opportunities of noting many interesting facts relative to birds.

“ On the central table-land of the Rocky Mountains, and on the upper branches of the Colorado of the west, we first heard the powerful song of this most delightful Finch. From thence, in the thick groves of all the streams on our western course to the borders of the Columbia, and throughout the dense forests of that river nearly to the sea, we were frequently cheered amidst the wildest desolation by the inimitable voice of this melodious bird. Jealous of all intrusion on his lonely and wild haunts, it was seldom that we had the opportunity of witnessing this almost fairy musician, which gave a charm to the saddest gloom, and made the very woods as it were re-echo to his untiring song. With the modesty of superior merit, and almost with the solicitude of the Nightingale, our favourite Finch seeks the darkest thicket of the deepest forest. The moment his eye rests on the intruding observer he flits off in haste, calls to his mate, and plunging into the thicket sits in silence till he is satisfied of the restoration of solitude, when he again cautiously mounts the twig and pours out afresh the oft-told but never-tiring tale of his affection and devotion to the joys of nature. His song, which greatly resembles that of the Red-breasted Grosbeak, is heard at early dawn, and at intervals nearly to the close of night. It is a loud, varied, high-toned and melodious fife, which rises and falls in the sweetest cadence; but always, like the song of the nightingale, leaves a sensation of pleasing sadness on the ear, which fascinates more powerfully than the most cheering hilarity. In fact, the closing note of our bird is often so querulous as to appear like the shrill cry of appealing distress: it sinks at last so faintly, yet still so charmingly on the sense. When seen, which is only by accident, he

sits conspicuously on some lofty bough, below the summit of the tree, and raising his head, and swelling his throat with a rising motion, almost amounting to a flutter, he appears truly rapt in ecstasy, and seems to enjoy his own powers of melody as much as the listener. Even the cruel naturalist, ever eager to add another trophy to his favourite science, feels arrested by his appeal, and connives at his escape from the clutch of the collector.

“About the month of July, in the Rocky Mountains, I observed the female feeding her fledged young, and they also spent the summer in the thickest branches, but with the nest and eggs I am unacquainted. The song, as I have heard it, in the forests of Columbia, seems to be like the syllables *'tait, weet, teet, weowit, teet weowit, teet weewit, verr*, and sometimes terminating *weet, weet, weet*, every note a loud tender trill of the utmost sweetness, delivered in his own “wood-notes wild,” mocking nothing, but still exulting in his powers, which, while exerted, seem to silence every songster around. The Robin seems almost his pupil in song and similarity of expression, but falls short, and after our Orpheus, seems at best but a faltering scholar.”

GUIRACA MELANOCEPHALA, Swainson.

Adult Male. Plate CCCLXXIII. Figs. 2, 3.

Bill rather short, very robust, bulging at the base, conical, acute; upper mandible with its dorsal outline a little convex, the sides rounded, the edges sharp, ascending from the base to beyond the nostrils, then deflected with a slight median festoon, and an obscure notch close to the tip; lower mandible with the angle short and very broad, the dorsal line straight, the back very broad at the base, the sides high and convex, the edges inflected, the tip acute. Nostrils basal, roundish, partly concealed by the feathers.

Head large, roundish-ovate; neck short; body rather full. Legs of moderate length, rather strong; tarsus anteriorly covered with seven scutella, posteriorly with two plates forming a sharp edge; toes rather large, the first stout, the lateral nearly equal, the middle toe much longer. Claws rather long, arched, much compressed, acute.

Plumage soft and blended. Wings of moderate length, broad. The first quill two-twelfths shorter than the second, which is longest,

but scarcely exceeds the third, the fourth longer than the first; secondaries slightly emarginate. Tail rather long, nearly even.

Bill with the upper mandible dusky, the lower white. Iris hazel. Feet and claws wood-brown. Head, cheeks, and a small portion of the throat black; the upper parts brownish-black; the feathers on the lower part of the hind neck all round, a streak over each eye, another along the middle of the hind head, the greater part of the rump, and the lower parts generally, yellowish-red or brownish-orange; the edges of some of the feathers on the back, a broad band formed by the first row of small coverts, a narrow band formed by the tips of the secondary coverts, a band on the base of the primaries, the outer web of the first excepted, the margins of three of the primaries toward the end, and a spot on the outer web of most of the secondaries at the end; a large patch on the inner web of all the tail-feathers, excepting the two middle, and largest on the outer, pure white; the middle of the breast and abdomen, with the axillaries and lower wing-coverts, yellow.

Length to end of tail $8\frac{1}{2}$ inches; wing from flexure $4\frac{1}{4}$; tail $3\frac{8}{12}$; bill along the ridge $\frac{9}{12}$, along the edge of lower mandible $\frac{10}{12}$; tarsus $\frac{11}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

Adult Female. Plate CCCLXXIII. Fig. 4.

The female is much less beautiful. The bill is of a lighter brown above, brownish-white beneath, with the edges and tip of the lower mandible light brown; the feet and claws wood-brown. The upper parts are wood-brown, the head darker, with three longitudinal bands of brownish-white; a band of reddish-white across the hind neck, the feathers of the back margined with whitish; the wings marked as in the male, but with brownish-white; the tail without white spots. The lower parts are of a much paler tint than those of the male; the axillaries and lower wing-coverts yellow.

Length to end of tail $8\frac{1}{4}$ inches; bill along the ridge $\frac{9}{12}$; tarsus $\frac{11}{12}$; middle toe and claw $1\frac{3}{12}$.

SHARP-SHINNED OR SLATE-COLOURED HAWK.

FALCO FUSCUS, GMEL.

PLATE CCCLXXIV. MALE AND FEMALE.

THERE is a pleasure which that ornithologist only can feel who spends his days in searching for the materials best adapted for his purpose, and which arises from the contemplation of the objects he is anxious to portray and describe, as they roam in freedom over Nature's wild domains. Another pleasure is derived from finding in different countries birds so much alike in form, colour, and habits, that they seem as if formed for the purpose of exercising our faculties of observation and comparison. But this pleasure passes into pain, or at least perplexity, when, as in the present instance, two species differ so slightly that you cannot clearly define their characters, although they yet seem to be distinct. In fact, I long felt uncertain whether the American bird described by WILSON under the names of Sharp-shinned Hawk, and Slate-coloured Hawk, was distinct from the Sparrow Hawk, *F. Nisus*, of Europe.

It is mentioned in the *Fauna Boreali-Americana*, that a specimen of this bird was killed in the vicinity of Moose Factory, and that it has been deposited by the Hudson's Bay Company in the Zoological Museum of London. This specimen I have not seen, but confiding entirely in the accuracy of every fact mentioned by the authors of that work, I here adduce it as a proof of the extraordinary range of this species in America, which from the extreme north extends to our most southern limits, perhaps far beyond them, during its autumnal and winter migrations. I have met with it in every State or Territory of the Union that I have visited. In the spring of 1837, it was abundant in Texas, where it appeared to be travelling eastward. I have a specimen procured by Dr TOWNSEND in the neighbourhood of the Columbia River; and, when on my way towards Labrador, I met with it plentifully as far as the southern shores of the Gulf of St Lawrence, beyond which, however, none were observed by me or any of my party.

I never saw this daring little marauder on wing without saying or thinking "There goes the miniature of the Goshawk!" Indeed,

reader, the shortness of the wings of the Sharp-shinned Hawk, its long tail, though almost perfectly even, instead of being rounded as in the Goshawk, added to its irregular, swift, vigorous, varied, and yet often undecided manner of flight, greatly protracted however on occasion, have generally impressed upon me the idea alluded to. While in search of prey, the Sharp-shinned Hawk passes over the country, now at a moderate height, now close over the land, in so swift a manner that, although your eye has marked it, you feel surprised that the very next moment it has dashed off and is far away. In fact it is usually seen when least expected, and almost always but for a few moments, unless when it has procured some prey, and is engaged in feeding upon it. The kind of vacillation or wavering with which it moves through the air appears perfectly adapted to its wants, for it undoubtedly enables this little warrior to watch and to see at a single quick glance of its keen eyes every object, whether to the right or to the left, as it pursues its course. It advances by sudden dashes, as if impetuosity of movement was essential to its nature, and pounces upon or strikes such objects as best suit its appetite ; but so very suddenly that it appears quite hopeless for any of them to try to escape. Many have been the times, reader, when watching this vigilant, active, and industrious bird, I have seen it plunge headlong among the briary patches of one of our old fields, in defiance of all thorny obstacles, and, passing through, emerge on the other side, bearing off with exultation in its sharp claws a Sparrow or Finch, which it had surprised when at rest. At other times I have seen two or three of these Hawks, acting in concert, fly at a Golden-winged Woodpecker while alighted against the bark of a tree, where it thought itself secure, but was suddenly clutched by one of the Hawks throwing as it were its long legs forward with the quickness of thought, protruding its sharp talons, and thrusting them into the back of the devoted bird, while it was endeavouring to elude the harassing attacks of another, by hopping and twisting round the tree. Then down to the ground assailants and assailed would fall, the Woodpecker still offering great resistance, until a second Hawk would also seize upon it, and with claws deeply thrust into its vitals, put an end to its life ; when both the marauders would at once commence their repast.

On several such occasions, I have felt much pleasure in rescuing different species of birds from the grasp of the little tyrant, as when-

ever it seizes one too heavy to be carried off, it drops to the ground with it, and, being close by, I have forced it to desist from committing further mischief, as it fears man quite as much as its poor quarry dreads itself. One of these occurrences, which happened in the neighbourhood of Charleston, in South Carolina, is thus related in my journal.

Whilst walking one delightful evening in autumn, along a fine hedge-row formed by the luxuriant Rocky Mountain rose-bushes, I observed a male of this species alighted in an upright position on the top-bar of a fence opposite to me. I marked it with particular attention, to see what might follow. The Hawk saw me as plainly as I did him, and kept peeping now at me, and now at some part of the hedge opposite, when suddenly, and with the swiftness of an arrow, it shot past me, entered the briars, and the next instant was moving off with a Brown Thrush, *Turdus rufus*, in its talons. The Thrush, though seized by the sharp claws of the marauder, seemed too heavy for him to carry far, and I saw both falling to the ground. On running up, I observed the anxiety of the Hawk as I approached, and twice saw it attempt to rise on wing to carry off its prize; but it was unable to do so, and before it could disengage itself I was able to secure both. The Thrush must have been killed almost instantaneously, for, on examining it, I found it quite dead.

My friend THOMAS NUTTALL, Esq., tells us that in the "thinly settled parts of the States of Georgia and Alabama, this Hawk seems to abound, and proves extremely destructive to young chickens, a single one having been known regularly to come every day until he had carried away between twenty and thirty. At noon-day, while I was conversing with a planter, one of these Hawks came down, and without ceremony, or heeding the loud cries of the housewife, who most reluctantly witnessed the robbery, snatched away a chicken before us." Again, while speaking of the wild and violent manner of this bird, he adds "descending furiously and blindly upon its quarry, a young Hawk of this species broke through the glass of the green-house, at the Cambridge Botanic Garden; and fearlessly passing through a second glass partition, he was only brought up by the third, and caught, though little stunned by the effort. His wing-feathers were much torn by the glass, and his flight in this way so impeded as to allow of his being approached."

Whilst travelling to some distance, the Sharp-shinned Hawk flies high, though in a desultory manner, with irregular quick flappings of the wings, and at times, as if to pause for a while and examine the objects below, moves in short and unequal circles, after which it is seen to descend rapidly, and then follow its course at the height of only a few feet from the ground, visiting as it were every clump of low bushes or briar patches likely to be supplied with the smaller birds, on which it principally feeds. Again, after having satisfied its hunger, this little warrior, at times rises to a great height, and indeed now and then is scarcely discernible from the ground.

I found a nest of this Hawk in a hole of the well-known "Rock-in-cave" on the Ohio River, in the early part of the spring of 1819. It was simply constructed, having been formed of a few sticks and some grasses carelessly interwoven, and placed about two feet from the entrance of the hole. I had the good fortune to secure the female bird, while she was sitting on her eggs, which were nearly hatched, and it was from that individual that I made the figure in the plate. The eggs, four in number, were almost equally rounded at both ends, though somewhat elongated, and their ground colour was white, with a livid tinge, scarcely discernible however amid the numerous markings and blotches of reddish-chocolate with which they were irregularly covered. The second opportunity which I had of seeing a nest of this species occurred not far from Louisville in Kentucky, when I accidentally observed one of these hawks dive into the hollow prong of a broken branch of a sycamore overhanging the waters of the Ohio. Here the eggs were five in number, and deposited on the mouldering fragments of the decayed wood. The third and last opportunity happened when I was on my way from Henderson to St Genevieve, on horseback. I saw a pair of these birds forming a nest in the forks of a low oak, in a grove in the centre of the prairie which I was then crossing. The young in the nest I have never seen.

This interesting species usually resorts to the fissures of rocks for the purpose of there passing the hours of repose, and generally in places by no means easy of access, such as precipitous declivities overhanging some turbulent stream. It is often not until the darkness has so much gained on the daylight as to render objects difficult to be distinguished, that it betakes itself to its place of rest, and then I have only

been assured of its arrival by the few cries which it utters on such occasions. The earliness of its departure has often much puzzled me, for with all my anxiety to witness it, I have never succeeded in doing so, although on two or three occasions I have watched the spot more than half an hour before dawn, and remained patiently waiting until long after the sun had risen, when I clambered to the hole, and always found it empty.

The food of this Hawk consists chiefly of birds of various sizes, from the smallest of our warblers to the Passenger Pigeon or young chickens, the latter appearing to afford a special temptation to it, as has been above related. I am also aware that it feeds occasionally on small reptiles and insects, and I shot the male represented in the plate, on wing, whilst it held in its claws the small Shrew also represented. It is extremely expert at seizing some of our smaller snakes and lizards, and not unfrequently snatches up a frog while basking in the sun.

The difference of size observed between the males and females, as well as between individuals of the same sex, is very remarkable ; and no doubt it was on account of this very great disparity that WILSON described specimens of both sexes as two distinct species. Its notes are short, shrill, and repeated in a hurried manner, when the bird is wounded and brought to the ground. It often emits cries of this kind while falling, but suddenly becomes silent when it comes to the earth, and then makes off swiftly, with long and light leaps, keeping silent until approached. Although a small bird, it possesses considerable muscular power, and its extremely sharp claws are apt to inflict severe pain, should a person lay hold of it incautiously.

FALCO FUSCUS, and DUBIUS, *Gmel. and Lath.*

SLATE-COLOURED HAWK, FALCO PENNSYLVANICUS, *Wils. Amer. Ornith. vol. vi. p. 13, pl. 46, fig. 1. Adult Male.*

SHARP-SHINNED HAWK, FALCO VELOX, *Wils. Amer. Ornith. vol. vi. p. 116, pl. 45, fig. 1. Young Female.*

FALCO VELOX, *Ch. Bonaparte, Synopsis of Birds of United States, p. 29.*

FALCO FUSCUS, *Ch. Bonaparte, Ibid. Append. p. 433.*

ACCIPITER PENNSYLVANICUS, SLATE-COLOURED HAWK, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 44.*

AMERICAN BROWN or SLATE-COLOURED HAWK, *Nuttall, Manual, vol. ii. p. 87.*

Adult Male. Plate CCCLXXIV. Fig. 1.

Bill short, with the dorsal line of the upper mandible curved from the base, so as to form nearly the fourth of a circle, the sides sloping rapidly and convex toward the end, the edges sharp anteriorly, with a broad tooth-like process or prominent festoon about the middle, the tip very acute and decurvedate; the cere rather short, its margin forming a convex curve before the nostrils, which are oblique, oblongo-ovate, broader behind; the lower mandible with the angle broad and short, the dorsal line convex, the back broad at the base, the sides convex, the edges inflected, the tip obliquely truncate, rounded, with a very faint sinus behind:

Head of moderate size, broad, rather flattened above; neck very short; body very slender, remarkably attenuated behind. Legs long and very slender; tarsus rather long, extremely slender, compressed, anteriorly covered with fifteen scutella disposed in a longitudinal plate, of which the inner sharp edge projects considerably, whence the name of "Sharp-shinned" given to this species, the sides with hexagonal scales, the hind part with numerous scutella. Toes slender, the third and fourth connected at the base by a web, extending beyond the second joint of the latter, and curving forward as far as that of the former; first and second toes strongest and about equal; third extremely elongated, fourth very slender; tuberculate and papillate beneath, there being a long fleshy tubercle on the last joint of each toe, and one on the next joint of the two outer. Claws very long, arched, gradually attenuated to a fine point.

Plumage full, soft, blended, somewhat distinct on the upper parts. Wings of moderate length, reaching beyond the middle of the tail; the fourth quill longest, the fifth scarcely shorter, the third intermediate between the fifth and seventh, the second a little longer than the seventh, the first generally shorter than the outer secondary; the first five quills cut out on the outer, the first four more deeply on the inner edge. The tail is long, even, of twelve rather broad, rounded feathers.

The bill is light blue at the base, bluish-black at the end; the cere and eyelids yellowish-green; the iris bright reddish-orange; the tarsi and toes yellow; the claws black, pale bluish at the base. The general colour of the plumage on the upper parts is deep greyish-blue, or dark slate-blue, the shafts darker; the feathers on the occiput are white at the base, that colour appearing more or less as they are raised; and on

each of the scapulars are two large white patches, which, however, are not seen until the feathers are raised. The outer primaries are tinged with brown; all the quills are marked on the inner web with dusky bands, between which the inner margins are white toward the base. The tail has four broad bands of blackish-brown, and is tipped with greyish-white. The cheeks are yellowish-red, and the forehead is tinged with the same colour. The throat is reddish-white; the lower parts are transversely and rather broadly barred with light red and white, there being from three to five bars or double spots of the latter colour on each feather, those on the sides with the inner web entirely red; part of abdomen and lower tail-coverts white; feathers of the legs barred like the breast; lower wing-coverts yellowish-white, barred and spotted with dusky.

Length to end of tail $11\frac{1}{4}$ inches; to end of wings $8\frac{3}{4}$; to end of claws $11\frac{1}{4}$; extent of wings $20\frac{1}{2}$; wing from flexure $6\frac{10}{12}$; tail $5\frac{10}{12}$; bill along the ridge $\frac{8}{12}$, along the edge of lower mandible $\frac{8}{12}$; tarsus $1\frac{11}{12}$; hind toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{6}{12}$; middle toe $1\frac{2}{12}$, its claw $\frac{4\frac{1}{2}}{12}$. Weight $3\frac{1}{2}$ oz.

Adult Female. Plate CCCLXXIV. Fig. 2.

The female, which greatly exceeds the male in size is generally greyish-brown tinged with blue on the upper parts, in very old individuals bluish-grey or dark bluish-grey, more or less tinged with brown. The bill, cere, iris, feet, and claws are as in the male, and the markings on the plumage are similar on the upper parts; the lower are generally of a lighter tint, but otherwise nearly the same.

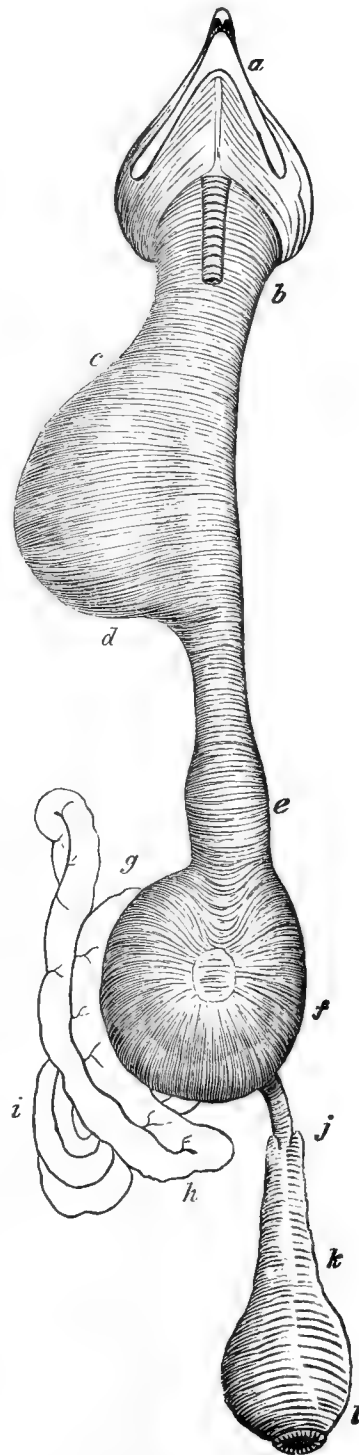
Length to end of tail 14 inches; extent of wings 26; wing from flexure $8\frac{2}{12}$; tail $6\frac{8}{12}$; bill along the ridge $\frac{10}{12}$; tarsus $2\frac{1}{12}$; hind toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{7\frac{1}{2}}{12}$; middle toe $1\frac{11}{12}$, its claw $\frac{6}{12}$. Weight of an individual $7\frac{1}{2}$ oz., of another $8\frac{1}{4}$.

Young birds of either sex, when fully fledged, have the upper parts generally hair-brown, on the back darker; the feathers on the head and hind neck margined with light red; those of the rest of the upper parts also terminally edged with brownish-red; the feathers of the hind head and neck are white at the base, but to less extent, and the scapulars are also spotted with the same. The lower parts are white or yellowish-white, the throat longitudinally streaked, the rest banded with dark brown, the feathers of the sides spotted, those of the legs light reddish, obscurely marked with darker along the middle; the lower tail-coverts

white. The female has the markings on the lower parts much narrower at this age.

A male bird preserved in spirits presents the following characters:—The roof of the mouth is flat, with two longitudinal ridges; the posterior aperture of the nares oblong, with a linear anterior slit, papillate on the edges. The tongue is $5\frac{1}{12}$ long, narrow, concave above, slightly emarginate. The œsophagus, *a b c d e*, is 3 inches $3\frac{1}{12}$ long; its diameter at the upper part $5\frac{1}{12}$; it enlarges on the neck to a capacious crop, *c d*, 1 inch in diameter. The proventriculus, *e*, has a complete belt of small oblong glandules. The stomach, *f g*, is large, roundish, membranous, without distinct muscles, 1 inch $3\frac{1}{12}$ long, and 1 inch broad. The intestine, *g h i l*, is $14\frac{3}{4}$ inches long, its greatest diameter 2 twelfths. The rectum, *j l*, is 1 inch $9\frac{1}{12}$ long; its diameter at the anterior part $3\frac{1}{12}$; the cœca, *j*, are exceedingly small, forming two scarcely observable sacs, about half a twelfth in depth. The trachea is $2\frac{1}{12}$ inches long, its rings unossified, 78 in number; the bronchi long and slender, of about 18 half rings. The contents of the crop and stomach were portions of two small birds.

On comparing several specimens, male and female, of this Sharp-shinned Hawk, with others of the European Sparrow Hawk, the proportions are found to be similar, as are the colours of the upper parts; but the American birds, especially the males, are much smaller; and the transverse bands on the lower parts of the Sharp-shinned Hawk are redder and broader



than those of the Sparrow Hawk. The number of dark bands on the tail is the same in both, namely four on the middle feathers, and six on the lateral. The tail is not always precisely even, being in both European and American birds often slightly rounded, the lateral feather being sometimes a quarter of an inch shorter than the longest.

