PROCEEDINGS
OF THE
FOURTH INTERNATIONAL
ORNITHOLOGICAL CONGRESS
LONDON JUNE 1905
FORMING
VOLUME XIV OF THE "ORNIS"
EDITED
Under the direction of the President:
R. BOWDLER SHARPE, LL.D.,
BY
The Secretaries:
ERNST J. O. HARTERT, PH.D., AND J. LEWIS BONHOTE, M.A.
WITH EIGHTEEN PLATES.

LONDON:
DULAU & CO.,
37, SOHO SQUARE, W.
February 1907.
op. i. 259. megrV

LONDON. WITHERBY & CO., LETTERPRESS
AND COLOUR PRINTERS, 326, HIGH HOLBORN.
PREFACE.

The present Volume gives the history of the IVth International Ornithological Congress. It only remains for me to acknowledge the debt of gratitude which, as President, I owe to all those colleagues of mine who rallied round me so enthusiastically and helped to make our Congress such a remarkable success. Of this fact I am assured by the numerous letters which I have received from my foreign colleagues in every part of the world.

The special thanks of the Congress are due to H.R.H. Prince Ferdinand of Bulgaria, the Duke and Duchess of Bedford, the Hon. Walter Rothschild, Dr. F. Du Cane Godman, Professor Newton, Sir John Pound (the Lord Mayor of London), and our friends in Yorkshire, Mr. A. Boynton and Mr. Nelson, whose hospitality and generosity contributed so much to the enjoyment of the members of the Congress. To the zealous and energetic Secretaries, the Treasurer, and the Committee of Management, I take this opportunity of tendering my sincere thanks for their friendly co-operation.

R. BOWDLER SHARPE, President.
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ERRATA.

Pages 195 (line 17 from bottom) and 196 (line 10) :—Instead of “Chenopsis” read “Chenopis.”

Pages 197 (line 5 from bottom), 209 (line 12 from bottom), 210 (line 1), and 214 (line 12 from bottom) :—Instead of “Alectraenas” read “Alectroenas.”

Pages 203 (line 6) and 211 (line 11) :—Instead of “Comptolaimus” read “Camptolaimus.”

Pages 212 (line 8) and 216 (line 5) :—Instead of “lanaiensis” read “lanaiensis.”

Page 214 (line 6 from bottom) :—Instead of “gigantia” read “gigantea.”

Page 214 (line 20) :—Instead of “defossar” read “defossor.”

Page 215 (line 6 from bottom) :—Instead of “albifascies” read “albifacies.”

Page 215 (line 18 from bottom) :—Instead of “Cirridops” read “Ciridops.”

Page 257 (line 2 from bottom) :—Instead of “chiadriae” read “chiaradiae.”
RECORD OF PROCEEDINGS.

The Third International Ornithological Congress, held in Paris, in 1900, elected Dr. R. Bowdler Sharpe President of the International Ornithological Committee and of the Fourth Congress, to take place in England in 1905.

In August, 1904, Dr. Sharpe, Mr. C. E. Fagan, Dr. Hartert and the Hon. Walter Rothschild met at Tring to arrange the Programme of the Congress. Dr. Sharpe appointed as Treasurer of the Congress Mr. C. E. Fagan, Assistant-Secretary, British Museum (Natural History), and as Secretaries Dr. Ernst Hartert and Mr. J. Lewis Bonhote. An Organising Committee was then formed, consisting of the following gentlemen:

President
Treasurer \( \text{ex officio} \)
Secretaries
F. Du Cane Godman, D.C.L., F.R.S.
E. G. B. Meade-Waldo.
W. R. Ogilvie-Grant.
F. Penrose, M.D.
Hon. Walter Rothschild, Ph.D., M.P.
P. L. Sclater, D.Sc., Ph.D., F.R.S.
H. F. Witherby.

This Committee held several meetings in London, and arrangements were made to hold the Congress in the rooms of the London University, Imperial Institute Buildings, during the week 12th to 17th June, to be followed by excursions on the first three days of the following week.

It was decided that the Congress should be divided into sections, as follows:

Section I.—Systematic Ornithology, Geographical Distribution, Anatomy and Palaeontology.
Section II.—Migration.
Section III.—Biology, Nidification, Oology.
Section IV.—Economic Ornithology and Bird Protection.
Section V.—Aviculture.

The following Programme was eventually agreed upon:

Monday, June 12th. Informal Reception at the Jehanghir Hall, Imperial Institute.

Tuesday, June 13th. Morning and Afternoon—Meetings of Sections. Evening—Social gathering at the Naval, Shipping and Fisheries' Exhibition, at Earl's Court, by invitation of the Directors of the London Exhibitions, Ltd.

Wednesday, June 14th. Morning and Afternoon—Meetings of Sections. Evening—Conversazione at the Natural History Museum.

Thursday, June 15th. Visit to Tring, with Lecture on "Extinct Birds," by the Hon. Walter Rothschild, M.P.

Friday, June 16th. Morning—Meetings of Sections. Afternoon—Reception at the Mansion House, by the Lord Mayor and Lady Mayoress. Evening—Dinner given to the Foreign Members by the British Ornithologists' Union.

Saturday, June 17th. Morning—Meetings of Sections. Afternoon—Concluding Meeting.

Monday, June 19th. Visit to Woburn Abbey, Bedfordshire.

Tuesday, June 20th. Visit to Cambridge. Luncheon at Magdalene College.

Wednesday, June 21st. Visit to the Cliffs at Bempton, Yorkshire, to view the colonies of seabirds and the cliff climbers.

The following gentlemen kindly consented to serve on the General Committee:

**General Committee.**

**Great Britain and Ireland.**

The Right Hon. Lord Avebury, P.C., D.C.L., LL.D., F.R.S.

Captain G. E. H. Barrett-Hamilton.

Richard M. Barrington, LL.D.

His Grace the Duke of Bedford, K.G., President of the Zoological Society.

Edward Bidwell.

W. T. Blanford, LL.D., F.R.S.

Sir Walter Lawry Buller, Sc.D., F.R.S.

A. G. Butler, Ph.D.

W. E. De Winton.

H. E. Dresser.

W. Eagle Clarke, F.R.S.E.

A. H. Evans, M.A.

Col. H. W. Feilden, C.B.

H. O. Forbes, LL.D.

Hans Gadow, Ph.D., F.R.S.

Lt.-Col. Godwin-Austen, F.R.S.

Albert C. L. Günther, M.D., F.R.S.

J. H. Gurney.

J. E. Harting.

John A. Harvie-Brown.

A. O. Hume, C.B.

Sir H. H. Johnston, G.C.M.G., K.C.B.

The Right Hon. Sir Herbert E. Maxwell, Bt., F.R.S., M.P.

John Guille Millais.

P. Chalmers Mitchell, M.A., D.Sc., Secretary to the Zoological Society of London.

Henry J. Pearson.

W. P. Pyrcraft.

W. H. St. Quintin.

The Hon. N. Charles Rothschild, M.A.

Howard Saunders, Secretary to the British Ornithologists’ Union.
D. Seth-Smith.
Capt. G. E. Shelley.
W. B. Tegetmeier.
Archibald Thorburn.
Aubyn B. R. Trevor Battye.
The Right Hon. Lord Walsingham, LL.D., F.R.S.
Joseph I. S. Whitaker.
Lt.-Col. R. G. Wardlaw-Ramsay, F.R.S.E.

Australia.
Alfred North.
Charles W. De Vis.
Dudley Le Souëf.

Austria.
Carl Hellmayr.
Dr. Th. Lorenz Ritter von Liburnau.
Othmar Reiser.
Victor Ritter von Tschusi zu Schmidhoffen.

Belgium.
Dr. Alphonse Dubois.

Borneo.
Charles Hose, D.Sc.

Brazil.
Dr. Emil A. Goeldi.
Dr. Herman von Ihering.

Bulgaria.
Hofrat Dr. Paul Leverkühn.

Canada.
J. H. Fleming.

Canary Islands.
Don Anatael Cabrera y Diaz.

Cape Colony.
W. L. Sclater, M.A.

China.
C. B. Rickett.
F. W. Styan.
J. D. La Touche.

Denmark.
Herluf Winge.
Dr. Knud Andersen.
General Committee.

Egypt.
Capt. Stanley S. Flower.

Finland.
Dr. A. Palmén.

France.
M. J. de Claybrooke.
Baron Jules de Guerne.
Dr. Remy Saint-Loup.
Dr. Emile Oustalet.
Dr. Louis Bureau.

Germany.
Graf Hans von Berlepsch.
Freiherr Hans von Berlepsch.
Prof. Dr. Rudolf Blasius.
Geheimrat Prof. Dr. Wilh. Blasius.
Prof. Dr. Jean Cabanis.
Dr. Otto Finsch.
Prof. Dr. Anton Reichenow.
Herman Schalow.

Greece.
Dr. Th. Krüper.

Holland.
F. E. Blaauw.
Dr. J. Büttikofer.

Hungary.
Otto Herman.
Dr. Julius von Madarász.

India.
E. C. Stuart Baker.

Italy.
Conte E. Arrigoni degli Oddi.
Dr. H. H. Giglioli.
Dr. Giacinto Martorelli.
Conte Tommaso Salvadori, M.D.

Japan.
Dr. Isao Ijima.

Java.
Max Bartels.

Madeira.
Abbé P. Schmitz.
General Committee.

Norway.
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Portugal.
   Prof. J. V. Barboza du Bocage.
Russia.
   Dr. Valentin Bianchi.
   S. A. Buturlin.
   Prof. Dr. M. Menzbier.
   Harald Baron Loudon.
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   Don Salvador Castello y Cabreras.
   Prof. Don Martínez-Gómez.
Sweden.
   Prof. Dr. Einar Lönnberg.
   Prof. Dr. Yngve Sjöstedt.
Switzerland.
   Prof. Dr. Victor Fatio.
   Prof. Dr. Studer.
United States of America.
   Joel Asaph Allen, Ph.D.
   F. M. Chapman.
   D. G. Elliot, F.R.S.E.
   Chas. W. Richmond.
   Robert Ridgway.
   Leonhard Stejneger.
LIST OF MEMBERS.

Note.—Members who were present are denoted by an asterisk.

DELEGATES NOTIFIED BY FOREIGN GOVERNMENTS.

Belgium *Dr. Alphonse Dubois.
France Mons. Daubrée, Conseiller d'État, Directeur Général des Eaux et des Forêts.
*Prof. Dr. Oustalet, President of the Third International Ornithological Congress.
Holland *Baron Snouckhúrt von Schauburg.
*Dr. J. Büttikofer.
Hungary *Dr. Otto Herman, Honorary President of the Hungarian Ornithological Society.
*Herr Stefan Chernel von Chernelháza.
Italy *Prof. H. H. Giglioli.
Sweden *Prof. Axel Johan Einar Lönneberg.

MEMBERS.

*Abraham, Miss Lilian, 40, Elgin Crescent, Notting Hill, London, W.
Amherst, Hon. Florence, Didlington Hall, Stoke Ferry, Norfolk, England.
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*Audubon, Miss Maria R., 29, Upper Bedford Place, Russell Square, London, W.C.

Baird, Sir Alexander, Bart., Urie, Stonehaven, N.B.
List of Members.

*Barrington, Richard M., LL.D., Fassaroe, Bray, Co. Wicklow, Ireland.
Bartels, Max, Pasir Datar, Halte Tjisaat, Java, Dutch East Indies.
Bau, Alexander, Ruggburg, near Bregenz, Austria.
Berlepsch, Graf Hans von, Schloss Berlepsch, Hesse, Germany.
*Berlepsch, Gräfin Emma von, Schloss Berlepsch, Hesse, Germany.
*Berlepsch, Freiin Anna von, Schloss Berlepsch, Hesse, Germany.
*Berlepsch, Hans Freiherr von, 2, Landaustasse, Cassel, Germany.
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Blaauw, F. E., Gooilust, 's Graveland, North Holland.
*Blasius, Prof. Dr. R., President and Delegate of the German Ornithological Society, and also of the Internat. Frauenbund für Vögelshutz, Braunschweig, Germany.
*Blasius, Mrs., Braunschweig, Germany.
*Bocarmé, Fd. Visart de, Chateau d'Emines, Rhisnes, Belgium.
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*Bonar, The Rev. H. N., Saltoun, Pencaitland, East Lothian, N.B.
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Bryan, Wm. Alanson, B. P. Bishop Museum, Honolulu, Hawaiian Islands.
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*Cerva, F. A., Sziget Coep, Hungary.

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*Chapman, Mrs. Frank M., New York City, U.S.A.


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*Fatio, Dr. Victor, Valavran près Genthod, Canton de Genève, Suisse, Delegate of the Société Nat. Helvet. des Sc. Nat. (Deceased.)
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*Fleming, J. H., Toronto, Canada.
*Foster, Nevin H., Hillsborough, co. Down, Ireland.
*Foster, William T., Sapucay, Paraguay.
*Frost, W. E., Ardvreck, Crieff, Perthshire, N.B.
*Gans, Herbert E., Sierme, Geneva, Switzerland.
*Gans, Mrs. Herbert E., Sierme, Geneva, Switzerland.
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*Giglioli, Prof. Dr. H. H., Florence, Italy, Delegate of L'Unione Zoologica Italiana and the Società Zoologica Italiana.

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* Hegyfoky, Rev. T., Turkeve, Hungary.

*Heine, Ferd., Oberamtmann, Hadmersleben, Germany.

*Heine, Dr. Ferd., Junr., Zilly, Germany.
List of Members.

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*Lorenz, Dr. Ritter L. von Liburnau, Representing the Hof Museum, Wien, Austria.
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*Talsky, Josef, Olmütz, Mähren, Austria.
Taylor, Lionel E., Irene, Transvaal, South Africa.
*Ternier, Louis, Honfleur, Calvados, France.
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GENERAL MEETINGS.

MONDAY, JUNE 12th.

At 8.30 p.m.—An Informal Reception was held at the Jehanghir Hall, Imperial Institute Buildings, at which most of the Members of the Congress were present.

TUESDAY, JUNE 13th.

At 10 a.m.—Prof. Oustalet, President of the Third International Ornithological Congress, made a short speech, and vacated the chair in favour of Dr. R. Bowdler Sharpe, the President elected at Paris in 1900.

Dr. Sharpe, in taking the chair, heartily welcomed the Delegates of the various Governments and learned Societies, and all the members of the Congress. He then called upon Dr. Hartert to make some remarks concerning the business of the Congress, and to propose, on behalf of the Organising Committee, the election of the Vice-Presidents of the
Congress and Presidents, Vice-Presidents and Secretaries of the Sections. The following gentlemen were then unanimously elected:

**Vice-Presidents of the Congress.**

His Grace the Duke of Bedford, K.G.
Professor Dr. H. H. Giglioli.
Dr. F. Du Cane Godman, F.R.S.
Otto Herman.
Prof. Dr. Emile Oustalet.
Prof. Dr. Anton Reichenow.
The Hon. Walter Rothschild, Ph.D., M.P.
Dr. P. L. Sclater, F.R.S.

**Section I.** (Systematic Ornithology, etc.).

*President:* Dr. P. L. Sclater, F.R.S.
*Vice-Presidents:* Count Hans von Berlepsch.
                        Professor Dr. A. Reichenow.
*Secretaries:* W. R. Ogilvie-Grant.
                  Dr. C. Parrot.

**Section II.** (Migration).

*President:* Otto Herman.
*Vice-Presidents:* Dr. Valentin Bianchi.
                  Howard Saunders.
*Secretaries:* Titus Csörgey.
                  Harry F. Witherby.

**Section III.** (Biology, Nidification, Oology).

*President:* Prof. Dr. Victor Fatio.
*Vice-Presidents:* Prof. Dr. H. H. Giglioli.
                   Leonhard Stejneger.
*Secretaries:* Edward Bidwell.
                Baron Snouckaert van Schauburg.

**Section IV.** (Economic Ornithology and Bird-Protection).

*President:* H. E. Dresser.
*Vice-Presidents:* Prof. Dr. Rudolf Blasius.
                  Prof. Dr. Einar Lönnberg.
General Meetings.

Secretaries: S. Chernel von Chernelhaza.
Dr. F. G. Penrose.

Section V. (Aviculture).

President: E. G. B. Meade-Waldo.
Vice-Presidents: Freiherr Hans von Berlepsch.
Baron J. de Guerne.
Secretaries: Dr. J. Büttikofer.
D. Seth-Smith.

The Secretary read some letters and telegrams from Ornithologists who sent greetings and expressions of regret at their inability to attend the Congress.

The President then delivered his address, at the termination of which the meeting closed.

In the evening many Members and their friends gathered at the Naval, Shipping and Fisheries' Exhibition at Earl's Court.

Wednesday, June 14th.

General Meeting.

At 10 a.m.—Prof. Giglioli opened the meeting, and after some business communications by Dr. Hartert, called upon Mr. Frank M. Chapman to deliver his lecture: "What constitutes a Museum Collection of Birds." The lecture was illustrated by numerous very instructive lantern slides. Dr. Paul Leverkühn gave an address on the distribution and breeding habits of *Aquila imperialis* and *Neophron percnopterus* in Bulgaria. Mrs. Ilona Ginever, having been introduced by Mr. Herman, read in English the latter's paper "On the Migration of Birds."

Mr. Herman then addressed the Congress on the work carried on by the "Hungarian Central Bureau of Ornithology," illustrating his remarks by numerous lantern slides of maps showing the beginning, height, and decline of the spring-immigration of the Swallow in Hungary.

Copies of this paper and of a larger Mémoire, "Recensio Critica automatica of the Doctrine of Bird Migration," by the same author, which was dedicated to the British Ornithologists' Union, were given to those present.
Then followed Dr. Dwight's paper on "Some phases of wear in feathers," also illustrated by lantern slides, and Mr. Henry Scherren's notes on "The first bird-list of Eber and Peucer (1549) and its relation to the 'Avium praeципu- arum, quorum apud Plinium et Aristotelem mentio est, brevis et succincta historia' (1544)."

In the evening a conversazione was held at the Natural History Museum, by kind permission of the Trustees of the British Museum.

**Thursday, June 15th.**

This day was devoted to an excursion to Tring, the Members of the Congress being the guests of the Hon. Walter Rothschild, M.P.

A special train left Euston station at 9 o'clock. The Members of the Congress were conveyed from the station to Mr. Rothschild's Museum in brakes. An hour was devoted to a walk through the Museum, and then the party proceeded to the Victoria Hall in Tring, where Mr. Rothschild delivered his lecture on "Extinct and Vanishing Birds." The hall was decorated with flowers and plants, and along the walls was exhibited a large collection of birds either extinct or more or less in danger of extinction, as well as skeletons, bones, and drawings.

Luncheon followed, after which photographs were taken on the lawn, and the party divided, some to see the bird-skins or eggs at the Museum, under the guidance of Dr. Hartert and Mr. Hellmayr. Others, led by Mr. Rothschild, visited the park, to see the Rheas, Emus and Kangaroos, others again driving to the "Tring Reservoirs," where they saw the numerous wild Ducks and other Water-fowl. At 5 o'clock tea and light refreshments were served at the Bungalow, and at 7.10 the special train left Tring station again for London.

**Friday, June 16th.**

At 10 a.m.—Dr. Louis Bureau showed an "Atlas des Planches Coloriées de Brisson," attributed to the painter Martinet. Dr. Paul Leverkühn spoke about the correspondence of Professor Naumann, and Dr. Edward Wilson
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lectured on “Some Antarctic Birds,” and besides his own series of beautiful Antarctic landscapes and of bird-life from those regions, showed and explained pictures from the Scottish Antarctic Expedition, belonging to Mr. Bruce, who was unable to attend. Mr. Bonhote recorded his “Experiments in hybridising Ducks,” showing many skins as well as lantern-pictures. Lastly, Dr. Hartert spoke on the “Principal Aims of Modern Ornithology.”

In the afternoon a reception was given to the Congress by the Lord Mayor of London and the Lady Mayoress, at the Mansion House. The celebrated gold plate of the City and other ancient and remarkable objects of interest were displayed for the visitors, some of whom were also able to visit the Guildhall.

In the evening a dinner, under the presidency of Dr. F. Du Cane Godman, F.R.S., was given by the British Ornithologists’ Union at the Frascati Restaurant.

SATURDAY, JUNE 17TH.

2.30 p.m.—The President occupied the chair, and opened the last meeting of the Congress by asking the Hon. Walter Rothschild to bring before the Congress a proposal for the protection of Penguins. Mr. Rothschild stigmatised as a dastardly outrage the persecution of Penguins on some island-groups in the waters south of Australia and New Zealand, where these birds were caught during the breeding-season and “boiled down for oil.” He explained that if such things were allowed to proceed, the Penguins of those islands would soon be among the vanishing birds, and he proposed the following resolution, which was seconded by Sir Walter Buller:

“That telegrams be sent in the name of the Fourth International Ornithological Congress to the Commonwealth of Australia and the Governments of Tasmania and New Zealand, appealing to them most strongly to pass legislation to prevent the destruction of Penguins and all other birds which were boiled down for oil on the islands under their rule.”
This resolution was adopted unanimously, with the exception of Dr. Stejneger, who opposed it, maintaining that the Ornithological Congress, being an international body containing members of many nationalities, had no business to interfere with the internal laws of distant Colonies, or to dictate a course of action to foreign Governments. This view was combated by several other members of the Congress, but Dr. Stejneger, on the grounds above stated, though he was otherwise quite in sympathy with the resolution, maintained his opposition, and specially desired that this should be stated in the records of the Proceedings.

The President then laid before the Congress a Resolution of the Permanent International Ornithological Committee, viz.: “That the next International Ornithological Congress be held in Berlin in 1910, Prof. Reichenow being the President, Count von Berlepsch and Prof. Rudolf Blasius Vice-Presidents; that if the Congress could not be held in Germany, it should take place in Belgium, Prof. Dr. Dubois acting as the President.

Prof. Reichenow stated that there might be difficulties in holding the next Congress in Berlin so that he felt himself unable to accept the honour. A discussion ensued, and Dr. Sclater proposed as an amendment that “Berlin, or some other city in Germany,” should be substituted for “Berlin.”

The Resolution, as amended, was carried.

Prof. R. Blasius thanked, in the name of the Congress, its Patron, H.R.H. the Prince of Wales; the Honorary Presidents, H.R.H. the Prince of Bulgaria and Mr. Alfred Russel Wallace; the President, Dr. R. Bowdler Sharpe; the Treasurer, Mr. C. E. Fagan; the Secretaries, Messrs. Ernst J. O. Hartert and J. Lewis Bonhote; and the members of the Organising Committee, Messrs. F. Du Cane Godman, E. G. B. Meade-Waldo, W. R. Ogilvie-Grant, F. Penrose, Hon. Walter Rothschild, P. L. Sclater, and H. F. Witherby for “das vortreffliche Gelingen” of the Congress.

The President expressed his thanks to all the Members of the Congress, and especially the foreign delegates, for their attendance and help. He then formally closed the Congress.
EXCURSIONS.

The first three days of the following week were devoted to excursions. On Monday a special train conveyed the members from Euston Station to Ridgmont in Bedfordshire, where carriages were waiting to convey the members to the park. The Duke and Duchess of Bedford met the party, and a first halt was made to view the Bisons, Giraffes, and Ostriches, after which the drive was continued, several other halts being made, to afford views of the numerous species of Deer, Antelopes, and Water-fowl. Luncheon was then served at the Abbey, after which the party divided, some visiting the picture- and sculpture-galleries, while others, accompanied by the Duke and Duchess, went for an extended walk through the park.

On Tuesday an excursion was made to Cambridge. Prof. Newton, assisted by Dr. Gadow, received the Members at the Museum, where many rare books, and specimens of birds and eggs, were on exhibition. Luncheon was served at Magdalene College and Dr. Sharpe, in a short speech, thanking the Master and Fellows for having allowed the Congress to lunch in their Hall, proposed the health of Prof. Newton, which was warmly seconded in appropriate speeches by Drs. Oustalet, Reichenow, and Fatio, and Mr. F. M. Chapman. Professor Newton, in replying, reminded the members of the Congress that their excursion might almost be considered a bird-nesting expedition as they came to see the nest from which had flown "The Ibis," now so widely known all over the world. The nest was built and the young "Ibis" fledged in the room immediately above that in which they had left their coats and hats. After luncheon most of the members drove to Fen Ditton, while some who had not been to Cambridge before went round the Colleges. Mr. and Mrs. Bonhote received the party at their residence, Ditton Hall, showing them the aviaries containing a fine collection of British birds, as well as the hybrid ducks used in Mr. Bonhote's experiments. After tea the party returned to Cambridge in time to catch the special train for Bridlington.
Dinner was served on the journey and Bridlington was reached late that night. The following morning the party started off in brakes under the guidance of Mr. A. Boynton, who had made the local arrangements. A short visit was paid to Flamborough Head, its lighthouse and cliffs adjoining, and the journey continued to Bempton. Cliff-climbers were ready to start and fine views were obtained of the birds as well as of the climbers and their method of work, which was fully explained in a specially printed extract from Mr. Nelson's forthcoming book on the "Birds of Yorkshire," which the author, who personally acted as cicerone, kindly distributed among the visitors. Luncheon was served in a tent which had been erected near the edge of the cliff, and, after a photograph had been taken of the party, most of the members returned to Bridlington in time for the afternoon train to London, while a few remained to re-visit the Bempton cliffs on the following day. Of the innumerable eggs brought up by the climbers, many were bought and taken home to the cabinets of egg collectors, where they will for a long time remind their owners of the Congress of Ornithologists in 1905.