A species most intimately allied to the Sharp-shinned Hawk presents the same form and colours, but differs somewhat in its proportions, and is much larger. The bill is much higher at the base, its upper outline slopes from the commencement, and the festoon on its edge is less prominent. The tarsi and toes are proportionally stronger, the edge on the former not nearly so prominent. The first quill is a little longer than the first secondary, the fifth quill (not the fourth) is longest; and the tail is rounded, the lateral feather in a female, being eight-twelfths of an inch shorter than the longest. The dimensions of a female of this species, shot by myself in South Carolina, are as follows:—

Length to end of tail $16\frac{1}{2}$ inches; wing from flexure 10; tail $7\frac{10}{12}$; bill along the ridge 1; tarsus $2\frac{7}{12}$; hind toe $\frac{10}{12}$, its claw 1; middle toe $1\frac{8}{12}$, its claw $\frac{7}{12}$.

It is very probable that this is the *Accipiter Mexicanus* of Mr SWAINSON, whose brief account of a female of that species, in the *Fauna Boreali-Americana*, agrees sufficiently with it. There are, however, some errors in his critical observations, at p. 44. Thus, he states that WILSON'S figure of the Slate-coloured Hawk, *Accipiter Pennsylvanicus*, is perfectly characteristic, in having the tail quite even at the end; but that TEMMINCK'S *Autour a bec sinueux* is doubtful, the tail being represented as distinctly rounded. Now, in fact, the tail of our Sharp-shinned Hawk is when perfect a little rounded, but often when worn quite even or square. Both the figures in Plate CCCLXXIV represent it as a little rounded, and such it is in five specimens out of eight, four of these being females, and one a male; while the three specimens in which the tail may be said to be quite even are males. Again, he states that "the anterior scales on the tarsus of *A. Pennsylvanicus* are entire, being apparently formed externally of one entire piece; whereas in *Mexicanus*, the transverse divisions are distinctly visible." The latter part of the sentence is certainly correct, in so far as may be

judged from a single very fine specimen ; but the scales are equally distinct in all the younger individuals of the *A. Pennsylvanicus*, although in one, an old male, the distinctions between the greater number are obliterated, so that they resemble a single plate. There is nothing very remarkable in this, however, for the like happens to other Hawks ; it having been long ago remarked with regard to the Sparrow Hawk of Europe, *Accipiter Nisus*, that “ in some individuals, the anterior oblique scutella, as well as the hexagonal scales of the sides, are so indistinct, that all traces of them disappear when the parts become dry.”

Accipiter Nisus, *A. velox*, and *A. Mexicanus*, which are most closely allied, insomuch that it is extremely difficult to distinguish them from each other, may be characterized as follows :—

A. Mexicanus is largest ; has the fifth quill longest, the first primary much longer than the last, the tail distinctly rounded, the tarsi stouter, and with fifteen scales ; the upper parts deep slate-blue ; the lower banded with light red and white.

A. velox is smallest, has the fourth quill longest, the first primary much shorter than the last, the tail even, the tarsi extremely slender, with fifteen scales ; the colours exactly as in *Mexicanus*.

A. Nisus is intermediate in size, never so small as *velox*, but sometimes as large as *Mexicanus*, with the fourth quill longest, the first and last primary about equal, the tail very slightly rounded or even, the tarsi very slender, with eighteen scales, the upper parts deep slate-blue, the lower narrowly banded with light red in the male, and dusky in the female.

This species was described by WILSON under the name of Sharp-shinned Hawk, *Falco velox*, and figured in Pl. XLV, a young female only being represented, although a description is given of a young male also. He afterwards figured an adult male (Pl. XLVI), and described it under the name of Slate-coloured Hawk, *Falco Pennsylvanicus*, considering it as a distinct species. It appears, however, that it had previously been described under several names. Thus *Falco fuscus* of MILLER and GMELIN, and the American Brown Hawk of LATHAM, seem to be the same bird in the young state. *Falco dubius* of GMELIN and LATHAM, the Dubious Falcon of the latter and of PENNANT are also

synonymous. The Dusky Falcon of PENNANT and LATHAM, *Falco obscurus* of the latter and of GMELIN, may also belong to the same species. If we consider priority of name as of paramount importance, then, in so far as can be shewn, the species ought to be named the "American Brown Hawk, *Falco fuscus*;" or, according to the newer nomenclature, *Astur* or *Accipiter fuscus*. The names of "Sharp-shinned;" "Slate-coloured," and "*velox*," are not more distinctive; and *Pennsylvanicus* is out of the question, having been applied to another species.

LESSER REDPOLL.*FRINGILLA LINARIA*, LINN.

PLATE CCCLXXV. MALE AND FEMALE.

WHEN I was in Labrador, my young companions and my son one day (the 27th of July 1833) procured eight individuals of this species, of different sexes and ages. Next morning I went to the place where they had been shot, and found a good number remaining. The first observation I made had reference to their notes, which, instead of resembling those of the Goldfinch, as alleged by an American writer, are very similar to those of the Siskin, and are frequently uttered both when the birds are alighted and while they are on wing. They were in small parties of seven or eight, apparently formed by the members of the same family, and although several of these groups were around me, they did not intermingle until fired at, when they all simultaneously rose on wing, mixed together, and after performing several short evolutions returned to the same bushes, separated into families, and resumed their occupations. When alighted they were quite unsuspecting, and so heedless as to allow a close approach, scarcely regarding my presence, but clinging to the branches, dexterously picking out the seeds of the alder-cones, and occasionally coming to the ground after some which had dropped.

Few birds exhibit a more affectionate disposition than the Little Redpoll, and it was pleasing to see several on a twig feeding each other by passing a seed from bill to bill, one individual sometimes receiving food from his two neighbours at the same time. Occasionally, however, they shewed considerable pugnacity, and one would drive off its companion, inflicting some smart blows upon it with its bill, and uttering a low querulous chatter.

In other portions of the same country, I saw flocks composed of twenty or more individuals flying loosely at a moderate height, in the undulatory manner of the American Goldfinch and Siskin, without, however, making the deep sweeps of the former; suddenly alighting, and at once beginning to search with great expertness between the

stems and leaves, picking at the embryo buds while perched over them, like Jays and Titmice.

So hardy is this species, that, according to Dr RICHARDSON, it is a "permanent resident in the Fur Countries, where it may be seen in the coldest weather, on the banks of lakes and rivers, hopping among the reeds and carices, or clinging to their stalks. Although numerous throughout the year, even in the most northern districts, a partial migration takes place, as large flocks visit Pennsylvania for a month or two in severe winters." The migrations alluded to are of rare occurrence in that State, however, as well as in that of New York. I never saw one of these birds to the westward of the Alleghanies, and none were observed by Dr TOWNSEND or Mr NUTTALL on the Columbia River. They are abundant every cold winter in the northern parts of Massachusetts and Maine, as well as in all the British Provinces.

The food of this species consists of buds, seeds of various grasses, berries, and the small leaves of bushes and trees. I have represented a male and a female on a plant which grows abundantly in the localities in which I found it in Labrador.

The many young birds which I examined in the month of August, had the head entirely grey. The feathers of that part, and those on the breast and rump, were of the same colour nearly to the base, which is bluish-grey; and I suspect that they do not acquire any redness until the approach of spring. The old birds were moulting at the period mentioned, and from their appearance I concluded that all their red feathers are reassumed each spring. The eggs, from four to six in number, measure five-eighths in length, rather more than half an inch in diameter, and are pale bluish-green sparingly dotted with reddish-brown toward the larger end.

FRINGILLA LINARIA, *Linn. Syst. Nat.* vol. i. p. 322.—*Lath. Ind. Ornith.* vol. i. p. 458.—*Ch. Bonaparte, Synopsis.* p. 112.

LESSER REDPOLL, FRINGILLA LINARIA, *Wils. Amer. Ornith.* vol. iv. p. 42, pl. 30, fig. 4. Male.

LINARIA MINOR, LESSER REDPOLL, *Fauna Bor.-Amer.* vol. ii. p. 267.

LESSER REDPOLL, *Nuttall, Manual,* vol. i. 512.

Adult Male in Summer. Plate CCCLXXV. Fig. 1.

Bill short, strong, conical, compressed toward the end, extremely

acute ; upper mandible with the dorsal line straight, the ridge narrow, the sides convex, the edges sharp and overlapping, without notch, the tip acuminate ; lower mandible with the angle short and semicircular, the dorsal line straight, the ridge broadish at the base, the sides convex, the edges sharp and inflected, the tip acute. Nostrils basal, roundish, covered by stiffish reversed feathers.

Head of moderate size, roundish ; neck short ; body moderate. Feet of moderate length, slender ; tarsus compressed, anteriorly covered with a few scutella of which the upper are blended, posteriorly with two longitudinal plates meeting at a very acute angle ; toes slender, the first with its claw as long as the third with its claw ; the lateral toes equal. Claws large, moderately arched, much compressed, acute.

Plumage soft, rather blended, with very little gloss, unless on the red parts. Wings of ordinary length, the first three quills almost equal, but the second longest. Tail rather long, forked.

Bill yellowish, the upper mandible dusky on the ridge ; iris brown ; feet blackish-brown. A band edging the forehead, the loreal space, and the throat, brownish-black ; the reversed feathers on the base of the bill yellowish ; the crown of the head crimson ; the hind part of the head, the neck, the fore part of the back, and the scapulars yellowish-brown, longitudinally streaked with blackish-brown, the feathers on the hind part of the back margined with whitish, and tipped with carmine ; the wings and tail dusky, with yellowish-brown edges, and two transverse bands of the same on the tips of the first row of small coverts and the secondary coverts. The sides of the neck, its fore part, the breast, and flanks, rich carmine ; the middle of the breast, the abdomen, and the lower tail-coverts white, tinged with rose colour ; the sides longitudinally streaked with dusky.

Length to end of tail 5 ; to end of wings 4 ; extent of wings $8\frac{3}{4}$; wing from flexure $3\frac{2}{12}$; tail $2\frac{1}{2}$; bill along the ridge $\frac{4}{12}$, along the edge of lower mandible $\frac{5\frac{1}{2}}{12}$; tarsus $\frac{7}{12}$; first toe $\frac{2\frac{3}{4}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{3}{12}$.

Adult Female in Summer. Plate CCCLXXV. Fig. 2.

The female, which is somewhat less, has the black of the forehead and throat more brown, with less red on the head, and little or none on the rump, or on the lower parts, which are white, the breast and flanks longitudinally streaked with dusky.

TRUMPETER SWAN.

CYGNUS BUCCINATOR, RICHARDSON.

PLATE CCCLXXVI. YOUNG IN WINTER.

THE history of the American Swans has been but very slightly traced. Few records of the habits of these majestic, elegant, and useful birds exist, on which much reliance can be placed; their geographical range still remains an unsolved problem; one species has been mistaken for another, and this by ornithologists who are said to be of the first order. The *Cygnus Bewickii* of Great Britain has been given as a North American Swan in place of *Cygnus Americanus* (well described by Dr SHARPLESS of Philadelphia) in the Fauna Boreali-Americana; and the latter bird has been taken for the Whistling Swan, *C. musicus* of BECHSTEIN, by the Prince of MUSIGNANO, who says in his Synopsis, p. 379, No. 321, that it is "very numerous in winter in Chesapeake Bay." It is possible that we may have more than two species of Swan within the limits of North America, but I am at present acquainted with only that which forms the subject of this article, and the *Cygnus Americanus* of SHARPLESS.

In a note contained in the Journals of LEWIS and CLARK, written in the course of the expedition of these daring travellers across the Rocky Mountains, it is stated that "the Swans are of two kinds, the large and small. The large Swan is the same with the one common in the Atlantic States. The small differs from the large only in size and note; it is about one-fourth less, and its note is entirely different. These birds were first found below the great narrows of the Columbia, near the Chilluckittequaw nation. They are very abundant in this neighbourhood, and remained with the party all winter, and in number they exceed those of the larger species in the proportion of five to one." These observations are partly correct and partly erroneous. In fact, the smaller species of the two, which is the *C. Americanus* of SHARPLESS, is the only one abundant in the middle districts of our Atlantic coast, while the larger Swan, the subject of this article, is rarely if ever seen to the eastward of the mouths of the Mississippi. A perfect specimen of the small Swan mentioned by LEWIS and CLARK

has been transmitted to me from the Columbia River by Dr TOWNSEND, and I find it to correspond in every respect with the *C. Americanus* of SHARPLESS. Dr TOWNSEND corroborates the observations of the two eminent travellers by stating, that the latter species is much more numerous than the large *C. Buccinator*.

The Trumpeter Swans make their appearance on the lower portions of the waters of the Ohio about the end of October. They throw themselves at once into the larger ponds or lakes at no great distance from the river, giving a marked preference to those which are closely surrounded by dense and tall cane-brakes, and there remain until the water is closed by ice, when they are forced to proceed southward. During mild winters I have seen Swans of this species in the ponds about Henderson until the beginning of March, but only a few individuals, which may have staid there to recover from their wounds. When the cold became intense, most of those which visited the Ohio would remove to the Mississippi, and proceed down that stream as the severity of the weather increased, or return if it diminished; for it has appeared to me, that neither very intense cold nor great heat suit them so well as a medium temperature. I have traced the winter migrations of this species as far southward as the Texas, where it is abundant at times, and where I saw a pair of young ones in captivity, and quite domesticated, that had been procured in the winter of 1836. They were about two years old, and pure white, although of much smaller size than even the younger one represented in the plate before you, having perhaps been stinted in food, or having suffered from their wounds, as both had been shot. The sound of their well-known notes reminded me of the days of my youth, when I was half-yearly in the company of birds of this species.

At New Orleans, where I made the drawing of the young bird here given, the Trumpeters are frequently exposed for sale in the markets, being procured on the ponds of the interior, and on the great lakes leading to the waters of the Gulf of Mexico. This species is unknown to my friend, the Rev. JOHN BACHMAN, who, during a residence of twenty years in South Carolina, never saw or heard of one there; whereas in hard winters the *Cygnus Americanus* is not uncommon, although it does not often proceed farther southward than that State. The waters of the Arkansas and its tributaries are annually supplied with Trumpeter Swans, and the largest individual which I have exa-

mined was shot on a lake near the junction of that river with the Mississippi. It measured nearly ten feet in alar extent, and weighed above thirty-eight pounds. The quills, which I used in drawing the feet and claws of many small birds, were so hard, and yet so elastic, that the best steel-pen of the present day might have blushed, if it could, to be compared with them.

Whilst encamped in the Tawapatee Bottom, when on a fur-trading voyage, our keel-boat was hauled close under the eastern shore of the Mississippi, and our valuables, for I then had a partner in trade, were all disembarked. The party consisted of twelve or fourteen French Canadians, all of whom were pretty good hunters; and as game was in those days extremely abundant, the supply of Deer, Bear, Racoons, and Opossums, far exceeded our demands. Wild Turkeys, Grouse, and Pigeons, might have been seen hanging all around; and the ice-bound lakes afforded an ample supply of excellent fish, which was procured by striking a strong blow with an axe on the ice immediately above the confined animal, and afterwards extricating it by cutting a hole with the same instrument. The great stream was itself so firmly frozen that we were daily in the habit of crossing it from shore to shore. No sooner did the gloom of night become discernible through the grey twilight, than the loud-sounding notes of hundreds of Trumpeters would burst on the ear; and as I gazed over the ice-bound river, flocks after flocks would be seen coming from afar and in various directions, and alighting about the middle of the stream opposite to our encampment. After pluming themselves awhile they would quietly drop their bodies on the ice, and through the dim light I yet could observe the graceful curve of their necks, as they gently turned them backwards, to allow their heads to repose upon the softest and warmest of pillows. Just a dot of black as it were could be observed on the snowy mass, and that dot was about half an inch of the base of the upper mandible, thus exposed, as I think, to enable the bird to breathe with ease. Not a single individual could I ever observe among them to act as a sentinel, and I have since doubted whether their acute sense of hearing was not sufficient to enable them to detect the approach of their enemies. The day quite closed by darkness, no more could be seen until the next dawn; but as often as the howlings of the numerous wolves that prowled through the surrounding woods were heard, the clanging cries of the Swans would fill the air. If the morning proved fair, the whole

flocks would rise on their feet, trim their plumage, and as they started with wings extended, as if, racing in rivalry, the pattering of their feet would come on the ear like the noise of great muffled drums, accompanied by the loud and clear sounds of their voice. On running fifty yards or so to windward, they would all be on wing. If the weather was thick, drizzly, and cold, or if there were indications of a fall of snow, they would remain on the ice, walking, standing, or lying down, until symptoms of better weather became apparent, when they would all start off. One morning of this latter kind, our men formed a plot against the Swans, and having separated into two parties, one above, the other below them on the ice, they walked slowly, on a signal being given from the camp, toward the unsuspecting birds. Until the boatmen had arrived within a hundred and fifty yards of them, the Swans remained as they were, having become, as it would appear, acquainted with us, in consequence of our frequently crossing the ice; but then they all rose on their feet, stretched their necks, shook their heads, and manifested strong symptoms of apprehension. The gunners meanwhile advanced, and one of the guns going off by accident, the Swans were thrown into confusion, and scampering off in various directions took to wing, some flying up, some down the stream, others making directly toward the shores. The muskets now blazed, and about a dozen were felled, some crippled, others quite dead. That evening they alighted about a mile above the camp, and we never went after them again. I have been at the killing of several of these Swans, and I can assure you that unless you have a good gun well loaded with large buck-shot, you may shoot at them without much effect, for they are strong and tough birds.

To form a perfect conception of the beauty and elegance of these Swans, you must observe them when they are not aware of your proximity, and as they glide over the waters of some secluded inland pond. On such occasions, the neck, which at other times is held stiffly upright, moves in graceful curves, now bent forward, now inclined backwards over the body. Now with an extended scooping movement the head becomes immersed for a moment, and with a sudden effort a flood of water is thrown over the back and wings, when it is seen rolling off in sparkling globules, like so many large pearls. The bird then shakes its wings, beats the water, and as if giddy with delight shoots away,

gliding over and beneath the surface of the liquid element with surprising agility and grace. Imagine, Reader, that a flock of fifty Swans are thus sporting before you, as they have more than once been in my sight, and you will feel, as I have felt, more happy and void of care than I can describe.

When swimming unmolested the Swan shews the body buoyed up ; but when apprehensive of danger, it sinks considerably lower. If resting and basking in the sunshine, it draws one foot expanded curiously towards the back, and in that posture remains often for half an hour at a time. When making off swiftly, the tarsal joint, or knee as it is called, is seen about an inch above the water, which now in wavelets passes over the lower part of the neck and along the sides of the body, as it undulates on the planks of a vessel gliding with a gentle breeze. Unless during the courting season, or while passing by its mate, I never saw a swan with the wings raised and expanded, as it is alleged they do, to profit by the breeze that may blow to assist their progress ; and yet I have pursued some in canoes to a considerable distance, and that without overtaking them, or even obliging them to take to wing. You, Reader, as well as all the world, have seen Swans labouring away on foot, and therefore I will not trouble you with a description of their mode of walking, especially as it is not much to be admired.

The flight of the Trumpeter Swan is firm, at times greatly elevated and sustained. It passes through the air by regular beats, in the same manner as Geese, the neck stretched to its full length, as are the feet, which project beyond the tail. When passing low, I have frequently thought that I heard a rustling sound from the motion of the feathers of their wings. If bound to a distant place, they form themselves in angular lines, and probably the leader of the flock is one of the oldest of the males ; but of this I am not at all sure, as I have seen at the head of a line a grey bird, which must have been a young one of that year.

This Swan feeds principally by partially immersing the body and extending the neck under water, in the manner of fresh-water Ducks and some species of Geese, when the feet are often seen working in the air, as if to aid in preserving the balance. Often however it resorts to the land, and then picks at the herbage, not sidewise, as Geese do, but more in the manner of Ducks and poultry. Its food consists of roots

of different vegetables, leaves, seeds, various aquatic insects, land snails, small reptiles and quadrupeds. The flesh of a cygnet is pretty good eating, but that of an old bird is dry and tough.

I kept a male alive upwards of two years, while I was residing at Henderson in Kentucky. It had been slightly wounded in the tip of the wing, and was caught after a long pursuit in a pond from which it could not escape. Its size, weight, and strength rendered the task of carrying it nearly two miles by no means easy; but as I knew that it would please my wife and my then very young children, I persevered. Cutting off the tip of the wounded wing, I turned it loose in the garden. Although at first extremely shy, it gradually became accustomed to the servants, who fed it abundantly, and at length proved so gentle as to come to my wife's call, to receive bread from her hand. "Trumpeter," as we named our bird, in accordance with the general practice of those who were in the habit of shooting this species, now assumed a character which until then had been unexpected, and laying aside his timidity became so bold at times as to give chase to my favourite Wild Turkey Cock, my dogs, children, and servants. Whenever the gates of our yard happened to be opened, he would at once make for the Ohio, and it was not without difficulty that he was driven home again. On one occasion, he was absent a whole night, and I thought he had fairly left us; but intimation came of his having travelled to a pond not far distant. Accompanied by my miller and six or seven of my servants, I betook myself to the pond, and there saw our Swan swimming buoyantly about as if in defiance of us all. It was not without a great deal of trouble that we at length succeeded in driving it ashore. Pet birds, good Reader, no matter of what species they are, seldom pass their lives in accordance with the wishes of their possessors; in the course of a dark and rainy night, one of the servants having left the gate open, Trumpeter made his escape, and was never again heard of.

With the manners of this species during the breeding season, its mode of constructing its nest, the number of its eggs, and the appearance of its young, I am utterly unacquainted. The young bird represented in the plate was shot near New Orleans, on the 16th of December 1822. A figure of the adult male you will find in Plate CCCCVI; and should I ever have opportunities of studying the habits of this noble bird, believe me I shall have much pleasure in laying before you

the results. Dr RICHARDSON informs us that it "is the most common Swan in the interior of the Fur Countries. It breeds as far south as lat. 61°, but principally within the arctic circle, and in its migrations generally precedes the Geese a few days."

As the adult bird will be subsequently described, I judge it unnecessary at present to enter into a full detail of the external form and characters of the species, and will therefore confine myself to the colours and proportions of the individual represented.

CYGNUS BUCCINATOR, *Richardson*.—TRUMPETER SWAN, *Fauna Bor.-Amer.* vol. ii. p. 464. "White; head glossed above with chestnut; bill entirely black, without a tubercle; tail-feathers 24; feet black."

Young after first moult. Plate CCCI.XXVI.

In winter the young has the bill black, with the middle portion of the ridge, to the length of an inch and a half, light flesh-colour, and a large elongated patch of light dull purple, on each side; the edge of the lower mandible and the tongue dull yellowish flesh-colour. The eye is dark brown. The feet dull yellowish-brown, tinged with olive; the claws brownish-black; the webs blackish-brown. The upper part of the head and the cheeks are light reddish-brown, each feather having towards its extremity a small oblong whitish spot, narrowly margined with dusky; the throat nearly white, as well as the edge of the lower eyelid. The general colour of the other parts is greyish-white, slightly tinged with yellow; the upper part of the neck marked with spots similar to those on the head.

Length to end of tail $52\frac{1}{2}$ inches; extent of wings 91, wing from flexure $23\frac{1}{4}$; bill along the ridge $4\frac{3}{8}$, from the angle of the eye 6, along the edge of the lower mandible $4\frac{1}{8}$; tarsus $4\frac{1}{2}$; hind toe $1\frac{1}{4}$, its claw $\frac{3}{8}$; middle toe $6\frac{1}{4}$, its claw 1; inner toe $4\frac{1}{2}$, its claw $1\frac{0}{2}$; outer toe $6\frac{1}{4}$, its claw $\frac{3}{4}$. Weight 19 lb. 8 oz.; the bird very poor.

SCOLOPACEOUS COURLAN.

ARAMUS SCOLOPACEUS, VIEILL.

PLATE CCCLXXVII. MALE.

THIS very remarkable bird appears to be entirely confined to that section of the Peninsula of Florida known by the name of "Everglades," and the swampy borders of the many bayous and lagoons issuing from that great morass. Few are found farther north than "Spring-garden Spring," of which I have given you an account. I have heard of its having been in one instance procured on one of the Florida Keys, by Mr TITIAN PEALE, whose specimen, which was a young male, has been described and figured in the continuation of WILSON'S American Ornithology. None were seen by me on any of these islands, and our worthy Pilot told me, that in the course of the many years which he had spent in that country he had never met with one off the main-land. It did not occur to me on any part of the coast, while I was proceeding to the Texas, nor is it to be found in that country, which seems very strange, when I look at this bird, and compare it with the Rail family, which is so abundant along the whole of that coast, and to which it is very nearly allied in some of its habits, more especially to the Fresh-water Marsh Hen, *Rallus elegans*.

The flight of the Scolopaceous Courlan is heavy and of short duration; the concavity and shortness of its wings, together with the nature of the places which it inhabits, probably rendering it slow to remove from one spot to another on wing, it being in a manner confined among tall plants, the roots of which are frequently under water. When it rises spontaneously it passes through the air at a short distance above the weeds, with regular beats of the wings, its neck extended to its full length, and its long legs dangling beneath, until it suddenly drops to the ground. Few birds then excel it in speed, as it proceeds, if pursued, by long strides, quickly repeated, first in a direct course, along paths formed by itself when passing and repassing from one place to another, and afterwards diverging so as to ensure its safety even when chased by the best dogs, or other not less eager enemies inhabiting the half-submersed wilderness which it has chosen for its residence. When acci-

dentally surprised, it rises obliquely out of its recess, with the neck greatly bent downward, and although its legs dangle for a while, they are afterwards extended behind in the manner of those of the Heron tribe. At such times these birds are easily shot; but if they are only wounded, it would be vain to pursue them. Although of considerable size and weight, they are enabled, by the great length and expansion of their toes to walk on the broad leaves of the larger species of *Nymphaea* found in that country. They swim with the same buoyancy as the Coots, Gallinules, and Rails.

The nest of this bird is placed among the larger tufts of the tallest grasses that grow at short distances from the bayous, many of which are influenced by the low tides of the Gulf. It is so well fastened to the stems of the plants, in the same manner as that of *Rallus crepitans*, as to be generally secure from inundation; and is composed of rank weeds matted together, and forming a large mass, with a depression in the centre. The eggs, which rarely exceed five or six, are large for the size of the bird. The young are hatched early in May, and follow their parents soon after birth, being covered with coarse tufty feathers, of a black colour.

The Ever-glades abound with a species of large greenish snail, on which these birds principally feed; and, from the great number of empty shells which are found at the foot of the nest and around it, it is probable that the sitting bird is supplied with food by her mate. Their notes, when uttered while they are on wing, are a sort of cackle, but when on the ground, much louder, especially during the pairing season, or when they are started by the report of a gun. The flesh of the young is pretty good eating. Although it is alleged that this bird occasionally alights on trees, I have never seen it in such a situation.

ARDEA SCOLOPACEA, *Gmel. Syst. Nat.* vol. i. p. 647.—*Lath. Ind. Ornith.* vol. ii. p. 701.

ARAMUS SCOLOPACEUS, *Ch. Bonap. Synopsis of Birds of United States*, p. 39.

SCOLOPACEOUS COURLAN, ARAMUS SCOLOPACEUS, *Ch. Bonap. Amer. Ornith.* vol. iv.

p. 111, pl. 26, fig. 2.—*Nuttall, Manual*, vol. ii. p. 68.

Adult Male. Plate CCCLXXVII.

Bill long, being double the length of the head, rather slender, but strong, much compressed, straight, its breadth less before the nostrils

than towards the point; upper mandible with the dorsal line straight until towards the end, then slightly arcuato-declinate, the ridge convex in its whole length, the sides nearly erect, more convex towards the extremity, the tip blunted, the edges broad and obtuse for half their length, sharp but thick in the rest of their extent; lower mandible slightly ascending at the base, then direct, much compressed towards the tip, which is acute, the angle long and very narrow, the dorsal line slightly convex, the edges obtuse, becoming sharp towards the end. Nasal groove nearly half the length of the bill; nostrils direct, linear, long.

Head rather small, oblong, compressed. Eyes rather large. Neck long and slender. Body ovato-oblong, much compressed. Feet very long and slender, rather stout; tibia bare in its lower half, which is anteriorly covered with hexagonal scales, posteriorly with transverse scutella; tarsus long, compressed, anteriorly with numerous broad scutella, laterally with very small elongated scales, posteriorly with large scutelliform scales, many of which are divided; toes long, rather slender; hind toe small and elevated; fourth considerably longer than second, middle toe nine-twelfths of an inch longer than the outer; the anterior toes are divided to the base, compressed, scutellate above, scaly on the sides, papillate beneath, compressed and not marginate. Claws of moderate length, very slightly arched, compressed, tapering to a point; that of the first toe smallest, of the third largest, without serratures on the inner edge, which is thin and a little expanded.

Plumage of ordinary texture, rather compact and glossy on the upper parts, blended on the lower; feathers on the head and neck short, oblong; on the back ovate and very broadly rounded. Wings of moderate length, very broad, concave, rounded; primaries broad, secondaries very broad and rounded; first primary two-thirds of the length of the second, which is ten-twelfths shorter than the third; the fourth, which is longest, exceeds the third by one-twelfth, and the fifth by half a twelfth; some of the secondaries reach to half an inch of the tip of the longest primary when the wing is closed; the three outer quills are narrower toward the base than toward the extremity, more especially the first. The tail is short, broad, convex, rounded, of twelve broad, rounded feathers.

Bill greenish-yellow, dusky toward the end of both mandibles, but

especially of the upper; iris hazel; feet lead-grey, claws dusky. The general colour of the plumage is chocolate-brown, the upper parts glossed, with purple and bronze reflections; the fore part of the head paler, inclining to grey, each feather with a greyish-white central line; the sides of the head and the throat are still lighter, and a small portion of the throat is whitish, these parts being streaked with greyish-brown and greyish-white; the lower eyelid white. The hind part and sides of the neck are marked with elliptical spots of white in regular series, there being one on each feather, some of them extending forwards to the posterior angle of the eye. Some of the feathers on the middle of the breast and the lower wing-coverts are similarly marked with lanceolate white spots; the tail is more highly glossed and coloured than the rest of the upper parts.

Length to end of tail $25\frac{3}{4}$ inches, to end of wings 25, to end of claws 32, to carpal joint $13\frac{3}{4}$; extent of wings 41; wing from flexure $12\frac{1}{2}$; tail $5\frac{1}{2}$; bill along the ridge $4\frac{7}{8}$, along the edge of lower mandible $4\frac{3}{4}$; bare part of tibia $2\frac{1}{2}$; tarsus $4\frac{5}{8}$; hind toe $1\frac{1}{2}$, its claw $\frac{7}{8}$; second toe $2\frac{4}{8}$, its claw $\frac{8}{8}$; third toe $3\frac{1}{2}$, its claw $\frac{1}{2}$; fourth toe $2\frac{8}{8}$, its claw $\frac{8}{8}$.

The Female is somewhat less, but resembles the male.

Length to end of tail 25 inches, to end of claws $33\frac{1}{4}$; to end of wings 24, to carpal joint $12\frac{3}{4}$; extent of wings 42; wing from flexure 12; tail $4\frac{3}{4}$; bill along the gape $4\frac{3}{8}$.

The young when fully fledged is of a much lighter tint; the head and fore-neck brownish-grey, the lower parts greyish-brown. The bill is yellowish-green, darker toward the end; the feet much darker than in the adult. Excepting the quills, primary-coverts, tail-feathers, and the rump, all the plumage is marked with spots of white, of which there is one along the centre of each feather; those on the neck elongated, on the back, wings, and breast lanceolate. In this state it is figured in the continuation of Wilson's American Ornithology, by the Prince of MUSIGNANO.

Length to end of tail 23 inches.

This remarkable bird has exercised the ingenuity of the systematizing ornithologists, some of whom have considered it as a Heron, others a Crane, while many have made it a Rail, and many more a

genus apart, but allied to the Rails, or to the Herons or to both. It seems in truth to be a large Rail, with the wings and feet approaching in form to those of the Herons; but while frivolous disputes might be carried on *ad libitum* as to its location in the system of nature, were we merely to consider its exterior; it is fortunate that we possess a means of determining its character with certainty:—if we examine its digestive organs, we shall at once see if it be a Rail, or a Heron, or anything else. If a Heron, it will have a very wide œsophagus, a roundish, thin-walled stomach, very slender intestines, and a single short obtuse cœcum; if a Rail or Gallinule, or bird of that tribe, it will have a narrow mouth, a narrow œsophagus, a very muscular stomach, intestines of moderate width, and two moderately long, rather wide cœca. Here then are two specimens, shot in Florida, and preserved in spirits.

The first, which is found to be a female, has the mouth narrow, measuring only 7 twelfths across; the tongue very long and extremely slender, trigonal, pointed, extending to within half an inch of the tip of the lower mandible, being $3\frac{7}{12}$ inches in length. The œsophagus, *a b c d*, which is 12 inches long, is narrow in its whole length, its diameter at the upper part being 6 twelfths, below the middle of the neck 8 twelfths. The proventriculus, *b c*, is nearly 1 inch long, 9 twelfths in its greatest diameter, bulbiform; its glandules cylindrical, $1\frac{1}{2}$ twelfth long. Between the termination of the proventriculus, and the commencement of the stomach, the space, *c d*, is more elongated than usual, an inch and 2 twelfths, and presents the appearance of a tube curved toward the left in the form of the letter S. The circular fibres of this part are strong, and its epithelium is very thick, soft, and raised into twelve very prominent rounded longitudinal rugæ. The stomach, properly so called, *d e f g*, is an extremely powerful gizzard, of an orbicular form, compressed, with its axis a little inclined toward the right side, its length 1 inch and 9 twelfths, its breadth 1 inch and 8 twelfths, its thickness 11 twelfths. The left lateral muscle, *d f*, is much larger than the right, occupying nearly one-half of the organ; the muscles are thick, but not very remarkably so, their greatest thickness being 4 twelfths; the epithelium is very hard and rugous. The duodenum, *g h i*, curves in the usual manner, folding back upon itself at the distance of 3 inches. The intestine, *g h i j k*, is of moderate length, 31 inches, its greatest diameter 3 twelfths; the rectum, *k l*, 3 inches long,

including the cloaca, *lm*, which is globular, $1\frac{1}{2}$ inch in diameter; the cœca, *nn*, of moderate size, $1\frac{3}{4}$ inch long, for nearly half their length 2 twelfths in diameter, in the rest of their extent from 4 to 6 twelfths, obtuse; their distance from the cloaca 10 twelfths.

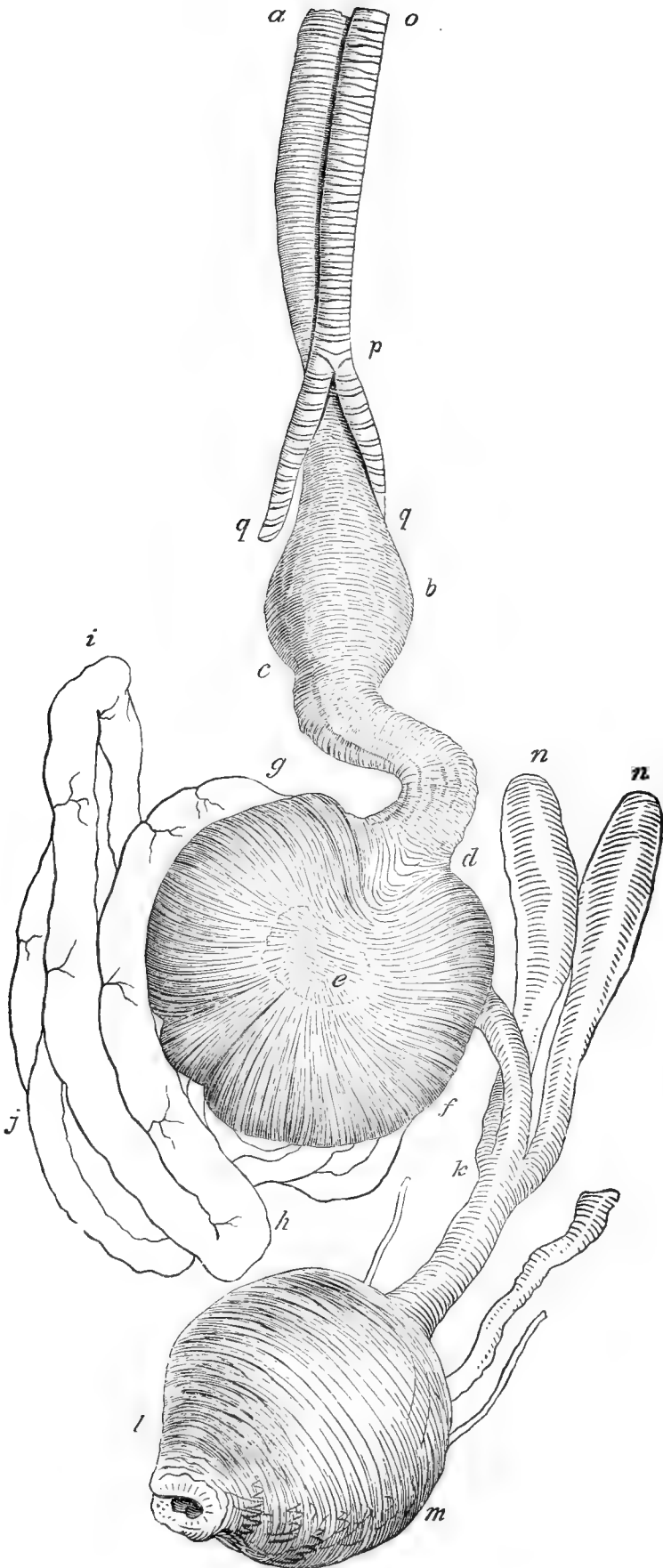
The trachea, *op*, is 10 inches long, narrow, of nearly uniform diameter, being narrowest in the upper third of its length, unless for three-fourths of an inch at the commencement. Its rings 186 in number, are ossified, and a little flattened. The contractor muscles are slender, as are the sterno-tracheal; and there is a single pair of inferior laryngeal. The bronchi, *pq*, are wide, tapering, of about 15 narrow cartilaginous half rings. The heart is of moderate size, $1\frac{7}{8}$ inch long, 1 inch in breadth. The liver is small, its lobes, which are equal, being 1 inch in length.

The other individual, a male, has the œsophagus 12 inches long; the distance from the proventriculus to the stomach $1\frac{2}{3}$ inch; the stomach $1\frac{8}{12}$ inch long, and the same in breadth; the cœca 2 inches long, the greatest diameter 5 twelfths; the intestine $32\frac{1}{2}$ inches in length, their greatest diameter $3\frac{1}{2}$ twelfths.

Now, in all this there is nothing indicative of any affinity to the Herons; the structure of the intestinal canal being essentially like that of the Coots, Gallinules, and Rails. Even the external parts sufficiently indicate its station, the bill; the plumage, and the colouring being more like these of the Rallinæ than of any other family.

The Prince of MUSIGNANO, who first described this bird as a Rail, *Rallus giganteus*, afterwards adopted for it VIELLOT's genus *Aramus*, and considered it as belonging to the *Ardeidæ*, forming a connecting link with them and the *Rallidæ*, and "aberrating somewhat towards the *Scolopacidæ*, as well as tending a little towards the *Psophidæ*, sub-family *Gruinæ*," and claiming "again a well-founded resemblance to the most typical form of the genus *Rallus*." Finally, he reverts to his original idea, and places it at the head of the *Rallidæ*. Mr SWAINSON refers it to the *Tantalidæ*, associating it with *Anastomus*, *Tantalus*, and *Ibis*, to which it certainly has very little affinity in any point of view.

The efficiency of the digestive organs as a means of determining affinities in cases of doubt, is happily illustrated in this instance; and any person who will make himself acquainted with them will easily discover numerous false associations in all systems founded on the external aspect alone.



HAWK OWL.

STRIX FUNEREA, LINN.

PLATE CCCLXXVIII. MALE AND FEMALE.

It is always disagreeable to an author to come forward when he has little of importance to communicate to the reader, and on no occasion have I felt more keenly than on the present, when introducing to your notice an Owl, of which the habits, although unknown to me, must be highly interesting, as it seems to assimilate in some degree to the diurnal birds of prey. I have never seen it alive, and therefore can only repeat what has been said by one who has. Dr RICHARDSON gives the following account of it in the *Fauna Boreali-Americana* :—

“ It is a common species throughout the Fur Countries from Hudson’s Bay to the Pacific, and is more frequently killed than any other by the hunters, which may be partly attributed to its boldness and its habit of flying about by day. In the summer season it feeds principally on mice and insects ; but in the snow-clad regions which it frequents in the winter, neither of these are to be procured, and it then preys mostly on Ptarmigan. It is a constant attendant on the flocks of Ptarmigan in their spring migrations to the northward. It builds its nest on a tree, of sticks, grass, and feathers, and lays two white eggs. When the hunters are shooting Grouse, this bird is occasionally attracted by the report of the gun, and is often bold enough, on a bird being killed, to pounce down upon it, though it may be unable from its size to carry it off. It is also known to hover round the fires made by the natives at night.”

I lately received a letter from my friend Dr THOMAS M. BREWER of Boston, Massachusetts, in which he informs me that “ the Hawk Owl is very common at Memphramagog Lake in Vermont, where as many as a dozen may be obtained by a good gunner in the course of a single day. Its nests in the hollow trees are also frequently met with.” It is surprising that none should have been seen by Mr NUTTALL or Dr TOWNSEND, while crossing the Rocky Mountains, or on the Columbia River ; especially as it has been found by my friend EDWARD HARRIS, Esq. as far southward on our eastern coast as New Jersey.

The specimens from which the figures in the plate were drawn, were given to me by THOMAS MACCULLOCH, Esq. of Pictou, who had a good number of them. Two entire individuals preserved in spirits afford materials for the following descriptions.

STRIX FUNEREA, *Linn. Syst. Nat.* vol. i. p. 133.—*Lath. Ind. Orn.* vol. i. p. 62.—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 35.

HAWK OWL, STRIX HUDSONIA, *Wils. Amer. Ornith.* vol. vi. p. 64, pl. 50, fig. 6.

STRIX FUNEREA, AMERICAN HAWK OWL, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 92.

HAWK OWL, *Nuttall, Manual*, vol. i. p. 115.

Adult Male. Plate CCCLXXVIII. Fig. 1.

Bill short, strong, higher than broad; upper mandible with the dorsal line declinate and decurved, the ridge convex, the sides convex toward the end, the edges nearly straight until toward the end, the tip decurved, trigonal, acute; the cere covered with stiff bristly feathers directed forwards; lower mandible with the angle very wide, the dorsal outline convex, the ridge broad and convex, the sides convex, the edges sharp toward the end, the tip obtuse, thin-edged. Nostrils roundish, in the fore part of the cere, concealed by the feathers.

Head very large, roundish, convex above. Eyes very large. Neck very short; body of moderate size. Legs very short, robust; tarsus very short, feathered, as are the toes, of which the outer is reversible; claws long, stout, compressed, tapering to a very acute point, that of third toe with the inner edge considerably dilated.

Plumage full, very soft, blended; the cere covered with slender stiffish reversed feathers, having their filaments disunited; the facial disks incomplete above. Wings rather long, rounded; the third primary longest, the fourth one-twelfth and a half shorter, the second four and a half twelfths shorter than the third, the first intermediate between the fifth and sixth; the first four cut out on the outer web towards the end, the barbs on the greater part of the outer web of the first, and the terminal portion of the second, thickened, and a little separated, but not recurved; the secondaries of moderate length, rounded. Tail rather long, much rounded, of twelve rather broad rounded feathers, of which the lateral are two inches shorter than the middle.

Bill pale yellow; iris bright yellow; claws dusky. The facial disk

is greyish-white, the shafts black, at its anterior part intermixed with black filaments. The upper part of the head brownish-black, closely spotted with white, there being generally three roundish spots on each feather. The hind part of the neck is brownish-black, with two broad longitudinal bands of white spots; a semicircle of brownish-black feathers margins the facial disk behind. The general colour of the upper parts is chocolate-brown, becoming lighter behind; all the feathers marked with white spots in pairs, larger and more conspicuous on the scapulars, disposed in bars on the rump and upper tail-coverts. On both webs of the quills are several transversely elliptical white spots, the outer webs of the first two and five inner primaries excepted; the tips of all brownish-white. The tail is marked with about eight transverse bars of white, formed by narrow oblong alternating spots on both webs, the feathers also tipped with white, the throat is greyish-dusky, that colour being succeeded by a semi-circular band of white, beneath which is an obscure brownish-black band; the rest of the lower parts transversely barred with dusky and white; the dark bars of a deeper tint anteriorly, approaching to chestnut on the sides and legs, fainter on the abdomen and feet, and greyish-brown on the lower tail-coverts.

Length to end of tail $15\frac{3}{4}$ inches, to end of wings $12\frac{1}{2}$, to end of claws $11\frac{1}{2}$, to carpal joint $3\frac{3}{8}$; extent of wings $31\frac{1}{2}$; wing from flexure $9\frac{8}{12}$; tail $7\frac{1}{2}$; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible 1; tarsus 1; hind toe $1\frac{5}{12}$, its claw $\frac{10\frac{1}{2}}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{1\frac{0}{2}}{12}$; inner toe $\frac{8\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; outer toe $\frac{6}{12}$, its claw $\frac{1\frac{0}{2}}{12}$.

Adult Female. Plate CCCLXXVIII. Fig. 2.

The Female is somewhat larger, and resembles the male, but is of a lighter tint, especially on the wings and tail, where the white markings are smaller and less decided.

Length to end of tail $17\frac{1}{2}$ inches.

An adult male, presented by THOMAS M. BREWER, Esq. of Boston, and preserved in spirits.