All the excursions were well attended; while practically the whole Congress, i.e., nearly 200 members, went to Tring, about 150 accepted the invitation of the Duke of Bedford to Woburn Park, 100 assembled at Cambridge, and about 50 took part in the excursion to the Bempton Cliffs.
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SECTION I.

SYSTEMATIC ORNITHOLOGY, GEOGRAPHICAL DISTRIBUTION, ANATOMY AND PALEONTOLOGY.

Tuesday, 15th June.

The President, Dr. P. L. Sclater, F.R.S., in the Chair.

1. Dr. R. Blasius: Vortheile und Nachtheile moderner Arten- und Unterarten Beschreibung und Namengebung.

Dr. Blasius dealt at considerable length with the vexed question of Zoological nomenclature, dividing his paper under three headings:—

1. The Law of Priority.
2. Whether specific names should commence with a capital or small letter.
3. The nomenclature of sub-species.

His conclusions were as follows:—

1. That the work of Moehring (1752) should be ignored.
2. That the 10th edition of Linnaeus should be the starting point of all Zoological nomenclature.
3. That sub-species might commence with either a capital, or small, letter.
4. That trinomials should be generally accepted.
5. That Mr. Kleinschmidt’s proposal to introduce new quasi subgeneric names between the generic and specific names—for example Pratincola Pratensis rubetra—should be declined.
6. That in giving lists of species, only species should bear consecutive numbers, the subspecies being distinguished by the addition of the letters a, b, c, etc.
7. That new forms should not be given names without a series of specimens for comparison.

A discussion followed, in which Dr. Hartert said that he sincerely hoped that everybody would agree with Prof. Blasius,
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that Moehring's names could not be adopted in our nomenclature. He had fully discussed the question in the "Zoologische Anzeiger" for 1904.

He thought that it would be more desirable not to allow the option of spelling dedication-names with small or large initials, because if such option was allowed, uniformity would be out of the question.

He was glad to hear that Prof. Blasius agreed that trinomial nomenclature must be generally employed, but he did not agree that the first-named form ought to bear two names instead of three. "Corvus corax" should be a general name for the species, including "Corvus corax corax" of North-Europe, Corvus corax hispanus of Spain, Corvus corax sardus of Sardinia, and others, while Corvus corax corax could leave no doubt that it was only and strictly meant for the first-named North-European Raven. It was not scientific to speak of "the European Raven," because in Europe at least four distinct forms of Raven were found.

Mr. Kleinschmidt's proposal to introduce a new nomenclature, that of his "Formenkreise," was indeed most unnecessary, and he had fully discussed this in the "Journal für Ornithologie."

Dr. Hartert thought it much more practical if, in a systematic work, not only the species, but also the subspecies, were separately numbered under similar headings, because, for a scientific student, the subspecies were often at least as interesting as the species.

The demand that the differences between subspecies should be so well-marked, that one could name and determine the form, was a very pleasing one, but rules could not be made for nature, and the facts must be taken as they are, and not as one would like them to be! If a subspecies is ill-defined in nature, a very clear diagnosis for it cannot be given, and it would be unscientific if, on that account, the fact that certain differences existed were simply neglected. The object of scientific work was not so much to bring clear and plausible statements before the public, as to find out the truth—even if it were very inconvenient.

Prof. Blasius said that it was dangerous to surmise that more subspecies of a certain species might exist, because this
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actually enticed workers to search for new forms ("es verleitet ja vollkommen zum Suchen nach neuen Subspecies").

Dr. Hartert was of opinion that this was exactly what was wanted. Our knowledge was not yet complete, and students wished to be led in search of new discoveries, because it was a laudable object to discover new facts and to enlarge research and knowledge. On the other hand Dr. Hartert fully agreed with the speaker that new forms should not be created and named without good and apparently sufficient reasons, and, if possible, only after examination of a good series.

The Hon. Walter Rothschild said that some ornithologists, in designating the typical form of a species, instead of repeating the specific name as in Corvus corax corax, preferred to write Corvus corax typicus, but he was not in favour of this method. Dr. Blasius had expressed the opinion that the differences between two forms should always be definitely expressed in words, but it was often impossible to do so, as one could not ascertain the limits of variation unless very large series were available for comparison.

Dr. Reichenow remarked that one was only justified in altering zoological nomenclature at an International Zoological Congress, and he thought that any suggestions of the kind should be deferred till the end of the meeting.

Dr. Steineger stated that, at the present time, the Zoological Commission were engaged in preparing a new set of rules, which would probably be put forward before the next Ornithological Congress in 1910, and under these circumstances he greatly hoped that no resolution would be passed on the subject of nomenclature on the present occasion.

The Chairman then called on Dr. Blasius to reply. He said that though he did not wish any resolution to be passed, he thought it desirable that the present Congress should at least discuss such questions of nomenclature, so that the record of their opinion on such matters might act as a guide at the next meeting of the Zoological Congress.

2. Dr. Louis Bureau: La Sterne de Dougall.

Owing to its comparative scarcity in the British Islands, ornithologists in that country had few opportunities of
studying the Roseate Tern (Sterna dougalli). It was, however, much more numerous on the coast of France from Cherbourg to Brest and southward, and bred in numbers on the islands of Baunec, Kerourec, and Toulinguet, opposite Brest. It arrived about the 15th of May, commenced nesting about the 5th of June, and departed on the 10th of July, approximately. The eggs might be mistaken for those of Sterna fluviatilis, but in more than 50 per cent. of cases he was able to distinguish the eggs of the two species without hesitation.

He exhibited the young in down of S. dougalli and other allied species, and pointed out that the former might always be recognised from the nestlings of S. fluviatilis and S. macrura by the more mottled and less distinct pattern on the down of the upper parts, as well as by their blackish feet. In the young of S. fluviatilis and S. macrura, which closely resembled one another, the feet were always pale orange. This important distinctive character was pointed out for the first time.

Dr. Bureau mentioned that no examples of the young in down of S. dougalli were to be found in the British Museum collection, and that specimens so named were evidently wrongly identified.


Count von Berlepsch exhibited a large number of interesting species from S. America, many of which were described as new.

Dr. Reichenow, on behalf of the Chairman, thanked Count von Berlepsch for his most interesting exhibit, and this terminated the proceedings.

Wednesday, 14th June.

The President, Dr. P. L. Sclater, F.R.S., in the Chair.


This paper contained a revision of the species of the genus Elainea. A list of the 40 species and subspecies admitted was read, and examples were exhibited.

A complete list was given of the 185 species of birds stated to have occurred in Madeira. The number of forms known to breed there was 36, and of these about 12 were peculiar to the Island, the remainder being either summer visitors or accidental stragglers.

Of the 280 species of Portuguese birds, 140 had occurred in Madeira; only 18 of these, however, were known to breed.


In this paper Mr. Pycraft contended that more attention should be paid to the study of nestling birds than had up to the present time been given. Within the last few years some extremely interesting facts concerning the nestling plumage had come to light, but these, without further data, could have but a limited value for scientific purposes.

He showed that though the condition of young birds at birth could no longer be regarded as of value for the systematist, it certainly threw a very important light on some aspects of the evolution of the group to which the nestling belonged. The primitive condition of the nestling was undoubtedly of what is known as the precocious or nidifugous type, but the earliest nidifugous birds were hatched in trees—for example, the Hoatzin. Some of the precocious types, such as the Game-birds, still bore traces of this earlier arboreal phase. In others, these traces had been lost. The helpless or nidicolous type of nestling was the outcome of a process of selection, whereby the less active nestlings survived, the more active being eliminated; their activity bringing about an enormous death-rate, caused by their falling from the trees in which the nest was placed. The less active type was brought about by the reduction of the food yolk within the egg, thereby inducing what may be called premature hatching, and consequent helplessness.

The skeleton of the nestling, he remarked, promised to yield much valuable information on questions of evolution. Instances in support of this contention were given.
7. **Hans von Berlepsch**: Ein letztes Wort über die sogenannte "Ruticilla cairii."

From observations made on birds kept in captivity, as well as on those seen in a wild state, it was now conclusively proved that the name *Ruticilla cairii* must be suppressed, this supposed species being based on an immature example of *R. tithys*.

The black colour was not attained till the second autumn moult, but birds of this species breed in the grey plumage of the first year.

8. **Count von Berlepsch**: Notes on *Tyrannidae*.

Count von Berlepsch said that the family *Tyrannidae* was one of the most difficult groups of birds within his knowledge. Dr. Selater’s attempt to classify it (cf. Cat. B. Brit. Mus., xiv., 1888) contained a great number of mistakes, caused, partly no doubt, by lack of sufficient material, and partly by the vastness of the subject.

His revision entailed a number of alterations; for instance the genera *Todirostrum* and *Platyrhynchus* should be placed either at the beginning or end of the family. *Agriornis andecola* was a well characteised form, but should perhaps be regarded as a subspecies of *A. striata*. The genus *Mecocerculus* should be united with *Ochthoea*; and *M. consobrinus* was synonymous with *Leptopogon minor*.

[The Meeting was then adjourned.]

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Saturday, 17th June.

The President, Dr. P. L. Selater, F.R.S.

9. **Dr. Louis Bureau**: La Perdrix grise des Pyrénées. (*Perdix perdix charrela.*)

Dr. Bureau pointed out the distinctive characters of this form and exhibited specimens, as well as a comparative series of feathers, showing the differences between this bird and typical *P. perdix*. 
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He also exhibited photographs and a map showing its exact distribution.

He stated that this form was only found on the higher pasture land of the Pyrenees at an elevation of about 2000 metres.

It was said to differ from typical *P. perdix* in having the plumage of the neck and breast more spotted, the wing-coverts in the male transversely barred with buff like those of the female, and the horseshoe-mark on the breast of a very dark chestnut colour.

Dr. Reichenow stated that this was the Partridge he had described as *Perdix hispaniensis* (J.F.O. 1892, p. 226), and that his name had priority over *P. charrela*, Seoane (1894), as had been explained by Mr. C. D. Sherborne. [cf. Ann. and Mag. N.H. (6), xiv., p. 154 (1894).]

Mr. W. Ogilvie-Grant said that if the marking of the wing-coverts was really alike in both sexes, it was no doubt an important character, but that a series of specimens, in which the sex had been carefully ascertained, was still required to prove this. He did not consider the darker colour of the horseshoe mark on the breast of much value, as it varied in typical examples of *P. perdix*. Both the birds exhibited by Dr. Bureau were immature, as was shown by the pointed first primary quill.

The Hon. Walter Rothschild said that Partridges procured in England were of no use for the purpose of studying different races, as birds from all parts of Europe had been imported, and had interbred freely with our native birds.

10. Dr. J. Dwight: The Significance of Sequence in Moults and Plumages.

Dr. Dwight, after stating that feather-growth, plumage-development, and plumage-renewal are founded on sequences, explained this sequence in plumages and moults, and urged the use of terms by which the plumage-cycle of any species of bird may be definitely expressed.

There were three distinct stages of plumage recognizable, that of the nestling, that of the young bird, and that of the adult, for which the names *natal*, *juvenal*, and *adult* were
advocated. The natal plumage consists of the downy or filamentous neossoptiles, sometimes aborted, the juvenal of mesoptiles, the second generation of feathers, and the adult of teleoptiles, the later generations of mature feathers. Between the successive plumages occur moults, complete or partial, resulting in simple plumages wholly of one generation, or those compounded of several. The plumages of the first year are the most complicated, later ones being divisible only into nuptial or summer, and non-nuptial or winter, except in the case of some Ducks and Grouse, that have also a specially protective or eclipse dress. The consistent use of the terms suggested would eliminate much of the confusion arising from the many inexact expressions now current.

The Hon. Walter Rothschild asked the author if he could explain the moults in the Gannet (Sula bassana) and in the Paradise Birds, but Dr. Dwight stated that he had not been able to examine sufficient material to offer an opinion on the moults and changes in these birds.

Mr. Meade-Waldo, referring to Dr. Dwight's remark that the young of the Snowy Owl had two downs, a white followed by a brown, stated that nestlings of the species of the genera Bubo, Syrniun, Athene, Speotyto, and, in fact, all Owls except Scops and Strix, had two downs, a white followed by a brown. Much of the down developed till it became almost a feather, and was gradually changed for true feathers as the young bird grew up, some of it being retained until the bird was practically full-grown and independent. Scops, on the contrary, had only one crop of white down, which was changed precisely as in the Falcons and Hawks, the young bird growing up and getting its plumage rapidly, as in these birds. The down in the young of Strix was similar to that of Scops, but the young birds took much longer to develop. In all owls the first down was white.

Referring to Dr. Dwight's remarks on seasonal changes, Mr. Meade-Waldo said that the Pin-tailed Sand-Grouse (Pteroclurus alchatus) changed its plumage like the Ptarmigan. The nestling-plumage was changed for a winter-plumage, which was in turn changed for an elaborate breeding-plumage; this latter, in the case of the male, was subsequently
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changed for an eclipse plumage, during which the complete annual change of all the feathers took place.

11. Dr. A. Dubois: Remarques au sujet de certains oiseau méconnus.

This paper dealt with certain types of species of birds in the Brussels museum which had been referred to other closely allied species, but were really distinct.

1. *Bycanistes leucopygius*, Dubois, had been wrongly regarded by certain ornithologists as the male of *B. sharpii*, Elliot: on the other hand the latter name was really synonymous with *B. fistulatus*, Cass.

2. *Tiga borneonensis*, Dubois, was perfectly distinct from *T. javanensis*, which had the markings on the breast vertical, while in the former they were transverse.

3. *Lampribis olivacea*, Du Bus, was distinct from *L. rara*, Rothschr., Hartert and Kleinschm., and had nothing to do with *Hagedashia hagedash* (Lath.).

Dr. Reichenow stated that his mistake regarding *L. olivacea* in his “Vög. Afr.” I., p.325, had already been corrected in the “Orn. Monatsberichte,” where the distinctive characters of this species were pointed out, and that his remarks would be republished in the Appendix to his “Vög. Afr.” In spite of Dr. Dubois’ remarks he was still inclined to consider *B. leucopygius* as merely an individual aberration of *B. sharpii*.

12. Mr. Reiser exhibited specimens from his collection of Brazilian birds made during his recent travels in Bahia and Piauhy in 1903.


This work dealt with the birds of Madagascar and the Mascarene Islands, many of the species mentioned being now extinct.
14. **Stefan Chernel von Chernelháza**: On the Variety in the colouring of *Colymbus cristatus*, *C. griseigena*, and *C. nigricollis* observed at the Lake of Velencze in Hungary.

This paper gives an account of the method employed in shooting the vast numbers of birds on this large lake, and contains the names of the principal species to be met with there. Descriptions are given of albino, or partial albino examples of *Colymbus cristatus*, and *C. griseigena* and *C. nigricollis* and of a melanistic variety of *C. cristatus*.

The meetings of this Section were then brought to a close.

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**SECTION II.**

**Migration.**

*Tuesday, June 13th.*

The President, Mr. Otto Herman, in the chair.

The President opened the section with the following observations upon the methods to be employed in observing migration:

If we want to grasp the principle of migration it soon becomes evident that this phenomenon appertains to phænology, and is therefore in organic connection with meteorology. As migration is a phenomenon of movement it is obvious that even the most elaborate local observations can only further the solution of the problem, and that a definite solution will only be arrived at by systematic observations extending as far as possible over the whole area covered by the migrations. The methods—lucus a non lucendo—hitherto followed cannot therefore lead to any positive result, and ought to be altered. Just as meteorology has reached its great results by uninterrupted systematic observation and the methodical working out of the information thus acquired, so must Ornithophænology be studied if it is to bring forth any definite results. Our chief aim should therefore be the organisation of a uniform process and an attempt to carry it out as far as possible. We must
endeavour to become acquainted with the winter habitat of our summer migrants to determine the meteorological conditions influencing migration, and to compare these conditions with those obtaining in both the winter and summer ranges.

It should also be our object to establish at important points, e.g., on the North African and South European coasts, a system for obtaining records of the passage of migrants during the whole of the migration period, and in the case of a few well-known birds, such as the Swallow and the Stork, to avail ourselves, as regards Europe in any case, of the large systems of railways and post offices.

The results already obtained in Hungary were arrived at by a system of observations made by professional ornithologists, government foresters, and village schoolmasters, the number of observers being sometimes over 6000, and the data thus collected were worked out and published year by year.

It would be most desirable if a committee of Ornithopheneologists, and, in fact, ornithologists of all branches could agree upon a system of principles to be observed in collecting, recording, and working out the data.

[The sitting then adjourned.]

Saturday, June 17th.

The Vice-President, Mr. H. SAUNDERS, in the chair.

Mr. J. H. FLEMING read a paper on the various migrations of Brünnich’s Murre (Uria lomvia). After noticing in detail the various occurrences during the last fourteen years he went on to discuss the probable cause of these migrations, more especially in those years in which the immigrations were most marked. After noticing that they were not accompanied by other allied species, the author points out that for the cause of these migrations we must consider the conditions in those places where this species winters alone. Hudson’s Bay is probably therefore the base whence these birds came, and the author suggests that a comparatively sudden lack of food, caused possibly by the complete freezing over of their feeding grounds to have been the motive cause. He argues further that the first birds arrived south exhausted
but in good condition, which would not have been the case had the supply of food gradually dwindled.

After inviting discussion, Mr. Saunders remarked that the interesting facts brought forward by Mr. Fleming served to indicate that the south-westward autumnal migration of Brünnich's Murre was influenced by the natural trough formed by the St. Lawrence in the direction of the Mississippi valley. This was a well-known route for Ducks, etc., which penetrated as far as the Gulf of Mexico. The Murre, it was true, had not been recorded below the Indiana, say about lat. 38° N., but even so, this was the most southerly record inland, though on the coast birds had been known to reach South Carolina.

The Rev. H. N. Boxar asked if there could not be some other reason than want of food to cause the migration. He had known the bird well in Spitsbergen, and thought that it could get food under difficult ice conditions.

Mr. Fleming explained that the feeding grounds of these birds were near the shore and that, apparently, their food was not obtainable in deep water; that the ice in Hudson's Bay had driven inshore, forming a junction with the shore ice, and that the feeding grounds were thus covered. With the exception of five birds, which were found in sea water, none of the very many examined during the migration had any food whatever in their stomach. The reason for his having advanced his theory was the study of the parallel case of the Ducks driven from their feeding grounds by ice as he had already explained in his paper.

Mr. Saunders then vacated the chair in favour of Mr. Otto Herman, the President of the Section.

Mr. Herman then called on Dr. F. Helm to read his paper entitled:

"Neuere Beobachtungen über den Herbstzug des Staares in Deutschland."

At the conclusion of this paper the chairman made a few remarks and having thanked Dr. Helm, announced the meeting closed.
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SECTION III.

BIOLOGY, NIDIFICATION, OOLOGY.

Wednesday, June 14th.

The President, Dr. Fatio, in the chair.

Mr. Frank M. Chapman exhibited a splendid series of photographs taken by himself in the Bahamas, illustrating the breeding habits of the American Flamingo (*Phoenicopterus ruber*).*

Dr. Rudolf Blasius read a paper on bird life in the Pyrenees.

Mr. Frank M. Chapman exhibited a series of photographs taken by himself in Florida, illustrating the breeding habits of the Brown Pelican (*Pelecanus fuscus*).

[The Meeting then adjourned.]

Friday, June 16th.

The President, Dr. Fatio, in the chair.

The Rev. C. R. Jourdain read a paper on "Colour Variation in the Eggs of Palæarctic Birds."

After discussing the principal pigments which caused the colour of eggs, as described by Mr. H. C. Sorby, P.L.S., in 1875, the author went on to point out that variations in eggs might be traced to three main causes, (1) the absence of a pigment normally present; (2) the presence of a pigment normally absent; (3) when two pigments were normally present, the undue preponderance of one or the other. The causes were all illustrated by examples, and a table was given, showing the range and extent of variation in various families.

Referring to Mr. Jourdain's paper, Mr. E. G. B. Meade-Waldo said that the race of the Grey Wagtail, which was found on the Canary Islands, frequently laid brick-red eggs, and the clutch often contained a white egg. The Blackcap of these islands, on the contrary, never, so far as he was aware, laid a red egg, the clutches being either normal or white, or

white with dark purple and light purple spots, bearing no resemblance to eggs of the Blackcap from Europe. The bird itself cannot be separated from *Sylvia atricapilla*, although the curious melanistic form *S. heineckeni* occurs in the crater of the island of Las Palmas, as it likewise does in Madeira.

The Canarian Kestrel frequently lays white eggs, as does also the Chaffinch (*Fringilla canariensis*), whose normal eggs except in being larger resemble those of *F. celebs*.

There was some further discussion, in which Dr. R. Blasius and Messrs. R. H. Read and E. Bidwell and the President took part.

Mr. Robert H. Read then exhibited a case of eggs, including varieties of *Sylvia cinerea*, *Acrocephalus phragmites*, and others, ranging from pure white through greenish-brown to red. He remarked that the variation of colour in eggs of similar species in different climates was doubtless influenced by the state of the liver as well as by the difference in food.

With regard to the eggs of *Erithacus rubecula*, he said that he met with white or very pale varieties so frequently that he was tempted to think they might be reverting to a white type, as being laid in covered sites, the markings were of no protective value to them.

Although the coloration of a heavily-marked egg was no doubt due to an abundance or excess of colouring matter in the glands, the light egg in a set of *Passer montanus* was not always the last laid, as he had found by marking the eggs of an incomplete set.

With regard to variation in eggs of *Alauda arvensis*, he found that not only the eggs, but also the nesting material differed in coloration according to the colour of the soil, both nests and eggs on a light sandy soil being of a light sandy tint, whilst a nest and eggs from a dark soil were both of a much darker tint than the preceding.

The President then declared the meeting of the Section closed.
SECTION IV.

ECONOMIC ORNITHOLOGY AND BIRD PROTECTION.

Tuesday, June 13th.

The President, Mr. H. E. Dresser, in the chair.

Mr. Digby Piggott read a paper "On the Wild Birds Protection Acts, as administered by Orders in Great Britain and Ireland."

This paper formed a complete and comprehensive history of our Bird Protection Acts from 1868 to the present time. In the latter portion the author gave instances of a few of the anomalies arising from the special powers given to the Local and County Councils, and offered a few suggestions of his own.

Mr. Southwell, in reply to some remarks in Mr. Piggott's paper, said that the reason there were so few birds on the Schedule of the County of Norfolk in comparison with Suffolk was that the protected areas in the former County covered almost all the species that it was thought desirable specially to protect. Large tracts in the "Broad" district in which the Bearded Tit now bred in increased numbers, and in which various kinds of Ducks had largely increased, which also would form the nesting place of such birds as the Ruff, Bittern, Avocet and Spoonbill, should they return to their former homes, were effectually protected. Virtually the whole of the foreshore of the county was carefully guarded, greatly to the benefit of the Greater and Lesser Terns, Sheld Ducks, and some others which had largely benefited thereby. The close times in the two counties, which formerly differed, thereby causing considerable confusion, were now assimilated, and in obtaining an extension of the close time to the 1st September the various species of Ducks were not included for the reason that they would all have left the breeding grounds, to the destruction of flapper-shooting. The object of the Norfolk County Council had been not to load the Schedule with birds perfectly able to take care of themselves, but carefully to protect rare and local species, and those whose increased
scarcity pointed to probable early extermination, at the same time by avoiding unnecessary friction to retain the sympathy and co-operation of the public, which he was pleased to say they had to a great extent succeeded in doing.

Dr. F. G. Dawtry Drewitt remarked that Mr. Digby Piggott’s history of the growth of the law on Bird Protection will be of interest to all ornithologists. On looking through some letters written to him in 1868 by the Rev. H. F. Barnes, the vicar of Bridlington, it was evident that the first Act of Parliament for the protection of sea birds was greatly due to him, and to his friend Commander Knocker, and also that much of the support which the movement received came from those who lived near Bridlington. And that is not to be wondered at, for the sea birds at Flamborough Head were at that time in danger of extermination, and sailors were complaining that they were no longer warned off the rocks, as they had been, by the cries of the "Flambro Pilots"—the Gulls.

An association of subscribers of a small sum towards expenses of preparing the Bill was formed, and a list published in January, 1869, contains nearly 300 members.

At Oxford at the same time three undergraduates started a branch association, and obtained a large number of signatures to a petition to Parliament in favour of the Bill, which was to be taken charge of by Mr. Christopher Sykes, the Member for the Riding of Yorkshire which included Flamborough Head. An association for such an object did not appeal to all members of the University. It was dubbed the new “S.P.G.” and caricatures of its promoters as Gulls appeared in the Oxford stationers’ windows. Still the Association flourished, and contributed its mite to the cause of Bird Protection.

Dr. H. E. Gans, of Geneva, strongly urged the desirability of Great Britain joining the International Convention for the Protection of Birds useful to agriculture. With Britain’s influence behind it, the Convention might do something to prevent the terrible destruction to Swallows which is understood to take place in Italy and on the shores of the Mediterranean. These migrants wintering in Italy were said to be killed by hundreds of thousands for their
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plumage or for eating, and their numbers were being greatly diminished. To a lesser extent this applied also to Stonechats and Skylarks, etc., and if these species were to be removed from the list of disappearing birds the Italian Government ought to be persuaded to take very strong action for their protection. It was in this that the example of Great Britain in joining the Convention would be most useful. He added that the Egyptian Government had issued a decree for the protection of useful birds, Swallows amongst others, which decree had met with the approval of the Mixed Convention.