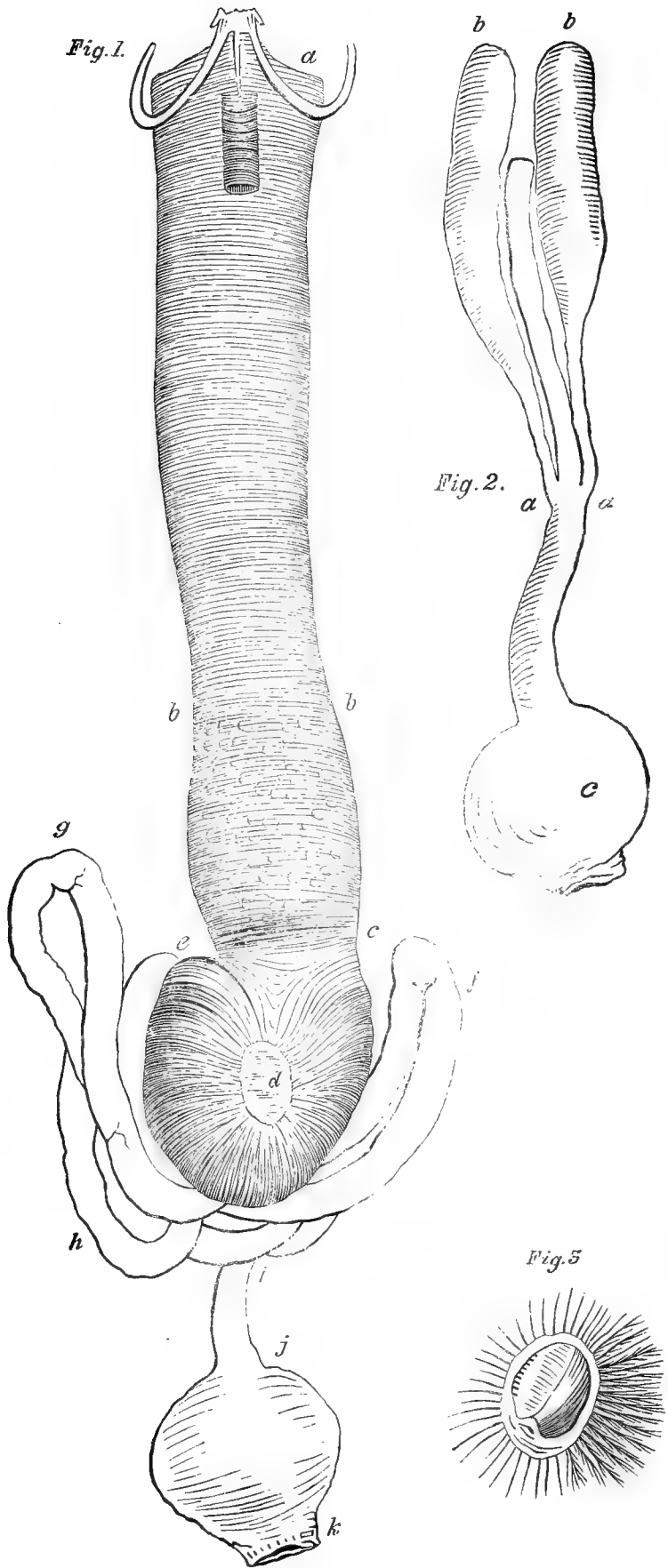
The palate is concave, with two longitudinal, parallel, papillate ridges. The posterior aperture of the nares is lanceolate, with an anterior fissure, the space between which and the lateral ridge is papillate. The tongue is short, fleshy, deeply emarginate and papillate at the

base, rounded and notched at the end ; its length $7\frac{1}{2}$ twelfths, its breadth $3\frac{1}{4}$ twelfths. The mouth is very wide, measuring 1 inch 1 twelfth across. The œsophagus, *a b c*, which is $4\frac{3}{4}$ inches in length, is of nearly uniform diameter, its greatest breadth being 11 twelfths, and at its entrance into the thorax 10 twelfths. Its walls are extremely thin ; but its longitudinal and transverse muscular fibres are distinctly seen. The proventricular glandules are very large and cylindrical, forming a belt, *b c*, 1 inch 1 twelfth in breadth. The stomach, *c d e*, is of moderate size, roundish, 1 inch 5 twelfths long, 1 inch $1\frac{1}{2}$ twelfth broad ; its walls very thin, the muscular coat being composed of slender fasciculi converging toward two roundish tendinous spaces ; the inner coat or epithelium very soft and rugous, but partially dissolved by the gastric juice. The pylorus has a semilunar margin, but is otherwise destitute of valve. The contents of the stomach are tufts of reddish hair, resembling that of some hare. The duodenum, *e f g*, which is $3\frac{1}{2}$ twelfths in diameter, curves backwards and upwards, running across to the left side, and returning upon itself opposite the fifth rib ; it then proceeds to the right side under the liver, receives the biliary ducts, passes behind and above the stomach, and forms three folds, terminating in the rectum, which is laterally curved, and ends in a globular cloaca, *j k*, 10 twelfths in diameter. The entire length of the intestine, *e f g h k*, is 18 inches, its diameter from 4 twelfths to $1\frac{1}{2}$ twelfth. The rectum is 2 inches long. The cœca, Fig. 2, *a b*, *a b*, are $2\frac{1}{4}$ inches in length, for 1 inch and 2 twelfths very narrow, their diameter varying from 1 to 2 twelfths, their greatest diameter 4 twelfths, their extremity blunt.

The aperture of the ear, Fig. 3, although very large, is inferior to that of many Owls of similar size. It is of an elliptical form, 5 twelfths in its greatest diameter, and 4 twelfths across.

The trachea is 3 inches long, flattened, its diameter nearly uniform, averaging 2 twelfths ; the rings moderately firm, 74 in number. The bronchi are long, slender, of about 20 very slender cartilaginous half rings. The contractor muscles are moderate, as are the sternotracheal. There is a single pair of flat inferior laryngeal muscles, going to the first and second bronchial rings.

HAWK OWL.



RUFF-NECKED HUMMING BIRD.

TROCHILUS RUFUS, GMEL.

PLATE CCCLXXIX. MALE AND FEMALE.

THIS charming Humming Bird was discovered by the great navigator, Captain Cook, who found it abundant at Nootka Sound. It does not appear to have been seen by Dr RICHARDSON or Mr DRUMMOND in the northern parts of America, traversed by those most zealous and highly talented naturalists. As no account has hitherto been given of its habits, the following notices from my friends Mr NUTTALL and Dr TOWNSEND, will, I doubt not, prove highly interesting.

“ We began,” says the first of these enterprising travellers, “ to meet with this species near the Blue Mountains of the Columbia River, in the autumn, as we proceeded to the west. These were all young birds, and were not very easily distinguished from those of the common species of the same age. We now for the first time (April 16.) saw the males in numbers, darting, burring, and squeaking in the usual manner of their tribe; but when engaged in collecting its accustomed sweets in all the energy of life, it seemed like a breathing gem, or magic carbuncle of glowing fire, stretching out its gorgeous ruff, as if to emulate the sun itself in splendour. Towards the close of May, the females were sitting, at which time the males were uncommonly quarrelsome and vigilant, darting out at me as I approached the tree probably near the nest, looking like an angry coal of brilliant fire, passing within very little of my face, returning several times to the attack, sinking and darting with the utmost velocity, at the same time uttering a curious reverberating sharp bleat, somewhat similar to the quivering twang of a dead twig, yet also so much like the real bleat of some small quadruped, that for some time I searched the ground instead of the air, for the actor in the scene. At other times, the males were seen darting up high in the air, and whirling about each other in great anger, and with much velocity. After these manœuvres the aggressor returned to the same dead twig, where for days he regularly took his station with all the courage and angry vigilance of a King-bird. The angry hissing or bleating note of this species seems something like *wht't't't sh vee*,

tremulously uttered as it whirls and sweeps through the air, like a musket-ball, accompanied also by something like the whirr of the Night Hawk. On the 29th of May, I found a nest of this species in a forked branch of the Nootka Bramble, *Rubus Nutkanus*. The female was sitting on two eggs, of the same shape and colour as those of the common species. The nest also was perfectly similar, but somewhat deeper. As I approached, the female came hovering round the nest, and soon after, when all was still, she resumed her place contentedly."

Dr TOWNSEND'S note is as follows:—"Nootka Sound Humming Bird, *Trochilus rufus*, *Ah-puets-Rinne* of the Chinooks. On a clear day the male may be seen to rise to a great height in the air, and descend instantly near the earth, then mount again to the same altitude as at first, performing in the evolution the half of a large circle. During the descent it emits a strange and astonishingly loud note, which can be compared to nothing but the rubbing together of the limbs of trees during a high wind. I heard this singular note repeatedly last spring and summer, but did not then discover to what it belonged. I did not suppose it to be a bird at all, and least of all a Humming Bird. The observer thinks it almost impossible that so small a creature can be capable of producing so much sound. I have never observed this habit upon a dull or cloudy day."

Mr NUTTALL having presented me with the nest of this species attached to the twig to which the bird had fastened it, my amiable friend Miss MARTIN has figured it for me, as well as the plant, about which these lovely creatures are represented. The nest, which measures two inches and a quarter in height, and an inch and three quarters in breadth, at the upper part, is composed externally of mosses, lichens, and a few feathers, with slender fibrous roots interwoven, and lined with fine cottony seed-down.

TROCHILUS RUFUS, *Gmel. Syst. Nat. vol. i. p. 497.*

TROCHILUS COLLARIS, *Lath. Ind. Ornith. vol. i. p. 318.*

TROCHILUS (SELASPHORUS) RUFUS, *Swainson.*

CINNAMON OR NOOTKA HUMMING BIRD, *Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 324.*

Adult Male. Plate CCCLXXIX. Figs. 1, 2.

Bill long, straight, subulate, somewhat depressed at the base, acute; upper mandible with the dorsal line straight, the ridge narrow at the

base, broad and convex toward the end, the sides convex, the edges overlapping, the tip acuminate; lower mandible with the angle very long and extremely narrow, the dorsal line straight, the edges erect, the tip acuminate. Nostrils basal, linear.

Head of ordinary size, oblong; neck short; body slender. Feet very small; tarsus very short, feathered more than half-way down, toes small; the lateral equal, the middle toe not much longer, the hind toe a little shorter than the lateral, anterior toes united at the base; claws rather long, arched, compressed, laterally grooved, very acute.

Plumage soft and blended; feathers on the throat, fore part and sides of the neck oblong-obovate, with the filaments towards the end thickened and flattened, with metallic gloss, those on the sides of the neck elongated and erectile. Wings rather short, extremely narrow, falcate, pointed; the primaries rapidly graduated, the second being longest, but only slightly longer than the first; these two quills taper to a point; the rest are broader, and gradually become less pointed; the secondaries are extremely short, and only five in number. Tail rather long, broad, graduated, the lateral feathers four and a half twelfths of an inch shorter than the central; the latter are extremely broad, measuring four and a half twelfths across, and the rest gradually diminish to the lateral, which are very narrow; all obtusely pointed.

Bill brownish-black; toes brown, claws dusky. The general colour of the upper parts is bright cinnamon or reddish-orange; the head bronzed green, the wings dusky, the coverts glossed with green, the primaries with purplish; each of the tail-feathers has a narrow longitudinal lanceolate median streak toward the end. The loreal space, a narrow band over the eye, another beneath it, and the auriculars are reddish-orange; the scale-like feathers of the throat and sides of the neck are splendid fire-red, purplish-red, yellowish-red, greenish-yellow or yellowish-green, according to the light in which they are viewed; behind them, on the lower part of the neck, is a broad band of reddish-white; the rest of the lower parts are like the upper, the abdomen inclining to white.

Length to end of tail $3\frac{7}{12}$ inches; bill along the ridge $\frac{7\frac{3}{4}}{12}$, along the edge of lower mandible $\frac{9\frac{1}{2}}{12}$; wing from flexure $1\frac{7\frac{1}{2}}{12}$; tail $1\frac{3\frac{1}{2}}{12}$; tarsus $\frac{1\frac{1}{2}}{12}$; hind toe $\frac{1\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; middle toe $\frac{2\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$.

Adult Female. Plate CCCLXXIX. Fig. 3.

The Female has the bill and feet coloured as in the male. The upper parts are gold-green, the head inclining to brown; the wings as in the male; the tail-feathers reddish-orange at the base, brownish-black toward the end, the tip white. The lower parts are white, tinged with rufous, of which colour, especially, are the sides; the throat marked with roundish spots of metallic greenish-red.

Length to end of tail $3\frac{7}{12}$ inches; bill along the ridge $\frac{88}{12}$; wing from flexure $1\frac{1}{2}$; tail $1\frac{1}{2}$.

The above descriptions are from two individuals shot by Dr TOWNSEND on the "Columbia River, 30th May 1835." A "young male, Columbia River, 29th May 1835," resembles the female as above described, differing only in having the metallic spots on the throat larger. A "young female, Columbia River, June 10th 1835," differs from the adult only in wanting the metallic spots on the throat, which is spotted with greenish-brown.

CLEOME HEPTAPHYLLA.

The beautiful plant represented in the plate belongs to *Tetradymia Siliquosa* of the Linnæan arrangement, and to the genus *Cleome*, characterized by having three nectariferous glandules at each corner of the calyx, the lower excepted; all the petals ascending; the germen stipitate; the siliqua unilocular, two-valved. The species, *C. heptaphylla*, is distinguished by its septenate leaves, of which the leaflets are lanceolate, acuminate, and of a deep green colour. It grows in South Carolina and Georgia.

TENGMALM'S OWL.

STRIX TENGMALMI, GMEL.

PLATE CCCLXXX. MALE AND FEMALE.

I procured a fine male of this species at Bangor, in Maine, on the Penobscot River, in the beginning of September 1832: but am unacquainted with its habits, never having seen another individual alive. Dr TOWNSEND informs me that he found it first on the Malade River Mountains, where it was so tame and unsuspecting, that Mr NUTTALL was enabled to approach within a few feet of it, as it sat upon the bushes. Dr RICHARDSON gives the following notice respecting it in the *Fauna Boreali-Americana*:—"When it accidentally wanders abroad in the day, it is so much dazzled by the light of the sun as to become stupid, and it may then be easily caught by the hand. Its cry in the night is a single melancholy note, repeated at intervals of a minute or two. Mr HUTCHINS informs us that it builds a nest of grass half-way up a pine tree, and lays two white eggs in the month of May. It feeds on mice and beetles. I cannot state the extent of its range, but believe that it inhabits all the woody country from Great Slave Lake to the United States. On the banks of the Saskatchewan it is so common that its voice is heard almost every night by the traveller, wherever he selects his bivouac."

STRIX TENGMALMI, *Gmel. Syst. Nat.* vol. i. p. 291.—*Lath. Ind. Ornith.* vol. i. p. 65.

STRIX TENGMALMI, TENGMALM'S OWL, *Swains. and Richards. Fauna Bor.-Amer* vol. ii. p. 94.

Adult Male. Plate CCCLXXX. Fig. 1.

Bill short, very deep, strong; upper mandible with its dorsal line curved from the base, its ridge convex, as are the sides, the edges sharp and incurved anteriorly, the tip very acute, and at its extremity nearly perpendicular; the cere short, and bare on its upper part; the lower mandible has the angle broad and short, the dorsal line slightly convex,

the edges inflected, towards the end incurved, with a notch on each side close to the abruptly-rounded tip. Nostrils broadly elliptical, oblique, in the fore part of the cere, which bulges considerably behind them.

The head is extremely large, roundish, when viewed from above somewhat triangular; the eyes large. The conch of the ear very large, of an elliptical form, extending from the base of the lower jaw to near the top of the head, being an inch and a quarter in length, with an anterior semicircular operculum stretching along its whole length, and an elevated margin behind. The neck is very short and thin; the body very slender; but both appear very full on account of the vast mass of plumage. The feet are rather short, and strong; the tarsi and toes covered with very soft downy feathers, the extremities of the latter with two scutella. The claws are slender, tapering to a fine point, compressed, and curved.

The facial disk is complete, as is the ruff. The plumage is full, very soft, and blended; the feathers broadly oblong and rounded. The wings are rather long, very broad, much rounded; the third primary longest, the fourth almost equal, the second four-twelfths of an inch shorter, the first equal to the seventh; the barbs of the outer web of the first, of half the second, and the terminal part of the third, free and recurved. Tail of moderate length, arched, slightly rounded, of twelve broad, rounded feathers.

Bill greyish-brown, yellowish-white at the end; claws yellowish-brown, their tips dusky. The general colour of the upper parts is greyish-brown tinged with olive. The feathers of the head have an elliptical central white spot; those of the neck are similarly marked with larger white spots, of which some are disposed so as to form a semicircular band; the scapulars have two or four large round spots near the end, and some of the dorsal feathers and wing-coverts have single spots on the outer web. All the quills have marginal white spots on both webs, arranged in transverse series, there being six on the outer web of the third quill. On the tail are five series of transversely elongated narrow white spots. The disk is yellowish-white, anteriorly black; the ruff yellowish-white, mottled with dusky. The throat is brown, the chin white. The general colour of the lower parts is yellowish-white, longitudinally streaked with brown, some of the feathers of the sides

have two white spots near the end; the tarsal and digital feathers greyish-yellow, with faint transverse bars of brown.

Length to end of tail 11 inches; wing from flexure $6\frac{1}{2}$; bill along the ridge 1; tarsus $1\frac{1}{2}$; hind toe $\frac{3}{2}$, its claw $\frac{5}{2}$; middle toe $\frac{9}{2}$, its claw $\frac{8}{2}$.

Adult Female. Plate CCCLXXX. Fig. 2.

The Female resembles the male, but is considerably larger.

SNOW GOOSE.

ANSER HYPERBOREUS, BONAP.

PLATE CCCLXXXI. ADULT MALE AND YOUNG FEMALE.

THE geographical range of the Snow Goose is very extensive. It has been observed in numerous flocks, travelling northward, by the members of the recent overland expeditions. On the other hand, I have found it in the Texas, and it is very abundant on the Columbia River, together with Hutchins's Goose. In the latter part of autumn, and during winter, I have met with it in every part of the United States that I have visited.

While residing at Henderson on the Ohio, I never failed to watch the arrival of this and other species in the ponds of the neighbourhood, and generally found the young Snow Geese to make their appearance in the beginning of October, and the adult or white birds about a fortnight later. In like manner, when migrating northward, although the young and the adult birds set out at the same time, they travel in separate flocks, and, according to Captain Sir GEORGE BACK, continue to do so even when proceeding to the higher northern latitudes of our continent. It is not less curious that, during the whole of the winter, these Geese remain equally divided, even if found in the same localities; and although young and old are often seen to repose on the same sand-bar, the flocks keep at as great a distance as possible.

The Snow Goose in the grey state of its plumage is very abundant in winter, about the mouths of the Mississippi, as well as on all the muddy and grassy shores of the bays and inlets of the Gulf of Mexico, as far as the Texas, and probably still farther to the south-west. During the rainy season, it betakes itself to the large prairies of Attacapas and Oppellousas, and there young and adult procure their food together, along with several species of Ducks, Herons, and Cranes, feeding, like the latter, on the roots of plants, and nibbling the grasses sideways, in the manner of the Common Tame Goose. In Louisiana I have not unfrequently seen the adult birds feeding in wheat fields, when they pluck up the plants entire.

When the young Snow Geese first arrive in Kentucky, about Hen-

derson for instance, they are unsuspecting, and therefore easily procured. In a half-dry half-wet pond, running across a large tract of land, on the other side of the river, in the State of Indiana, and which was once my property, I was in the habit of shooting six or seven of a-day. This, however, rendered the rest so wild, that the cunning of any "Red Skin" might have been exercised without success upon them; and I was sorry to find that they had the power of communicating their sense of danger to the other flocks which arrived. On varying my operations however, and persevering for some time, I found that even the wildest of them now and then suffered; for having taken it into my head to catch them in large traps, I tried this method, and several were procured before the rest had learned to seize the tempting bait in a judicious manner.

The Snow Goose affords good eating when young and fat; but the old Ganders are tough and stringy. Those that are procured along the sea-shores, as they feed on shell-fish, fry and marine plants, have a rank taste, which, however suited to the palate of the epicure, I never could relish.

The flight of this species is strong and steady, and its migrations over the United States are performed at a considerable elevation, by regular flappings of the wings, and a disposition into lines similar to that of other Geese. It walks well, and with rather elevated steps; but on land its appearance is not so graceful as that of our common Canada Goose. Whilst with us they are much more silent than any other of our species, rarely emitting any cries unless when pursued on being wounded. They swim buoyantly, and, when pressed, with speed. When attacked by the White-headed Eagle, or any other rapacious bird, they dive well for a short space. At the least appearance of danger, when they are on land, they at once come close together, shake their heads and necks, move off in a contrary direction, very soon take to wing, and fly to a considerable distance, but often return after a time.

I am unable to inform you at what age the Snow Goose attains its pure white plumage, as I have found that a judgment formed from individuals kept in confinement is not to be depended upon. In one instance at least, a friend of mine who had kept a bird of this species four years, wrote to me that he was despairing of ever seeing it become pure white. Two years after, he sent me much the same message;

but, at the commencement of next spring, the Goose was a Snow Goose, and the change had taken place in less than a month.

Dr RICHARDSON informs us that this species "breeds in the barren grounds of Arctic America, in great numbers. The eggs, of a yellowish-white colour, and regularly ovate form, are a little larger than those of the Eider Duck, their length being three inches, and their greatest breadth two. The young fly in August, and by the middle of September all have departed to the southward. The Snow Goose feeds on rushes, insects, and in autumn on berries, particularly those of the *Empetrum nigrum*. When well fed it is a very excellent bird, far superior to the Canada Goose in juiciness and flavour. It is said that the young do not attain the full plumage before their fourth year, and until that period they appear to keep in separate flocks. They are numerous at Albany Fort in the southern part of Hudson's Bay, where the old birds are rarely seen; and, on the other hand, the old birds in their migrations visit York Factory in great abundance, but are seldom accompanied by the young. The Snow Geese make their appearance in spring a few days later than the Canada Geese, and pass in large flocks both through the interior and on the coast."

The young birds of this species begin to acquire their whiteness about the head and neck after the first year, but the upper parts remain of a dark bluish colour until the bird suddenly becomes white all over; at least, this is the case with such as are kept in captivity. Although it is allied to the White-fronted or Laughing Goose, *Anser albifrons*, I was surprised to find that WILSON had confounded the two species together, and been of opinion that the Bean Goose also was the same bird in an imperfect state of plumage. That excellent ornithologist tells us that "this species, called on the sea-coast, the Red Goose, arrives in the river Delaware, from the north, early in November, sometimes in considerable flocks, and is extremely noisy, their notes being shriller and more squeaking than those of the Canada, or common Wild Goose. On their first arrival, they make but a short stay, proceeding, as the depth of winter approaches, farther south; but from the middle of February, until the breaking up of the ice in March, they are frequently numerous along both shores of the Delaware, about and below Reedy Island, particularly near Old Duck Creek, in the State of Delaware. They feed on roots of the reeds there, which they tear up like hogs."

This species is rare both in Massachusetts and South Carolina, although it passes over both these States in considerable numbers, and in the latter some have been known to alight among the common domestic Geese, and to have remained several days with them. My friend Dr BACHMAN, of Charleston, South Carolina, kept a male Snow Goose several years along with his tame Geese. He had received it from a friend while it was in its grey plumage, and the following spring it became white. It had been procured in the autumn, and proved to be a male. In a few days it became very gentle, and for several years it mated with a common Goose; but the eggs produced by the latter never hatched. The Snow Goose was in the habit of daily frequenting a mill-pond in the vicinity, and returning regularly at night along with the rest; but in the beginning of each spring it occasioned much trouble. It then continually raised its head and wings, and attempted to fly off; but finding this impossible, it seemed anxious to perform its long journey on foot, and it was several times overtaken and brought back, after it had proceeded more than a mile, having crossed fences and plantations in a direct course northward. This propensity cost it its life: it had proceeded as far as the banks of the Cooper River, when it was shot by a person who supposed it to be a wild bird.