Hans Freiherr von Berlepsch said: I should like to say something about my experience in the Practical Protection of Birds, but I must first apologise for my imperfect English; I hope, however, that it will serve for the little I have to say.

The question of the protection of birds must be divided into two entirely separate parts—the laws for Bird Protection and the practical protection of the same—and it is on this latter phase that I wish to speak to-day. I have arrived, as, indeed, every one can, at important results in this study of the practical protection of birds, but it is necessary to bear the following points well in mind. Any protection of birds, to be of any real service, involves of necessity an exact knowledge of their habits. All the arrangements provided for them must follow on Nature’s lines, for the true protection of birds is not only a work of love, it is a science, which must have its seat in the head, and not in the heart only, and must be carried out without sentimentality. Bird protection is a science, like every other science, and a very important one. The chief factor in the protection of birds is to afford them their natural condition of existence, and more especially the possibility of building their nests, which the cultivation of land has taken away from them, and this may be done—

(i.) By artificial nest-boxes.
(ii.) Special plantations in which they may breed.
(iii.) Winter food.
(iv.) Ridding them of their enemies.

The most important of these are the nest-boxes, since, by
means of these, we can protect more especially those species which nest in holes, and these are just the birds that are most useful. It is important to regard this protection, not only as a work of love but as a question of national economy.

My nest-boxes differ greatly from other nest-boxes—they are simply copies of the natural holes of the Woodpecker. Further information on this point will be found in my book "Der gesammte Vogelschutz" which has so far been translated into eight foreign languages, in fact into all the more important European languages, with the exception of English, an omission I mean to speedily remedy. If these nest-boxes are suitably placed and properly filled with a little earth mixed with sawdust, the best results are attained. For instance I have on my estate 2000 of these boxes: they are all occupied, and mostly by the more useful birds. Although the German Government has fixed up many thousands throughout Germany, Austria, Switzerland, etc., there are now many hundreds of thousands more put up, and everywhere with equal success. With plantations one protects all those other birds which do not build in holes. The bushes should be cut in a certain way which may be seen in my book. With these plantations one is always successful, for instance I found a nest at every step in my plantation last year. A less important matter, in England especially, where the winters are not so severe, is the winter feeding and the ridding birds of their enemies. I hope that these few remarks of mine may have conduced to a more practical method of bird-protection in England.

Prof. Lönneberg, of Stockholm, spoke as follows:—

I should like to say a few words on this subject, in which I am most interested, and I think we ought to strive for the protection of most birds. But there is one word which we should be careful not to use too freely in connection with protection, and that is the word "useful." In the present state of our knowledge we do not know which species are useful. It is commonly accepted that all insectivorous birds are useful and all graminivorous the reverse. This is certainly not the case. It may even happen that some insectivorous birds may be found to be rather more harmful than
useful, if the matter be carefully investigated, since they may feed chiefly on useful insects, such as parasitic hymenoptera and diptera or other kinds of flies which prey on harmless insects. Wherefore let us be not too ready to say that we protect useful birds, but rather *all* birds that are not too harmful.

Mr. William Wilson (of Aberdeen) contended for a uniform protection of birds throughout the world, without classing them as useful and harmful.

The Rev. H. N. Bonar spoke concerning the protection of the birds on the Bass Rock, and alluded to a wholesale butchery of Gannets which took place there last August. He added that it was expected that this year and in subsequent years the Bass Rock and the adjacent island would be protected by special order up to November 1st from shooters. He also spoke concerning sanctuaries for certain species of birds and of the utility of setting up nesting-boxes in suitable places.

Dr. Quinet (of Brussels) said: J'attire l'attention du Congrès sur les deux points suivants. 1° Tendance générale à dire que les oiseaux d'Europe ont tellement diminués que certaines espèces pourraient disparaître du fait de leur capture et chasse par l'homme. 2° Tendance générale à attribuer aux Insectivores une importance trop grande en agriculture. On vient de dire que les Hirondelles de fenêtre ou de cheminée ne sont plus aussi abondantes en Suisse, sur les côtes de la Méditerranée et ailleurs. Cela est possible, mais il faut se garder de généraliser et de dire que la masse des Hirondelles de l'Europe a diminué. Il serait d'abord impossible de prouver cette diminution en générale parce qu'ils sont des oiseaux migrateurs et qu'ils peuvent fixer leur habitat d'été ou d'hiver ailleurs qu'au paravant pour des motifs qui échappent à l'appréciation de l'homme. Le plus souvent alors il est simplement déplacement et non diminution, encore moins disparition. Des oiseaux aussi bien armés que les Hirondelles dans la lutte pour l'existence ne trouvaient être influencées par l'action destructive de l'homme, parcequ'on les protège l'été dans toute l'Europe et que les captives qu'on en fait en Italie à l'automne ne sont pas assez
considérables que pouvant avoir une influence sur le nombre total.

La quantité de nourriture qu'il existe dans un district, fixe, à peu près, le nombre de chaque espèce. Et ce n'est pas parce qu'on capture certains oiseaux à l'automne que l'espèce diminue, mais leur nombre est plutôt limité par les ressources alimentaires que peuvent fournir certaines régions, soit dans les campagnes, soit dans les forêts, soit même dans l'air. Ainsi les Martinets (*Cypselus*) qui chassent pour leur nourriture toute la journée et que personne ne tue, ni Rapaces ni l'homme, parce qu'on ne les mange pas, n'ont pas augmenté depuis des siècles qu'ils existent parce qu'il n'y a qu'une quantité limitée d'insectes en l'air pour les nourrir. Ils se limitent d'eux-mêmes. Ils se luttent en certaines régions, ils se battent pour la nourriture et ne laissent pas s'installer les intrus dans leur rayon d'action. Ainsi agissent presque tous les oiseaux Insectivores et les oiseaux de Proie parce que la nourriture animale est plus difficile à trouver et est plus rare que le végétal. Leur nombre est donc limité dans les parcs, les vergers, les jardins et les bois, en raison de la subsistance que ces milieux peuvent leur fournir. Et comme les cultures modernes ont beaucoup changé l'aspect et l'ensemble de ces milieux, il en est résulté que l'oiseau a dû aller chercher ailleurs les conditions d'existence que l'homme a diminué et supprimé pour eux.

Mais il n'est pas juste de dire qu'il y a diminution, mais il y a déplacement simplement, et le nombre des oiseaux d'Europe reste semblablement le même.

2° On a attribué aux oiseaux une valeur économique trop grande en ce qui concerne l'agriculture. Tous les oiseaux insectivores ont été déclarés très utiles à nos cultures, parce qu'ils mangeaient des insectes. C'est là une erreur ancienne. L'insecte n'est pas l'ennemi. Tous les insectes ne sont pas nuisibles. L'insecte nuisible n'est pas isolé : à côté de lui la nature a placé l'insecte utile et ce sont les insectes utiles qui entretiennent et rétablissent l'harmonie dans la nature. Il y a beaucoup plus d'insectes indifférents que d'autres, et par conséquent les oiseaux mangent beaucoup plus d'insectes, indifférents aux plantes cultivées par l'homme, que de nuisibles ou d'utiles. L'oiseau mange tout ce qu'il remarque et il ne
sait pas faire la distinction entre l'insecte utile et l'insecte nuisible. Ce sont les Ichneumons, les Braconiales, les Eramés et tous les insectes parasites qui détruisent les insectes dévastateurs. Ils existent par millions et ce sont ces insectes qui arrêtent les grandes invasions d'insectes nuisibles en détruisant leurs larves et non les oiseaux. Les oiseaux les mangent aussi, mais pas assez pour rétablir l'équilibre; sauf pour les insectes utiles il y a longtemps qu'il n'y aurait plus ni feuilles sur nos arbres, ni prairies, ni verdure.

La vérité établie par les analyses faites sur le régime alimentaire des oiseaux est que les neuf dixièmes des oiseaux Insectivores sont indifférents à l'agriculture, ou la vigne-culture, et que leur rôle principal est la côté esthétique par la charme qu'il prête à toute la nature. Qu'on laisse de la protection par humanité ou par esthétique, soit, je la veux bien, et je suis le premier à la proclamer mais pas au nom des intérêts de l'agriculture. Ce n'est pas scientifique, ce n'est qu'une partie de la vérité.

Messrs. Barrington and Pycraft also took part in the discussion.

Sir John A. Cockburn then read his paper "On Bird Legislation in Australia," giving a brief history of the Acts and the protection afforded to the different species of birds.

Mr. F. M. Little (Tasmania) spoke briefly on the existing Tasmanian Bird Protection Laws, and called attention to the fact that quite recently by an addition made to the previous Act, practically all the sea-birds had been given total protection. He stated that such a thing as destruction of sea-fowl for millinery purposes was unknown round the coasts of Tasmania. Very great help was afforded by the police in aiding the number of Bird Protection Societies. Successful efforts had been made to induce the auctioneers in the principal towns not to allow native birds to be exposed for sale in their marts. Mention was made of the great destruction that occurred every year among the Black Swans on the east coast of the island by parties of shooters.

It was explained that most of the birds shot were left to fester in the sun. Efforts had been made to obtain legislation to restrict this, but without success.
Passing on, Mr. Littler stated he could not understand why Snipe were placed on the black list in South Australia; the species in Tasmania, he asserted, was very rare.

To a certain extent the same remarks applied to the Wattle Bird. The Tasmanian Wattle Bird is one of the island's best game birds. A couple of years since it was placed on the totally protected list; now, however, it has been replaced on the semi-protected list. Mr. Littler was afraid, however, that before long it will have to be afforded total protection.

Mr. Frank E. Lemon read his paper on the "Rationale of Bird Protection." After emphasising the need of Protection, Mr. Lemon dealt with the causes producing diminution and then with the various points which should be borne in mind to make protection complete. Reference was then made to the various protection Acts throughout the British Dominions and attention drawn to the various methods employed by the different Governments to compass the end in view. Finally, attention was called to the International Convention which had brought about protection for certain parts of Africa.

The Hon. Walter Rothschild said that he had very definite views, differing from the general feeling of the meeting, on several points of bird protection, but he did not rise to discuss these points. He merely wished to say, that, in his opinion, the only rational methods of bird protection were: firstly, to supply adequate nesting facilities and refuges (reserves) in each district; secondly, to take the enforcement of bird protection laws out of the hands of the police, and place them in the hands of specially appointed officers or wardens; and lastly, that these wardens be given wide discretion in respect to severe or lenient interpretation of the law, and they ought to have the right to grant licenses to kill birds for scientific purposes or for public museums.

Mr. W. P. Pycraft remarked that he did not believe any real good or any substantial advance would be made in the matter of Legislation for the Protection of Birds, until the Board of Agriculture took up the subject, and instituted a Department of Economic Ornithology, after the model
adapted in the United States. At the present time the conflict of opinion in this question was so great that it was really impossible to decide as to the merits of any measure yet adopted, or of any proposed measure.

The system of legislation by County Council had proved quite inadequate, and the same was true where fishery-boards were concerned. Our knowledge as to the harm or good done by birds was too rudimentary, while both preventative and protective measures alike rested rather on prejudice than fact.

So far, all that the Board of Agriculture had done was to issue a few leaflets which carried no weight whatever, the statements therein being founded on compilations from ancient writers such as Gilbert White, MacGillivray, Morris's British Birds, Waterton's Essays, and so on. Direct observations and modern records were conspicuous by their absence, save in one or two very exceptional cases, and even here the data were quite insufficient.

He urged that a scientific Ornithologist should be appointed—one combining a knowledge of field ornithology and anatomy. It should be the business of this officer to investigate minutely the food of all British Birds, at all times of the year, paying special attention to those species which had so far come under the severest condemnation.

The Secretary (Dr. Penrose) thought it would be extremely difficult to know where to draw the line at which it would be possible to say that any given species was a vanishing one, and that the few remaining individuals should be secured for preservation in museums for scientific purposes as suggested by Mr. Rothschild. He instanced the Kite. There were known to be only a few remaining individuals, and if the Kite was a truly insular form, then if he understood Mr. Rothschild rightly, the suggestion would be that those individuals should be obtained and preserved in a museum, whereas if they were identical with the European Red Kite, then every effort should be made to protect and preserve them alive. Although in full sympathy with Mr. Rothschild's proposal, he feared it would prove unpracticable. He felt sure Mr. Lemon had hit the right nail on the head when he suggested that an improvement in
the knowledge of the public generally about birds was one of the best ways of protecting them. He had just returned from a visit to Holland, where many birds which we would give anything to recover, such as Avocets, Black Tailed Godwits, Oyster Catchers, etc., were walking about the fields and marshes quite close to a house to which he went, and that the children, although they looked for and found the nests, did not disturb them. Indeed, most birds and eggs were protected in Holland during the breeding season, but the Government had the power to grant permission to certain people to take eggs for scientific or other purposes. Such a power was perfectly well recognised also in this country, where the authorities could empower or license certain qualified persons to perform acts contrary to the law of the land, for definite beneficent or scientific purposes. He very much wished that it might be possible to give to the owner of the land, property in and power to protect the wild fauna and flora on his estate, in the same way that he possessed his cattle, poultry, flowers, fruit and vegetables.

Sir John Cockburn, Messrs. Collier and Southwell and the Chairman also spoke, and Mr. Lemon briefly replied.

[The Meeting then adjourned.]

Saturday, June 17th.

The President, Mr. H. E. Dresser, in the chair.

Mr. Otto Herman read a paper on the "Investigations of the Food of Birds," detailing the work that had been carried on in Hungary since 1900.

Mr. Talsky (Moravia), stated that he could not agree on all points with Mr. Herman. The conditions in the various countries as regarded any one species were in the main the same, but the essential point was, whether the bird was a resident or a migrant. In Moravia the Rook (Corvus frugilegus) was a bird of passage, and therefore welcome, as he was only there from autumn to spring, when his work was entirely beneficial. It was the duty of ornithologists to preserve all birds. In
Meetings of Section IV.

Nature no animal was entirely harmful or useful. Birds therefore should only be destroyed when they did harm, but they should be protected from reasons of humanity and economy.

Mr. Herman briefly replied.

The following papers were distributed to the meeting.

(i.) The Economic Importance of the Rook (Corvus frugilegus) in Hungary. By Titus Csörgey.
(ii.) "Von der Nahrung der Vögel." By Otto Herman and Ernst Csiki.—Reprint from Aquila XI.
(iii.) "Positive Daten zur Lebensweise des Rebluhns (Perdix perdix)." Von Josef v. Losy.

Dr. Quinet then read his paper, "The result of investigations on the Food of Birds," in which he dealt fully with the methods carried out by the Belgian Government for obtaining particulars as to the food of the various birds, giving at the same time a short summary of the conclusions which had been reached.

Mrs. Lemon asked to be informed by Dr. Quinet as to whom the Belgian Government addressed their questions concerning the contents of birds' stomach. She suggested, as individual Governments appeared unable and reluctant to take the subject in hand seriously, the possibility of the investigations needed to decide the question of the usefulness or destructiveness of birds, being undertaken by the International Institute of Agriculture, which is promised as the outcome of the Agricultural Congress convened by the King of Italy at Rome, and which met on May 28th, 1905.

In replying, Dr. Quinet said that the forms prepared for tabulation were sent by the Government to all "Gardes Forestiers."

M. Visart de Bocarmé read a paper dealing very fully with the Rook (Corvus frugilegus) from the point of view of agriculture and forestry.

A paper by Mr. Igali Svetozár (Hungary) "On the harm or utility of the Sparrow to Agriculture" was taken as read.
A paper by M. Paul Martin "Sur la grosseur des Grélons dangereux pour les oiseaux," was taken as read.

Dr. Oustalet (Paris) handed in the following paper by M. Ternier: "Notice sur l'opportunité de protéger la Bécasse au printemps." This paper was also taken as read.

Mr. Wm. Wilson (Aberdeen), then gave a résumé of his paper on "The Red Grouse in its Economic and Recreative Aspects."

The Chairman then declared the meetings of the section closed.

The meeting, at the proposal of Prof. Lönnberg, unanimously carried a vote of thanks to the President, Vice-Presidents, and Secretaries.

SECTION V.
Aviculture.
Saturday, June 17th.

The President, Mr. E. G. B. Meade-Waldo, in the chair.

Mr. D. Seth-Smith read his paper on 'The Importance of Aviculture as an aid to the Study of Ornithology.'

The Chairman remarked that, after listening to Mr. Seth-Smith's paper, there could be no doubt in the minds of those present as to the importance of Aviculture, and the great difference which existed between scientific Aviculture and mere bird-fancy. It was, he said, by keeping birds in perfect health, and as nearly as possible under natural conditions, that their life-history—breeding habits, seasonal changes, moults, period of incubation and so forth—could best be learnt. With regard to the duration of life in birds he could not help thinking that they must, as a rule, live longer in confinement than when wild, for in the latter condition not only do they have to contend with numerous enemies, but the older birds must give place to those that are younger and more vigorous. He thought that
Mr. Seth-Smith's discovery of the polyandrous habits of the Tinamous and Turnices suggested a reason why species which must increase so rapidly did not become very numerous.

Dr. A. G. Butler said that when rare birds were shot or caught one often heard the remark that they bore no sign of having been kept in captivity, and it was therefore assumed that they could not have escaped from confinement. It was, however, a great mistake to imagine that birds in captivity were necessarily in inferior condition as to health or plumage to those that were wild: the contrary was rather the case, birds kept in suitable aviaries being, as a rule, in absolutely perfect condition in every way, which cannot always be said of wild birds which have many enemies, both of their own and other species, to contend with, and must often get damaged in the struggle for existence.

Mr. A. F. Wiener said he had found that small foreign finches often suffered during our English winters on account of their being unable to survive the long dark nights without food; and he had found it a good plan to supply artificial light at such times. He suggested that an export tax of, say one shilling a head, should be levied upon the small birds imported to Europe from West Africa. These sometimes reached this country in such numbers as to become a glut in the market, when numbers perished in the bird-dealers' shops or in the cages of those who bought them merely because they were cheap, but had no idea as to their correct treatment. It was, however, generally agreed that the importation of rare species in small numbers should be encouraged, as the study of their habits in captivity was of great scientific importance.

The Chairman then thanked Mr. Seth-Smith for his paper and declared the meeting closed.
PERMANENT INTERNATIONAL ORNITHOLOGICAL COMMITTEE.

The proposed meeting on the 13th June could not be held because the General Meeting lasted too long. A well-attended meeting was held on the 17th, at 10 a.m., the President being in the chair.

Dr. E. Hartert gave a full report of the work of the Committee since the Congress in 1900. The principal facts were as follows:—

Owing to bad health, Dr. Sharpe had asked Professor Oustalet to retain the duties of President of the Committee and editor of the "Ornis," so that it was not until the late autumn of 1904 that he entered upon his duties as President. He elected his Treasurer and Secretaries and their work began. The time being already far advanced, these officers were not able to do much more than to organise the present Congress. Prof. Oustalet had edited two volumes of the "Ornis," and the new officers of the Committee have begun another volume (13), the first number of which was now published, and contained articles by Victor Ritter von Tschusi zu Schmidhoffen, E. Hartert, and C. E. Hellmayr.

Mr. Bonhote went to Paris in February, and received from Prof. Oustalet the funds and papers belonging to the Committee. Prof. Oustalet and Dr. Blasius had given accounts of their expenses and income as follows:
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A number of resolutions were passed in Paris for work to be done by the P.I.O.C. It appears that none of them have been attended to. They stand on paper, and that is all. Nor do the officers of the Committee see much chance to carry out proposals in future which demand much time and outlay of money. They are all busy men, who cannot devote all their time to the P.I.O.C., and they cannot expect to have large funds. They hope to continue the "Ornis," and will hardly be able to do much more. On the other hand, they have resolved to put the affairs of the P.I.O.C. on a more business-like footing. Formerly the various back volumes of the "Ornis" had been kept in the different towns where they had been published; during the next five years all the stock will be united in London. As Messrs. Masson and Co., in Paris, the last publishers of the "Ornis," have declined to continue the publication, the "Ornis" will henceforth be printed and published in London. It was now the business of the present members of the Committee to elect to itself new members, and to decide where the next Congress should be held. Some members of the Committee had died since 1900, but an exact list was so far not available, as no communications had taken place with the members since 1900.

After some discussion by Prof. Blasius, Prof. Giglioli, Prof. Oustalet, Mr. Otto Herman, The Hon. Walter Rothschild, Dr. E. Hartert, and others, the report was agreed to, and it was proposed to hold the next Congress in Germany in 1910, Prof. Reichenow being the President, Count Berlepsch and Dr. Blasius the Vice-Presidents, and in case it was not possible to hold this Congress in Germany, that it should be organised in Belgium, Prof. Dubois acting as the President. Dr. Penrose was appointed to examine the accounts.

At the suggestion of the President and Secretaries the following members were added to the P.I.O. Committee:—

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<tr>
<td>R. M. Barrington.</td>
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Members of Permanent Committee.

W. R. Ogilvie-Grant. Mrs. F. E. Lemon.
Dr. Albert Günther. Prof. A. J. Einar Lönnberg.
Bernhard Hantzsch. Count Josef Mailáth.
Jacob Hegyfoky. E. G. B. Meade-Waldo.
Oberamtmann Ferdinand Heine.
Alfred North.
Dr. F. G. Penrose.
Carl E. Hellmayr. W. L. Sclater.
Dr. F. Helm. D. Seth-Smith.
Prof. Dr. H. von Ihering. Baron Snouckært van Schaumburg.

[The Meeting then closed.]

The Rules of the Permanent International Ornithological Committee will be found in the Proc. of the III. Int. Orn. Congr., Paris, pp. 101-109 (1901). The following is, as far as can be ascertained, a complete list of the members of the P.I.O.C., corrected to 19th June, 1905:—

List of Members.

Almásy, Dr. G. von, Borostyánkó, Com. Vas, Hungary
Andreini, General A., Teheran, Persia
Arrigoni Degli Oddi, Conte E., Ca’oddo, Monselice, Padova, Italy
Barrington, Richard M., LL.D, Fassaræ, Bray, Co. Wicklow, Ireland
Barboza du Bocage, Prof. J. V., Royal Museum, Lisbon, Portugal
Bianchi, Dr. Valentín, Museum der Kaiserlichen Akademie der Wissenschaften, St. Petersburg, Russia
Berg, Baron von, Kaiserl. Landforstmeister, Strassburg, i.E., Germany
Berlepsch, Count H. von, Schloss Berlepsch, Kreis Wittenhausen, Germany
Blauw, F. E., Gooilust, ’S Graveland, Holland
Blasius, Prof. Dr. Rudolph, Braunschweig, Inselpromenade 13, Germany
66 Members of Permanent Committee.

Blasius, Prof. Wilhelm, Geh. Hofrat, Braunschweig, Gauss-Str. 17, Germany

Bonhote, J. Lewis, Gadespring Lodge, Hemel Hempstead, Herts.

Braun, Prof. Dr. Max, Königsberg i. Pr., Germany

Brewster, W., Cambridge, Massachusetts, U.S.A.

Brusina, Prof. Spiridion, Zagreb, Croatien, Austria

Buda, A. de, Réa, Hungary

Buen, Dr. Odon de, University, Barcelona, Spain

Bulgaria, S. A. R. Prince Ferdinand of, Palace, Sophia

Buller, Sir Walter Lawry, 3 & 4, Great Winchester Street, London, E.C.

Burckhardt, Prof. Dr. R., University, Basel, Switzerland

Bureau, Prof. Dr. Louis, Rue Gresset, 15, Nantes (Loire Inférieure), France

Buttikofer, Dr. J., Zoological Gardens, Rotterdam, Holland

Campo, Marquis de, President of the Colombophile Soc. of Spain

Capek, Wenzel, Oslawan, Moravia, Austria

Carvalho-Borges, Baron de, Lisboa, Portugal

Castello y Carreras, Don Salvador, Barcelona, Spain

Chamberlain, Montague, St. John's, New Brunswick, Canada

Chapman, Frank M., American Museum of Natural History, Central Park, New York, U.S.A.

Chernel von Chernelháza, S., Köszeg, Com. Güns, Hungary

Collett, Prof. Dr. R., Oscarsgade 19, Christiania, Norway

Cretté de Palluel, Baron A., 26, Rue des Ecuries-d'Artois, Paris

Csato, Johann de, Nagy Enyed, Hungary

Da Cunha, Gerson, Bombay

Dalmas, Comte Reynond de, 26, Rue de Berri, Paris

D'orfeuille, Comte, Versailles, France

Dresser, H. E., 28, Queensborough Terrace, Hyde Park, London

Dubois, Dr. A., Musée Royal d'Histoire Naturelle, Bruxelles, Belgium

Dwight, Dr. J., Jun., 2, East 34th Street, New York, U.S.A.

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Members of Permanent Committee.

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Godeau de Kerbelle, H., 7, Rue Dupont, Rouen, France
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Hegeföky, Jacob, Magyar Ornithol. Központ, VIII. Joszef Körút 65, Budapest, Hungary
Herman, Otto, Magyar Ornithol. Központ, VIII. Joszef Körút 65, Budapest, Hungary
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Horváth, Dr. Geza, Magyar Nemzeti Museum, Budapest
Ihering, Prof. Dr. H. von, Museu Paulista, São Paulo, Brazil
Kaiser, Alfred, Tor, Egypt
Keller, C. G., Genève, Switzerland
Kempen, Ch. van, 10 Rue St. Bertin, Saint Omer, Pas-de-Calais, France
Kermode, P. M. C., Hillside, Ramsay, Isle of Man
Koch, A., Williamsport, U.S.A.
Koenig, Baron Rich., Von und zu Warthausen, Schloss Warthausen bei Biberach, Germany
68 Members of Permanent Committee.

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KUSCHEL, POLIZEIRAT MAX, Gubrau, Bez. Breslau, Germany

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LEMON, Mrs. F. E., Hillcrest, Redhill, Surrey

LEVERKUHN, Dr. PAUL, The Palace, Sophia, Bulgaria [since deceased]

LLAVE, Dr. DIEGO DE LA

LÖNBERG, Prof. AXEL JOHANN EINAR, Vetenskaps Akademien, Stockholm, Sweden

LORENZ von LIBURNAU, Dr. L., K. K. Hofmuseum, Wien, Austria

LÜTKEN, Prof. Dr. CHRISTIAN, Royal Museum, Copenhagen, Denmark

MADARÁSZ, Dr. J. VON, Nemzeti Muzeum, Budapest, Hungary

MADAY, ISIDORE, Budapest, Hungary

MAILÁTH, Count JOSEPH, Perbenyik, Hungary

MARMOTTAN, Dr., Maire du XVI. arr. de Paris, Paris-Passy

MARTINEZ y SAEZ, DON FRANCISCO DE PAULA, Prof., Plaza de los Ministerios 5, Zoizquierda, Madrid

MASTORELLI, Prof. G., Museo Civico, Milano, Italy

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MENZIEIER, Prof. Dr. MICHAEL, University, Moscow, Russia

MERRIAM, Dr. H. HAERT, Department of Agriculture, Washington, D.C., U.S.A.

MEYER, Hofrat, Dr. A. B., Königl. Zoolog. Museum, Dresden

MIDDENDORF, ERNST VON, Schloss Hellenorm, über Platform Hellenorm, Livland, Russia

MIR y NAVARRO, D.-N., Professor of Natural History, Barcelona, Spain

MÖBIUS, Professor Dr. C., Geheimrat, Museum für Naturkunde, Berlin

NEHRKORN, A., Amtsrate, Adolfstrasse No. 1, Braunschweig

NEWTON, Prof. ALFRED, Magdalen College, Cambridge

NORTH, ALFRED, Australian Museum, Sydney, N.S. Wales, Australia
Members of Permanent Committee.

Nüsslin, Professor, Karlsruhe, Germany
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Palmén, Prof. Dr. G. A., Helsingfors, Finland
Parrot, Dr. C., Vorsitzender der Orn. Ges. in Bayern, Thierschstrasse, Munich, Bavaria
Penrose, Dr. F. G., Penmener, Parkstone, Dorset
Perier de Larsan, Comte du, Château de Brillette, Gironde, France
Petit, Louis, 21, Rue du Caire, Paris
Phillips, E. Cambridge, Brecon, Wales
Piston, Dr. A., Messina, Sicilia, Italy
Raimondi, Dr., Lima, Peru
Ramsay, Dr. E. P., Sydney, N.S. Wales
Raspail, Xavier, Gouvieux, Oise, France
Reichenow, Dr. A., Professor, Museum für Naturkunde, Invalidenstrasse 143, Berlin, N. (4)
Reiser, Othmar, Bosnisches Landesmuseum, Sarajevo, Bosnia
Rodriguez, Juan José, Director, Zoological Museum, Guatemala
Sarossy, Kapell F., Budapest, Hungary
Salvadori, Conte T., Professor, Museo Zoologico, Torino, Italy
Saint-Loup, Dr. Remy, 15, Rue de Siam, Paris
Saunders, Howard, 7, Radnor Place, Hyde Park, London, W.
Schalow, Herman, Berlin, N.W. 23, Flensburger Strasse, 15 II.
Schulz, Cordoba, Argentine Republic
Schultz, F. W., Yen Chuan, Corea
Sclater, Dr. Ph. L., Odiham Priory, Winchfield, Hants, England
Sclater, W. L., South African Museum, Cape Town, Cape Colony
Seth-Smith, D., "Glengarry," Canning Road, Addiscombe, Surrey
Sharpe, Dr. R. Bowdler, British Museum (Natural History), Cromwell Road, London, S.W.
Excursion to Cambridge.

Simon, Eugène, 16, Villa Saïd, Paris
Slowzoff, Omsk, Russia
Snouckaert van Schauburg, Baron, Neerlandbroeck, Holland
Stahl, Dr. Aug., Bayamón, Porto Rico
Staiger, F., Brisbane, Queensland
Stejneger, Dr. L., U.S. National Museum, Smithsonian Inst., Washington, D.C., U.S.A.
Studer, Prof. Dr. Th., Berne, Switzerland
Tschesisu Schmidhoffen, Victor Ritter von, Villa Tannenhof bei Hallein, Salzburg, Austria
Ternier, Louis, Honfleur, Calvados, France
Thott, Count Taye, Sakensjö, Sweden
Torre, Prof. Dalla, Innsbruck, Tyrol, Austria
Valdez y Pajarez, Dr. Don J., C. de la Amnista 12, 2° Madrid, Spain
Ventura de los Reyes y Prosper, Madrid, Spain
Vitrac, Dr. L., Sainte Anne, Guadeloupe
Wilson, Scott Barchard, Heatherbank, Weybridge Heath, Surrey
Winge, Dr. Herluf, Royal Museum, Copenhagen, Denmark
Witherby, H. F., 11, Hereford Mansions, Hereford Road, W., London
Wright, Prof. R., Ottawa, Canada
Zos y Martorell, Don Silvino, Barcelona, Spain

MEETING AT CAMBRIDGE.

Many objects of ornithological interest were specially put out for the benefit of Members of the Congress.

The following important note was written by Prof. Newton:

Leguat’s Giant Bird.

In a communication made by the late Prof. Schlegel in 1857 to the Royal Academy of Sciences of Amsterdam, of which a portion, translated into German, appeared in the "Journal für Ornithologie" (1858, p. 367) and the whole,
rendered into English, in "The Ibis" for 1866 (p. 146), the author, under the belief that the figure of the "Géant" or "Giant Bird" given in Leguat's "Voyage" (French ed., ii. p. 73; English ed., p. 171) was original, ingeniously shewed that the subject of the plate must have been a Ralline bird, which he named Gallinula (Leguatia) gigantea. In 1873 I exhibited at a meeting of the Zoological Society of London, as recorded in its "Proceedings" for that year (p. 191), the print of a copper plate by Galle, after a drawing by Collaert, which had obviously been copied as regards this figure by Leguat's draughtsman, since Collaert died more than one hundred and twenty years before Leguat sailed from Europe. Schlegel's argument founded on this figure accordingly fell to the ground, and nothing therefore is left to tell us what the bird was but Leguat's text. His description, if so it may be called, making allowance for the circumstances, seems to me, as it seemed to Strickland,\(^1\) evidently that of a Flamingo—the only discrepancies worth noting being the size, easily mis-estimated, and the absence of a web between the toes. It may be remarked too, in this connection, that bones of a Phoenicopterus have been found in Mauritius ("Ibis," 1866, p. 144; "Ann. Sc. Nat." Sér. 5, xix. no. 3), though this was not known until nearly ten years later, while among the hundreds or even thousands of birds' bones recovered from that island there is not one which can be assigned to a giant Ralline. I bring this subject forward now, because I see that in recent works Leguatia has been admitted as a genuine genus, while the facts above stated have been wholly ignored.

As evidence of the view here taken, there will be seen on the table a print of Collaert's drawing engraved by Galle, as well as a copy of each version (French and English) of Leguat's "Voyage," showing the figures of the "Géant" or "Giant Bird" therein given, together with Schlegel's rendering of the same in his paper, while, hung on the wall, are the enlarged drawings used by him when he read it at Amsterdam in 1857, which came into my possession at the sale of his library and effects.

\(^1\) The Dodo and its Kindred, p. 60, note 1.

Alfred Newton.
BOOKS, LETTERS, AND PAPERS EXHIBITED IN THE PHILOSOPHICAL LIBRARY BY PERMISSION OF THE COMMITTEE, WITH NOTES BY PROFESSOR NEWTON, 20TH JUNE, 1905.

Books.

   Book XXIII. treats of Birds, of which 114 kinds are named—without including several others mentioned in the 24 chapters devoted to those used in Falconry.

   Copy subscribed for by the Cambridge Philosophical Society.

3. AVICENNA de Aialibus per Magistrū Michaelē Scotū de Arabico in latinū translatus. [Venetiis: circa 1500? Hain 2220.] Folio.
   Avicenna’s work is based on Aristotle. Many birds are mentioned, and one chapter of Book IX. (p. 17) is wholly “ de naturis uolatilium, et maxime quae rapina uinunt.” This copy is from the Library of the late Professor J. Victor Carus.

   Presentation copy to Boyer with author’s autograph.

5. " " Ornithologiae Specimen Novum, sive series Avium in Ruscinone, Pyrenaeis Montibus, atque in Galliâ Æquinoctiali observatarum... Perpiniani: MDCCXLV. 4to.
   An early attempt at imitating the method of Linnaeus.


This copy has the English name of many of the birds written in a 17th century hand. (From the Public Library of the University.)


"J’avais fait cette table pour mon plaisir et mon propre usage, en y parlant avec M. le Marquis de St. Simon, cet homme si illustre par sa naissance que par son erudition, me disait qu’il avait commencé une table, selon l’étiquette des planches; les politesses et les marques d’estime que ce savant Mécen des sciences et des arts, me avait toujours montré, me firent copier mon manuscrit, mais cependant je jugeai, que j’en pourrais faire plaisir à quelques amis et savants en le faisant imprimer, j’en ai donc fait tirer 50 Exemplaires; pour les distribuer aux Amateurs." Préface, p. ix.

This copy formed Lot 34 at the sale of Temminck’s library, 27 Sept., 1855, when it was bought for Sir William Jardine (see his note on flyleaf). On the dispersal of his books in 1881 it was bought by his daughter, the late Mrs. Hugh Edwin Strickland. There is one copy in the British Museum, which was reprinted, professedly in facsimile, by Mr. Tegetmeier in 1874.


These seven plates from the late Professor Schlegel’s Library, executed by W. Pape and representing birds from Bering’s Strait in the North Pacific, are thought by Dr. Finsch to have been intended for a work on the Russian possessions (Abhandl. des Naturwissensch. Vereins zu Bremen, Band iii. pp. 19-21; 1872). The names on the plates seem to be in Dr. Finsch’s writing. Some of the figures have been quoted by Bonaparte in the “Conspectus Generum Avium” as "Brandt, Orn. Ross.” and "Brandt, Icon. Av. Ross.”

Another copy of the plates was in the possession of the late Dr. Hartlaub.

10. **Bullock’s Museum.** Catalogue of the sale of the collection.
This sale lasted for twenty-six days, beginning 29 April, 1819, and was renewed for four days more from 7 December, 1819. Some days were wholly devoted to Birds, of which the Museum contained a great number, and the sale was attended by Professor Lichtenstein from Berlin, Temminck from Amsterdam, and Baron Laugier from Paris, while “Fector” bought several things for Vienna.

This copy gives the names of the buyers of most of the lots and the prices obtained, written in the margin. The catalogue was obviously drawn up by Bullock himself.


Copy formerly in the possession of Mr. Yarrell. Issued with the author’s “De Canibus britannicis” and “De libris propriis.” Contains the description of thirteen birds (foll. 17—22), among which the Morinellus and Pephines may be specially mentioned.


At page 103, under the name of “Mergus americanus,” is a figure of Alca impennis, the earliest known, from a specimen brought from America by Jacob Plateau.


On flyleaf is written “Au citoyen Duméril de la part de l'aut......” (See Cuvier, in 'Leçons d'Anat. Comp.' p. xlii.)


Contains (pp. 168—167) the most complete account we have of the birds which formerly inhabited the Isle de Bourbon (de la Réunion).

Folio.

This copy, procured from Paris, contains a few corrections of misprints such as might well have been made by the author himself. The copy in the Library of the Zoological Society, presented by him, is the subject of Mr. Sclater’s notes in the ‘Proceedings’ for 1855 (pp. 65, 66). Doubt has been entertained as to the good faith of the author, originating perhaps in the fact that the descriptions of the species were never published in the ‘Annals of the New York Lyceum’ as stated on the title-page—nor has any explanation of that fact been furnished. (See Coues, ‘Birds of the Colorado Valley,’ Bibliographical Appendix, pp. 630, 631.)


In volume ii., chapter viii., the author treats “Des différentes espèces de Perroquets des Isles,” stating that each island had three kinds of Parrots (1) an “Ara,” (2) a “Perroquet”—obviously a Chrysotis, and (3) a “Perrique”—Conurus—and at pages 156, 157 he briefly describes those of Guadeloupe, Dominica, and Martinique. This last is certainly extinct and, moreover, no specimen of it is known to exist in any Museum. Spalowsky, however, in his ‘Vierter Beitrag zur Naturgeschichte der Vögel’ (Wien, 1792) describes and figures the Chrysotis, page 18, Tab. 8, under the name of “Psittacus leucocephalus martinicus. Der Weisswirbel von Martinika.”


Fischer de Waldheim’s copy, interleaved with MS. notes by him.


Wholly in the author’s handwriting. The flyleaf of Vol. I. is inscribed by him, “These three Volumes are ready for the Press.” This second edition of the ‘Index Ornithologicus’ was never printed. The MS. was for many years in the possession of the late Dr. John Edward Gray—see ‘Zoology of the Voyage of the Erebus and Terror’—Mammalia, p. 1, note.
20. **[W. E. Leach.]** Systematic Catalogue of the Specimens of the indigenous Mammalia and Birds that are preserved in the British Museum; with their localities and authorities. To this is added a List of the described species that are wanting to complete the Collection of British Mammalia and Birds. London: printed by Richard and Arthur Taylor, Shoe Lane, 1816.

Copy, with Dr. Sturm's name on wrapper, bought in Paris, 1893. Two copies in the British Museum.


22. ".." A New Voyage to the East-Indies by Francis Leguat and his companions. Containing their adventures in two desert Islands . . . . London: mdcxviii. 8vo.

23. **Leverian Museum.** Catalogue of the sale of the entire Collection.

This sale lasted for sixty-five days, beginning 8 May, 1806, and was distributed into 7878 lots of a most miscellaneous character, containing a considerable number of specimens of birds obtained during Captain Cook's three voyages, especially the last, some of which still exist in the Museum at Liverpool, having been bought for Lord Stanley, subsequently thirteenth Earl of Derby, while others are at Vienna, having been bought for the Imperial Museum by Leopold von Fichtel—See Von Pelzeln, 'Ibis,' 1873, pp. 14—54, 105—124, and 1874, pp. 461, 462.

This copy shows the names of the buyers of and the prices obtained for most of the lots. The copy in the Liverpool Museum gives the same information, transcribed from the present one. Donovan is supposed to have drawn up the catalogue.

24. **Ferp.-J. Lherminier.** Recherches sur l'appareil sternal des oiseaux, considéré sous le double rapport de l'ostéologie et de la myologie; suivies d'un Essai sur la distribution de cette classe de vertébrés, basée sur la
consideration du sternum et de ses annexes; par M. le docteur Ferd.-J. Lherminier, Correspondant à la Guadeloupe.

(Mém. de la Soc. Linnéenne de Paris. Tom. VI. pp. 3—93, 1827.)


Author's own copy, with MS. corrections by him.


Book XIX. chapter xxix. (p. 673) tells the story of Swallows passing the winter under water, which was for so many years more or less credited. The woodcut illustrating the chapter is reprinted Book XX. chapter xxi. (p. 717) with the heading "De mixtis Piscibus cum Hirundibus."


Another early attempt at imitating the method of Linnaeus.


See P. Leverkuhn 'Die Drei Naumanns' (Gera: 1905).


A series of lithographic plates, with the figures of the birds coloured. Perhaps the earliest ornithological work executed in India.


Seems to have been printed about four years later than the first edition of this popular work, of which the author is unknown. With many rude woodcuts, some very grotesque, though obviously meant to be serious. The "Tractatus de Avibus et Volatilibus," which last term includes many Insects, consists of 122 chapters, nearly each of which has its illustration.


One copy in the Advocates' Library at Edinburgh: another given by me to that of the Zoological Society of London, 1901. The second edition (4to, 1785) is common enough.

Only two of the twelve animals treated of in this celebrated and once popular work are Birds—Aquila and Turtur.


Copy bought at Temminck’s sale for Sir W. Jardine.


From Dr. J. E. Gray with autograph.


The introductory notice “To the Reader” mentions several birds first made known to the author by Sir Thomas Browne, beside which “A Catalogue of English Birds” is included, p. 81.


This copy bears on the flyleaf “Wm. Kirby to his friend Revett Sheppard, Fagan Anuicitaie July 16th, 1818.” To which Sheppard (joint author with Whitear of the Catalogue of the Birds of Norfolk and Suffolk—Trans. Linnean Society, xv. p. 1) has added “This book given to me by the best of men and the first Entomologist in Europe was formerly the property of the celebrated Gilbert White of Selborne, whose handwriting may be seen at pages 7, 47, 48, 53, 58, 66, 80, 85, 86, 88, 115, 137.”

Most likely the copy bought by White at Oxford, 21 October, 1753, for three shillings and sixpence, as entered in his account book, according to the extract printed by Bell in his edition of the ‘Natural History of Selborne,’ vol. ii. page 238.

(John Ray born 1628, died 1706; Gilbert White born 1720, died 1793; William Kirby born 1759, died 1850; Revett Sheppard born 1779, died 1830.)


The fourth volume (1792) contains (page 18, Tab. 8) a description of the “Psittacus leucopephalus martinicanus. Der Weisswierbel von Martinika,” the extinct species of Chrysopterus peculiar to the island of Martinique, as stated by Labat in 1722 (Nouv. Voy. aux Isles de l’Amérique, ii. page 157), of which no specimen is known to exist. The “Perroquet

For Hartlaub's determination of the species here described see 'Contributions to Ornithology,' 1849, pp. 19 et seq. "Schlegel undoubtedly did not know this catalogue." O. Finsch, in litter.


Contained the celebrated specimen of the "Dodar, from the Island Mauritius; it is unable to fly being so big" (p. 4). The Museum subsequently passed to Ashmole, who bequeathed it to the University of Oxford.


Bound as usual with the 'Dialogus de Avibus' of Longolius printed at the same place and time. Turner's treatise has been reprinted and edited with an English translation and notes by Mr. A. H. Evans (Cambridge University Press, 1903).


Contains the original story (pp. 104, 105), so often wrongly told, of Sir Thomas M.ason's Falcons.

At page 301 is a figure of *Aila impennis* from a young bird brought to the author from Faeroe, which lived several months in his possession.

**Chinese Materia Medica.**

"In the Chinese Materia Medica (called 'Pun Tsoo Kang Muh') I find in the figure of the Fe Seng, or 'Flying Beast,' a remarkable likeness to the fossil * Archaeopteryx* described by Prof. Owen. I will investigate this question on my present return to China"—R. Swinhoe, Proc. Zool. Soc. 1871, p. 423.

Mr. Swinhoe sent me a copy of the work cited. The original is of very great antiquity, but this copy may not be more than 200 years old. According to Chinese custom the woodcuts are repeated in successive editions. The figure to which Mr. Swinhoe referred is that in the inside compartment at the bottom of the left hand page as exposed.

**LETTERS.**

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H. E. Strickland. Correspondence and Papers relating to Zoological Nomenclature, including the plan of his original proposals, submitted to the Committee appointed by the British Association in 1841, and forming the basis of the Report made in 1842, containing what is commonly known as the "Stricklandian Code." One of the most remarkable features of these proposals is as follows:

"Now the specific names of Gmelin (so far as they are supplementary to those of Linnaeus) have for more than fifty years been adopted throughout Europe as the basis of modern nomenclature. It is therefore submitted that the specific nomenclature of Gmelin has acquired a prescriptive authority which cannot now be set aside by any examples of prior designations which may be adduced. We suggest, then, § 14. A specific name may be changed which was used previously to Gmelin's 'Systema Naturae,' and is not adopted therein."

These sentences were struck out by the Committee, as subsequently appears at the instance of C. L. Bonaparte. The original plan was sent to some forty of the principal naturalists then living, both at home and abroad, and replies from a good many of them were received—some accepting at least the principle of the whole scheme, others suggesting alterations. Their letters are included in this Collection. Among those who signified their complete approval of the scheme was Mr. Darwin, who, as his numerous letters herein inserted shew, took great interest in the subject. The Report when printed was distributed to 214 naturalists or scientific bodies in Europe and America.
Drawings on Exhibition at Cambridge.

Drawings.

H. Schlegel. Tracings of drawings by an unknown artist who must have been on board one of Wolphart Harnanszoon's ships when they touched at Mauritius. The originals were found by Dr. Tiele in a MS. narrative of the voyage (1601-1603), in the library of the church of the Remonstrants at Rotterdam, whence it has since been transferred to the Archives at the Hague. The tracings represent Aphanapteryx, Didus (several figures), Erythrema nitidissima and Lophopsittacus, two of which are reproduced in the "Dictionary of Birds," (pp. 156, 216). (See also Proc. Zool. Soc. 1875, p. 347.)

" ... The figure (Collaert's) of the "Géant" from Leguat's work enlarged as a lecture diagram with Prof. Schlegel's interpretation of it. [Hung on the wall.]


... " Studies of Otis tarda.

Photograph.


Specimens Showing Webbed Feet in Pigeons.

Exhibited by R. Staples Browne, Esq.

The webbed foot behaves as a recessive to the normal foot. The specimens in the bottle show webbed feet of birds bred from the mating together of two birds of F.1. generation. Small feet, Nos. 1, 2, 3.)
Exhibition of Mendelian Experiments.

The remaining webbed feet are bred from the mating of a F.1. with the web-footed $\delta$ shown as a skin, or from extracted web-footed pigeons mated together.

Some normal feet are also shown in the bottle for comparison, including the feet of the Nun Pigeon, used as the normal-footed bird in the experiments.

**Skins Showing Birds Bred from Crosses between Black Barb and White Fantail Pigeons.**

F.1. All birds are black with few white feathers.
(Skins i. and ii.)

F.2. Blacks, whites, and homozygote "Blues." (Skin vi.)
Heterozygote "Blues." (Skin v.)
Blacks with few white feathers. (Skin iv.)
A red, and some whites ticked with black or red also produced.

*F.1. mated to White* gives Black with few white feathers as the heterozygote form (skin iii.), which when mated to heterozygote "Blue" of F.2. gives Blacks, Whites, and "Blues." (Skin viii.)

*F.2. homozygote "Blue" mated to White* gives "Blues" with white feathers.

*F.2. heterozygote "Blue" mated to White* gives Whites and "Blues" with white feathers (skin vii.), which when mated together give "Blue," "Blue" with white, and White.

*F.2. homozygote "Blue" mated to F.2. heterozygote "Blue"* give equal numbers of "Blues," and "Blues" with white.

The following specimens illustrating some phases of "Mendel's Law" were exhibited by W. Bateson, Esq.:—

**White Rose-comb Bantam.**

Note minute specks of pigment on breast. White breeds having such specks when crossed with coloured birds give all
offspring coloured, and no whites; whereas true white
breeds crossed with coloured breeds give all offspring white,
or white with small coloured splashes.

Silver-Grey or Duckwing.

One of the types of colour produced by mating the first
crosses (F.1.) from White Leghorn or White Dorking with
Brown Leghorn (Bankiva colour). The Silver-grey is a
homozygous form, and breeds true from its first appearance.

First cross ♀ between Brown-Breasted Bantam x Black-
Red Bantam, showing dominance of the novel Brown-
Breasted characters over the Black-Red, which nevertheless
has almost exactly the colour of Gallus Bankiva (of which
a ♂ is shown).

The first cross birds bred together give a Mendelian
segregation, with the ratio 3 brown-breasted: 1 black-red.

Three Andalusian cockerels, Blue, Black, and White-
splashed. The Andalusian fowl never breeds true.

Blues bred together give Blues, Blacks, and Whites in the
proportion of 2: 1: 1.

The Blacks breed true, as also do the White-splashed.

When Black is crossed with White-splashed all the offspring
are blue. (See diagram on the wall at the side.)

The down colours of the three are very distinct. Two
White-splashed and one Black are shown.
**EFFECTS OF INSULARITY**

Illustrated by Birds of

(A) Madagascar and Mascarene Islands;

(B) Sandwich Islands.

Exhibited in the Lecture Room of Comparative Anatomy, Cambridge, 20 June, 1905.

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F. represented by Figure.  
B. represented by Bones.
Birds’ Skins on Exhibition at Cambridge.

(A) continued.

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H. GADOW.
LIST OF PAMPHLETS

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OTTO HERMAN,
Director of the H.C.O. f. O.
PRESIDENT'S ADDRESS.