In the latter part of the autumn of 1832, whilst I was walking with my wife, in the neighbourhood of Boston in Massachusetts, I observed on the road a young Snow Goose in a beautiful state of plumage, and after making some inquiries, found its owner, who was a gardener. He would not part with it for any price offered. Some weeks after, a friend called one morning, and told me that this gardener had sent his Snow Goose to town, and that it would be sold by auction that day. I desired my friend to attend the sale, which he did; and before a few hours had elapsed, the bird was in my possession, having been obtained for 75 cents! We kept this Goose several months in a small yard at the house where we boarded, along with the young of the Sand-hill Crane, *Grus Americana*. It was fed on leaves and thin stalks of cabbage, bread, and other vegetable substances. When the spring approached, it exhibited great restlessness, seeming anxious to remove northward, as was the case with Dr BACHMAN's bird. Although the gardener had kept it four years, it was not white, but had the lower part of the neck and the greater portion of the back, of a dark bluish tint, as represented in the plate. It died before we left Boston, to the

great regret of my family, as I had anticipated the pleasure of presenting it alive to my honoured and noble friend the EARL of Derby.

There can be little doubt that this species breeds in its grey plumage, when it is generally known by the name of Blue-winged Goose, as is the case with the young of *Grus Americana*, formerly considered as a distinct species, and named *Grus Canadensis*.

ANAS HYPERBOREA, *Gmel. Syst. Nat.* vol. i. p. 504.—*Lath. Ind. Orn.* vol. ii. p. 837.

SNOW GOOSE, ANAS HYPERBOREA, *Wils. Amer. Ornith.* vol. viii. p. 76, pl. 68, fig. 3,

Male, and p. 89, pl. 69, fig. 5, Young.

ANSER HYPERBOREUS, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 376.

ANSER HYPERBOREUS, SNOW GOOSE, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 467.

SNOW GOOSE, *Nuttall, Manual*, vol. ii. p. 344.

Adult Male. Plate CCCLXXXI. Fig. 1.

Bill about the length of the head, much higher than broad at the base, somewhat conical, compressed, rounded at the tip. Upper mandible with the dorsal line sloping, the ridge broad and flattened at the base, narrowed towards the unguis, which is roundish and very convex, the edges beset with compressed, hard teeth-like lamellæ, their outline ascending and slightly arched; lower mandible ascending, nearly straight, the angle long and of moderate length, the dorsal line beyond it convex, the sides erect, and beset with lamellæ similar to those of the upper, but more numerous, the unguis obovate and very convex. Nasal groove oblong, parallel to the ridge, filled by the soft membrane of the bill; nostrils medial, lateral, longitudinal, narrow-elliptical, open, pervious.

Head of moderate size, oblong, compressed. Neck rather long and slender. Body full, slightly depressed. Feet rather short, strong, placed about the centre of the body; legs bare a little above the joint; tarsus rather short, strong, a little compressed, covered all round with hexagonal, reticulated scales, which are smaller behind; hind toe very small, with a narrow membrane; third toe longest, fourth considerably shorter, but longer than the second; all the toes reticulated above at the base, but with narrow transverse scutella towards the end; the three anterior connected by a reticulated membrane, the outer having a thick margin, the inner with the margin extended into a two-lobed web. Claws small, arched, rather compressed, obtuse, that of the middle toe bent obliquely outwards, and depressed, with a curved edge.

Plumage close, full, compact above, blended beneath, as well as on the head and neck, on the latter of which it is disposed in longitudinal bands, separated by narrow grooves; the feathers of the lateral parts small and narrow, of the back ovato-oblong, and abruptly rounded, of the lower parts curved and oblong. Wings rather long, broad; primaries strong, incurved, broad, towards the end tapering, the second longest, but only a quarter of an inch longer than the first, which scarcely exceeds the third; the first and second sinuate on the inner web, the second and third on the outer. Secondaries long, very broad, rounded, the inner curved outwards. Tail very short, rounded, of sixteen broad rounded feathers.

Bill carmine-red, the unguis of both mandibles white, their edges black. Iris light brown. Feet dull lake, claws brownish-black. The general colour of the plumage is pure white; the fore part of the head tinged with yellowish-red; the primaries brownish-grey, towards the end blackish-brown, their shafts white unless toward the end.

Length to end of tail $31\frac{3}{4}$ inches, to end of claws $33\frac{1}{2}$, to end of wings $31\frac{3}{4}$, to carpus 14; extent of wings 62; wing from flexure $19\frac{1}{2}$; tail $6\frac{1}{4}$; bill along the ridge $2\frac{5}{8}$, along the edge of lower mandible $3\frac{1}{4}$; bare part of tibia $\frac{3}{4}$; tarsus $3\frac{5}{8}$; hind toe $\frac{1}{2}$, its claw $\frac{4}{12}$; middle toe 3, its claw $\frac{4}{12}$. Weight $6\frac{3}{4}$ lb.

Young Female, in first winter. Plate CCCLXXXI. Fig. 2.

The colours of the young bird, in its first plumage, are unknown; but in its second plumage, in autumn and winter, it presents the appearance exhibited in the plate. The bill is pale flesh-colour, its edges black, and the unguis bluish-white; the feet flesh-colour, the claws dusky. The head and upper part of the neck are white, tinged above with grey, the lower part of the neck all round, the fore part of the back, the scapulars, the fore part of the breast, and the sides, blackish-grey; paler beneath. The hind part of the back and the upper tail-coverts, are ash-grey; as are the wing-coverts; but the secondary coverts are greyish-black in the middle; and all the quills are of that colour, the secondaries margined with greyish-white; the tail-feathers dusky-grey, broadly margined with greyish-white. The dark colour of the fore part of the breast gradually fades into greyish-white, which is the colour of the other inferior parts, excepting the axillar feathers, and some of the lower wing-coverts, which are white.

Length of an individual in this plumage, kept four years, to end of tail 26 inches, to end of claws 25; extent of wings 55; bill along the ridge $2\frac{1}{4}$, from frontal angle $2\frac{1}{2}$; tarsus $2\frac{7}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{4}{12}$; middle toe $2\frac{1}{4}$, its claw $\frac{4}{12}$. Weight 2 lb. 13 oz. The bird very poor.

In an adult male preserved in spirits, the roof of the mouth is moderately concave, with five series of strong conical papillæ directed backwards. The posterior aperture of the nares is linear, margined with two series of extremely slender papillæ. The marginal lamellæ of the upper mandible are 25, of the lower about 45. The tongue is 2 inches $\frac{5}{12}$ long, nearly cylindrical, with strong pointed papillæ at the base, and on each side a series of flattened, sharp lamellæ, directed backwards, together with very numerous bristle-like filaments. It is fleshy, has a soft prominent pad at the base above, and towards the end has a median groove, the point rounded, thin, and horny. The cesophagus, which is 17 inches long, has a diameter of $\frac{9}{12}$ at the upper part, and at the lower part of the neck is dilated to 1 inch. The proventricular glands are cylindrical, simple, and arranged in a belt nearly 1 inch in breadth. The other parts were removed.

The reddish tint on the head affords no indication of the age of the bird, some individuals of all ages having that part pure white, while others have it rusty. The same remark applies to our two Swans.

SHARP-TAILED GROUS.

TETRAO PHASIANELLUS, LINN.

PLATE CCCLXXXII. MALE AND FEMALE.

THIS is another species of our birds with the habits of which I am entirely unacquainted. Dr RICHARDSON's account of it is as follows:— "The northern limits of the range of the Sharp-tailed Grouse is Great Slave Lake, in the sixty-first parallel; and its most southern recorded station is in latitude 41°, on the Missouri. It abounds on the outskirts of the Saskatchewan plains, and is found throughout the woody districts of the Fur Countries, haunting open glades or low thickets on the borders of lakes, particularly in the neighbourhood of the trading paths, where the forests have been partially cleared. In winter it perches generally on trees, in summer is much on the ground; in both seasons assembling in coveys of from ten to sixteen. Early in spring, a family of these birds select a level spot, whereon they meet every morning, and run round in a circle of fifteen or twenty feet in diameter, so that the grass is worn quite bare. When any one approaches the circle, the birds squat close to the ground, but in a short time stretch out their necks to survey the intruder; and, if they are not scared by a nearer advance, soon resume their circular course, some running to the right, others to the left, meeting and crossing each other. These "Partridge dances" last for a month or more, or until the hens begin to hatch. When the Sharp-tailed Grouse are put up, they rise with the usual whirring noise, and alight again at the distance of a few hundred yards, either on the ground, or on the upper branches of a tree. Before the cock quits his perch, he utters repeatedly the cry of *cuck, cuck, cuck*. In winter they roost in the snow like the Willow Grouse, and they can make their way through the loose wreaths with ease. They feed on the buds and sprouts of the *Betula glandulosa*, of various willows, and of the aspen and larch; and in autumn on berries. Mr HUTCHINS says that the hen lays thirteen white eggs with coloured spots early in June; the nest being placed on the ground and formed of grass, lined with feathers."

Dr TOWNSEND informs me that while crossing the north branch of

the Platte (Lorimie's Fork), he found this species breeding, and that as an article of food it proved to be a very well-flavoured and plump bird, considerably superior to any of the other larger species that occur in the United States.

TETRAO PHASIANELLUS, *Linn. Syst. Nat.* vol. i. p. 273.—*Lath. Ind. Ornith.* vol. ii. p. 635.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 127.

TETRAO PHASIANELLUS, SHARP-TAILED GROUS, *Ch. Bonaparte, Amer. Ornith.* vol. iii. p. 37, pl. 19.

TETRAO (CENTROCERCUS) PHASIANELLUS, *Swains. Sharp-tailed Grouse, Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 361.

SHARP-TAILED GROUS, *Nuttall, Manual*, vol. i. p. 669.

Adult Male. Plate CCCLXXXII. Fig. 1.

Bill short, strong, as broad as high; upper mandible with the dorsal line arcuato-declinate, the ridge narrow at the base on account of the great extent of the nasal sinus, which is feathered, the sides convex toward the end, the edges overlapping and thin, the tip declinate and blunt, but thin-edged; lower mandible with the angle of moderate length and width, the dorsal line ascending and convex, the edges sharp and inclinate, the tip obtuse.

Head rather small, oblong; neck of moderate length; body full. Feet rather short, stout; tarsus roundish, feathered, bare and reticulated behind. Toes of moderate size, with numerous scutella above, but covered over at the base by the hair-like feathers which grow from the sides and the intervening basal membranes, laterally pectinate with long slender projecting flattened scales; first toe small, second a little longer than fourth, third much longer. Claws slender, arched, moderately compressed, rather obtuse; that of the third toe with the inner edge dilated.

Plumage dense, soft, rather compact, the feathers in general broadly ovate; those on the head and upper part of the neck short, but some on the upper and hind part of the former elongated and forming a slight crest. There is a papillate coloured membrane over the eye, as in the other species; and on each side of the neck is a large bare space, concealed by the plumage, which I have no doubt is inflated, as in *Tetrao Cupido* and *T. Urophasianus*, during the love season. Wings rather short, concave, much rounded; the primaries stiff and very narrow, so as to leave large intervals when the wing is extended; the third quill longest,

the fourth next, the second shorter than the fifth, the sixth longer than the first. Tail short, much graduated, of sixteen feathers, of which the lateral are three inches shorter than the central; all the feathers are more or less concave, excepting the two middle worn along the inner edge, obliquely and abruptly terminated, the two middle projecting an inch beyond the next.

Bill dusky above, brown beneath; iris light hazel; superciliary membrane vermilion; toes brownish-grey, claws brownish-black. The upper parts are variegated with light red or brownish-orange, brownish-black and white; the black occupying the central part of the feathers, the light red forming angular processes from the margin, generally dotted with black, and a lighter bar near the end; the white being in terminal, triangular, or guttiform spots on the scapulars and wing-coverts. The alula, primary coverts, secondary coverts, and quills are greyish-brown, the coverts spotted and tipped with white; the primaries with white spots on the outer web, the inner tipped with white, as are all the secondaries, of which the outer have two bars of white spots, and the inner are coloured like the back. The tail is white, at the base variegated, and the two middle feathers like the back. Loral space, and a line behind the eye, white; a dusky streak beneath the eye, succeeded by a light coloured one. The throat is reddish-white, with some dusky spots; the fore part and sides of the neck barred with dusky and reddish-white; on the lower part of the neck and fore part of the breast, the dusky bars become first curved, and then arrow-shaped, and so continue narrowing on the hind part of the breast, and part of the sides, of which the upper portion is barred; the abdomen, lower tail-coverts, axillar feathers, and most of the lower wing-coverts, white. The hair-like feathers of the tarsi are light brownish-grey, faintly barred with greyish-white.

Length to end of tail $17\frac{1}{2}$ inches, to end of wings 14, to end of claws 17; extent of wings 23; wing from flexure $8\frac{1}{4}$, tail $4\frac{1}{2}$; bill along the ridge $\frac{10\frac{1}{2}}{12}$, along the edge of lower mandible $1\frac{1\frac{1}{2}}{12}$; tarsus $1\frac{7\frac{1}{2}}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{6}{12}$; middle toe $1\frac{7\frac{1}{2}}{12}$, its claw $\frac{7}{12}$.

Adult Female. Plate CCCLXXXII. Fig. 2.

The Female is considerably smaller, but is coloured like the male, the tints being duller.

LONG-EARED OWL.

STRIX OTUS, LINN.

PLATE CCCLXXXIII. MALE.

THIS Owl is much more abundant in our Middle and Eastern Atlantic Districts than in the Southern or Western parts. My friend Dr BACHMAN has never observed it in South Carolina; nor have I met with it in Louisiana, or any where on the Mississippi below the junction of the Ohio. It is not very rare in the upper parts of Indiana, Illinois, Ohio, and Kentucky, wherever the country is well wooded. In the Barrens of Kentucky its predilection for woods is rendered apparent by its not being found elsewhere than in the "Groves;" and it would seem that it very rarely extends its search for food beyond the skirts of those delightful retreats. In Pennsylvania, and elsewhere to the eastward, I have found it most numerous on or near the banks of our numerous clear mountain streams, where, during the day, it is not uncommon to see it perched on the top of a low bush or fir. At such times it stands with the body erect, but the tarsi bent and resting on a branch, as is the manner of almost all our Owls. The head then seems the largest part, the body being much more slender than it is usually represented. Now and then it raises itself and stands with its legs and neck extended, as if the better to mark the approach of an intruder. Its eyes, which were closed when it was first observed, are opened on the least noise, and it seems to squint at you in a most grotesque manner, although it is not difficult to approach very near it. It rarely on such occasions takes to wing, but throws itself into the thicket, and makes off on foot by means of pretty long leaps.

I have never seen this bird moving on wing to a sufficient distance to enable me to speak with certainty of its mode of flight, especially as it is one of our most nocturnal species, seldom beginning to seek for prey before it is quite dusky. In the morning I have never seen one abroad at however early an hour I have been on the look-out.

The Long-eared Owl is careless as to the situation in which its young are to be reared, and generally accommodates itself with an abandoned nest of some other bird that proves of sufficient size, whe-

ther it be high or low, in the fissure of a rock or on the ground. Sometimes however it makes a nest itself, and this I found to be the case in one instance near the Juniatta River in Pennsylvania, where it was composed of green twigs with the leaflets adhering, and lined with fresh grass and sheep wool, but without feathers. The eggs are usually four, nearly equally rounded at both ends, thin-shelled, smooth, when newly deposited pure white, with a slight blush, which is no longer observable when they have been for some time sitten upon, their average length an inch and a half, their greatest breadth an inch and three-sixteenths. I found eggs of this bird on the 15th of April, and again on the 25th of June, which induces me to believe that it rears two broods in the season in the State of Pennsylvania, as it probably does also to the westward. WILSON relates the following instance of its indifference as to the place selected for its eggs. "About six or seven miles below Philadelphia, and not far from the Delaware, is a low swamp, thickly covered with trees, and inundated during great part of the year. This place is the resort of great numbers of the Qua-bird or Night Raven (*Ardea Nycticorax*), where they build in large companies. On the 25th of April, while wading among the dark recesses of this place, observing the habits of these birds, I discovered a Long-eared Owl, which had taken possession of one of their nests, and was sitting; on mounting to the nest, I found it contained four eggs, and breaking one of these, the young appeared almost ready to leave the shell. There were numbers of the Qua-birds' nests on the adjoining trees all around, and one of them actually on the same tree."

When encamped in the woods, I have frequently heard the notes of this bird at night. Its cry is prolonged and plaintive, though consisting of not more than two or three notes repeated at intervals.

Dr RICHARDSON states that it has been found "as far north as Lat. 60°, and probably exists as high as the forests extend. It is plentiful in the woods skirting the plains of the Saskatchewan, frequents the coast of Hudson's Bay only in the summer, and retires into the interior in the winter. It resides all the year in the United States, and perhaps is not a rare bird in any part of North America; but as it comes seldom abroad in the day, fewer specimens are obtained of it than of the other Owls. It preys chiefly on quadrupeds of the genus *Arvicola*, and in summer destroys many beetles. It lays three or four roundish white eggs, sometimes on the ground, at other times in the deserted nests of

other birds in low bushes. Mr HUTCHINS says it lays in April, and that the young fly in May; and Mr DRUMMOND found a nest on the ground in the same neighbourhood, containing three eggs, on the 5th of July, and killed both the birds. On comparing the above-mentioned eggs with those of the English Long-eared Owl, the American ones proved to be smaller, measuring only an inch and a half in length, and 1.27 inches in breadth; while the English ones measured 1.8 inch in length, and $1\frac{1}{4}$ in breadth. The form and colour were the same in both."

The food of this Owl consists of rats, mice, and other small quadrupeds, as well as birds of various species; its stomach having been found by me crammed with feathers and other remains of the latter.

There is a marked difference between the sexes. The males are not only smaller than the females, but darker; and this has tempted me to consider the *Strix Mexicanus* of Mr SWAINSON and the Prince of MUSIGNANO as merely a large female of our Long-eared Owl.

STRIX OTUS, *Linn. Syst. Nat.* vol. i. p. 132.—*Lath. Ind. Ornith.* vol. i. p. 53.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 37.

LONG-EARED OWL, STRIX OTUS, *Wils. Amer. Ornith.* vol. vi. p. 52, pl. 50, fig. 1.

STRIX OTUS, LONG-EARED OWL, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 72.

LONG-EARED OWL, *Nuttall, Manual*, vol. i. p. 130.

Adult Male. Plate CCCLXXXIII.

Bill short, stout; upper mandible with its dorsal line slightly curved from the base, towards the end decurved, the ridge broad at the base, narrowed anteriorly, convex in its whole extent, the sides sloping at the base, convex towards the tip, the edges soft and obtuse as far as the nostrils, then sharp and barred to the end, below the nostrils inflected, afterwards direct, the tip acute, and at its extremity descending obliquely; the cere of moderate length, feathered on the sides; the lower mandible straight, its angle elongated, wide, and rounded, the dorsal line very short and slightly convex, the back and sides convex, the edges toward the end sharp and inflected, their outline decurved and with a slight sinus on each side, the tip obliquely truncate. Nostrils medial, lateral, large, oblique, oblong, in the fore edge of the cere,

with a tough soft membrane above, and having internally a ridge curved backwards from the inner edge.

Head very large, flattened anteriorly ; neck short ; body very slender, but seeming large on account of the great mass of plumage. Feet of moderate length, and stout ; tarsi feathered, short ; toes also short, and feathered ; the third and fourth connected at the base by a short web ; the first shortest, and admitting of much lateral motion, the third longest, the second and fourth nearly equal. On all the toes are two terminal scutella. Claws long, curved in the fourth of a circle, tapering, extremely acute, rounded above, very narrow beneath, the first and second rounded, the rest flat ; that of the fourth toe smallest, of the first slightly larger, those of the other toes much larger and nearly equal.

Plumage extremely soft and downy. The facial disks complete, and composed of circular series of weak, slender, slightly recurved feathers, having remote barbs ; surrounding which is a ruff formed of several rows of oblong incurved feathers, having the barbs close. The feathers of the forehead are apparent between the ruffs, although that part is very narrow ; the bill is partially concealed by the plumage ; the feathers are oblong or ovate, and rounded, extremely soft, and blended, those on the tarsi and toes, small, and somewhat silky. Wings long and broad ; primaries very broad, rounded, the outer a little incurved towards the end, the first sinuate on the inner web near the end, the second very slightly so ; the second longest, the third a little shorter, the fourth a little longer than the first ; the outer in its whole length, the second towards the end, and the first alular feather, with the barbs disunited and recurved at the ends. Tail rather short, slightly convex, a little rounded, of twelve broad rounded feathers, having feeble shafts.

Bill brownish-black, cere flesh-coloured ; iris orange ; claws bluish-grey, dusky towards the end. The colouring of the plumage is very intricate, but may be described as buff, mottled and spotted with brown and greyish-white. The disks are whitish anteriorly, with the tips black, posteriorly reddish-white ; the ruff mottled with red and black ; the upper part of the head, minutely mottled with whitish, brownish-black, and light red ; the tufts light reddish toward the base, brownish-black in the central part toward the end, the inner edge white, dotted with dark-brown. The upper parts are buff, variegated with brown and whitish-grey, minutely mottled or undulatingly barred. The first

row of coverts tipped with white on the outer web; the edge of the wing and the outer margin of the first alular feather also white; the alula and primary coverts greyish-brown barred with darker; the quills and scapulars pale grey, barred with dark brown, and having more or less buff towards the base of the outer web, that colour being conspicuous on the six outer primaries. The tail is barred and mottled in the same manner, the bars very narrow, ten on the middle and eight on the outer feathers. The lower parts are in general similar to the upper, but with more buff, and fewer spots, each feather with a long dark brown streak and several irregular transverse bars. The legs and toes are pure buff. The lower surface of the wing is yellowish-white, a few of the coverts with a brown spot; the quills banded with brown towards the end. The lower tail-coverts have a narrow central brown line.

Length to end of tail $14\frac{1}{2}$ inches, to end of claws $14\frac{3}{4}$, to end of wings 15; extent of wings 38; wing from flexure $11\frac{1}{2}$; tail 6; bill along the ridge $1\frac{5}{12}$; tarsus $1\frac{8}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{8}{12}$; second toe 1, its claw $\frac{9}{12}$; third toe $1\frac{2}{12}$, its claw $\frac{10}{12}$; fourth toe $\frac{8}{12}$, its claw $\frac{7}{12}$. Weight 8 oz.

The Female is considerably larger, and of a lighter colour than the male, but otherwise similar.

A male sent in spirits from Boston by Dr BREWER:—The roof of the mouth is flat, with two longitudinal ridges, the sides ascending; the posterior aperture of the nares oblong, 4 twelfths long, with an anterior fissure. The tongue is $7\frac{1}{2}$ twelfths long, deeply emarginate and papillate at the base, flattish above, with a faint median groove, the sides parallel, the tip narrowed and emarginate. The mouth is very wide, measuring 1 inch and $1\frac{1}{2}$ twelfth. The œsophagus is $5\frac{1}{2}$ inches long, of nearly uniform diameter throughout, as in all other Owls, its breadth being 1 inch. The proventricular glandules form a belt 9 twelfths in diameter. The stomach is large, round, 1 inch 9 twelfths long, 1 inch 7 twelfths broad, its walls thin, its muscular coat composed of rather coarse fasciculi, but without distinction into lateral muscles, the tendinous spaces circular, and about 8 twelfths in diameter; its epithelium soft and rugous. The duodenum is 3 twelfths in diameter, and curves at the distance of 3 inches from the pylorus.