The President took the chair at 10 a.m., and made the following remarks:—

My Dear Colleagues,—On the History of Ornithology there can be little to add, since we have, in the person of Professor Newton, an unrivalled chronicler, whose articles on Ornithology in the 'Dictionary of Birds,' seem to me to embrace the whole of the subject in so complete a manner that they must for ever remain the foundation of ornithological history. I will confess that I had entertained the idea of presenting from this chair an address on the history of ornithology, a subject that has always interested me greatly, but I soon found that the facts I had collected were already set forth in Professor Newton's articles above referred to, and that they were marshalled in such an excellent fashion that I could not hope to add anything of value.

Nomenclature is a tedious subject, and seldom leads to profitable discussion in a Congress such as ours, where there is abundant promise of serious work to be performed. It is too often the apple of discord, and I shall not throw it among you on the present occasion.

Since, however, the meeting of this Fourth International Ornithological Congress is being held in London, and in proximity to the Natural History Museum, it has struck me that a few words on the origin and progress of the Bird-Collection in our National Museum might be of some interest to the Members of the Congress.

Some of you may have seen the volume of the 'History of the Collections in the British Museum' which appeared in 1904, in which were published accounts of the following Departments, viz.:

Botany, by George Murray, F.R.S.,
Mineralogy, by L. Fletcher, F.R.S.,
Geology, by A. Smith Woodward, F.R.S., and

In the forthcoming second volume will be narrated the history of the Department of Zoology, to which I have contributed the ornithological portion. As this volume will
shortly be in your hands there is no need to trouble you with all the minute details there published, and it is principally to the more ancient history of the Bird-Collections that I wish to draw your attention this morning.

The nucleus of the British Museum was formed in the year 1753, when Sir Hans Sloane directed in his will that the first offer of his collections, which, he stated, had cost him £50,000, was to be made to the Nation for the sum of £20,000. This money was voted by Parliament. Trustees were appointed, and the Harleian MSS. (purchased for £10,000), the Cottonian Library, and other collections having been acquired, either by presentation or purchase, a home was sought for the "British Museum," as it was then called.

Finally a large mansion, Montague House in Bloomsbury, with seven acres of ground, was purchased from the Montague family for the very moderate sum of £10,100. This fine residence was built by Ralph Montague about the year 1674. He employed foreign artists in the decorations, and the staircases and ceilings were adorned with paintings by Verrio, La Fosse, and other well known artists. Evelyn, in his "Diary," records the burning of the mansion in 1686, and says that for paintings and furniture, "there was nothing more glorious in England."

I have, in my 'History of the Collections in the British Museum,' given a description of Montague House from the early guide-books published by the Trustees, and a very good account of the place is to be found in Mr. John Timbs' 'Romance of London' (p. 301). I am indebted to His Grace the Duke of Bedford, K.G., for some further interesting notes kindly furnished to me for the purposes of the present address:—

The site of Montague House was formerly part of the Bloomsbury Estate of the Earl of Southampton and passed to Lady Rachel, his daughter, who married Lord William Russell, son of William, fifth Earl and first Duke of Bedford.

On the 19th June, 1675, Lord William and Lady Rachel Russell granted to The Right Honourable Ralph Montague in fee, the site of Montague House, subject to a Fee Farm Rent of £5 per annum, and Mr. Montague built on the ground a
mansion of considerable size. Evelyn, in his 'Diary,' calls it a "Palace."

Ralph Montague married Lady Elizabeth Wriothesley, half sister of Lady Rachel Russell, and this connection may, perhaps, account for the grant of 1675.

In January, 1686, this House was burnt to the ground. The fire is mentioned by Evelyn and by Lady Rachel Russell in one of her letters. The House was rebuilt by its owner (who was created Duke of Montague) on the same plan as before. The second Duke of Montague lived there for a time, but subsequently built another mansion in Whitehall, to which he removed.

In 1753 Sir Hans Sloane bequeathed his collection to the Nation, and an Act of Parliament was passed constituting the British Museum and appointing its Trustees, and while the latter were looking for a House in which to place their treasures, the representatives of the Duke of Montague offered to sell them Montague House. The price was agreed upon at £10,100, and a very large sum was spent by the Trustees in repairs and alterations. The Museum was opened to the public in 1759.

In 1841 the Duke of Bedford released to the Trustees of the British Museum the rent of £5 reserved under the Grant of 1675, and in the same year the Duke and his Trustees sold and conveyed to the Museum Trustees the pieces of land on which the South-east and South-west wings now stand.

In 1895 His Grace sold to the Trustees the houses surrounding the Museum on the North, East and West sides.

In one of the early guide-books of the Museum, an estimate is given of the contents of the Sloane collection, as being 50,000 Books, MSS. and Prints, 23,000 Coins and Medals, 8,186 specimens of Quadrupeds and their parts, 1,172 Birds and their parts, eggs and nests, etc. Most of the Zoological collections have perished in course of time, but a few specimens still remain.

In the 'History of the Collections' before mentioned I have attempted an identification of the Banksian 'Drawings.' These were presented by Sir Joseph Banks, with the rest of his wonderful library, to the Trustees of the British Museum,
of which body he was an active member. These 'Drawings' consist of coloured or pencil sketches by the artists who accompanied Captain Cook and Sir Joseph Banks on their voyages round the world. Sydney Parkinson went on the first voyage, and his sketches are contained in a thin folio volume. He unfortunately died during the expedition. The two Forsters, Johann Reinhold and his son Georg Adam, went with Captain Cook on his second voyage, and the large folio volume of their paintings and pencil drawings is the most important of the three collections presented to the Museum by Sir Joseph Banks. The third set of 'Drawings' is that of W. W. Ellis, who was the artist on Captain Cook's third circumnavigating voyage.

It is very evident from an examination of these drawings, that many were merely traced in outline, with the colours of the feet and bill painted on the spot, while the general coloration was left to be filled in later on from the skins of the birds, probably after the return to England. This was not done in many cases, and the species are often impossible to identify with certainty.

The fate of the actual specimens preserved on the three voyages is also difficult to trace. At the time that Latham wrote his 'General Synopsis of Birds' (1781—1785), many of the specimens are mentioned as being in the Museum of Sir Ashton Lever, and in the collection of Sir Joseph Banks. The latter does not seem to have given many of the birds to the British Museum, but a number passed into the Bullock Museum, and were dispersed at the sale of this collection. A good many were then bought by Lord Stanley and are now in the Liverpool Museum, but a great number of these priceless specimens went abroad. John Reinhold Forster seems to have prepared an account of the birds observed by him, but it remained unpublished till the year 1844, when his 'Descriptiones Animalium,' was edited by Prof. H. Lichtenstein.

In my room in the Natural History Museum I have laid out for inspection by Members of the Congress a further collection of 'Drawings,' which were acquired by the Trustees in 1902. These consist of a large volume of paintings by
Thomas Watling, who was sent to Australia as a collector and artist by James Lee, the greatest horticulturist of the time, and a man of eminent position. He was a correspondent of Linnaeus', and was a friend of the leading naturalists of his time, acting as arbitrator in the dispute which arose between Sydney Parkinson’s brother and Sir Joseph Banks. (Cf. Parkinson’s Voyage.)

Mr. James Lee, the great grandson of the famous horticulturist, possesses several relics of his ancestor’s time, among them being a very interesting letter from Linnaeus to the latter. By his courtesy I have been permitted by Mr. Lee to publish this hitherto unrecorded letter of Linnaeus, which bears the inscription ‘Epistola Linnaei ad Leeum data, 1776.’

The envelope is addressed as follows:

“Tho Mester James Lee fræ Amsterd™
Vineyard Hammersmith London.”

Vir amicissime!

Accepi litteras Tuas ultimas sed non accepi responsum ad priores de Blackburnea, sed parum refert qvum Forsteri genus Blackburnea longe certius sit.

Aytonia Tua est absque controversia Species Campanulæ, sed pra’fero genus Aytonia Thunbergii in Cap. bon. spei, qvod quidem nondum vidi propriis oculis.

Credis Banksii Herbarium esse maximum quod ullus habet, ego vero vellem certare de meo quod hoc esset duplo majus.

Si habeas Lecam qvam ego a Tuo nomine dudum dixi, qua so istam meium communica [re].

Doleo maxime statum optimi Ellisii sed mea ipsa fata me prius vocant. Vale, iterumq., Vale.

Upsalia 1776
Novemb’. Carl Linné.”

[Translation.]

Dear Friend,

I received your last letter, but not the answer to the former about Blackburnea; however, it is of little con-
sequence, since Forster’s genus Blackburnea is far more certain.

Your Aytonia is beyond question a species of Campanula, but I prefer the genus Aytonia of Thunberg (from the Cape of Good Hope), which, indeed, I have not yet seen with my own eyes.

You imagine Banks’ Herbarium to be the largest in anyone’s possession, but I should like to claim for mine that it is twice as large.

If you have a Leea, which I named after you some time ago, please lend me the specimen.

I am very grieved about Ellis, but my own affairs have the prior claim on me. Farewell, and once more, farewell.

Carl Linne.

Mr. Lee was so good as to allow the Museum to acquire the collection of Watling Drawings, and they will always be a valuable possession of the British Museum, not so much for their artistic merit as for their historical connection with James Lee and John Latham.

To the pictures of birds is appended a list of the species as determined by Latham, and the scientific names are in his handwriting, as vouched for by a note (probably in the handwriting of James Lee, the owner of the volume):—“This catalogue was wrote by Dr. Latham, author of the ‘General Synopsis of Birds.’”

In my portion of the ‘History of the Collections,’ I have given a critical résumé of the Watling drawings, and have succeeded in identifying the species in nearly every instance. The origin of Latham’s Australian species in his second ‘Supplement’ to the ‘General Synopsis’ has hitherto been a puzzle, but we now know that his descriptions were founded on these very pictures of Watling’s, which thereby become the types of Latham’s descriptions. Latham apparently refers to a few of them as ‘Lambert’s Drawings.’ They may have been lent by James Lee to Lambert, and shown to Latham by the latter, but they did not pass into Lambert’s possession. Latham, though apparently glad to name the species and to publish Watling’s notes, usually in their entirety, never once, as far
as I can discover in the 'Synopsis,' mentions the name of Watling or James Lee.

In my 'History of the Bird Collections' in the British Museum, I have given a list of the species mentioned by Latham in his 'General Synopsis' (1781-1785), and from this we gain some idea of the extent of the collection of Birds in those early days.

Although many specimens from Cook's Voyages passed into the Leverian Museum, it would seem from Latham's work that many were still in Sir Joseph Banks' possession, and there is no proof that the latter ever presented or bequeathed any considerable number of birds to the British Museum, no register being kept at the time. On the other hand many specimens from Cook's Voyages were in the Bullock Museum, which was dispersed in 1819, by auction. On this occasion, priceless specimens of birds, belonging to species now extinct, were purchased by curators and collectors from abroad, men more wise than our own countrymen, and they are now some of the most valuable possessions of foreign museums.

There can be no question that at the commencement of the nineteenth century the British Museum did not occupy a very commanding position as regards ornithology, and for a succession of years, as has been so well demonstrated by Professor Newton in his historical article in the 'Dictionary of Birds,' France produced most of the epoch-making ornithological works.

Professor Newton's article above referred to is doubtless familiar to my hearers, but I cannot refrain from quoting at length his account of Buffon and Latham and their times: it seems to me to put the facts in such a concise and masterly way as to convey the best idea of the state of Ornithology at the end of the eighteenth century to be found in any work within my knowledge. It is, too, the most thorough tribute to the genius of Buffon that I know.

Discussing Edward's 'Natural History of Birds' and 'Gleanings of Natural History of Birds in the Introduction' to his 'Dictionary of Birds' (p. 9), Professor Newton speaks of the 'Ornithologie' of Brisson as "a work of very great merit as far as it goes, for as a descriptive ornithologist
the author stands even now unsurpassed; but it must be said that his knowledge, according to internal evidence, was confined to books and to the external parts of Birds' skins. . . . . . . His attempt at classification was certainly better than that of Linnaeus; and it is rather curious that the researches of the latest ornithologists point to results in some degree comparable with Brisson's systematic arrangement, for they refuse to keep the Birds-of-Prey at the head of the Class Aves, and they require the establishment of a much larger number of 'Orders' than for a long while had been thought advisable. Of such 'Orders' Brisson had twenty-six, and he gave Pigeons and Poultry precedence of the Birds which are carnivorous or scavengers. But greater value lies in his generic or sub-generic divisions, which, taken as a whole, are far more natural than those of Linnaeus, and consequently capable of better diagnosis. More than this, he seems to be the earliest ornithologist, perhaps the earliest zoologist, to conceive the idea of each genus possessing what is now called a 'type,' though such a term does not occur in his work; and, in like manner, without declaring it in so many words, he indicated unmistakably the existence of sub-genera—all this being effected by the skilful use of names. . . . ."

"The success of Edward's work seems to have provoked competition, and in 1765, at the instigation of Buffon, the younger D'Aubenton began the publication known as the "Planches Enluminées d'histoire naturelle," which, appearing in forty-two parts, was not completed till 1780, when the plates it contained reached the number of 1008—all coloured, as its title intimates, and nearly all representing Birds."

As Professor Newton records in a foot-note, these plates were drawn and engraved by Martinet, who had executed the plates for Brisson's work. In my opinion, there can be no doubt that the artist took some of the figures in the 'Planches Enluminées' from the engravings in Brisson's work, merely altering the positions slightly, and I fancy that some of them were coloured in the 'Planches,' from Brisson's descriptions, rather than from the actual birds.

"But Buffon," adds Professor Newton, "was not content
President's Address.

with merely causing to be published this unparalleled set of plates. He seems to have regarded the work just named as a necessary precursor to his own labours in Ornithology. His 'Histoire Naturelle, générale et particulière,' was begun in 1749, and in 1770 he brought out, with the assistance of Guénau de Montbeillard, the first volume of that grand undertaking relating to birds, which, for the first time, became the theme of one who possessed real literary capacity. It is not too much to say that Buffon's florid fancy revelled in such a subject as was that on which he now exercised his brilliant pen; but it would be unjust to examine too closely what, to many of his contemporaries, seemed sound philosophical reasoning, under the light that has since burst upon us. . . . He, too, was the first man who formed any theory that may be called reasonable of the Geographical Distribution of Animals, though this theory was scarcely touched in the ornithological portion of his work, and has since proved to be not in accordance with facts. He proclaimed the variability of species, in opposition to the views of Linnaeus as to their fixity, and, moreover, supposed that this variability arose in part by degradation."

"Taking his labours as a whole, there cannot be a doubt that he enormously enlarged the purview of naturalists, and, even if limited to birds, that, on the completion of his work upon them in 1783, Ornithology stood in a very different position from that which it had before occupied."

This description of Buffon's work and influence I have quoted from Professor Newton in extenso, because I think it gives such an excellent idea of the state of Ornithology towards the end of the eighteenth century, and of the important part played by France in the development of our knowledge of the Class Aves at that epoch. The full history of the science and its development must be sought for in Professor Newton's 'Dictionary,' being somewhat beyond the scope of my present address, which I am restricting more to a history of the rise and progress of the British Museum and its collection of birds.

1 He retired on the completion of the sixth volume, and thereupon Buffon associated Bexon with himself.—A.N.
England possessed at the same epoch several energetic and learned naturalists, worthy successors of Willughby and Ray, who had laid the foundation of the study of Natural History in this country. Not to mention all the British authors of the period and their work, duly chronicled by Professor Newton in his "Introduction," it is impossible to consider this period of our history without a reference to the influences on British Ornithology of Gilbert White, Bewick, Pennant, and Montagu, whose writings not only promoted serious study, but contributed to the popularity of ornithological research, which has ever since been a distinguishing feature of our country.

Of the British Museum, however, but little was heard, and, as far as I can discover, there were no special features in the Bird Collection to excite much interest among the public. I have given in the official 'History' of the ornithological collections, a summary of the gradual growth of the latter, as far as I have been able to trace the development in the little guide-books which were published for the Trustees under the title of a 'Synopsis of the Contents of the British Museum.' The earliest we possess in our library is that of 1808, but before that date, Dr. John Latham had published his 'General Synopsis of Birds,' in which he indicated every species known to him as existing in the British Museum, the number being just over 400.

As Latham played an important part in the history of Ornithology, I cannot do better than quote Professor Newton again ('Intr. Dict. Birds,' p.11):—"Great as were the services of Buffon to Ornithology in one direction, those of a wholly different kind rendered by our countryman, John Latham, must not be overlooked. In 1781 he began a work, the practical utility of which was immediately recognised. This was his General Synopsis of Birds, and, though formed generally on the model of Linnaeus, greatly diverged in some respects therefrom. The classification was modified, chiefly on the older line of Willughby and Ray, and certainly for the better; but no scientific nomenclature was adopted, which, as the author subsequently found, was a change for the worse. His scope was co-extensive with that of Brisson, but Latham did not
possess the inborn faculty of picking out the characters wherein one species differs from another. His opportunities of becoming acquainted with Birds were hardly inferior to Brisson's, for during Latham's long lifetime there poured in upon him countless new discoveries from all parts of the world, but especially from the newly-explored shores of Australia and the islands of the Pacific Ocean. The British Museum had been formed, and he had access to everything it contained, in addition to the abundant materials afforded him by the private museum of Sir Ashton Lever. Latham entered, so far as the limits of his work would allow, into the history of the Birds he described, and this with evident zest, whereby he differed from his French predecessor; but the number of cases in which he erred as to the determination of his species must be very great, and not unfrequently the same species is described more than once. His Synopsis was finished in 1785; two supplements were added in 1787 and 1802, and in 1790 he produced a Latin abstract of the work under the title of Index Ornithologicus, wherein he assigned names on the Linnean method to all the species described. Between 1821 and 1828 he published at Winchester, in eleven volumes, an enlarged edition of his original work, entitling it A General History of Birds; but his defects as a compiler, which had been manifest before, rather increased with age, and the consequences were not happy."

It was decidedly unfortunate for Latham that he so long delayed his 'Index,' for in the meantime Gmelin published his edition of the 'Systema Naturae,' and, as Professor Newton puts it, he "availed himself of every publication he could, but he perhaps found his richest booty in the labours of Latham, neatly condensing his English descriptions into Latin diagnoses, and bestowing on them binomial names."

It is not a little surprising that Latham, being acquainted with the Linnean method, and ultimately intending to use Latin binomial terms for the species of the 'Synopsis,' should not have recognised the possibility of some other naturalist anticipating his intention. It is in this way that Gmelin obtained his position in Ornithology, and Latham falls far behind him in the nomenclature of species of birds, though he
did all the work. The subject was regarded with less seriousness in those old days, and the last-named author doubtless imagined that his English names were of quite as much importance as Latin ones. At any rate, when it came to the publication of the 'Supplements,' that of the 'Index Ornithologicus' followed close upon the Supplement of the 'General History,' and in the second one, Latham held the field, and a considerable number of "New Holland" birds bear his names. These Australian species were in great part described from Watling's Drawings above-mentioned.

At the same time it must be remembered that Latham was himself an observer and collector. He describes some species from his own collection, and in the earliest catalogue of British Birds in the Museum, that by Leach in 1816, several specimens are said to have been presented by Latham. Another thing to be noted, as showing the influence of his work, is that the names of several of our British species are still known by the titles he bestowed upon them.

Another man whose work exercised considerable influence on British Ornithology was Colonel Montagu, the author of the 'Ornithological Dictionary.' He possessed a private collection of birds, procured chiefly in Devonshire and Wiltshire. This collection passed into the British Museum, and formed the basis of Dr. Leach's 'Systematic Catalogue' of 1816.

In this little work (printed on one side of the page only) Leach published some fifteen new generic and specific names, some of which are recognised to the present day, viz.: Melizophilus, Squatarola, Pavoncella, etc. A copy of this scarce book exists among the tracts in the Natural History Museum, and from this a reprint was made by the Willughby Society in 1882, edited by the late Osbert Salvin, F.R.S. If, as the latter suggests, it was intended as a label-catalogue for the specimens, this fact may account for the rarity of the pamphlet, as it would be intended for use in the British Museum only. I only know of one other copy, which is in the possession of Professor Newton at Cambridge.

The collection of the British Museum, with the acquisition of the Montagu collection, was beginning to make some better
show, but we know very little about its early beginnings, as no registers were kept or catalogues published. Its funds were not considerable, and we learn from the ‘Synopsis of the contents of the British Museum,’ published in 1808, that in order to raise money for the purchase of collections and for housing the latter, a lottery was projected, and authorised by Parliament. It brought in the sum of £95,194 8s. 9d.

For £10,100 the splendid Montague House, with seven acres of ground was purchased. “The necessary repairs (which, the house having stood long empty, proved very expensive) were immediately proceeded upon; and the proper book-cases and cabinets having been completed, and the collections removed thither and properly distributed and arranged, the Museum was at length opened for study and public inspection, on the 15th of January, 1759.”

“Besides the £20,000 paid for the Sloanean, and the £10,000 for the Harleian collections, and £10,100 for Montague House, the sum of £28,663 15s. was laid out in the purchase of £30,000 three per cent. reduced annuities, and appropriated to the maintenance of the establishment; and the remaining £26,531 3s. 2d. raised by the lottery scarcely sufficed to defray the expenses of repairs, cases, furniture, removing the collections, and various other incidental charges.”

Of the number of birds we gain some idea from the ‘General Synopsis’ of Latham, as already mentioned, and in the same ‘Synopsis of the Collections’ of 1808 we find that the birds were arranged in Room XI. of the Upper Floor of Montague House. They were “disposed, as far as convenience would admit, according to the Linnaeian mode of arrangement, viz., into six great divisions or orders, the separations of which are marked by white lines between each. Some birds, however, on account of the large size of the cases in which they are contained, could not conveniently be stationed in their proper orders, and are therefore disposed on the upper part of the general divisions.”

Particular attention was drawn to a “young Hargil, or Giant Crane, from India, which, when full grown, is by far
the largest of all the Heron tribe,” as well as to the “Argus Pheasant, from Sumatra, the Black or Crested Curasso-bird, the Shining African Thrush, and the Long-shafted Goat-sucker from Sierra Leone.”

“Some Birds,” says the guide-book, “on account of their inconvenient size, could not be admitted into the general assortment; of these the most remarkable is the Cassowary, an Indian Bird, which some ornithologists place among the Grallae, others among the Gallinæ, and others in a particular division distinct from both.”

There were also curious nests, etc., in two table-cases, one containing the “hanging-nests, chiefly formed by Birds of the Oriole tribe,” as well as nests of the Edible Swifts and Taylor-birds, with feathers of the Condor, the leg of a Dodo in a glass, etc. “The second case contained eggs of the Ostrich, Cassowary, Crocodile, etc.”

Another interesting exhibit was mentioned. In his account of the Dodo in the ‘Dictionary of Birds,’ Professor Newton refers to the large picture of the Dodo in the British Museum as being formerly in the collection of Sir Hans Sloane, and supposed to be the work of Roelandt Savery, who was born at Courtray in 1576, and died in 1639. It was always understood that his pictures had been drawn from the life. “Proof, however, of the limning of a living Dodo in Holland at that period had hitherto been wanting. There can now be no longer any doubt of the fact; and the paintings by this artist of the Dodo at Berlin and Vienna dated respectively 1626 and 1628, as well as the picture by Goiemare, belonging to the Duke of Northumberland, at Sion House, dated 1627, may be, with greater plausibility than ever, considered portraits of a captive bird.” Professor Newton also believes it possible that a living bird may have existed in the vivarium of the Emperor Rudolf II., of Austria, and have formed the subject of sketches by artists of the time.

It is in connection with the painting in the Museum that the following account of it in the ‘Synopsis,’ of 1808, becomes of interest: “We must not omit a curious picture, executed long ago in Holland, of that extremely rare and curious bird the Dodo, belonging to the tribe Gallinæ, and a
native of the island of Bourbon. The picture was taken from a living specimen, brought into Holland, soon after the discovery of the passage to the East Indies by the Cape of Good Hope, by the Portuguese. It was once the property of Sir Hans Sloane, and afterwards of the celebrated ornithologist George Edwards, who presented it to the British Museum." This statement, made in 1808, was doubtless on the authority of Shaw, who was assistant-keeper of the Zoological Department at the time.

The synopsis of the collections ran through numerous editions, and I have, in my 'History,' endeavoured to trace the changes which took place in the arrangement and development of the Bird Collections. In 1815, the birds held a more prominent position in the guide book, and occupied twenty cases, and after Dr. John Edward Gray's appointment in 1824, considerable improvement seems to have been made, and a special section of the Museum appropriated to the British collections, which has continued unto the present day.

From the 'Synopsis' of 1815 we also learn that, in 1769, "the Trustees being informed that a large collection of stuffed birds, in uncommon preservation, had been brought over from Holland by a person of the name of Greenwood, who, having for a time exhibited them to the public, became desirous to dispose of them at a reasonable price, they readily availed themselves of the opportunity and purchased the whole for the sum of £460. Many additions were made by purchases and donations; and the aggregate soon formed, not indeed a complete, but as extensive and curious a collection as any perhaps at that time extant."

Thus we see that the Sloane Collection formed the foundation of the Ornithological collection of the British Museum, and that the increase of the latter was at first by small degrees. There may have been certain additions from Cook's Voyages (there certainly were numbers in the Ethnographical Department) but of these nothing remains. The collection purchased of Greenwood must have been a substantial acquisition, while in 1816 the Montagu collection of British Birds was added, and a catalogue given of it by Leach in the same year.
The purchase of the Montagu collection, as I am informed by the Principal Librarian and Director of the British Museum, Sir E. Maunde Thompson, K.C.B., was recommended by Dr. D. Leach on the 14th June, 1816. The price was to be £1200, payable in instalments. On the 15th June, the purchase was agreed upon, Sir Joseph Banks having signified his opinion that the price was reasonable, and on the 1st of October, 1816, Dr. Leach reported to the Trustees the safe arrival of the collection.

The early history of the Bird Collection is, however, extremely imperfect, since no registers were kept till the year 1837. The influence of John Edward Gray was undoubtedly making itself felt. He was a man of extraordinary energy, whose sole idea was to make the Zoological Department of the British Museum the greatest in the world, and he spared neither his time nor his private purse in the endeavour. One of Gray’s greatest friends was General Hardwicke, a retired Indian officer, who presented a large number of mounted specimens to the British Museum. Together the two friends published, in 1820, the ‘Illustrations of Indian Zoology,’ the plates of which were founded on native drawings brought home by Hardwicke.

With the foundation of the Zoological Society, however, the British Museum encountered serious rivalry. All that was best of the work of youthful zoologists of the time gravitated to the Society, whose Museum rapidly developed in importance. John Gould and Louis Fraser were among the early Curators, the former a man of indomitable energy. To the Zoological Society’s Museum, therefore, went most of the principal collections made during the voyages of the early part of the 18th century: such as Captain King’s specimens from the Straits of Magellan, Darwin’s from the ‘Voyage of the Beagle,’ and many others.

Many of these old-time treasures were transferred to the British Museum, when the Zoological Society determined to give up its Museum. The choice of selection was left to Mr. G. R. Gray, who appears to have overlooked a few of the types, which afterwards passed into private hands at the subsequent sale of the Zoological Society’s collection.
From the year 1837 onwards we have material for an exact history of the Bird Collections in the British Museum. For many years to come the influence of John Gould was to be felt in the history of British Ornithology, not so much on account of his scientific attainments, as for the wonderful series of illustrated books which he published. He was an accomplished taxidermist, and had a real love for a bird. His books were started on an entirely new line, and the lithography of his plates was done first by his wife, then by Lear (the author of a work on Parrots), and lastly by Richter and Hart.

Gould was a staunch friend of the British Museum, and towards the end of his life he was always ready to allow us to acquire any collections which had served his purpose for illustration in his great series of works. From an early date he presented specimens to the Museum, and he has told me how great was his grief when the offer of his Australian collections of birds and eggs was rejected by Dr. J. E. Gray. In a moment of chagrin he accepted the offer of Dr. Edward Wilson, and allowed the collections, with their priceless types, to go to Philadelphia.

In 1838 Gould went to Australia to procure the material for his great work on the Birds of that country, and he also published another folio on the Mammals of Australia, which he always considered one of his most praiseworthy publications, as he produced it in the interests of science alone, knowing well that the undertaking would not pay.

Gould must have had some correspondent in Australia who sent him specimens, as in 1837 and 1838 he presented specimens from that continent, and in the latter year he left England for New South Wales.

Slowly but surely, the National Collection of Birds now began to increase. The year 1837 saw collections from South America presented by Admiral Fitzroy and Sir Robert Schombergh, and in 1838 began the presentations of Indian and Chinese birds from John Russell Reeves, another old friend of Dr. J. E. Gray.

The expeditions to the interior of South Africa by Dr. (afterwards Sir) Alexander Smith had resulted in the discovery of a number of new forms of birds. These were
collected by Dr. Smith, and were mounted by Jules and Alexis Verreaux, who were at that time in South Africa. They were exhibited in London at the Egyptian Hall, as the 'South African Museum,' and the collection was afterwards sold in 1838. Sir Andrew was terribly disappointed at the want of interest exhibited by the public in his South African collection, which had been made under circumstances of difficulty and danger, not to be credited in these days.

In 1839 we find the attempts at a reconstitution of the collection of British Birds, 114 specimens of young birds being presented by Mr. J. Baker of Melbourne in Cambridgeshire, who afterwards became a taxidermist in London, and mounted many of the birds in the Museum.

In 1840, and again in 1843, Sir George Grey presented specimens from South and West Australia, which he obtained through Gould and his collectors. In 1841, after Gould had come back from Australia, 332 birds were purchased from him. In 1842 an important collection of 120 birds from Port Essington was presented by Captain Chambers, and another from the Philippine Islands, purchased of Hugh Cuming, contained several new species. A set of birds was purchased from Dr. Rüppell, being duplicates from his Abyssinian collection.

In this year was received the first instalment of the specimens collected during the great Antarctic Expedition.

The year 1843 must for ever be a notable one in the history of the British Museum, for at this time began the wonderful donations of Mr. Bryan H. Hodgson from Nepal. One thousand three hundred and two birds were presented by him in 1843.

In 1844, 222 birds from the Falkland Islands were sent by the Antarctic Expedition, and 107 birds from the voyage of H.M.S. "Fly," collected by Dr. J. Beete Jukes. Hodgson gave a second collection in 1845, 998 birds being from Nepal and 301 from Behar, while Jerdon sent 57 specimens from Madras, including the types of species described by him in Indian journals.

Thirty-five birds from Port Essington were presented by Dr. Sibbald, and 54 birds from Shoa, duplicates from Sir W.
Cornwallis Harris' collections, were presented by the Hon. East India Company. The most important donation was, perhaps, 292 birds purchased from Sir Andrew Smith, being the remainder of the collection made by him on his celebrated expeditions.

Ninety-one birds from Pará were also presented by Mr. R. Graham.

The year 1846 was rendered famous by the presentation of 124 birds procured by Captain Sturt during his adventurous expedition into Central Australia, by a collection of birds and eggs from Tunis made by Louis Fraser, and the Bolivian series of birds obtained by Thomas Bridges.

In 1847 Sir George Grey signalised his office as Governor of the Colony by presenting the Museum with 44 specimens of New Zealand Birds, 134 others from Jamaica were obtained from Mr. P. H. Gosse, and a collection of 171 Australian birds were presented by Sir T. Mitchell.

In 1848, Hodgson gave 307 birds from Sikhim, and Dr. Rae presented 135 birds and eggs from Repulse Bay in the Hudson's Bay Territory.

Captain Stokes presented 47 birds from New Zealand in 1849, and in the same year 173 specimens from various quarters of the British Islands were purchased from Mr. J. Baker.

The year 1850 was remarkable for the voyage of the "Rattlesnake," and Capt. Owen Stanley presented to the Museum 204 birds from Northern Australia and the Islands of Torres Straits. August Sallé was commencing his explorations in the West India Islands, and 37 birds from San Domingo were purchased from his collection.

John Macgillivray, who had been naturalist on board the "Rattlesnake," remained in Australia, and made collections after the expedition was over. In 1851 he presented 44 birds to the Museum obtained during the voyage.

In 1852, the remnant of a small collection of birds made by C. J. Andersson, in Damara Land, was secured by the Museum. One hundred and six birds from New Zealand were presented by Captain Stokes.
Fifty-five Humming Birds and 88 Toucans were purchased from Mr. Gould in 1853.

One hundred and four birds from the neighbourhood of Bagdad were presented by Mr. Kenneth Loftus.

In 1854 was purchased through Mr. Samuel Stevens, who became celebrated as a Natural History agent, a collection of 127 birds from New Grenada. This was the first sign of that steady influx of Bogotà Birds which has continued into Europe down to the present day, the specimens sent during the last fifty years from Colombia amounting undoubtedly to millions.

Dr. P. L. Sclater was at this time commencing his career as a Zoologist, and was paying especial attention to American Birds; and he described the Bogotà collections in the "Proceedings" of the Zoological Society for 1855 and 1857.

In 1855, the Museum purchased from the Zoological Society, at the dissolution of the Museum of the latter, 403 specimens of birds, the object being to acquire the species described in the voyages of the "Sulphur," "Beagle," etc., with the types of Darwin’s species.

Dr. Rayner, who was on H.M.S. “Herald,” presented a series of forty-six birds from the Fiji Islands; and five birds from New Zealand, purchased from Mr. W. Mantell, contained a specimen of the nearly extinct Notornis mantelli.

Mr. Alfred Russel Wallace, having returned from the Amazons, had departed for his expedition to the Malay Archipelago, and his first collection reached England in 1857. Sixty-six birds were acquired by the British Museum from Lombok. Mr. G. R. Gray was permitted to describe the collections in their entirety, but the first set was retained by Mr. Wallace for his private use, and only the duplicates were allowed to be sold. (Vide infra, pp. 110-112.)

In 1857, too, a series of 249 birds from N. W. Australia was presented by Dr. J. R. Elsey, who had accompanied the expedition of the brothers Gregory to the Victoria River. Three hundred and forty-seven birds were purchased by Mr. Gould in 1857, and 205 more in 1858.

In the last-named year a small selection of birds (56) was purchased from Mr. H. W. Bates’ collection made on the Rio
Javarri and the Amazon. In 1858, too, there occurred the sale of the great collection of Dr. Lidth de Jeude in Holland, and the Museum secured a specimen of the Great Auk (*Plautus impennis*). An example of the whale-headed Stork (*Baleniceps rex*) was also purchased.

Collections also arrived from Mr. Wallace in 1858, and 150 birds from the Key and Aru Islands, and 58 from Celebes were purchased for the Museum. In 1859 another collection from the Fiji Islands, and other localities in the Pacific, collected by Dr. F. M. Rayner, was presented by the Lords of the Admiralty. Ninety-one birds from Vancouver Island were presented by Dr. Lyall, of H.M.S. "Plumper." John Macgillivray was still collecting in the Pacific Islands, and sent 22 birds from New Caledonia.

Five hundred and ninety-eight birds from Nepal were presented by Mr. Hodgson.

Eighty-three birds from Batchian, Amboina, and New Guinea, were acquired from Mr. Wallace's collection, 33 sets of eggs and nests from Natal, collected by Mr. T. Ayres, and 88 birds, including several types, from the Massena Collection, were purchased of M. Parzudaki, a well-known natural history agent in Paris.

We have now arrived at the most momentous period in the history of British Ornithology, for in the year 1859 the 'British Ornithologists' Union' was founded, and the 'Ibis' had appeared. The 'Journal fur Ornithologie,' founded by Professor Cabanis, had already flourished for six years, and has since celebrated its jubilee, but the position of the 'Ibis' as the centre of British ornithological work has never been called in question. The founders of the 'Ibis' consisted of a small number of college friends who happened to meet first at Canon Tristram's house at Castle Eden, and afterwards in the rooms of Professor Newton, at Cambridge. Even these men, however, celebrated as they have all become, could scarcely have expected to see their projected journal rise to the height of fame and usefulness to which it has attained. At first it was only conducted at considerable expense, and the hands of the founders had often to be put in their pockets to find the money for carrying it on.
In 1860 many important additions were made to the collection of birds. Ninety-two specimens from Ecuador were purchased of Mr. Gould. Ninety birds from Natal, collected by Dr. Gueinzius, were purchased from Mr. Samuel Stevens. Allusion to this collection is frequently made by the late Mr. John Henry Gurney in his articles in the 'Ibis,' on the birds of Natal.

Two hundred and fifty-five specimens from Mr. Wallace's collections, from Celebes, Ceram, Gilolo, Ternate, and Timor were added.

The North American Boundary Commission, for the delimitation of the British Columbian frontier, finished its labours, and the naturalist appointed by the Government, Mr. J. Keast Lord, made a collection of 131 birds from the west side of the Rocky Mountains, and he further presented a series of 106 birds obtained in Vancouver Island.

In this year, 1860, the India Museum determined to hand over a number of its specimens to the British Museum, especially such as had no direct connection with the Indian Empire, viz., Sir Cornwallis Harris' Abyssinian (or rather Shoan) collection. Five hundred and eighty-four birds were received on this occasion, but the bulk of the collection was received in 1861.

One hundred and ninety-three birds were presented by the Foreign Office, collected by Sir John Kirk during Dr. Livingstone's celebrated expedition to the Zambesi.

Mr. Osbert Salvin had returned from his first expedition to Guatemala, and the duplicates, which he allowed the Museum to have, were always of great value to the collection. Forty-eight specimens from Guatemala were this year added.

In 1861 a further instalment of specimens was received from the India Museum, consisting of 172 birds from Shoa collected by Sir W. Cornwallis Harris. One hundred and eighty-seven Humming Birds were purchased of Mr. Gould, and 40 birds were presented by Mr. B. R. Ross from Fort Simpson in Western Canada.

From Mr. Wallace's collections 116 birds were obtained, from Mysol, Waigiu, and Ceram.

In 1862 there were no notable acquisitions, with the excep-
tion of a further series of Mr. Wallace's collections, consisting of 221 birds from Timor, Mysol, and New Guinea.

A further collection of British Columbian birds was presented in 1863 by Mr. J. K. Lord, 398 in number, and 194 birds from the Mackenzie River district by Mr. B. R. Ross.

Forty-three birds from the Zambesi, including the type of a new Touraco (Turacus livingstonei), were presented by the Rev. Charles Livingstone.

An adult Balaniceps rex from the Upper White Nile was purchased from Consul Petherick, who discovered the species.

Mr. W. T. Blanford also presented in 1863 the collection of birds made by him in Pegu, which contained many specimens of great interest to the Museum. Forty birds collected by Mr. A. R. Wallace in Bouru and Flores, were added this year.

The most important contribution to the bird-collection in 1863 was, however, made by the Linnean Society, which determined to dispense with its series of mounted birds and handed over to the British Museum 87 specimens, the types of species described by Temminck, Vigors, and Horsfield in the Society's 'Transactions.'

In 1864 the Museum acquired a set of birds from Palestine and Syria, collected by Canon Tristram.

The year 1865 was noteworthy for the acquisition of a further instalment of 88 birds from Guatemala and Costa Rica, duplicates from Mr. Salvin's collections.

One hundred and sixty birds from Malacca were presented by Mr. W. Harvey, and were a useful addition to the collection.

In 1866 Mr. Salvin presented 68 nests from North America; and 66 birds from Upper Amazonia, collected by Mr. Edward Bartlett, were purchased.

Mr. Darwin presented in 1867 his series of 66 varieties of Domestic Pigeons and Ducks.

A further instalment of duplicates from Mr. Salvin's Central American collections was added in 1868.

In 1869 Mr. E. L. Layard, who was then Curator of the Cape Museum at Cape Town, presented 106 eggs of South
African Birds. One hundred and two Humming Birds were purchased from Mr. Gould, and 147 specimens from South America from Mr. Edward Bartlett.

The second set of the collection made by Mr. W. T. Blanford during the Abyssinian Expedition, to which he was the naturalist, was presented by the Government of India.

In 1870, three important donations were received, viz., 135 specimens from the Pacific Islands, presented by Mr. Julius Brenchley, who had accompanied Commodore Wiseman on the cruise of the "Curaçoa."

Mrs. Bryant presented 66 birds from the West Indian Islands, where they had been procured by her late husband, Dr. Bryant, and 48 birds were also presented by the Smithsonian Institution.

For many years Robert Swinhoe had been our Consul in China and Formosa, and had done much service to Ornithology. He had recently made a visit to the Island of Hainan, and, in 1871, the Museum acquired from him 23 specimens collected during his expedition.

In 1872 George Robert Gray died, as also did Sir Alexander Smith, the latter bequeathing to the Museum a small collection of 68 birds. I succeeded G. R. Gray in September of this year, and I at once proceeded to enlist the sympathies of my friends on behalf of the Museum collection, more particularly as Dr. Günther at once set me to work at the 'Catalogue of Birds,' which was to occupy my time for the next thirty years.

Twenty Gyr-falcons and other Accipitres were purchased of Mr. Gould, including those beautiful specimens figured in his 'Birds of Great Britain.' Colonel Irby gave 44 birds from Southern Spain, and Mr. Howard Saunders followed with a present of 24 birds from the same locality, while Captain Shelley presented 23 specimens from Accra, on the Gold Coast.

In 1873 Dr. A. R. Wallace determined to part with his private collection of Malayan Birds, and offered it to the British Museum, when, to my great joy, it was acquired by the Trustees on Dr. Günther's recommendation. The collection contained 2474 specimens, with all the types of the species discovered by that splendid collector.
In addition to this grand addition to the Museum many other collections of value were presented. Dr. Blanford gave 33 birds from the Godavery Valley, procured during his sojourn therein. Colonel Hayes Lloyd presented a set of the birds obtained by him in Kathiawar; Captain Shelley, some valuable specimens (117) from Egypt, and from Avington, in Hampshire, where we have spent many a pleasant hour together engaged in collecting for the British Museum.

The Accipitres of the Wallace Collection from the Amazons were also acquired; the rest of his Amazonian collection was purchased by Dr. F. D. Godman, and has since been presented by him to the Museum.

I was now busy with the preparation of the volume of 'Accipitres' for the 'Catalogue of Birds,' and took a month's trip to the Continent for the purpose of studying other collections, visiting the Museums at Leyden, Brussels and Berlin, and making exchanges wherever I could, especially in the effort to obtain series of the birds of continental countries, in which the Museum showed a lamentable deficiency. The Brussels Museum, thanks to Dr. Dubois, presented 62 birds from Belgium to the British Museum.

In 1873, Commander Sperling gave 39 birds which he had collected on the Congo; Dr. Günther also purchased the Monteiro collection of Angolan Birds, 179 in number, with many types.

In the succeeding year, 1874, a very valuable addition to the Museum took place in the shape of the second set of the birds collected by Dr. W. T. Blanford during the expedition of 1871-1872 to Eastern Persia and Baluchistan. The Museum received 321 specimens, presented by the Government of India, under whose auspices the expedition took place.

According to the wholesome rule which obtains in the British Museum, no officer on the staff is permitted to retain a private collection of specimens, at least in that group of animals with which he is officially connected. It became necessary, therefore, to part with my beloved collection of African Birds to the British Museum, and the first instalment of 603 specimens was handed over in 1874.
The numbers of additions to the collection, which for many years had not exceeded 1000 specimens and generally fell short of half that number, now began to increase, and reached 6000 during my first year of office, mainly through the donations of my friends, and some important purchases effected by Dr. Günther. In 1875 Dr. R. B. Hinde presented a series of 156 birds from Kamptee in Central India, and 81 birds from New Zealand were received in exchange from the Colonial Museum, Wellington.

An amusing incident happened to me this year. I received a letter from Bloemfontein from Dr. Exton, introducing a Mr. Fred. Barratt to me as a young traveller from the Transvaal and the Orange Free State. He brought with him an interesting collection of birds, which he subsequently described in the 'Ibis,' and after I had shown him all the attention due to a stranger, we discovered on parting and exchanging addresses, that we were old schoolfellows. One hundred and seventy-two specimens were presented by Mr. Barratt.

In 1876 Capt. Stackhouse Pinwill presented a fine collection of 1247 Indian and Malayan Birds. At this date we had no inkling that the great Hume collection would ever come to the British Museum, and I found the Pinwill collection particularly useful for the purposes of the 'Catalogue of Birds.'

Seven hundred and fifty specimens from my collection of African Birds were added this year. The 'Transit of Venus' expedition to Rodriguez was accompanied by the Rev. H. H. Slater and Mr. G. Gulliver as naturalists, and 110 birds, skeletons, nests, and eggs were collected by these gentlemen, and presented by the Royal Society. Eleven birds and 103 eggs were obtained by the Rev. A. E. Eaton on Kerguelen Island, and were also presented by the Royal Society.

Three hundred birds were collected by the late Professor Dawson during the North American Boundary Commission, and were presented by the Lords of the Treasury, and the second set of the birds collected by Dr. John Anderson during the Yunnan expedition was presented by the Government of India.

For many years past Sir Hugh Low had been engaged in exploiting the Natural History of Labuan and the adjacent
parts of N.W. Borneo, and in 1876 the Museum acquired a series of 151 birds from these regions, the collection forming the basis of my paper on the 'Birds of Labuan,' published in the 'Proceedings' of the Zoological Society for 1875 (pp. 99-111). As it turned out, Sir Hugh Low's agent in London had not kept the collections from Labuan and the mainland of Borneo separate, and had submitted the collection to me as being all from the Island of Labuan. Thus when Governor Ussher succeeded Sir Hugh Low as Governor of Labuan, he made a careful collection of the birds of the island, and I was enabled to correct several mistakes which had occurred in my previous memoir (cf. P.Z.S. 1879, pp. 317-354; Ibis, 1879, pp. 233-272). Governor Treacher had also made an interesting collection of birds in the same parts of Borneo: these he presented to the Museum at Oxford, but I was permitted to include an account of them in my paper.

The year 1876 was also notable for the addition of 77 birds from Professor J. B. Steere's first expedition to the Philippine Islands. I had described the collection in the 'Transactions' of the Linnean Society (Trans. Linn. Soc. (z.) i., pp. 307-353), and had named 40 new species. The typical specimens and the first set Professor Steere kept for America, but he very kindly allowed us to acquire the second set, which added 20 species to the Museum collection.

In the year 1877 the Museum began to receive its first additions from British New Guinea. Twenty-five specimens from Mr. O.C. Stone's exploration added seven new species, and three more were added from the expedition of Dr. James, a young American collector of great promise, who was unfortunately killed by the natives at Yule Island. Major Trevelyan this year presented 138 specimens from Kingwilliamstown: this was a valuable contribution, as the Museum possessed little or no material from the Eastern Cape Colony.

Governor Ussher was keeping a staff of native collectors at work in N.W. Borneo, and 144 specimens from Labuan and the adjacent islands as well as from the Lawas River, Brunei and Lumbidan, were received from him.
Six hundred more specimens from my African collection were purchased, and the Godeffroy Museum presented 87 birds from the Pacific Islands.


One hundred and eighteen birds were collected in Argentina and Uruguay, by Mr. Alan Peel, a friend of Dr. Günther.

Mr. A. Bouvier had established a very successful Natural History agency in Paris, and the Museum obtained from him several new and interesting species from the Congo, collected by Dr. Lucan and M. Petit, as well as some from Gaboon collected by M. A. Marche and the ill-fated Marquis De Compiègne.

In this year, too, the Museum received from Professor Alphonse Milne-Edwards a series of 308 birds from Cochin China. These had been collected by Mons. E. Pierre, who had wished that, after the first set had been retained for the National Museum at Paris, the duplicates might be forwarded to the British Museum, where they have been much appreciated.

One hundred and one birds and eggs from the north of Greenland were presented by Colonel Feilden and Mr. H. C. Hart, collected during the Arctic Expedition under Sir George Nares in the “Alert” and “Discovery.”

One thousand and thirty-nine African Birds from my collection were purchased. Eighty-eight birds from Ceylon were presented by Colonel Vincent Legge, and 121 from Western Java by Mr. Francis Nicholson.

A very noteworthy addition to the collection in 1878 was the first set of birds procured by Dr. Otto Finsch during his celebrated expedition to Western Siberia.

In 1879 the final dispersion of the collections of the old Indian Museum commenced. From the days of the East India Company, when the Museum was at the Company’s House in Leadenhall Street, the collections had been moved to other places, and finally packed away. They contained the results of the work of Horsfield, Sykes, and many other well-known men, and contained many types of Indian species.
though most of Horsfield's types, through defective preparation, had fallen victims to moths. Seven hundred specimens were handed over in 1879.

Up to the present time very few specimens from East Africa had reached the Museum, but in this year the Museum acquired 52 birds from Dr. Hildebrandt's expedition to Teita (cf. Cabanis, J. f. O., 1878, pp. 213-246). Mr. Frank Oates had undertaken an expedition to Matabele-land and the Victoria Falls, and had unfortunately succumbed to fever on the return journey. His collection of 360 birds was presented to the Museum by his brothers, W. E. and C. G. Oates.

Sixty-nine birds from British New Guinea collected by Mr. Kendal Broadbent were purchased. It was understood that this collection had been sent direct to England, but the new species which I described were already known to Dr. E. P. Ramsay, the ever-vigilant Director of the Museum at Sydney, whose descriptions ante-dated mine, so that my names became in consequence synomys.

The year 1879 is one which must always be famous in the history of the British Museum, since in this year we received the first instalment of the great Salvin-Godman collection. Included in this series were all the specimens from the Palearctic region, the results of Dr. Godman's travels in the Azores and the Canary Islands, Norway, etc., the Tunisian collection of Mr. Osbert Salvin, and many others. Especially interesting were the specimens obtained in their young days by these two great naturalists.

In 1879 the Museum also received the first collections made by Dr. Coppinger during the cruise of the "Alert," and 65 birds were sent by him from the Straits of Magellan.

In 1880 the transfer of the India Museum was completed, and the British Museum received 4731 birds, with 112 types of species.

Ninety-one birds and skeletons were received from the Straits of Magellan, obtained by Dr. Coppinger on the "Alert."

The collections of birds made during the voyage of the "Challenger" were also presented by the Admiralty. They consisted of 1021 birds and eggs, including 30 species new to the Museum, and 12 types of new species.
Three hundred and eighteen nests and eggs of Bornean birds from Sir Hugh Low's collection were also added.

On the death of Mr. T. C. Eyton, his collection was dispersed, and 108 skeletons and 205 skins of birds were purchased in 1881 by the Museum, which secured 69 types of species. The collection of skeletons was an historical one, being the material on which Mr. Eyton's 'Osteologia Avium' was founded.