The intestine is 23 inches long, its smallest diameter only 1 twelfth. The cœca, Fig. 2, are in this individual unequal, as they very frequently are in Owls; the largest being 2 inches 10 twelfths in length, their greatest diameter $5\frac{1}{2}$ twelfths, their distance from the anus 3 inches and a quarter. The cloaca is of an enormous size, ovate, 2 inches long, 1 inch 2 twelfths broad. It contains a calculous concretion 9 twelfths long, 7 twelfths broad, and 3 twelfths thick.

The trachea, which is 3 inches long, is $3\frac{1}{2}$ twelfths in breadth at the upper part, $2\frac{1}{2}$ twelfths in the middle, and 3 twelfths at its lower extremity; its rings about 75 in number, cartilaginous, and considerably flattened. The lateral muscles are strong, the sterno-tracheal moderate, and there is a single pair of very slender inferior laryngeal muscles. Five of the lower rings are elongated, arched, and slit. The bronchi are rather long, of 12 half rings.

The conch of the ear, Fig. 1, is of enormous size, extending from the level of the forehead over the eye to the chin, in a semilunar form, of which the posterior curve is 3 inches, and the distance between the two extremities in a direct line 1 inch and a half. There is an anterior semicircular flap in its whole length, 5 twelfths in breadth at the middle. The aperture or meatus externus is of a rhomboidal form $4\frac{1}{2}$ twelfths in length, $3\frac{1}{2}$ twelfths broad, bounded anteriorly by the eye, posteriorly by a ligament extended along the edge of the occipital bone, above by a ligament stretching to the operculum, below the articulation of the lower jaw. Above the meatus is a deep depression covered with skin, above which another ligament stretches across to the operculum.

In another specimen, a female, the œsophagus is $5\frac{1}{2}$ inches long, its average diameter 11 twelfths. The intestine is 21 inches long, from $2\frac{1}{2}$ twelfths to 1 twelfth in diameter; the cœca are $2\frac{1}{4}$ inches in length; their greatest diameter 4 twelfths; the cloaca still larger than that of the other individuals, being 2 inches long.

Fig. 1.

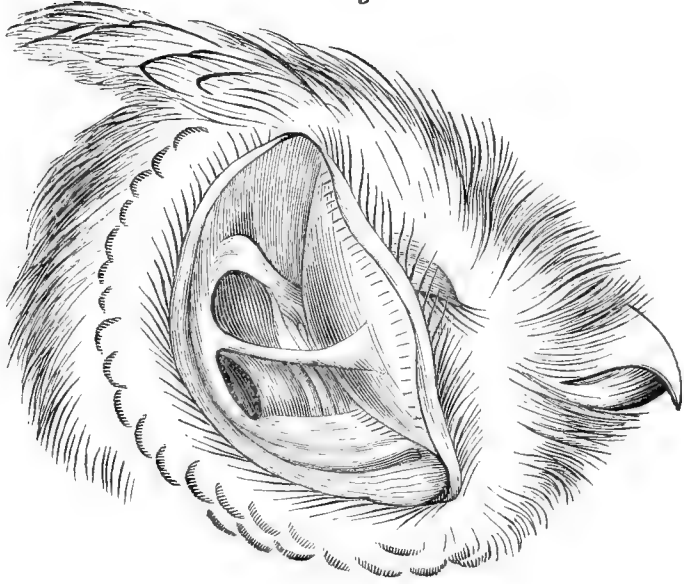
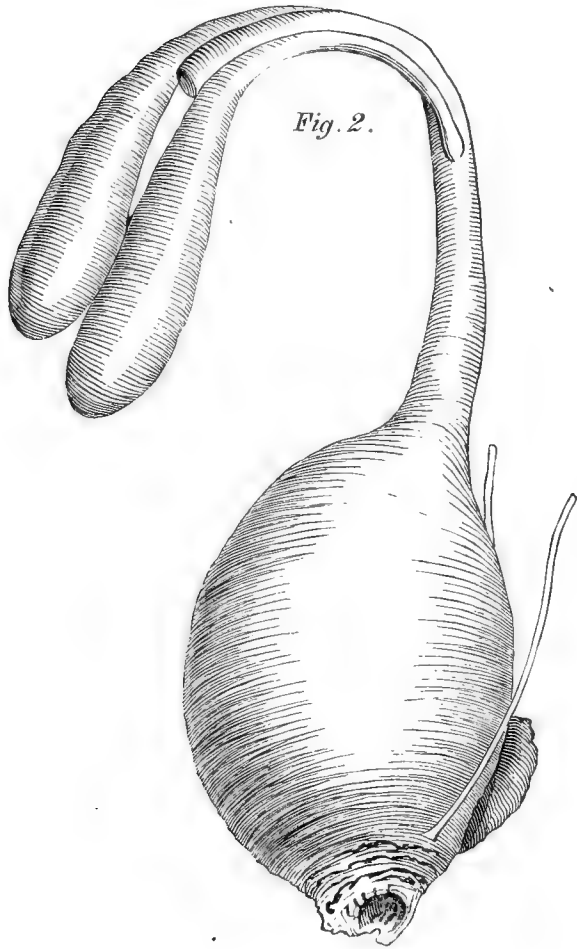


Fig. 2.



BLACK-THROATED BUNTING.*EMBERIZA AMERICANA*, GMEL.

PLATE CCCLXXXIV. MALE AND FEMALE.

ALTHOUGH this handsome Bunting may be said to be abundant in our middle Atlantic districts, it is there much less so than in the vast prairies of the south-west; and I consider those of the Texas to afford the localities best adapted to its habits. There, as my companions and I were returning from the capital of the infant republic, Houston, we were surprised to see how very numerous the Black-throated Buntings were in every open piece of ground covered by tufts of tall grass. They are also abundant on the open lands of Missouri and Illinois; but rarer in Ohio, and scarce in Kentucky. They are rarely observed to pass over South Carolina, but in Pennsylvania they are plentiful, and there breed in every field covered with grass or grain. I have also met with them in Massachusetts, but beyond this they are not seen to the eastward.

At the approach of the period of their removal from our Middle States southward, the Black-throated Buntings congregate in particular localities, as if to consult regarding their future proceedings. At this season I once went from Philadelphia in search of them, accompanied by my friend EDWARD HARRIS, and my son JOHN WOODHOUSE. Having reached Salem in New Jersey, we rambled some time in the neighbourhood, and found an elevated piece of ground, closely covered with high rank weeds, among which a great number of these birds had assembled. It being late in July, the males were moulting, or had already acquired their new plumage; the young, although full grown, had not yet assumed their second clothing, in which the sexes are distinguished; and the females were generally ragged. The birds were at first quite gentle, but after we had fired a few times they all flew off to a considerable distance, from which, however, they soon returned. On our continuing to harass them, however, they rose high in the air, and flew out of our sight in a southward direction. They had then undoubtedly begun migrating. These birds are very partial to particular localities. Sandy soil, unmixed with clay or earth, is not

favourable to them ; and it is probably for this reason that none are found in any purely sandy part of the State of New Jersey.

The Black-throated Buntings reach our Middle States about the 10th or 15th of May, and at once betake themselves to the dry meadow lands and grain fields, where they soon after begin to breed. The males are often observed perched on the top branches of the shade trees found in those places, and engaged in delighting their mates with their simple ditty, which, according to my learned friend Mr NUTTALL, resembles 'tic 'tic-tshĕ tshĕ tshĕ tshĕ, and tship tship, tschĕ tschĕ tschĕ tschĕ. To my ears the notes of our Black-throated Bunting so much resemble those of the Corn Bunting of Europe, *Emberiza Miliaria*, that I have often been reminded of the one by hearing the song of the other. These unmusical notes are almost continuously uttered from sunrise to sunset, and all this while the female is snugly seated on her eggs, and listening to her beloved. He often visits her, alighting within a few yards of where she is concealed, and then cautiously proceeding toward the spot on foot, through the grass. When the bird leaves the nest, it creeps along to some distance, and then flies off low over the ground.

About the first of June the nest is formed. It is constructed of fine grass neatly woven in a circular form, and is partly imbedded in the soil, and sheltered or concealed by a tuft of herbage. The eggs, usually five, are six and a half eighths in length, four and three-fourths in breadth, of a sullied white, generally sprinkled with faint touches of different tints of umber. In Pennsylvania, it seldom rears more than one brood in the season ; but in the Texas, I have reason to believe that it raises two.

The flight of this bird, when it has settled in a place, is usually of short extent. The male, while passing to and fro from the nest, exhibits a quivering motion of the wings. The female seldom shews this, unless when her property is in danger from intruders. While travelling, which they always do by day, they pass high over the trees, in flocks of thirty or forty, which suddenly alight at the approach of night, and throw themselves into the most thickly-leaved trees, where they repose until dawn. I have surprised them in such situations both in Kentucky and in Louisiana, and on shooting into the place to which they had betaken themselves, although I could not see them, have procured several at one discharge ; which proved in one instance to be males, and in the other females, thus shewing that the sexes travel se

parately. On such occasions, the survivors would sally forth, make a few rapid evolutions, and alight on the same tree.

In spring, I have found them, on two or three occasions, near Natchez, in the State of Mississippi, in meadows, in company with Bobolinks, *Emberiza Oryzivora*. On the ground they leap or hop, but never walk. Their flesh is good, especially that of the young birds.

EMBERIZA AMERICANA, *Gmel. Syst. Nat.* vol. i. p. 872.—*Lath. Ind. Ornith.* vol. i. p. 411.

BLACK-THROATED BUNTING, EMBERIZA AMERICANA, *Wils. Amer. Ornith.* vol. i. p. 54, pl. 3, fig. 2, male.

FRINGILLA AMERICANA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 107.

BLACK-THROATED BUNTING, *Nuttall, Manual*, vol. i. p. 461.

Adult Male. Plate CCCLXXXIV. Fig. 1.

Bill of moderate length, stout, conical, compressed toward the end; upper mandible with the dorsal line slightly declinate and convex, the ridge indistinct, the sides convex, the edges a little inflected, ascending to beneath the nostrils, then descending, with a slight notch close to the narrow tip: lower mandible with the angle short and wide, the dorsal line ascending and very slightly convex, the ridge broad at the base, the sides convex, the edges ascending at the base, then straight and involute to the end, the tip narrow. Nostrils basal, roundish in the fore part of the very short and wide nasal depression.

Head large, ovate; neck very short; body rather stout. Feet of moderate length, rather strong; tarsus of ordinary length, compressed, with seven anterior scutella, thin-edged behind; toes rather large; the hind one strong and longer than the lateral, which are equal, the third much longer, and united to the fourth at the base. Claws long, arched, much compressed, acute.

Plumage soft and blended, but firm. Wings of moderate length, acute; the first quill longest, the second slightly shorter, the other primaries graduated; secondaries slightly emarginate. Tail of moderate length, emarginate, of twelve rather narrow, obliquely pointed feathers.

Bill light blue; iris hazel; feet light brownish-red, claws of the same colour. The upper part of the head, the cheeks and the hind neck are ash-grey, the feathers on the head with a central blackish streak; loreal space, a band over the eye, and a shorter one beneath it,

bright yellow. The fore part of the back greyish-brown, with longitudinal streaks of brownish-black; the hind parts brownish-grey. The smaller wing-coverts are bright chestnut, the quills and large coverts blackish-brown, the primaries narrowly, the secondaries and their coverts broadly edged with pale greyish-brown. The tail is dark greyish-brown, the feathers faintly margined with paler. The fore neck is light yellow, the throat at first white, then with a large patch of black; the breast, sides, abdomen, legs and lower tail-coverts white, the breast tinged with yellow, the sides with grey; the lower wing-coverts yellow.

Length to end of tail $6\frac{1}{2}$ inches, to end of wings 5, to end of claws $6\frac{1}{4}$; extent of wings $10\frac{3}{8}$; wing from flexure $3\frac{3}{8}$; tail $2\frac{1}{2}$; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{8}{12}$; tarsus $\frac{10\frac{1}{2}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

Adult Female. Plate CCCLXXXIV. Fig. 2.

The Female has the upper parts coloured as in the male, but paler; the lower parts are also similar, but in place of the black patch on the throat, there are only two dusky lines from the base of the lower mandible, and some faint streaks on the lower part of the neck and the sides.

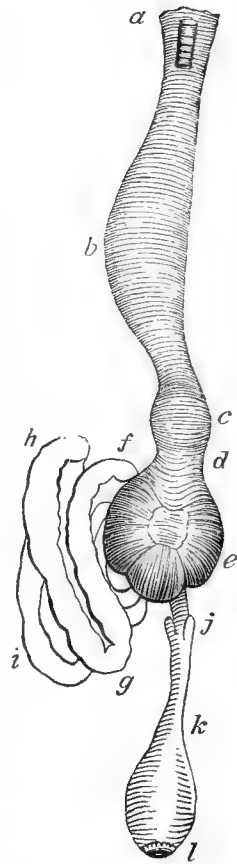
Length to end of tail 6, to end of wings 4, to end of claws $5\frac{7}{8}$; extent of wings 9; wing from flexure 3; tail $2\frac{5}{12}$; bill along the ridge $\frac{6\frac{1}{2}}{12}$; tarsus $\frac{10\frac{1}{2}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

In an adult male, the roof of the mouth has anteriorly three longitudinal ridges, and two lateral grooves; the palate descends obliquely, and at its anterior part has a distinct prominence of a softish texture; from which there passes backwards and outwards, a large soft ridge on each side of the nasal aperture; which is linear and papillate. The tongue is $5\frac{1}{2}$ twelfths long, narrow, deep, trigonal, deeply emarginate and papillate at the base, soft for half its length, convex and hard towards the end, which terminates with bristly points. The œsophagus, *a b c d*, is $2\frac{1}{2}$ inches long, dilated along the greater part of the neck into a kind of crop, *b*, 5 twelfths in diameter, lying on the right side along with the trachea. The proventriculus, *c d*, is not much enlarged. The stomach, *e f*, is a strong gizzard, of a broad elliptical form, $7\frac{1}{2}$ twelfths in length, $6\frac{1}{2}$ twelfths in breadth. Its contents are small hard seeds, a few remains of insects, and some particles of sand. The epithelium is very tough,

longitudinally rugous, and of a dark reddish-brown colour. The intestine, *f g h*, is $8\frac{1}{2}$ inches long, its greatest diameter 2 twelfths. The rectum, *j k l*, is 9 twelfths long; the cæca, *j*, extremely small, being $1\frac{1}{2}$ twelfth long and $\frac{1}{2}$ twelfth in diameter.

The trachea, which is 1 inch 10 twelfths long, is rather wide, flattened, of uniform diameter, measuring $1\frac{3}{4}$ inch across, the rings about 55, and ossified. The contractor muscles are of moderate strength; the sterno-tracheal slender; and there are four pairs of inferior laryngeal. The bronchi have about 15 half rings.

In its habits, this bird closely resembles the Common or Corn Bunting of Europe, its flight and notes being almost the same. Like it, our bird alights on walls, fences, detached rocks, or eminences of any kind, where it is often seen even in the immediate neighbourhood of our cities. Indeed, I have found it in full song perched on the trees that ornament the squares of Washington city. In the form of its bill it also agrees with the Buntings, although that organ is proportionally longer and less attenuated toward the end. If, on the principle of minute division, it is not admitted into the genus *Emberiza*, it must at least occupy a place in its immediate proximity.



The plants represented are the *Phalaris arundinacea* and *Antirrhinum Linaria*, both common in many parts of the United States, as well as in Europe; the former growing in wet meadows and by the sides of rivers, the latter in fields and waste places, a troublesome weed, very difficult to be extirpated.

BANK SWALLOW OR SAND MARTIN.

HIRUNDO RIPARIA, LINN.

PLATE CCCLXXXV. MALE, FEMALE, AND YOUNG.

IMAGINE, Reader, how delighted I was when, in East Florida, in the winter of 1831, I found thousands of Bank Swallows gaily skimming over the waters, and along the shores of the rivers and inlets. So numerous indeed were they that I felt inclined to think that the greater part of those which are in summer dispersed over the United States, and the regions still farther north, must have congregated to form those vast swarms. The first time I saw them was before sunrise, when I stood by the side of Lieutenant PERCY of our Navy, on the deck of the United States' schooner the Spark, then at anchor opposite St Augustine. The weather though warm, was thick and drizzly, so that we could not see to a great distance; but as probably some hundreds of thousands passed close to the vessel, in long and rather close flocks, I was well enabled to assure myself that the birds were of this species. On my expressing my surprise and delight at beholding so vast a concourse, Lieutenant PERCY assured me, that he had seen them on all the streams which he had visited south of where we then were. The weather cleared up in a few hours, the sun shone brightly, and the little creatures were seen all around, dipping into the water to wash themselves, gambolling close over its surface, and busily engaged in procuring insects, which in that country are always abundant. In the course of the same season I also observed a good number of our Green-backed and Barn Swallows, but few compared with what is seen about New Orleans.

We can thus account for the early appearance of the Bank Swallows in our Middle Districts. That species always arrives there sooner than the rest, sometimes preceding them by a fortnight, and keeping equally in advance as far northward as its range extends. The Green-backed Swallow, *Hirundo bicolor*, follows closely after it; then the Purple Martin, *Hirundo purpurea*; after which are seen the Barn Swallow, *Hirundo rustica*, and lastly, on our eastern Atlantic coasts, the American Swift, *Cypselus Americanus*. It is probable that these species extend

their autumnal migrations southward in a degree proportionate to the lateness of their appearance in Spring. I have likewise observed the arrival of the Bank Swallows on the waters of the Serpentine River and those of the Regent's Park, in London, to be in the same proportion earlier than that of the other species which visit England in spring, and have thought that, as with us, the first mentioned species retires to a less distance in winter than the rest.

The Bank Swallow has been observed on both sides of North America, and in all intermediate places suited to its habits. This is easily accounted for, when we reflect how easy it is for these birds to follow our great water-courses to their very sources. Even the ponds and lakes of our vast forests are at times visited by them ; but no person seems to have been aware of the existence of two species of Bank Swallows in our country, which, however, I shall presently shew to be the case.

Wherever, throughout the United States, sand-banks or artificial excavations occur, there is found the Bank Swallow during the breeding season, in greater or smaller numbers, according to the advantages presented by the different localities, not only along the shores of our rivers and lakes, but also on the coasts of the Atlantic, and not unfrequently in inland situations, at some distance from any water. High banks, composed of softish sandy earth, on the shores of rivers, lakes, or other waters, suit them best, and in such situations their colonies are far more numerous than elsewhere. The banks of the Ohio, and some parts of those of the Mississippi, called "Bluffs," have appeared to me to be more resorted to by this species in our western and southern districts, although I have met with considerable numbers in every State of the Union.

In Louisiana this species begins to breed early in March, and generally rears two, sometimes three broods in a season. In our Middle Districts it commences about a month later, or about the period at which it lays in Kentucky, and there produces two broods. In Newfoundland and Labrador, it rarely begins to breed before the beginning of June, and lays only once. Dr RICHARDSON states, that he saw "thousands of these Swallows near the mouth of the Mackenzie, in the sixty-eighth parallel, on the 4th of July," and from the state of the weather at that period supposed that they had arrived there at least a fortnight prior to that date, but no specimens were brought to England, and the de-

scription given in the *Fauna Boreali-Americana* is a mere transcript of that which in itself is quite imperfect. Indeed, there is not in any work with which I am acquainted an account of the Sand Swallow, sufficiently minute and accurate to characterize in an adequate manner that very common species.

The sociability and gentleness of these birds, the lightness and vigour with which they perform their various evolutions, the low and unobtrusive twittering of their voice, in short, all their actions and economy, are delightful to contemplate. Their flight is exceedingly graceful, light, yet firm, and capable of great continuance. They seem indeed as if created for the purpose of spending their time on wing, for they alight less often to rest when full grown than any other of our species, when not sitting on their eggs, and are seen abroad searching for food later in the dusk, retiring for the night as late, I think, as our Swift, *Cypselus Americanus*. As they procure their food more commonly than the other species along the margins or over the surface of pools, lakes, rivers, or even the sea, their flight is generally performed at a small elevation, which is the case with others only when the wind blows smartly, or the atmosphere is damp and chill. The movements of their wings are those common to the family of Swallows, which flap these members less frequently than perhaps any other small land birds. The wings act on the hinge formed by the carpal joint, opening and closing like the blades of scissors. Their sailings, though frequent, are not extensive, and their tail appears to be of great service to them, as you observe that on the least deviation from a straight course, it becomes suddenly more or less closed or inclined upward, downward, or sideways; and when you see some hundreds of pairs about their breeding places, passing, repassing, and crossing each other in various ways, you almost wonder that they never come into collision with each other. The slightest movement in any direction seems sufficient to enable them to overtake and secure their prey; and they less frequently than any other species follow an insect upward to any great distance. Like all other Swallows, they drink and bathe on wing.

Their migrations are performed by day, although perhaps continued by night, and their movements are more desultory and rather slower than those of other Swallows. It is rare to observe them in great flocks at that time, their associations not being apparently formed until they reach the countries in which they spend the winter months.

Their flight, when they are thus travelling, is continued rather low over the land or the water; and as in America they retire to a less distance southward than our other Swallows, they are not unfrequently seen to linger behind the rest. In South Carolina, indeed, I have seen some in November.

In summer and autumn they roost in the holes excavated for their nests; but in winter, at least in the Floridas, they always repose at night among the tall grass of the salt marshes, making choice of situations sheltered by the winds and not liable to be overflowed. At this time they keep together in large bodies while searching for food. I have several times accidentally crossed their roosting places, which I at once recognised by the quantity of their dung attached to the blades, and lying on the ground, and from which I infer that they rest clinging to the plants.

At the first appearance of spring they leave their winter quarters in pairs, or singly, or in very small flocks; but they follow each other so closely in this manner as to form an almost continued line of march. I had the pleasure of observing this to be the case with the Barn Swallow also, whilst I was proceeding toward the Texas, when that species was advancing in a contrary direction.

Although small, the Sand Swallow is a rather hardy bird; for I observed that the transient cold weather that at times occurs in the Floridas at night, seldom forces them to remove farther south. On one occasion, however, when the ice was about the thickness of a dollar, many were found dead along the shores, as well as floating on the water, whilst the rest appeared in great perturbation, wending their way in a hurried manner toward the warmer parts of the country, and taking advantage of every spot that afforded them more warmth, such as the borders of woods, and high banks of streams. I am, however, of opinion that the inclemency of the weather at times proves to be the greatest evil these birds have to encounter, especially when in early spring they are moving northward, and occasionally meet with a sudden change from temperate to cold. Even in the places selected for their summer residence, great numbers die in their holes, and many have been found there in a state bordering on torpidity.

Their food, which consists of small insects, principally of the hymenopterous kind, even during winter in the Floridas, is procured on wing. They very seldom approach walls or the trunks of trees to seize

them, but frequently snatch them from the tops of grasses or other plants on which they have alighted. They also seize small aquatic insects; but, although I suspect that they disgorge in pellets the harder parts of these, I have no proof, obtained from actual observation, that they do so.