Mr. Henry Seebohm was engaged on the fifth volume of the 'Catalogue of Birds,' and he presented 56 specimens of Thrushes to the Museum, the prelude to a long series of donations.

One hundred and twenty-three birds from Gilgit and Nepal were presented by Dr. J. Scully, who had written valuable memoirs on the birds of these regions.

The expedition to Sokotra, conducted by Professor I. Bayley Balfour, and promoted by the British Association, resulted in the presentation by the latter of 66 specimens of birds, including the types of 7 new species.

Ninety-seven birds from the Duke of York Island, embracing 8 types of new species, collected by the Rev. G. Brown, were purchased. Twenty-one species were added to the Museum.

The celebrated ornithologist, John Gould, died early in 1881, and his collection being offered to the Museum, was purchased by the Trustees, on Dr. Günther's recommendation. In addition to the collection of Humming Birds, 6315 skins of birds from various localities, and comprising 59 types, were added to the Museum.

Seventeen rare species from Upper Burma were presented by Colonel Wardlaw-Ramsay, to aid in the preparation of the 'Catalogue of Birds,' on the sixth volume of which I was then at work. A second donation of 260 birds from India and the Malay Peninsula, was made by Captain Stackhouse Pinwill.

Nineteen birds from the Pacific Islands were presented by Dr. Coppinger, from the voyage of the 'Alert.' Two hundred specimens from Gilgit were given by Colonel J. Biddulph (cf. 'Ibis,' 1881, pp. 35-102, 1882, pp. 266-290), and 106 specimens from California were presented by Lord Walsingham.
Colonel Swinhoe gave his collection of 341 birds from Kandahar (cf. ‘Ibis,’ 1882, pp. 95-112), and 21 birds from the Solomon Islands, collected by Lieut. Richards, added 10 species new to the Museum. Forty-four birds from the Transvaal were presented by Mr. John Henry Gurney.

The chief donation, however, of the year 1881, was the great collection of Queensland Birds, amounting to 1394 specimens, which was presented by Dr. F. D. Godman. This collection was made by Mr. J. Cockerell, and consisted of a series of beautifully prepared skins.

In 1882 the Museum received from Mr. Eugene W. Oates a donation of 454 eggs, nests, and sterna of birds from Pegu, where he had long resided, and his entire collection, consisting of 1544 birds, with 32 species entirely new to the Museum, was afterwards acquired by the latter. This was a very important addition to our collection, being the material on which Mr. Oates had based his work on the ‘Birds of Burmah.’

Mr. Seebohm presented 190 birds, mostly from the collection of the late Andrew Anderson, which he had purchased on the death of the latter naturalist. Dr. Coppinger forwarded 157 birds from the islands of Torres Straits, and the Museum also purchased a series of 546 skins, eggs, and skeletons of birds from Madagascar, collected by the Rev. Deans Cowan.

In 1882, moreover, many minor additions to the Museum collection took place. Colonel Biddulph added 294 specimens from Gilgit; and 126 birds, including 30 species new to the collection, with the types of 11 new species obtained in British New Guinea by Mr. A. Goldie, were purchased. Mr. Howard Saunders presented 86 specimens of Laridæ from his private collection; and 36 birds from the Nilghiri Hills, containing 2 species new to the Museum, were presented by Mr. W. R. Davison. Thirty-five birds from the Wasa district on the Gold Coast were presented by Sir Richard Burton and Capt. Cameron, and the Lisbon Museum presented 4 species of birds from Benguela, all of which were new to the Museum. Fifty-one specimens from New Britain were purchased from the Godeffroy Museum, and 20 specimens from Bermuda were given by Capt. Savile G. Reid.
In this year an interesting little series of Chinese Birds were presented by Mrs. Ince. They were collected in former years by Captain Ince, after whom Gould named a Paradise Flycatcher, *Tchitra incis*.

The seventh volume of the 'Catalogue of Birds' was now in progress, and Colonel Wardlaw-Ramsay again presented the Museum with 33 birds from the Philippine Islands and other localities, to help the work.

Ninety-five birds from Tenasserim were obtained from Colonel C.T. Bingham, and 28 birds from British New Guinea, collected by Mr. A. Goldie, were also added.

In 1883 the Museum received from the British Association the collections made by Dr. H.O. Forbes in the Tenimber Islands. The birds numbered 108, 25 of which were new to the Museum, 21 being types of new species.

One hundred and seven specimens of Australian Birds were presented by the Australian Museum, Sydney, N.S.W. The Leyden Museum also presented 13 specimens from Java and the Malay Archipelago, including 8 species new to the collection.

An important series of birds from Mt. Kina Balu and the Lawas River in N.W. Borneo, procured by Mr. F. Burbidge, one of their botanical collectors, was presented by Messrs. Veitch.

The most important addition to the Museum in 1884 was the collection of birds formed by the late Dr. W. A. Forbes, whose sad death on the Niger will be remembered by most of us. He bequeathed his collection to the Museum. It consisted of 426 specimens, and not only included his Nigerian series, but also an interesting set of Weaver-birds and Finches, of which groups he was projecting a monograph.

Nineteen birds, including the type of a fine new species of Bush Shrike (*Laniarius lagdeni*), from Kumasi, were presented by Sir Godfrey Lagden.

Thirteen birds collected in the Solomon Islands, embracing 1 type and 7 new species to the collection, were purchased of Mr. Cockerell.

Sir John Kirk presented 64 birds from the Zambesi, the remains of his old collection formed during the Livingstone
expedition. A valuable collection was purchased from Mr. Bohndorff on his return from the Niam-Niam country in Equatorial Africa. It consisted of 228 specimens, with 8 species new to the Museum, and the types of 5 species.

Sixty-nine birds from Corsica, including the type of the new Nuthatch (*Sitta whiteheadii*) were presented by the late Mr. John Whitehead. Ninety specimens from the Nilghiri Hills were given by the late Mr. W. R. Davison, while 119 specimens were presented by the U.S. National Museum to assist the preparation of the 'Catalogue of Birds.'

A large number of eggs was given to the Museum in 1884, of which 826 were presented by Mr. O. Salvin and Dr. F. D. Godman, 198 eggs from Pegu by Mr. E. W. Oates, 92 by the late Mr. Philip Crowley, 38 from Tenasserim by Colonel C. T. Bingham, while the Gould collection of 579 eggs, mostly Australian, was also registered.

A series of 332 birds from Mhow in Central India was presented by Colonel Charles Swinhoe.

In 1884 Dr. P. L. Sclater, who was engaged in writing four volumes of the 'Catalogue of Birds,' consented to allow the Museum to acquire his celebrated collection of American birds, which has been of immense service to the Museum. Seven hundred and thirty-one specimens were added in the present year, containing 34 types and 56 species new to the Museum.

Among the notable additions during the year 1885 were the concluding series of the eggs, 2256 in number, presented by Messrs. Salvin and Godman, and 1155 eggs from the Gould collection. One hundred and eighty-three eggs from Madagascar were also obtained from the Rev. Deans Cowan.

The Museum also purchased the collection made by the late Henry Durnford in Argentina, and described by him in the 'Ibis.' Colonel Miles presented 66 birds from Muscat, among them being a new Owl, *Bubo milesi*, and a new Bee-eater, *Merops muscatensis*.

The British Association presented 75 birds from Kilimanjaro, procured by Sir Harry Johnston. Six species were new to science (cf. Shelley, *P. Z. S.*, 1884, pp. 554-555).
A collection from the Island of Palawan, obtained from Mr. E. Lemprière, contained 13 species new to the Museum, with types of 3 new species described by me.

Mr. W. D. Cumming presented the first of his collections made near Fao in the Persian Gulf. It was remarkable as containing examples of Hypocolius ampolinus, and other rare species (cf. 'Ibis,' 1886, pp. 475-493).

The U.S. National Museum again presented the Museum with many rare specimens, to the number of 227.

The second instalment of the Sclater collection consisted of 2277 Tanagridæ, Icteridæ, etc., of which 144 were new to the Museum, and 100 were types.

In 1886 a third instalment of the Sclater collection was received, consisting of 778 specimens of Turdidæ, Ilidæ, etc., with 45 types.

Forty-five birds from Southern Manchuria were presented by Sir Evan James, and 84 from Bushire, in the Persian Gulf, by Mr. A. J. V. Palmer.

Sir William Jardine's collection was sold by auction after his death, and the Museum managed to secure 25 types, but the collection was so badly catalogued and arranged by the auctioneers, whose general line of business lay in another direction, that this beautiful collection was sold for one-tenth of its proper value, and I overlooked a few of the types in the general confusion. Some of the rarer specimens were bought by Professor Newton and Canon Tristram, and were not lost to science.

In this year, 1886, Mr. L. Wray commenced his explorations of the mountains of Perak, in the Malay Peninsula, and his first collection, containing types of seven new species, was received by the Museum. Mr. Henry Seebohm determined to present his large birds, and handed over the first instalment, consisting of Hawks and Owls, to the number of 480.

The Earl of Crawford also presented the collection of 35 Sea-birds from the Island of South Trinidad, off the coast of Brazil. This collection had been worked out by Mr. Howard Saunders. A most interesting collection was made by Dr. J. Aitchison during the Afghan Delimitation Commission, and
230 birds were handed over to the Museum, including the types of two new species.

In 1887 Dr. Sclater gave to the Museum the remains of the Solomon Islands collection, described by him in the 'Proceedings' of the Zoological Society for 1869 (pp. 118-126, pls. ix., x.), including the types of three of his new species, and a series of 35 birds from the same Archipelago were purchased from Mr. C. M. Woodford. This contained 7 species new to the collection, and the type of one new species.

Mr. Seebohm presented in 1887 his collection of 36 Petrels and 539 Cuckoos, to aid the preparation of the 'Catalogue of Birds,' and 485 Humming Birds from the Sclater collection, were also received.

An important collection of 176 birds from Kilimanjaro and Teita, in Eastern Africa, were presented by Mr. F. J. Jackson (cf. Shelley, 'Ibis,' 1888, pp. 287-306, pls. vi. vii.), and a fine series of birds from Equatorial Africa was presented by Emin Pasha (cf. Shelley, P.Z.S., 1888, pp. 17-50, pl. iii.). Seventeen specimens from the Upper Congo were purchased from Mr. Bohndorff, nine species being new to the collection.

Sir Evan James gave 37 more specimens from S.E. Manchuria, and 60 birds from the Caucasus and other parts of the Russian Empire were presented by the Academy of Sciences of St. Petersburg.

In this year, 1887, a further collection of 19 birds from Perak was presented by Mr. L. Wray, and 192 birds from N. Australia, collected by his son T. H. Bowyer-Bower, were presented by Captain Bowyer-Bower.

Mr. G. Frean Morcom presented 82 birds from California, and Mr. H. K. Coale 60 birds from Arizona.

Thirty-five birds were obtained by Sir H. H. Johnston on his expedition to the Camaroons, and were presented by the British Association. Mr. F. W. Styan presented 23 birds from China, including two species new to the collection.

Seventy-five birds obtained by Dr. Romilly on the Astrolabe Mts. in British New Guinea, and including some rare species of Birds of Paradise, were presented by the Government of Queensland.

The chief event of the year, however, was the presentation
of the great Tweeddale Collection of Birds, and the Tweeddale Library, by Colonel Wardlaw-Ramsay. This collection numbered 20,186 specimens, with many species new to the Museum, and about 140 types.

In 1888 another instalment of the Sclater collection was received, consisting of 1718 specimens of Tyrannidae, including 49 species new to the collection and 117 types. Forty-four birds from Manda Island, including a Sand-Grouse new to the collection were presented by Mr. F. J. Jackson. Forty-four birds from Benguela, with 20 species new to the collection were presented by the Lisbon Museum.

Thirty specimens from the island of Fernando Noronha including types of two new species, collected by Mr. H. N. Ridley were presented by the Royal Society.

Thirty-seven birds from Guadalcanar, Solomon Archipelago, collected by Mr. C. M. Woodford, and containing 16 species (with types of 13 new ones) new to the Museum.

Twenty-three birds from Christmas Island in the Indian Ocean, including the types of five new species (cf. P.Z.S., 1888, pp. 512-529), presented by J. J. Lister, Esq.

A further collection of 195 birds from Fao was presented by Mr. W. D. Cumming.

In 1889 the Museum first made the acquaintance of Dr. Charles Hose, who had for some time devoted his attention to the ornithology of Northern Borneo, and whose researches were destined to effect so many brilliant discoveries in Ornithology. In this year, too, appeared the record of Mr. John Whitehead's exploration of Mount Kina Balu.

One hundred and ninety-eight birds from various localities, chiefly Pigeons and Picarian birds, were presented by Mr. Henry Seebohm; 76 birds from Perak, including 7 species new to the collection, and types of 3 new species, presented by Mr. L. Wray; and 25 specimens from New Guinea, including 6 species new to the Museum, and types of 4 new species collected by Dr. H. O. Forbes.

Thirty-three birds from Johanna Island in the Comoros, collected by M. Humblot, were purchased of Mr. G. A. Frank.

Two hundred and fifty-one birds from Cyprus were presented by Lord Lilford, 54 birds from N.W. Borneo, including the
type of a new Pigeon, *Carpophaga everetti* from Mantanani Island were collected by Mr. A. H. Everett, and 69 birds from Ichang, in Western China by Mr. A. E. Pratt.

In 1890 six further instalments of the great Salvin-Godman collection of Neotropical birds were presented, the last of the Sclater Collection (834 Picarian Birds), and 761 specimens from the Shelley collection were received. Mr. Seebohm continued to present to the Museum all the specimens requisite for the publication of the ‘Catalogue of Birds,’ and many other interesting collections were acquired, including 216 eggs from Fao, in the Persian Gulf, presented by Mr. W. D. Cumming. Mr. St. George Liddedale also presented 47 birds from the Altai Mountains, Mr. W. R. Ogilvie-Grant 82 specimens from Madeira and the Desertas, and Mr. McCormick bequeathed to the Museum 142 specimens collected by him during his Arctic and Antarctic voyages with the "Erebus and Terror." A valuable asset of the year 1890 was the presentation by Mr. J. H. Gurney of 543 African birds from his father’s collection, being the material on which many of the papers in the ‘Ibis,’ on the birds of Natal and the Transvaal, were founded.

Mr. Seebohm undertook the arrangement of our collection of birds’ eggs in the succeeding year, 1891, and presented a large portion of his own collection, to the number of 5017 specimens. Four thousand seven hundred and eighty-seven specimens of Neotropical birds were presented by Dr. F. D. Salvin and Mr. Osbert Godman, and three further instalments of the Shelley collection were received. Two hundred and sixty-three specimens from Central Chile and Tarapacá were presented by Mr. H. Berkeley James. In the previous year 240 birds had been received in exchange from Mr. E. L. Moseley, who had been one of the members of the Steere Expedition to the Philippines, and in 1891 were added 186 further specimens. Four hundred and eighteen birds collected during the second Yarkand Mission were received in exchange from the India Museum, Calcutta, and many other interesting species were added to the Museum during this year, including the eggs (501) of Gulls and Terns from Mr. Howard Saunders’ private collection, and presented by him.

In 1892 Mr. Seebohm presented to the Museum a further
instalment of his private collection of eggs, to the number of 4013, and 4534 specimens of Neotropical birds of the great Salvin-Godman collection were received. A large collection, 1042 of birds from Chile, was bequeathed by the late Mr. H. Berkeley James.

During this year some notable additions were made to the Museum collection, viz.: many interesting species obtained by Dr. C. Hose and Mr. A. H. Everett in North-western Borneo, rare species from New Zealand and the Chatham Islands, collected by Dr. H. O. Forbes; 78 birds from Dammar Island in the Banda Sea, and in Northern Australia, procured by Dr. P. W. Bassett-Smith during the voyage of H.M.S. "Penguin."

In this year, Sir Harry Johnston, who was then H.B.M. Commissioner for British Central Africa, sent the first of a long series of consignments from Nyasa Land. This collection, described by Captain G. E. Shelley, contained 12 types of new species, and added 15 species to the National Collection. A consignment of 21 birds from the Island of Anguilla, W.I., collected by Mr. Ramage, was presented by the West Indian Committee of the Royal Society.

Five hundred and two specimens from Nyasa Land were presented by Sir Harry Johnston in 1893, and the first series of additional collections was received from Dr. F. D. Godman and Mr. O. Salvin. After the presentation of the main collection of Neotropical birds associated for ever with his name, Dr. Godman kept many collectors at work in various parts of Central America, mainly with the view of supplementing his series of skins for the purposes of his great book, the 'Biologia Centrali-Americana.' As these collections reached England, they were presented by Dr. Godman to the British Museum.

Mr. F. J. Jackson, C.B., presented in this year 44 types of new species of birds, discovered by him in Uganda and on Mount Elgon. For a series of years, this great naturalist, though unable, from his official duties, to do much personal collecting, has engaged a native collector, Baraka by name, to whom he has taught the art of preserving specimens of natural history, and by this means considerable collections have been made and many new species discovered. The Museum
is greatly indebted to Mr. Jackson, who has presented all the types of the new species, a donation of the greatest value.

Mr. Seebohm presented 289 specimens of Herons and Wading Birds, and a third instalment of eggs, 8273 in number, making his donation to the oological collection in the Museum 16,290 specimens. Many new species from N.W. Borneo were discovered by Mr. A. H. Everett and Dr. Charles Hose.

In 1894 a further collection of Neotropical Tanagrides was presented by Dr. F. D. Godman, and 690 specimens of Ducks, Herons, Grebes, etc., were given by Mr. Seebohm. Mr. Howard Saunders' private collection of Gulls and Terns, consisting of 496 specimens, was also acquired. Four hundred and seven birds from N.W. Borneo and the Philippine Islands were received from Mr. Everett, and Sir Harry Johnston sent a further collection of 183 birds from Nyasa Land. Six hundred and sixty-nine specimens from the Shelley collection consisted of Accipitres, Anseres, etc. To the Hon. Walter Rothschild the Museum was indebted for specimens of the Auckland Island Duck (Nesonetta aucklandica), and a pair of the lately-described Bird of Paradise (Trichoparadisea guliemii). A series of bones of Aphanapteryx and other extinct birds from the Chatham Islands was obtained from Dr. H. O. Forbes.

In 1895 Dr. Donaldson Smith presented the types of 23 new species of birds discovered by him during his expedition to Lake Rudolf; and a collection of 71 birds and eggs from Aden was presented by Colonel Yerbury. Mr. Alexander Fry gave an interesting collection of 924 birds, with nests and eggs, from Rio de Janeiro.

A fine series of 247 birds and eggs from Madeira, Porto Santo, and the Salvage Islands, was presented by the Hon. Cecil Baring and Mr. W. R. Ogilvie-Grant, and one of the chief acquisitions of the year was that of Colonel Godwin-Austen's celebrated collection of birds from the hill-ranges of Assam and Manipur. Three thousand one hundred and twenty-four specimens from the Shelley collection were registered. A collection of 179 birds from Somali Land, with 9 types of new species, was received from Mr. Lort Phillips, 126 specimens from Mt. Kina Balu and the
Philippine Islands from Mr. A. H. Everett, and a valuable collection of 175 birds from the Hawaiian Archipelago, collected by Mr. R. C. L. Perkins, was presented by the Joint Committees of the Royal Society and the British Association. One hundred and seventy-eight birds from the Pilcomayo expedition, collected by Dr. Graham Kerr, were presented by Captain Juan Page. Nine species new to the Museum were received in exchange from the Hon. Walter Rothschild.

In November, 1895, Mr. Seebohm died, to the irreparable loss of the Museum, to which he bequeathed his collections. These consisted of 16,950 specimens of birds and their skeletons, in addition to the many thousands he had given in his lifetime. The Seebohm bequest was received in 1896, and added a fine series of Palæarctic birds to the Museum, including, as it did, the Swinhoe collection from China, the Pryer collection of Japanese birds, and all the specimens obtained by Seebohm himself in Northern Russia, Siberia, Greece, Asia Minor, and other countries. This collection was supplemented by an addition of 1807 birds from the Palæarctic region, from the collection of the late Edward Hargitt.

Sir Harry Johnston sent a series of 72 birds from Nyasa Land, and was succeeded as H.B.M. Commissioner in British Central Africa by Sir Alfred Sharpe, who continued his natural history explorations, and sent a further small collection from Nyasa Land in 1896. A series of specimens from the Marianne Islands was presented by the Hon. Walter Rothschild, who also gave a beautiful collection of mounted Humming Birds.

An interesting collection from the Savana of British Guiana was presented by Mr. F. V. McConnell, and Mr. J. J. Quelch. Other collections of importance received in 1896 were the Steere collection, consisting of 1650 specimens, from the Philippine Islands, and the first instalment from the expedition of Mr. John Whitehead to the same Archipelago, consisting of 41 specimens from Luzon. Fifty-three birds from Aden and Somali Land were received in exchange from Captain Nurse, and 129 specimens from Somali Land and Persia were presented by Mr. F. Gillett.
In the year 1897 a further instalment of 972 specimens of Neotropical birds was presented by Dr. F. D. Godman. Another fine collection was that given by Colonel Biddulph, who had amassed a series of specimens from Gilgit in Upper Kashmir, where he had been Resident, and from Yarkand, whither he had accompanied Sir Douglas Forsyth’s expedition. He had also made a large collection of Finches, which he presented to the Museum.

In this year was received the first of a series of valuable collections from the Shan States, made by Colonel G. Rippon. For many years the Museum has been indebted to Colonel Rippon for important additions from the Burmese hill-ranges.

The Hargitt collection of Woodpeckers was acquired in 1897, consisting of 5479 specimens, and forming the groundwork of Mr. Hargitt’s volume of the ‘Catalogue of Birds,’ in which he monographed the Piéi. Eighty-one more specimens, collected by Mr. R. C. L. Perkins in the Hawaiian Archipelago, were presented by the Joint Committee of the Royal Society and the British Association.

Mr. Boyd Alexander, who had recently returned from an expedition to the Cape Verde Islands, presented the Museum with 17 specimens from his collection, with the types of two new species.

Many other important additions were received in 1897. Forty-seven birds from Foochow were presented by Mr. C. B. Rickett and Mr. J. D. La Touche—the first of many donations. Thirty-four birds and eggs from Spitzbergen were presented by Mr. A. Trevor-Battye.

In 1897 Mr. John Whitehead, the explorer of Mt. Kina Balu, went on a fresh expedition to the Philippine Islands, and 730 birds, including the types of 68 species new to the Museum, as well as 72 eggs, were presented by the subscribers to the Whitehead Expedition. Four hundred and twenty-eight birds from Northern Nyasa Land were presented by Sir Alfred Sharpe, and Mr. F. J. Jackson gave 10 types of new species discovered by him in Equatorial Africa.

Sir John Murray presented 36 specimens of birds from Christmas Island, in the Indian Archipelago, obtained by Dr. C. W. Andrews. A collection of 224 birds from Argen-
tina was acquired from Mr. A. H. Holland, and 218 birds from Mr. O. V. Aplin's expedition to Uruguay, was also added. From Mr. A. H. Everett's collections from Savu and Lombok, a selection of 136 specimens was made, and an interesting series of 135 birds from Northern Celebes was acquired from Dr. C. Hose. The Hon. Walter Rothschild again presented some valuable birds to the Museum, several of them being new to the collection.

In 1898, a further instalment of his collection, viz.: 678 eggs from Chile, was registered from the bequest of the late Mr. Berkeley James. Dr. Blanford handed over his private collection of Indian birds to the Museum: it contained a number of interesting species procured by him in Sind, Sikhim and Central India. Mr. R. M. Hawker made in this year the first of several interesting donations, when he presented 186 birds, with 9 types of new species, from South Arabia and Somali Land. Captain Barrett-Hamilton presented 232 specimens from Bering Sea, and a further instalment of 116 birds from the province of Foh-Kien in S. China, was presented by Mr. C. B. Rickett and Mr. J. D. La Touche. Mr. J. I. S. Whitaker, who for some years has devoted himself to the study of the ornithology of N.W. Africa, presented the Museum with a series of 40 specimens of Larks and other rare birds from Marocco and Tunis. Seventy-seven skeletons and birds in spirits were given by Mr. Dan Meinertzhagen.

Forty-two birds from Somali Land were presented by Mr. J. Benet Stamford, and Lord Delamere also gave a very interesting series of 61 skins from the same country.

A fine collection of birds from Somali Land, containing 7 types of new species, was also acquired from Mr. E. Lort Phillips.

Colonel Jayakar sent another consignment of 75 birds from Muscat. One hundred and eighteen birds from British Guiana were presented by Mr. F. V. McConnell and Mr. J. J. Quelch, and 93 birds from the Louisiade Archipelago were purchased from Mr. A. S. Meek. Three hundred and forty-eight birds and eggs from N.W. Borneo and the Lesser Sunda Islands, were purchased from the collections of Mr. A. H. Everett.
Mr. A. H. Holland's collection of 565 eggs from Argentina was also added to the Museum in 1898. Seventy-six specimens from Mr. John Whitehead's expedition to the Philippine Islands were likewise acquired, and Mr. W. A. Horn presented 18 specimens from Central Australia, including several new species obtained during the Horn expedition into the interior of that continent.

Dr. S. J. Hinde was then collecting in British East Africa, and he presented 95 specimens obtained by him at Machakos. Sir Alfred Sharpe also forwarded another collection of 238 birds from Nyasa Land. Mr. H. S. H. Cavendish presented 53 specimens from Mozambique.