The holes perforated by this species for the purpose of breeding require considerable exertion and labour. They are usually bored at the distance of two or three feet from the summit of the bank or surface of the ground, to the depth of about three feet, but sometimes to that of four or even five. They are near each other or remote, according to the number of pairs of swallows that resort to the place, and the extent of the bank. In one situation you may find not more than a dozen pairs at work, while in another several hundreds of holes may be seen scattered over some hundreds of yards. On the bluffs of the Ohio and the Mississippi there are many very extensive breeding-places. While engaged in digging a sand-bank on the shore of the Ohio, at Henderson, for the purpose of erecting a steam-mill, I was both amused and vexed by the pertinacity with which the little winged labourers continued to bore holes day after day, whilst the pickaxes and shovels demolished them in succession. The birds seemed to have formed a strong attachment to the place, perhaps on account of the fine texture of the soil, as I observed many who had begun holes a few hundred yards off abandon them, and join those engaged in the newly opened excavation. Whether the holes are frequently bored horizontally or not I cannot say, but many which I examined differed in this respect from those described by authors, for on introducing a gun-rod or other straight stick, I found them to have an inclination of about ten degrees upwards. The end of the hole is enlarged in the form of an oven, for the reception of the nest, and the accommodation of the parents and their brood.

When the birds have for a while examined the nature of the bank, they begin their work by alighting against it, securing themselves by the claws, and spreading their tails considerably so as, by being pressed against the surface, to support the body. The bill is now employed in picking the soil, until a space large enough to admit the body of the bird is formed, when the feet and claws are also used in scratching out the sand. I have thought that the slight ascent of the burrow contributed considerably to enable the bird to perform the severe task of dis-

posing of the loose materials, which are seen dropping out at irregular intervals. Both sexes work alternately, in the same manner as Woodpeckers; and few ornithological occupations have proved more pleasing to me than that of watching several hundred pairs of these winged artificers all busily and equally engaged, some in digging the burrows, others in obtaining food, which they would now and then bring in their bills for the use of their mates, or in procuring bits of dry grass or large feathers of the duck or goose, for the construction of their nests.

So industrious are the little creatures that I have known a hole dug to the depth of three feet four inches, and the nest finished in four days, the first egg being deposited on the morning of the fifth. It sometimes happens that soon after the excavation has been commenced, some obstruction presents itself, defying the utmost exertions of the birds; in which case they abandon the spot, and begin elsewhere in the neighbourhood. If these obstructions occur and are pretty general, the colony leaves the place; and it is very seldom that, after such an occurrence, any swallows of this species are seen near it. I have sometimes been surprised to see them bore in extremely loose sand. On the sea-coast, where soft banks are frequent, you might suppose that, as the burrows are only a few inches apart, the sand might fall in so as to obstruct the holes and suffocate their inmates; but I have not met with an instance of such a calamitous occurrence. Along the banks of small rivulets I have found these birds having nests within a foot or two of the water, having been bored among the roots of some large trees, where I thought they were exposed to mice, rats, or other small predaceous animals. The nest is generally formed of some short bits of dry grass, and lined with a considerable number of large feathers. They lay from five to seven eggs for the first brood, fewer for the next. They are of an ovate, somewhat pointed form, pure white, eight-twelfths of an inch long, and six-twelfths in breadth.

The young, as soon as they are able to move with ease, often crawl to the entrance of the hole, to wait the return of their parents with food. On such occasions they are often closely watched by the smaller Hawks, as well as the common Crows, which seize and devour them, in spite of the clamour of the old birds. These depredations upon the young are in fact continued after they have left the nest, and while they are perched on the dry twigs of the low trees in the neighbourhood,

until they are perfectly able to maintain themselves on wing without the assistance of their parents.

In Louisiana, or in any district where this species raises more than one brood in the season, the males, I believe, take the principal charge of the young that have left the nest, though both sexes alternately incubate, all their moments being thus rendered full of care and anxiety respecting both their offspring and the sitting bird. The young acquire the full brown plumage of the adult by the first spring, when there is no observable difference between them; but I am induced to think that they keep apart from the old birds during the first winter, when I have thought I could yet perceive an inferiority in their flight, as well as in the loudness of their notes.

This species has no song, properly so called, but merely a twitter of short lispings notes. In autumn it at times alights on trees preparatory to its departure. On such occasions the individuals, often collected in great numbers, take up the time chiefly in pluming themselves, in which occupation they continue for hours.

I must conclude with assuring you that in my opinion, no difference whatever exists between the Bank Swallow of America and that of Europe. The birds from which I made the drawing for my plate were procured on the banks of the Schuylkil River in 1824.

HIRUNDO RIPARIA, *Linn. Syst. Nat.* vol. i. p. 344.—*Lath. Ind. Ornith.* vol. i. p. 575.—*Ch. Bonap. Synopsis*, p. 65.

BANK SWALLOW or SAND MARTIN, *HIRUNDO RIPARIA*, *Wils. Amer. Ornith.* vol. v. p. 46, pl. 38, fig. 4.

HIRUNDO RIPARIA, THE SAND MARTIN, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 333.

BANK SWALLOW, or SAND MARTIN, *Nuttall, Manual*, vol. i. p. 607.

Adult Male. Plate CCCLXXXV. Fig. 1.

Bill very short, much depressed and very broad at the base, compressed toward the point, of a triangular form with the lateral outlines concave, when viewed from above or beneath; upper mandible with the dorsal line considerably convex, the sides convex, the edges sharp and overlapping, with a slight but distinct notch close to the deflected tip; lower mandible with the angle very broad, the dorsal line ascending and convex, the ridge broad and flat at the base, narrowed toward

the tip, which is acute, the edges inflected. Nostrils basal, lateral, oblong.

Head of ordinary size, roundish, depressed; neck short; body slender. Feet very small; tarsus very short, anteriorly scutellate, moderately compressed, with a tuft of feathers behind at the lower part; toes free, small, the lateral equal, the first much stronger; claws long, slightly arched, much compressed, very acute.

Plumage soft and blended, without lustre. Wings very long, extending a little beyond the tail, very narrow, slightly falciform; the primaries tapering to an obtuse point, the first quill longest, the second half a twelfth shorter, the third four and a quarter twelfths shorter than the second, the rest rapidly graduated; six of the secondaries distinctly emarginate. Tail rather long, deeply emarginate, the feathers tapering to an obtuse point.

Bill brownish-black. Iris hazel. Feet flesh-coloured, claws dusky. The upper parts are greyish-brown, or mouse colour, the head and wing-coverts darker, as are the primary coverts, primary quills, and outer secondaries, of which the shafts are dusky above, white beneath. The lower parts are white; the cheeks, a broad band across the lower part of the neck and fore part of the breast, and the sides under the wings, greyish-brown. The tail-feathers are very narrowly edged with a lighter tint, the outer with whitish.

Length to end of tail 5 inches, to end of wings $5\frac{1}{4}$, to end of claws $4\frac{1}{8}$; extent of wings 11; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{6\frac{1}{2}}{12}$; wing from flexure $4\frac{2}{12}$; tail to the fork $1\frac{1}{2}$; to the end $2\frac{4\frac{1}{2}}{12}$; tarsus $\frac{5}{12}$; hind toe $\frac{2\frac{1}{2}}{12}$; its claw $\frac{3\frac{1}{2}}{12}$; middle toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Adult Female. Plate CCCLXXXV. Fig. 2.

The Female cannot be distinguished from the male by any difference in her external appearance.

Length to end of tail $4\frac{7}{8}$ inches, to end of wings $5\frac{1}{4}$, to end of claws 4.

Young. Plate CCCLXXXV. Fig. 3.

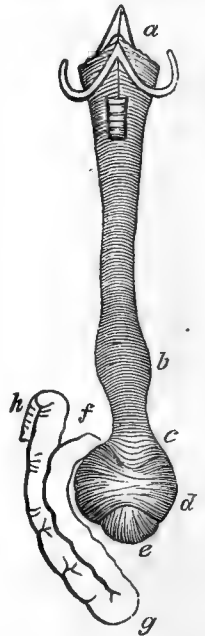
The young when fully fledged, have the bill dusky, with the edges yellow, the feet flesh-coloured, the claws yellowish. The colour of the upper parts is darker, but the feathers are margined with light

greyish-brown; the quills brownish-black, the outer very faintly, the inner broadly margined; the tail-feathers greyish-black, edged with greyish-white. The lower parts are white, the throat faintly streaked with dusky; the band across the breast, and the sides, coloured as in the adult, but darker.

On very carefully comparing skins of this Swallow, with a series of those of the Bank Swallow of Europe, procured for me by my esteemed friend, THOMAS DURHAM WEIR of Boghead, Esq. an enthusiastic and successful observer of the habits of birds, I can perceive no difference whatever. Old birds compared with old, and young with young, prove perfectly similar. There is, however, another species closely allied to the present, and which might very readily be confounded with it. This species, to which I give the name of Rough-winged Swallow, *Hirundo serripennis*, I consider it expedient to describe, although it has not as yet been figured by me.

In a male of the present species, from Boston, the palate is flat, the mouth very wide, measuring 5 twelfths across. The tongue is short, triangular, $2\frac{1}{2}$ twelfths long, deeply emarginate and papillate at the base, two of the lateral papillæ much larger than the rest, the tip bluntish and slightly slit. The œsophagus, *abc*, is 1 inch 9 twelfths long, narrow, 2 twelfths in diameter, without crop or dilatation. The proventriculus, *b*, is little enlarged. The stomach, *cdef*, a gizzard of moderate length, with distinct lateral muscles, and of an elliptical form, is half an inch long, and 5 twelfths broad; its epithelium longitudinally rugous, tough, and light red. It is filled with remains of insects. The intestine, *fg*, is $5\frac{1}{2}$ inches long, its greatest diameter $1\frac{1}{2}$ twelfth; the cœca very small, being $1\frac{1}{2}$ twelfth long, and $\frac{1}{2}$ twelfth in diameter, their distance from the anus 9 twelfths. There is no essential difference between the digestive organs of this and other swallows, and the Flycatchers, Warblers, and other slender-billed birds.

The trachea is 1 inch 4 twelfths long, slender, flattened, of about 55 unossified rings. The contractor and sterno-tracheal muscles are slender; and there are four pairs of inferior laryngeal muscles.



ROUGH-WINGED SWALLOW.

HIRUNDO SERRIPENNIS.

ON the afternoon of the 20th of October 1819, I was walking along the shores of a forest-margined lake, a few miles from Bayou Sara, in pursuit of some Ibises, when I observed a flock of small Swallows bearing so great a resemblance to our common Sand Martin, that I at first paid little attention to them. The Ibises proving too wild to be approached, I relinquished the pursuit, and being fatigued by a long day's exertion, I leaned against a tree, and gazed on the Swallows, wishing that I could travel with as much ease and rapidity as they, and thus return to my family as readily as they could to their winter quarters. How it happened I cannot now recollect, but I thought of shooting some of them, perhaps to see how expert I might prove on other occasions. Off went a shot, and down came one of the birds, which my dog brought to me between his lips. Another, a third, a fourth, and at last a fifth were procured. The ever-continuing desire of comparing one bird with another led me to take them up. I thought them rather large, and therefore placed them in my bag, and proceeded slowly toward the plantation of WILLIAM PERRY, Esq., with whom I had for a time taken up my residence.

The bill and feet of the Swallows were pure black, and both, I thought, were larger than in the Sand Martin; but differences like these I seldom hold in much estimation, well knowing from long experience, that individuals of any species may vary in these respects. I was more startled when I saw not a vestige of the short feathers usually found near the junction of the hind toe with the tarsus in the common species, and equally so when I observed that the bird in my hand had a nearly even tail, with broad rounded feathers, the outer destitute of the narrow margin of white. At this time my observations went no farther.

Doubts have been expressed by learned ornithologists respecting the identity of the Common Sand Martin of America and that of Europe. Some of them in their treatises write *Hirundo riparia?* or *Cotyle riparia?* which in my opinion is foolish, especially if no reason be given

for appending so crooked a character. About two years ago, my friend the Rev. JOHN BACHMAN, sent me four Swallow's eggs accompanied with a letter, in which was the following notice :—" Two pairs of Swallows resembling the Sand Martin, have built their nests for two years in succession in the walls of an unfinished brick house at Charleston, in the holes where the scaffoldings had been placed. It is believed here that there are two species of these birds." The eggs which my friend sent me differ greatly from those of our Common Sand Martin, being so much longer, larger, and more pointed, that I might have felt inclined to suppose them to belong to the European Swift, *Cypselus murarius*. But of the birds which had laid them no particular account was given. Time has passed; and during the while I have been anxious to meet again with such Swallows as I had shot near Bayou Sara, as well as to determine whether our Common Sand Martin be the same as that of Europe. And now, Reader, I am at last able to say, that the Sand Martin or Bank Swallow, *Hirundo riparia*, is common to Europe and America; and further, that a species, confounded with it in the latter country, is perfectly distinct.

I perhaps should never have discovered the differences existing between these species had I not been spurred by the remarks of VIEILLOT, who, in expressing his doubts as to their identity, and perhaps holding in his hand the bird here spoken of, says that the tarsus is much larger than in the European Sand Martin. I have been surprised that these doubts did not awaken in others a desire to inquire into the subject. Had this been done, however, I should probably have lost an opportunity of adding another new species to those to whose nomination I can lay claim, not to speak of such as, although well known to me previous to their having been published by others, I have lost the right of naming because I had imparted my knowledge of them to those who were more anxious of obtaining this sort of celebrity. I have now in my possession one pair of these Swallows procured by myself in South Carolina during my last visit to that State. Of their peculiar habits I can say nothing; but, owing to their being less frequent than the Sand Martin; I am inclined to believe that their most habitual residence may prove to be far to the westward, perhaps in the valleys of the Columbia River.

I regret that I have not figured this species, though it would have

proved exceedingly difficult to exhibit in an engraving the peculiar character presented by the outer quill, unless it were much magnified.

The specific characters of these two Swallows, so nearly allied, are as follows :—

Hirundo riparia. Tail, Fig. 1, slightly forked, margin of first quill smooth, tarsus with a tuft of feathers behind ; upper parts greyish-brown, lower whitish, with a dusky band across the fore part of the neck.

Hirundo serripennis. Tail, Fig. 2, slightly emarginate, margin of first quill, Fig. 3, rough with the strong decurved tips of the barbs, tarsus bare ; upper parts greyish-brown, lower pale greyish-brown, white behind.

Fig. 1.

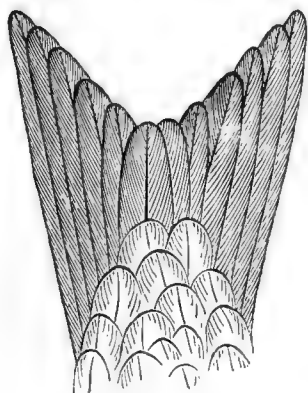


Fig. 2.

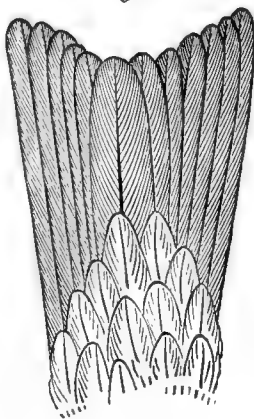
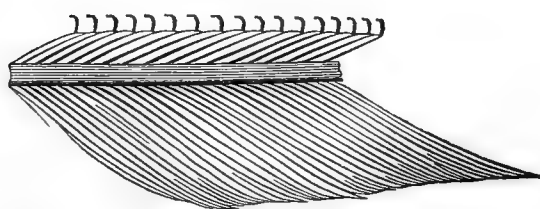


Fig. 3.



In its general appearance, including proportions as well as colour, the Rough-winged Swallow is extremely similar to the Bank Swallow. It differs however in having the bill considerably longer, more attenuated toward the end, with the point of the upper mandible more decurved. The tail, Fig. 2, is shorter and but slightly emarginate, the lateral exceeding the middle feathers by only two-twelfths of an inch, whereas in the other species they exceed them by five-twelfths or even six ; feathers are also broader and more rounded at the end. The wings are longer, and extend half an inch beyond the tail. The tarsi and

toes are somewhat longer and more slender, and there are no feathers on the hind part of the tarsus as in the common species; the claws are much more slender.

The bill is black, the tarsi, toes, and claws dusky. The upper parts are of the same greyish-brown, or mouse-colour, as those of the Bank Swallow. The lower are of a very light greyish-brown, gradually paler on the hind parts, the abdomen and lower tail-coverts being white.

Length to end of tail $5\frac{3}{4}$ inches, to end of wings $6\frac{1}{4}$; extent of wings $12\frac{1}{2}$; bill along the ridge $\frac{3\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{6\frac{1}{2}}{12}$; wing from flexure $4\frac{4}{12}$; tail to end of middle feather $1\frac{10}{12}$, to end of longest feather 2; tarsus $\frac{5}{12}$; hind toe $\frac{2\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

In a specimen, from Charleston, South Carolina, preserved in spirits, the roof of the mouth is flat, the width of the gape $5\frac{1}{2}$ twelfths; the tongue triangular, $3\frac{1}{2}$ twelfths long, emarginate and papillate at the base, with two of the papillæ much larger, flat above, tapering to a slit point, more narrow and elongated than that of the Sand Swallow. The œsophagus is 1 inch 11 twelfths long, without dilatation, its breadth $1\frac{1}{2}$ twelfth. The stomach is elliptical, muscular, 5 twelfths long, being $4\frac{1}{2}$ twelfths, and placed a little obliquely; the epithelium brownish-red, tough, longitudinally rugous, filled with remains of insects. The intestine is $4\frac{1}{2}$ inches long; the cœca $1\frac{1}{2}$ twelfth in length, and 8 twelfths distant from the anus.

The trachea is 1 inch 4 twelfths long, its diameter 1 twelfth; its rings about 50; the muscles as in the other species; the bronchi very slender, of about 12 half rings.

VIOLET-GREEN SWALLOW.

HIRUNDO THALASSINA, SWAINSON.

PLATE CCCLXXXV. MALE AND FEMALE.

OF this, the most beautiful Swallow hitherto discovered within the limits of the United States, the following account has been transmitted to me by my friend Mr NUTTALL. " We first met with this elegant species within the table-land of the Rocky Mountains, and they were particularly abundant around our encampment on Harris Fork, a branch of the Colorado of the west. They are nearly always associated with the Cliff Swallow, here likewise particularly numerous. Their flight and habits are also similar, but their twitter is different, and not much unlike the note of our Barn Swallow. In the Rocky Mountains, near our camp, we observed them to go in and out of deserted nests of the Cliff Swallow, which they appeared to occupy in place of building nests of their own. We saw this species afterwards flying familiarly about in the vicinity of a farm-house (M. LE BOUTE'S) on an elevated small isolated prairie on the banks of the Wahlamet, and as there are no cliffs in the vicinity, they probably here breed in trees, as I observed the White-bellied Martin do. This beautiful species in all probability extends its limits from hence to the table-land of Mexico, where Mr BULLOCH, it seems, found it.

Dr TOWNSEND, who afterwards had better opportunities of observing the habits of this bird, thus speaks of it:—" *Aquila chin chin* of the Chinook Indians, inhabits the neighbourhood of the Colorado of the west, and breeds along its margins on bluffs of clay, where it attaches a nest formed of mud and grasses resembling in some measure that of the Cliff Swallow, but wanting the pendulous neck in that of the latter species. The eggs are four, of a dark clay colour, with a few spots of reddish-brown at the larger end. This species is also found abundant on the lower waters of the Columbia River, where *it breeds in hollow trees.*"

Dr TOWNSEND also informs me that in the neighbourhood of the Columbia River, the Cliff Swallow attaches its nest to the trunks of trees, making it of the same form and materials as elsewhere. From

the above facts, and many equally curious, which I have mentioned, respecting the variations exhibited by birds in the manner of forming their nests, as well as in their size, materials, and situation, it will be seen that differences of this kind are not of so much importance as has hitherto been supposed, in establishing distinctions between species supposed by some to be different, and by others identical. To give you some definite idea of what I would here impress upon your mind, I need only say that I have seen nests of the Barn or Chimney Swallow placed within buildings, under cattle-sheds, against the sides of wells, and in chimneys; that while some were not more than three inches deep, others measured nearly nine; while in some there was scarcely any grass, in others it formed nearly half of their bulk. I have also observed some nests of the Cliff Swallow in which the eggs had been deposited before the pendent neck was added, and which remained so until the birds had reared their brood, amidst other nests furnished with a neck, which was much longer in some than in others. From this I have inferred that nests are formed more or less completely, in many instances, in accordance with the necessity under which the bird may be of depositing its eggs.

HIRUNDO THALASSINUS, Swains. Synopsis of Mexican Birds, Philos. Mag. for 1827, p. 365.

Adult Male. Plate CCCLXXXV. Fig. 4.

Bill very short, much depressed and very broad at the base, compressed toward the point, of a triangular form, with the lateral outlines nearly straight; upper mandible with the dorsal line considerably convex, the sides convex toward the end, the edges sharp and overlapping, with a slight but distinct notch close to the deflected acute tip; lower mandible with the angle very broad, the dorsal line ascending and slightly convex, the ridge broad and a little convex at the base, narrowed toward the tip, which is acute. Nostrils basal, lateral oblong.

Head rather large, roundish; neck very short; body slender. Feet very small; tarsus very short, anteriorly scutellate, compressed; toes free, small, the lateral equal, the first stronger; claws rather long, arched, much compressed, very acute.

Plumage soft and blended, on the upper parts somewhat velvety.

Wings very long, extending far beyond the tail, very narrow, slightly falciform; the primaries tapering to an obtuse point; the first quill longest, the second almost equal, the rest rapidly diminishing; six of the secondaries emarginate. Tail of moderate length, emarginate, the middle feathers four-twelfths shorter than the lateral; all rounded.

Bill black; iris brown; feet dusky. The upper part of the head deep green gradually shaded into the dark purple of the hind neck; the back rich grass-green, the rump and upper tail-coverts carmine purple. The smaller wing-coverts are dusky, broadly tipped with green, glossed with purple; the quills and larger coverts dusky, glossed with blue; the tail also dusky, glossed with blue. A line over the eye, the cheeks, and all the lower parts, are pure white excepting the lower wing-coverts, which are light grey.

Length to end of tail $4\frac{1}{2}$, to end of wings $5\frac{7}{12}$; bill along the ridge $\frac{23}{12}$, along the edge of lower mandible $\frac{5}{12}$; wing from flexure $4\frac{6}{12}$; tail to end of middle feathers $1\frac{1}{2}$, to end of longest $1\frac{10\frac{1}{2}}{12}$; tarsus $\frac{4\frac{3}{4}}{12}$; hind toe $\frac{2}{12}$, its claw $\frac{2}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{2}{12}$.

Adult Female. Plate CCCLXXXV. Fig. 5.

The Female is somewhat smaller, and differs considerably in colour. The upper part of the head and the hind neck are light greyish-brown glossed with bronzed green; the back bright green as in the male, the rump greyish-brown; the wings and tail are as in the male, but less glossy; as are the lower parts, which are, however, anteriorly tinged with grey.

Length to end of tail $4\frac{7}{12}$, to end of wings 5; wing from flexure $4\frac{1}{4}$, tail $1\frac{8\frac{1}{2}}{12}$.

GREAT AMERICAN EGRET.

ARDEA EGRETTA, GMEL.

PLATE CCCLXXXVI. MALE.

IN the third volume of this work, I have already intimated that the truly elegant Heron which now comes to be described, is a constant resident in the Floridas, that it migrates eastward sometimes as far as the State of Massachusetts, and up the Mississippi to the city of Natchez, and, lastly, that it is never seen far inland, by which I mean that its rambles into the interior seldom extend to more than fifty miles from the sea-shore, unless along the course of our great rivers. I have now to add that on my way to the Texas, in the spring of 1837, I found these birds in several places along the coast of the Gulf of Mexico, and on several of the islands scattered around that named Galveston, where, as well as in the Floridas, I was told that they spend the winter.

The Great American Egret breeds along the shores of the Gulf of Mexico, and our Atlantic States, from Galveston Island in the Texas to the borders of the State of New York, beyond which, although stragglers have been seen, none, in so far as I can ascertain, have been known to breed. In all low districts that are marshy and covered with large trees, on the margins of ponds or lakes, the sides of bayous, or gloomy swamps covered with water, are the places to which it generally resorts during the period of reproduction; although I have in a few instances met with their nests on low trees, and on sandy islands at a short distance from the main land. As early as December I have observed vast numbers congregated, as if for the purpose of making choice of partners, when the addresses of the males were paid in a very curious and to me interesting manner. Near the plantation of JOHN BULOW, Esq. in East Florida, I had the pleasure of witnessing this sort of tournament or dress-ball from a place of concealment not more than a hundred yards distant. The males, in strutting round the females, swelled their throats, as Cormorants do at times, emitted gurgling sounds, and raising their long plumes almost erect, paced majestically before the fair ones of their choice. Although these snowy beaux were a good deal irritated by jealousy, and conflicts now and then took place, the

whole time I remained, much less fighting was exhibited than I had expected from what I had already seen in the case of the Great Blue Heron, *Ardea Herodias*. These meetings took place about ten o'clock in the morning, or after they had all enjoyed a good breakfast, and continued until nearly three in the afternoon, when, separating into flocks of eight or ten individuals, they flew off to search for food. These manœuvres were continued nearly a week, and I could with ease, from a considerable distance mark the spot, which was a clear sandbar, by the descent of the separate small flocks previous to their alighting there.

The flight of this species is in strength intermediate between that of *Ardea Herodias* and *A. rufescens*, and is well sustained. On foot its movements are as graceful as those of the Louisiana Heron, its steps measured, its long neck gracefully retracted and curved, and its silky train reminded one of the flowing robes of the noble ladies of Europe. The train of this Egret, like that of other species, makes its appearance a few weeks previous to the love season, continues to grow and increase in beauty, until incubation has commenced, after which period it deteriorates, and at length disappears about the time when the young birds leave the nest, when, were it not for the difference in size, it would be difficult to distinguish them from their parents. Should you however closely examine the upper plumage of an old bird of either sex, for both possess the train, you will discover that its feathers still exist, although shortened and deprived of most of their filaments. Similar feathers are seen in all other Herons that have a largely developed train in the breeding season. Even the few plumes hanging from the hind part of the *Ardea Herodias*, *A. Nycticorax*, and *A. violacea*, are subject to the same rule; and it is curious to see these ornaments becoming more or less apparent, according to the latitude in which these birds breed, their growth being completed in the southern part of Florida two months sooner than in our Middle Districts.

The American Egrets leave the Floridas almost simultaneously about the 1st of March, and soon afterwards reach Georgia and South Carolina, but rarely the State of New Jersey, before the middle of May. In these parts the young are able to fly by the 1st of August. On the Mule Keys off the coast of Florida, I have found the young well grown by the 8th of May; but in South Carolina they are rarely hatched until toward the end of that month or the beginning of June. In these

more southern parts two broods are often raised in a season, but in the Jerseys there is, I believe, never more than one. While travelling, early in spring, between Savannah in Georgia and Charleston in South Carolina, I saw many of these Egrets on the large rice plantations, and felt some surprise at finding them much wilder at that period of their migrations than after they have settled in some locality for the purpose of breeding. I have supposed this to be caused by the change of their *thoughts* on such occasions, and am of opinion that birds of all kinds become more careless of themselves. As the strength of their attachment toward their mates or progeny increases through the process of time, as is the case with the better part of our own species, lovers and parents performing acts of heroism, which individuals having no such attachment to each other would never dare to contemplate. In these birds the impulse of affection is so great, that when they have young they allow themselves to be approached, so as often to fall victims to the rapacity of man, who, boasting of reason and benevolence, ought at such a time to respect their devotion.

The American Egrets are much attached to their roosting places, to which they remove from their feeding grounds regularly about an hour before the last glimpse of day; and I cannot help expressing my disbelief in the vulgar notion of birds of this family usually feeding by night, as I have never observed them so doing even in countries where they were most abundant. Before sunset the Egrets and other Herons (excepting perhaps the Bitterns and Night Herons) leave their feeding grounds in small flocks, often composed of only a single family, and proceed on wing in the most direct course, at a moderate height, to some secure retreat more or less distant, according to the danger they may have to guard against. Flock after flock may be seen repairing from all quarters to these places of repose, which one may readily discover by observing their course.

Approach and watch them. Some hundreds have reached the well-known rendezvous. After a few gratulations you see them lower their bodies on the stems of the trees or bushes on which they have alighted, fold their necks, place their heads beneath the scapular feathers, and adjust themselves for repose. Daylight returns, and they are all in motion. The arrangement of their attire is not more neglected by them than by the most fashionable fops, but they spend less time at the toilet. Their rough notes are uttered more loudly than in the even-

ing, and after a very short lapse of time they spread their snowy pinions, and move in different directions, to search for fiddlers, fish, insects of all sorts, small quadrupeds or birds, snails, and reptiles, all of which form the food of this species.

The nest of the Great White Egret, whether placed in a cypress one hundred and thirty feet high, or on a mangrove not six feet above the water, whether in one of those dismal swamps swarming with loathsome reptiles, or by the margin of the clear blue waters that bathe the Keys of Florida, is large, flat, and composed of sticks, often so loosely put together as to make you wonder how it can hold, besides itself, the three young ones which this species and all the larger Herons have at a brood. In a few instances only have I found it compactly built, it being the first nest formed by its owners. It almost always overhangs the water, and is resorted to and repaired year after year by the same pair. The eggs, which are never more than three, measure two inches and a quarter in length, an inch and five-eighths in breadth, and when newly laid are smooth, and of a pale blue colour, but afterwards become roughish and faded. When the nest is placed on a tall tree, the young remain in it, or on its borders, until they are able to fly; but when on a low tree or bush, they leave it much sooner, being capable of moving along the branches without fear of being injured by falling, and knowing that should they slip into the water they can easily extricate themselves by striking with their legs until they reach either the shore or the nearest bush, by clinging to the stem, of which they soon ascend to the top.

This Egret is shy and vigilant at all times, seldom allowing a person to come near unless during the breeding season. If in a rice-field of some extent, and at some distance from its margins, where cover can be obtained, you need not attempt to approach it; but if you are intent on procuring it, make for some tree, and desire your friend to start the bird. If you are well concealed, you may almost depend on obtaining one in a few minutes, for the Egrets will perhaps alight within twenty yards or less of you. Once, when I was very desirous of making a new drawing of this bird, my friend JOHN BACHMAN followed this method, and between us we carried home several superb specimens.

The long plumes of this bird being in request for ornamental purposes, they are shot in great numbers while sitting on their eggs, or

soon after the appearance of the young. I know a person who, on offering a double-barrelled gun to a gentlemen near Charleston, for one hundred White Herons fresh killed, received that number and more the next day.

The Great Egret breeds in company with the Anhinga, the Great Blue Heron, and other birds of this family. The Turkey Buzzards and the Crows commit dreadful havoc among its young, as well as those of the other species. My friend JOHN BACHMAN gives me the following account of his visit to one of its breeding places, at the "Round O," a plantation about forty miles from Charleston: "Our company was composed of BENJAMIN LOGAN, S. LEE, and Dr MARTIN. We were desirous of obtaining some of the Herons as specimens for stuffing, and the ladies were anxious to procure many of their primary feathers for the purpose of making fans. The trees were high, from a hundred to a hundred and thirty feet, and our shot was not of the right size; but we commenced firing at the birds, and soon discovered that we had a prospect of success. Each man took his tree, and loaded and fired as fast as he could. Many of the birds lodged on the highest branches of the cypresses, others fell into the nest, and, in most cases, when shot from a limb, where they had been sitting, they clung to it for some time before they would let go. One thing surprised me: it was the length of time it took for a bird to fall from the place where it was shot, and it fell with a loud noise into the water. Many wounded birds fell some distance off, and we could not conveniently follow them on account of the heavy wading through the place. We brought home with us forty-six of the large White Herons, and three of the great Blues. Many more might have been killed, but we became tired of shooting them."

ARDEA EGRETТА, *Gmel.* Syst. Nat. vol. i. p. 629.—*Lath.* Ind. Ornith. vol. ii. p. 694.

ARDEA ALBA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 304.

GREAT WHITE HERON, ARDEA EGRETТА, *Wils.* Amer. Ornith. vol. vii. p. 106, pl. 61, fig. 1.

ARDEA EGRETТА, *Wagler*, Syst. Avium,—GREAT WHITE HERON, *Nuttall*, Manual, vol. ii. p. 47.

ARDEA LEUCE, *Illiger*, *Lichtenstein*.

Adult Male in Summer. Plate CCCLXXXVI.

Bill much longer than the head, straight, compressed, tapering to a point, the mandibles nearly equal. Upper mandible with the dorsal line

nearly straight, the ridge broad and slightly convex at the base, narrowed and becoming rather acute towards the end, a groove from the base to two-thirds of the length, beneath which the sides are convex, the edges thin and sharp, with a notch close to the acute tip. Nostrils basal, linear, longitudinal, with a membrane above and behind. Lower mandible with the angle extremely narrow and elongated, the dorsal line beyond it ascending and almost straight, the edges sharp and direct, the tip acuminate.

Head small, oblong, compressed. Neck very long and slender. Body slender and compressed. Feet very long, tibia elongated, its lower half bare, slender, covered anteriorly and laterally with hexagonal scales, posteriorly with scutella; tarsus elongated, compressed, covered anteriorly with numerous scutella, some of which are divided laterally and posteriorly with angular scales. Toes of moderate length, rather slender, scutellate above, granulate beneath; third toe considerably longer than the fourth, which exceeds the second; the first large; the claws of moderate length, rather strong, arched, compressed, rather acute, that of the hind toe much larger, the inner edge of that of the third regularly pectinated.

Space between the bill and eye, and around the latter, bare. Plumage soft, blended; the feathers oblong, with their filaments generally disunited, unless on the wings and tail. There is no crest on the head, but the feathers on its upper and hind part are slightly elongated; those on the lower part of the neck anteriorly are elongated; and from between the scapulæ arises a tuft of extremely long, slightly decurved feathers, which extend about ten inches beyond the end of the tail, and have the shaft slightly undulated, the filaments long and distant. The wing is of moderate length; the primaries tapering but rounded, the second and third longest, the first slightly shorter than the fourth; the secondaries broad and rounded, some of the inner as long as the longest primaries, when the wing is closed. Tail very short, small, slightly rounded, of twelve rather weak feathers.

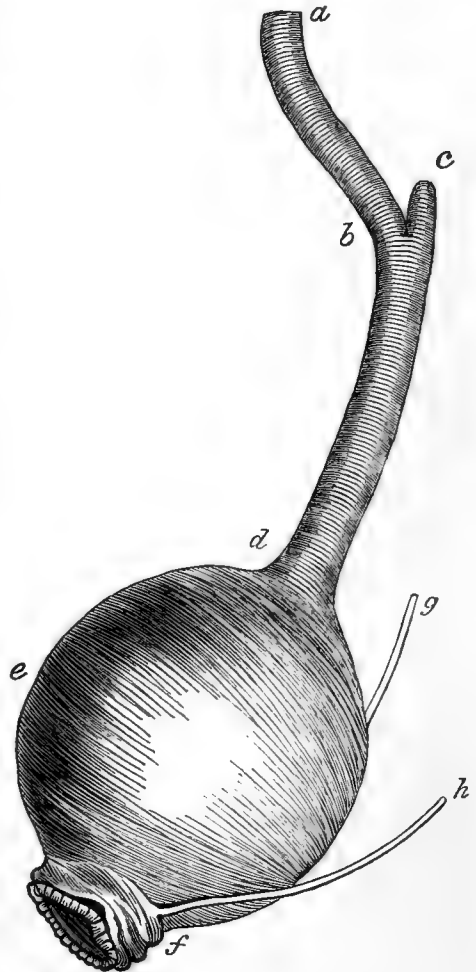
Bill bright yellow, as is the bare space between it and the eye; iris pale yellow; feet and claws black. The plumage is pure white.

Length to end of tail 37 inches, to end of claws 49, to end of wings $57\frac{1}{4}$, to carpus $23\frac{1}{2}$, to end of dorsal plumes 57; bill along the ridge $4\frac{7}{12}$, along the edge of lower mandible $5\frac{5}{12}$; wing from flexure $16\frac{1}{2}$; tail $6\frac{1}{4}$; extent of wings 55; bare part of tibia $3\frac{1}{2}$; tarsus $6\frac{1}{12}$; hind toe $1\frac{1}{2}$,

its claw $1\frac{2}{12}$; second toe $2\frac{8}{12}$, its claw $\frac{7}{12}$; third toe $3\frac{11}{12}$, its claw $\frac{9}{12}$; fourth toe $3\frac{2}{12}$, its claw $\frac{7\frac{1}{2}}{12}$. Weight $2\frac{1}{4}$ lb.

The Female is similar to the male, but somewhat smaller.

The roof of the mouth is slightly concave, with a median and two lateral longitudinal ridges, the palate convex, the posterior aperture of the nares linear, without an anterior slit. The mouth is rather narrow, measuring only 8 twelfths across, but is dilatable to $1\frac{1}{2}$ inch, the branches of the lower mandible being very elastic. The aperture of the ear is very small, being 2 twelfths in diameter, and roundish. The œsophagus is 2 feet 2 inches long, 1 inch and 4 twelfths in diameter, extremely thin, the longitudinal fibres within the transverse, the inner coat raised into numerous longitudinal ridges. The œsophagus continues of uniform diameter, and passes as it were directly into the stomach, there being no enlargement at its termination indicative of the proventriculus, which however exists, but in a modified form, there being at the termination of the gullet eight longitudinal series of large mucous crypts, about half an inch long, and immediately afterwards a continuous belt, $1\frac{1}{2}$ inch in breadth, of small cylindrical mucous crypts with minute apertures. Beyond this the stomach forms a hemispherical sac $1\frac{1}{2}$ inch in diameter, of a membranous structure, having externally beneath the cellular coat a layer of slender muscular fibres, convex towards two roundish tendons, and internally a soft, thin, smooth lining, perforated by innumerable minute apertures of glandules. The intestine is very long and extremely slender, measuring 6 feet 7 inches in length, its average diameter 2 twelfths. The



rectum, *bdf*, is 3 inches long; the cloaca, *def*, globular, $1\frac{1}{2}$ inch in diameter; the cœcum, *c*, single, as in the other Herons, 3 twelfths long, and nearly 2 twelfths in diameter.

The trachea is 1 foot $9\frac{1}{4}$ inches long, of nearly uniform diameter, flattened a little for about half its length, its greatest breadth $3\frac{1}{2}$ twelfths; the rings 285, the last four rings divided and arched. The contractor muscles are extremely thin, the sterno-tracheal moderate, and coming off at the distance of 1 inch from the lower extremity, from which place also there proceeds to the two last rings a pair of slender inferior laryngeal muscles. The bronchi are very short, of about two half rings.

TAPAYAXIN.

The animal represented on the plate is the *Tapayaxin* of Hernandez, *Phrynosoma orbicularis* of WIEGMANN, *Tapaya orbicularis* of CUVIER. The specimen from which it was drawn was entrusted to my care by my friend RICHARD HARLAN, M. D., to whom it was presented by Mr NUTTALL, who found it in California. A notice respecting this species by Dr HARLAN will be found in the American Journal of Science and Arts, vol. xxxi.

GLOSSY IBIS.

IBIS FALCINELLUS, VIEILL.

PLATE CCCLXXXVII. MALE.

THE first intimation of the existence of this beautiful species of Ibis within the limits of the United States is due to Mr GEORGE ORD of Philadelphia, the friend and companion of the celebrated ALEXANDER WILSON. It was described by him in the first volume of the Journal of the Academy of Natural Sciences of Philadelphia. He states that "on the seventh of May of the present year (1817), Mr THOMAS SAY received from Mr ORAM, of Great Egg Harbour, a fine specimen of *Tantalus*, which had been shot there. It is the first instance which has come to my knowledge of this species having been found in the United States. I was informed that a recent specimen of this bird was, likewise in the month of May, presented to the Baltimore Museum, and that two individuals were killed in the district of Columbia." In the sequel Mr ORD compares it with Dr LATHAM's account of the *Tantalus Mexicanus* of that author, and conjectures that it is the same.

It is not a little curious to see the changes of opinion that have taken place within these few years among naturalists who have thought of comparing American and European specimens of the birds which have been alleged to be the same in both continents. The Prince of MUSIGNANO, for example, who has given a figure of the very individual mentioned by Mr ORD, thought at the time when he published the fourth volume of his continuation of WILSON's American Ornithology, that our Glossy Ibis was the one described by the older European writers under the name of *Ibis Falcinellus*. Now, however, having altered his notions so far as to seem desirous of proving that the same species of bird cannot exist on both the continents, he has latterly produced it anew under the name of *Ibis Ordi*. This new name I cannot with any degree of propriety adopt. I consider it no compliment to the discoverer of a bird to reject the name which he has given it, even for the purpose of calling it after himself.

The Glossy Ibis is of exceedingly rare occurrence in the United States, where it appears only at long and irregular intervals, like a

wanderer who has lost his way. It exists in Mexico, however, in vast numbers. In the spring of 1837, I saw flocks of it in the Texas; but even there it is merely a summer resident, associating with the White Ibis, along the grassy margins of the rivers and bayous, and apparently going to and returning from its roosting places in the interior of the country. Its flight resembles that of its companion, the White Ibis, and it is probable that it feeds on the same kinds of crustaceous animals, and breeds on low bushes in the same great associations as that species, but we unfortunately had no opportunity of verifying this conjecture. Mr NUTTALL, in his Ornithology of the United States and Canada, says that "a specimen has occasionally been exposed for sale in the market of Boston."

I have given the figure of a male bird in superb plumage, procured in Florida, near a wood-cutter's cabin, a view of which is also given.

TANTALUS FALCINELLUS, *Linn. Syst. Nat.* vol. i. p. 241.—*Lath. Ind. Ornith.* vol. ii. p. 707.

IBIS FALCINELLUS, *Vieill. Nouv. Dict. d'Hist. Nat.—Ch. Bonaparte*, Synopsis of Birds of United States, p. 311.—*Wagler, Syst. Avium.*

GLOSSY IBIS, IBIS FALCINELLUS, *Ch. Bonap. Amer. Ornith.* vol. iv. p. 23.

TANTALUS IGNEUS, *Gmel. Syst. Nat.* vol. i. p. 649.—*Lath. Ind. Ornith.* vol. ii. p. 708. Adult.

TANTALUS VIRIDIS, *Gmel. Syst. Nat.* vol. i. p. 648.—*Lath. Ind. Ornith.* vol. ii. p. 707. Young.

NUMENIUS CASTANEUS, *Briss.* vol. v. p. 329. Adult.

NUMENIUS VIRIDIS, *Briss.* vol. v. p. 326. Young.

TANTALUS MEXICANUS? *Ord, Journal of Acad. of Sciences of Philadelphia*, vol. i. p. 53.

BAY OF GLOSSY IBIS, *Nuttall, Manual*, vol. ii. p. 88.

Adult Male. Plate CCCLXXXVII.

Bill very long, slender, higher than broad, compressed, tapering, acute, obtuse. Upper mandible with the dorsal line arched in its whole length, the ridge convex, broader towards the end, the sides at the base nearly erect, towards the end very convex and narrow, the ridge separated in its whole length from the sides by a deep narrow groove, the edges inflected and sharp. Nostrils basal, dorsal, linear, direct. Lower mandible more slender than the upper, its angle very narrow, and protracted in the form of a groove to the tip, the sides

convex, the edges sharp, but strong and closely approximated, bearing only a very narrow groove between them.

Head small, compressed, oblong; neck long and slender; body slender, deeper than broad; wings rather large. Feet very long, slender; tibia long, bare about half its length, and covered all round with hexagonal scales; tarsi long, slender, anteriorly covered with numerous broad scutella, laterally with angular scales, beneath flattened, with thick soft margins; the anterior connected at the base by membranes, of which the outer is large; claws rather small, slightly arched, compressed, tapering, pointed, that of the middle toe with a sharp thin edge.

There is a bare space margining the forehead, occupying the part before the eye, and extending a little beyond it. Feathers of the head and neck slender lanceolate; those of the former glossy and compact, of the latter blended, as are those of the breast and abdomen, which are ovate. The upper parts highly glossed, with silky lustre, the feathers generally ovate and rounded. Wings long, ample, the first primary a quarter of an inch shorter than the second, which is two-twelfths longer than the third, the rest moderately graduated; the first sinuate on the inner web near the end, the second less deeply so; some of the inner secondaries elongated, but rounded, and when the wing is closed an inch and ten-twelfths shorter than the longest primary. Tail short, very slightly emarginate, of twelve rounded feathers.

Bill black; bare part of the head greyish-blue; iris hazel; feet greyish-black, claws brown. The upper part and sides of the head are dark glossy, with purplish reflections. The neck, a portion of the back anteriorly, the breast, abdomen, and legs, are of a deep rich brownish-red or dark chestnut; part of the breast shaded with green, the sides dusky tinged with green, as are the lower wing-coverts, and lower tail-coverts. Excepting the anterior edge of the wing, and the anterior scapulars, which are deep glossy brownish-red, the upper parts are splendid dark green, glossed with purple; the primaries black, shaded with green; the tail glossy with purple reflections.

Length to end of tail 25 inches; to end of claws $30\frac{1}{2}$; bill along the ridge $5\frac{4}{12}$, along the edge of lower mandible $5\frac{2}{12}$; wing from flexure $11\frac{1}{4}$; tail $4\frac{1}{4}$; bare part of tibia $2\frac{1}{2}$; hind toe $1\frac{1}{12}$, its claw $\frac{5}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{6}{12}$; third toe $2\frac{8}{12}$, its claw $\frac{7}{12}$; fourth toe $2\frac{4}{12}$, its claw $\frac{5}{12}$.

The Female is similar to the male, but somewhat less.

The young in its second plumage, has the bill dusky, tinged with yellow, the bare part of the head dusky; the feet blackish-brown, the head, neck and lower parts are greyish-brown, the head and greater part of the neck marked with small longitudinal streaks of white, of which there are two on each feather. All the upper parts are blackish-green, glossy in a less degree than those of the adult.

On comparing adult American specimens with others obtained on the old continent, I can perceive no difference between them. A young Mexican bird, and one from India, are also precisely similar. I cannot therefore entertain a doubt as to the identity of our bird with the *Tantalus Falcinellus* of LATHAM and other European writers, which has been shewn by SAVIGNY to be the Black Ibis of the ancients.



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