Another interesting collection presented in 1898 was that of 74 birds from the Khin-gan Mountains, in S. Mongolia. This collection was given by Dr. Donaldson Smith, Mr. J. E. Farnum, and Mr. G. L. Farnum. The Hon. Walter Rothschild presented many species of birds new to the collection, and another interesting donation was that of 33 birds from Franz-Josef Land, presented by Capt. F. G. Jackson, the leader of the Jackson-Harmsworth expedition. A collection of 66 birds from Mashona Land was remarkable for the fact that the collector, Mr. J. L. Sowerby, was a soldier who fought through the Matabele War, and when stationed at one of the outlying forts, amused himself by making a collection of birds, all of which were shot with a Lee-Metford rifle, no shot-gun nor small shot being procurable.

In the year 1899 Dr. F. D. Godman presented 9802 specimens of Neotropical birds, being mostly obtained by his staff of collectors in various districts of Mexico. A fine series of 1192 birds from S. China were presented by Mr. C. B. Rickett, and General Manning, who was acting as Commissioner in British Central Africa, forwarded a collection of 174 birds from Nyasa Land.

A series of 40 specimens of Sea-birds from the islands of Ascension and Diego Garcia was presented by Dr. Frank Penrose. Mr. C. A. Fitzgerald gave to the Museum 131 birds, nests, and eggs, obtained by him during his celebrated expedition to the Chilian Andes, and another important addition to the Museum was the series of 242 birds from Argentina and Patagonia presented by the La Plata
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Museum, through the Director, Dr. F. Moreno. Twenty rare birds from Bolivia were given by Count von Berlepsch; and Sir Martin Conway presented 23 specimens procured by him in the last-named country.

Thirty birds from Muscat were presented by Colonel Jayakar, and 18 specimens from Yarkand by Captain H. P. Deasy. The year 1898 also saw the presentation, by the Royal Society, of the collection of 221 birds and eggs (including types of 8 new species) obtained in the islands of Sokotra and Abd-el-Kuri by Mr. W. R. Ogilvie-Grant and Dr. H. O. Forbes; and Mr. F. J. Jackson presented the types of 8 new species procured by him in Uganda.

The Museum likewise acquired the second set of skins and eggs, consisting of 717 specimens, procured by the Webster-Harris expedition to the Galapagos Archipelago, and the first of a series of collections was received from Mr. Perry O. Simons, from Ecuador and Puna Island. One hundred and three birds from Canada were presented by Mr. J. H. Fleming, who had in 1898 sent a series of 443 specimens in exchange. Strange as it may appear, these were almost the only birds which the Museum had received from Canada since the days of the early travellers in the Hudson's Bay Territory, in the early part of the last century.

Count Arrigoni degli Oddi presented in 1899, an interesting series of 100 birds from various parts of Italy, and Dr. Lopez Seoane sent 18 specimens from the neighbourhood of Coruña in Spain.

An interesting series of 55 birds from the Gold Coast Hinterland was presented by Colonel H. P. Northcott, and Dr. Cuthbert Christy gave a series of 27 birds and eggs from the Niger.

One of the most remarkable additions to the Museum during the year 1900 was the collection of birds made in the New Hebrides group of islands by Captain A. M. Farquhar, no less than 12 species being new to science. A fine series of Birds of Paradise was presented by Sir R. G. Le Hunte, the Governor of British New Guinea. Two hundred and twenty-nine Australian birds and eggs were presented by Mr. Donald McIntosh, and 35 birds from North Queensland by Mr. Herbert C. Robinson.
Mr. C. B. Rickett gave a further consignment of 1360 birds from Southern China, and 202 birds and eggs from the Island of Hainan, collected by the late Mr. John Whitehead, were either purchased or presented by Mr. J. T. Thomasson, one of the subscribers to the Whitehead Expedition Fund. Captain A. W. S. Wingate presented 190 birds from Yun-nan and W. China, and 953 birds from the Shan States, including the types of 7 new species, were given by Colonel Rippon.

Four hundred and two birds and eggs from N. W. Borneo were sent by Dr. Charles Hose.

Several valuable additions to the series of African birds in the Museum took place in 1900. Mrs. Jameson presented the remainder of the collections made by her late husband, J. S. Jameson, in Mashonaland and on the Upper Congo. Three hundred and nine birds from Nyasa Land were presented by Sir Alfred Sharpe and General Manning. Ninety-five specimens from his expedition to the Zambesi were given by Lieut. Boyd Alexander, and 70 birds and eggs from the River Ruo, in Zambesi, were obtained from Mr. A. Blayney Percival. Mr. F. J. Jackson presented the types of 7 more new species discovered by him in Equatorial Africa.

A collection of 82 birds from the Zeraf River in the Sudan, was presented by Capt. H. N. Dunn, and a very interesting and important series of birds from Southern Abyssinia, consisting of 417 specimens, with the types of 16 new species, was presented by Mr. H. Weld-Blundell and Lord Lovat. Two hundred and forty-three specimens from South Arabia were obtained by the Percival-Dodson expedition, and 85 specimens from the Mackinder expedition to Mount Kenya. Two hundred birds were received from Mr. Perry O. Simons, from Ecuador and Peru.

In the year 1900 the Museum received a first consignment of 32 birds from Mr. G. L. Bates; these were from the French Congo. A valuable series of 568 eggs of North American birds was received in exchange from the Museum of Princeton University, New Jersey, U.S.A.

The most notable addition to the Museum in 1901 was the Crowley bequest. Fifteen thousand one hundred and
fifty eggs, from the collection formed by the late Mr. Philip Crowley, were given by him to the British Museum. It contained the whole of Canon Tristram's series of eggs, among them being one of the Great Auk (*Plautus impennis*). The collection was also rich in eggs of Australian birds, and added those of numbers of species to the Museum cabinets.

Fifty-two birds from Somali Land, collected by Dr. Donaldson Smith, were presented by H. H. The Gaekwar of Baroda, and Lord Delamere gave a collection of 970 specimens, the result of his expedition to British East Africa.

A further series of 100 specimens from Somali Land was presented by Dr. Donaldson Smith, and 41 birds from the same country were given by Colonel J. J. Harrison.

The Hon. Charles Rothschild and Dr. A. F. R. Wollaston gave an interesting collection of 66 birds from the Egyptian Sudan.

A large collection of birds, eggs, and nests from Southern China, 730 specimens in all, were presented by Mr. C. B. Rickett.

The collection of Tits (*Paridae*), consisting of 529 specimens, formed by Professor M. Menzbier, was also acquired for the Museum, which was further indebted to Sir George Newnes for a series of 186 birds and eggs collected by Mr. Nikolai Hanson during the Antarctic voyage of the "Southern Cross." M. Herbert C. Robinson presented a further series of 107 birds from Queensland, and Sir William Ingram gave a collection of 103 birds obtained in Sao Paulo by Mr. A. Robert.

Several friends of the Museum continued to contribute to the Ornithological collection, e.g., 54 birds from the Shan States were given by Colonel Rippon, 370 birds and eggs from the Upper White Nile by Mr. R. M. Hawker, 37 birds from the Egyptian Sudan by Mr. H. F. Witherby, and 52 specimens from Northern China by Mr. C. W. Campbell.

During the past few years several collections had been made in the Moluccas, New Guinea and the Papuan Islands by Everett, Dumas, Lucas, Meek, Kühn, and other naturalists, for the Hon. Walter Rothschild, and of these the Museum
obtained the second set. In 1901 a series of 125 birds, with nests and eggs, collected by Mr. E. Weiske in the interior of British New Guinea, was acquired, and 23 species, with types of 9 new ones, were added to the Museum collection.

A further consignment of 211 birds from Ecuador and Peru was received from Mr. Perry O. Simons. Mr. G. L. Bates forwarded another collection from the Camaroons, and 5 species proved to be new to science.

The Earl of Ranfurly was at the same time forming a collection for the Museum from the outlying islands of New Zealand, and among the 67 birds received from him was a new species of Cormorant, which was named Phalacrocorax ranfurlyi, after its discoverer, by Mr. Ogilvie-Grant. Sir Harry Johnston presented 179 specimens from Equatorial Africa, of which 4 were types of new species, one being a beautiful new Touraco, which I named Gallirex johnstoni.

Eighty-one specimens from Deelfontein, Cape Colony, were presented by Colonel A. T. Sloggett, P.M.O., of the Imperial Yeomanry Hospital. These birds were procured by one of our taxidermists, E. Seimund, who had joined the Yeomanry, and had been invalided. Not having a gun, he procured all the specimens with a catapult.

In the year 1902 the National Collection added to its list of donors the name of Mr. W. Radcliffe Saunders, who has been a very good friend to the Museum. In this year he presented 2220 eggs of Palæarctic and Nearctic birds, this adding the eggs of many species previously unrepresented in the Museum, and this same year was remarkable for the number of additions to the collection made by old friends of the National Collection. Thus 17 types of new species from Equatorial Africa were received from Mr. F. J. Jackson, and 617 birds from Western Yun-nan from Colonel Rippon, 58 birds from New Zealand and its islands from the Earl of Ranfurly; 212 birds from Nyasa Land from Sir Alfred Sharpe; 623 birds and eggs from Foh-Kien, from Mr. C. B. Rickett; 450 birds from the Upper Nile and the Egyptian Sudan, from Mr. R. M. Hawker.

A large collection of 385 birds from Somali Land and Southern Abyssinia, was presented by Sir Alfred Pease; and Captain Barton, the Governor of British New Guinea,
gave a collection of 58 birds from the latter country, including many species new to the Museum. After the death of that excellent naturalist, Mr. Perry Simons, his collection of 2300 birds from Peru and Bolivia became the property of the Museum. Two hundred and thirty-one specimens of birds from the Camaroons were received from Mr. G. L. Bates, and 160 birds from the frontier of Yemen, in South Arabia, were sent by Mr. G. W. Bury. To the West Australian Museum the National Collection was indebted for a series of 32 Accipitres from Western Australia, especially useful, as the Museum possessed no specimens from that part of the Australian Continent. A second consignment of 407 eggs of North American birds was received in exchange from the Museum of Princeton University, New Jersey, U.S.A.

Other collections received in 1902 were 31 birds from the Aruwhimi River, on the Upper Congo, obtained by Capt. Guy Burrows; 71 birds from Ecuador and Colombia, collected by Messrs. Micketta and Fleming; 43 birds from Surinam, presented by Messrs. F. P. and A. P. Penard; 91 birds from Cyprus, collected by Mr. C. Glazner. Captain Nesbitt presented 15 specimens of Pheasants from Burma, including the type of Gennumus niebetti; and Captain Dunn presented 59 specimens from the Egyptian Sudan.

Twenty specimens from the provinces of Shensi, N. China, were sent by Father Hugh to the Museum, which was further indebted to the Hon. Charles Rothschild for a present of 20 birds from the Liu Kiu Islands.

In 1903 the Museum received a most valuable present of 973 birds from the Earl of Crawford. These specimens were procured by Mr. M. J. Nicoll during the voyage of Lord Crawford’s yacht, the “Valhalla,” to the South Atlantic and Pacific oceans. A large collection of 973 birds, nests and eggs, from Deelfontein, Cape Colony, was presented by Colonel Sloggett, C.M.G. This collection was made by two troopers of the Imperial Yeomanry, Eibert Seimund and Claude Grant, who had been our taxidermists in the British Museum, and the preparation of the skins was in every way excellent. Seimund returned to his duties at the Museum, but Grant has continued his explorations in South Africa, and has
procured some fine collections for Mr. C. D. Rudd. The first of these was forwarded in 1903, an expedition to Namaqua Land being made by Grant on behalf of Mr. Rudd, who has financed all the explorations, and presented their results to the British Museum.

From Uganda Dr. Cuthbert Christy sent to the Museum 64 birds and eggs; and a series of 260 birds and nests from British East Africa, was presented by Mr. A. Blayney Percival. Mr. Robin Kemp presented 72 birds collected by himself in Sierra Leone, and Lieut. Boyd Alexander gave 22 birds from Fernando Po, adding 15 species unrepresented in the British Museum. A collection of 286 birds from Northern Nyasa Land was presented by Sir Alfred Sharpe.

Mr. Radcliffe Saunders again gave a valuable collection of 351 eggs, mostly from Northern Queensland. Captain Deasy also presented 34 specimens from Central Asia, and Mr. H. F. Witherby 106 birds, nests and eggs, from Southern Persia.

One hundred and thirty eggs from North Cachar were received from Mr. E. C. Stuart Baker and Dr. Coltart, as also 420 birds and eggs from the Southern Shan States, collected by Mr. H. N. Thompson and Mr. W. H. Craddock. Mr. C. B. Rickett presented a further collection of 989 birds from Foh-Kien. Captain A. Mears presented a collection of 116 birds from Upper Burma.

Fifty eggs and nests from the Azores, collected by Mr. W. R. Ogilvie-Grant, were presented by the Hon. Walter Rothschild. Eighty specimens from British New Guinea were given by Captain F. R. Barton, and 635 birds and skeletons, collected by Mr. A. Robert in Mattoegrosso, were presented by Mrs. Percy Sladen. Mr. Robert also sent 275 birds from Pernambuco. Two hundred and forty-five birds from South Arabia were received from Mr. G. W. Bury, and 466 birds from Abyssinia from Mr. E. Degen.

In 1903 a very fine collection from Patagonia, consisting of 420 birds obtained by Mr. Koslowsky, was added to the Museum, as was also an interesting collection of 254 birds from Paraguay, obtained from Mr. W. Foster. One hundred and two birds from Cyprus were received from Miss Dorothea M. A. Bate, and a further instalment of 302 birds from the Camaroons from Mr. G. L. Bates.
In the next year, 1904, Mr. Radcliffe Saunders added to his former donations a present of 9948 eggs and 165 nests of Palaearctic birds. One hundred and fifty-four eggs from Foh-Kien were given by Mr. C. B. Rickett, and 85 birds and eggs from Sikhim by Mr. B. B. Osmaston.

Mr. J. Steele Elliot presented 87 eggs from St. Kilda, and other parts of Scotland. One hundred and twenty-two eggs of Costa Rican birds, collected by Mr. C. J. Underwood, were also added, as well as 745 nests and eggs from Mr. W. Foster's Paraguayan collection.

In 1904 the additions to the Ornithological Department numbered close upon 18,000 specimens. From the Indian region were received 333 birds from the Chindwin River in Upper Burma, presented by Captain A. Mears; and 498 specimens collected by Mr. Herbert Robinson and Mr. Nelson Annandale in the mountains of the Malay Peninsula, were given by the Royal Society and the Universities of Edinburgh and Liverpool.

From the Malayan Archipelago and the Papuan Islands the Museum received the second set of the collections made in Batchian by Mr. Heinrich Kühn, in S.E. New Guinea and the Solomon Islands by Mr. A. S. Meek, and in the islands of Waigiou and Mindanao by Mr. John Waterstradt—260 in all.

The Earl of Ranfurly made a further donation of New Zealand birds, and the Government of Victoria presented a collection of 59 birds from the vicinity of Adelaide.

The African collections received in 1904 were of great value. Forty-three birds from the Egyptian Sudan were presented by the Hon. Charles Rothschild, and a fine series of birds from the Baro and Sobat Rivers, collected by Mr. Zaphiro, was presented by Mr. W. N. Macmillan, to whom the Museum has been since indebted for some important collections from N.E. Africa. Four hundred and forty-two skins and skeletons of birds from the Uganda Protectorate were presented by Colonel C. Delmé-Radcliffe, and Mr. J. F. Cuminghame added forty-five specimens from Entebbe in Uganda. In the year 1904 the Museum also received from Mr. F. J. Jackson the types of 11 more species discovered by him in British East Africa, Uganda, and the Ruwenzori Range,
and 592 specimens, collected by Mr. Jackson in Equatorial Africa, were also added to the collection. One hundred and two birds from British East Africa and from Florida were presented by Mr. C. B. Storey. From Southern Africa also some notable additions were received: viz., 65 birds from the Vaal River, collected by Mr. R. B. Woosnam, and 427 birds and eggs from Bechuanaland and the Orange River, obtained by Mr. Woosnam and Mr. R. E. Dent. Mr. Robin Kemp's collection of 472 birds from Sierra Leone was also acquired. Four hundred and two birds and skeletons from Fernando Po, collected by Mr. Eibert Seimund, were presented by Mrs. Percy Sladen, His Grace the Duke of Bedford, K.G., and the Hon. Walter Rothschild.

Six hundred and twenty-seven birds from the Camaroons, among them being many rare and new species, were received from Mr. G. L. Bates.

A collection of 483 birds, obtained by myself during the voyage of the yacht "Emerald" in the West Indian Islands and Venezuela, was presented by Sir Frederick Johnstone, Bart., and Laura, Countess of Wilton, my kind hosts on the "Emerald." A very fine series of birds from the Azores, the West Indian Islands and Florida, collected by Mr. M. J. Nicoll during the voyage of the R.Y.S. "Valhalla," was presented by the Earl of Crawford, K.T.

Mr. E. G. B. Meade-Waldo made a valuable donation of 60 birds from the Atlas Mountains of Morocco, with types of three new species discovered by him. The Hon. Walter Rothschild presented 316 birds from the Azores, collected by Mr. W. R. Ogilvie-Grant.

The present year, 1905, will also be signalised by some interesting donations, as already a collection of Japanese birds has been received from H. G. The Duke of Bedford, K.G., and the collection of the late Edward Cavendish Taylor has been bequeathed to the Museum. Lord Ranfurly has sent a series of 41 birds from the Kermadec Islands and the Snares, and a large collection from Mt. Victoria, in the Chin Hills, has been presented by Colonel Rippon. A further donation of 1000 birds from Southern China has been received from Mr. C. B. Rickett, and at the date of this meeting of our Fourth International Ornithological Congress, there is every
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evidence that the year 1905 will be a notable one, as far as the ornithological collection of the British Museum is concerned.

The above is a somewhat rough sketch of the progress and development of our bird-collection in the British Museum, and is merely intended to indicate some of the principal acquisitions by which the National collection has increased during the last fifty years. Further details will be found in the forthcoming second volume of the 'History of the Collections in the British Museum,' which is about to be issued by the Trustees.

It would be a good thing for Ornithology, in my opinion, if a history of the Natural History collections in every great museum of the world could be written by the officers in charge of those museums. How interesting would be the details of the collections in the Paris Museum, for instance, with the notes concerning D'Orbigny, Castelnau, J. and E. Verreaux, Abbé David, and all the other naturalists who have made that museum celebrated. I commend to my colleagues the idea that they should each write the history of the ornithological collections in the museums in which they hold office. They will find the task intolerably irksome and tedious. *Experto crede!* But, on the other hand, I firmly believe that they will earn the gratitude of their fellows both now and in the generations to come. Each year the writing of a history of the ornithological collection in any public or private museum becomes more and more difficult. One does not get younger, and the number of the friends and acquaintances of our youth diminishes as time goes on. It is, therefore, to me a plain duty that, while we yet live, we should endeavour to record the experiences of that great body of ornithologists who have helped to make the history of our science, and whose experiences and life-history may still be within our reach.

It remains but to thank you all, ladies and gentlemen, for your kind attendance here to-day. I thank you, my old friend and colleague for the past forty years, Professor Oustalet, my predecessor in the chair, for the kindly sentiments you have expressed in conducting me into the high position which I am proud to occupy to-day. It is a great
pleasure to me to have the support not only of so many of
the younger generation of ornithologists, who are making
history in the present day, but I rejoice to see present on
this occasion two of the original founders of the British
Ornithologists' Union, Dr. P. L. Sclater and Dr. F. D.
Godman. When I was entering the field of ornithological
study, these were the men who encouraged me and helped
me forward in the teeth of many difficulties. That they
should be present to-day to support their erstwhile pupil is
only what might be expected from their kindly natures, but
it is impossible for me to regard their presence without
a recollection of all their goodness to me in past years,
and I am sure that I am only expressing the feeling of all
ornithologists here present when I say that we are all pleased
and proud to welcome two of the original founders of the 'Ibis.'
Another of that celebrated brotherhood, Canon Tristram,
sends me a message of greeting and congratulation, but his
age and the state of his health unfortunately prevent him
from being present. Professor Newton, also one of the
original founders of the Union, we hope to meet next week
when the Congress adjourns to Cambridge, and when we hope
to give him full evidence of our regard and esteem.

There is, moreover, present at this meeting, one of the
members of the Congress, whom I am sure we all delight to
honour—I mean Dr. Günther. Personally I feel that I owe
him great acknowledgment, for he it was that recommended
that I should be appointed to the post of Ornithologist in
the British Museum in succession to George Robert Gray—
and he carried to a successful conclusion the 'Catalogue
of Birds.' What the accomplishment of this great
undertaking meant is probably known only to two people
in the world—Dr. Günther—and myself. He directed the
work, and I wrote half of it. It must never be forgotten
by ornithologists that when he became keeper of the
Zoological Department, the latter was at a very low ebb, and
that, on his retirement, he left it in a high state of efficiency,
with the collection of birds at least ten times as great as
when he took up the keepership.

It has been, up to the present time, impossible to prepare
an exact estimate of the number of skins of birds and eggs
in the British Museum, but this will shortly be done. At the lowest computation the specimens must number 400,000, and at the time when I assumed office in 1872 a liberal estimate of the collection of birds and eggs would be 35,000: it probably did not exceed 30,000. In the record which I present to the Congress it will be seen that nearly every great private collection in England has passed with the willing consent of the owners into the British Museum, while the donations of the great collections of Mr. Allan Hume, the Marquis of Tweedale (presented by Colonel Wardlaw Ramsay), Dr. F. D. Godman, Mr. Osbert Salvin, Mr. Henry Seebohm, Mr. Philip Crowley, and other celebrated naturalists, have contributed to the renown of the British Museum.
In the absence of definite courses of bird study in most institutions of learning, ornithology is largely a self-taught science. Museum collections, therefore, particularly those which are placed upon exhibition, occupy, from an educational standpoint, a position of peculiar importance. In a sense, the Museum may become the student's ornithological Alma Mater, as from exhibition halls he is brought in touch with the laboratory, and avails himself of the instruction and advice of the curators-in-charge.

Consideration of the proper constitution of Museum collections involves, of course, a discussion of the Museum's relations with the public, and, so far as birds are concerned, it seems eminently desirable to bring this subject to the attention of a body containing so large a number of Museum representatives. It should not be supposed, however, that the matter is of interest only to those who are officially connected with Museums possessing collections of birds. The Museum Curator welcomes the co-operation of his confrères, and is often dependent on the public for the support that is essential to the realization of his plans.

The growing number of ornithological text-books, far from appeasing, increases the demand for a knowledge of birds, and especially for that more solid kind of information to be obtained from Museum collections. Such collections, we know, may be classified according to the manner of their preparation and disposition, as

I. Research Collections, II. Exhibition Collections.

RESEARCH COLLECTIONS.

Before a gathering composed so largely of professional ornithologists, a statement of the character of a research
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collection of birds is assuredly uncalled for. Nor am I here so especially concerned with this branch of the subject.
I will simply state, therefore, that a study collection will, of course, contain—(a) skins, (b) skeletons, (c) spirit specimens, (d) nests and eggs, (e) economic material, if it be proposed to investigate this branch of the subject. A Museum collection of skins, it may be added, should contain a sufficient number of specimens to represent changes in plumage due to age, sex, and season, geographical variation, and geographical distribution at all seasons.
In some instances so large a series of specimens is required that indiscriminating critics have, on occasion, classed the scientific collector with the millinery taxidermist. It should be remembered, however, that the Museum’s demands are limited, while the milliner’s are unlimited; that the Museum’s series of specimens of a species have been taken throughout its range, while the milliner’s agent takes his thousands and tens of thousands from a single locality.
Few Museums, as the result of years of collecting, possess 100,000 bird skins; while, to the writer’s knowledge, a single winter’s work on the west coast of Florida brought a party of millinery collectors 300,000 birds.
These remarks should not be interpreted as an endorsement of wholesale killing of birds or robbing of nests by irresponsible “collectors” who for selfish or commercial reasons may exterminate a species locally. Nor, indeed, would I advocate any form of collecting which threatens the existence or serious diminution of a species.
It is, of course, neither necessary nor desirable that every one forming a collection of birds or their eggs should attempt to represent each species by the large series of specimens to be found in Museums. To avoid, in a measure, such duplication of material and unnecessary collecting, I would urge the maintenance in Museums of collections of bird skins, representing at least the local ornis, to which every applicant, whether or not he be known to those in charge, shall have free access.
A collection of this kind need contain no examples of birds which, for one reason or another, it would be difficult to
duplicate, and still be of great practical assistance to the student. The possibilities of loss or damage are far outweighed by the educational value to be derived, and in practice are reduced to nil.

I would also emphasize the desirability of aiding the specialist as far as practicable, not only by giving him every opportunity to study collections in the Museum, but by loaning such specimens as he may find wanting in his own collections. So much of the material gathered is condemned to a life of darkness that any Museum regulation which forbids the loan of specimens to responsible applicants is greatly to be deplored. Such rules may rightly be made to apply to type or unique specimens without thereby largely decreasing the study value of the available loan collections.

Without going further into the subject of study collections, and their use, I may sum up my estimate of their place in ornithology by considering them simply as means to an end; and this end is to render the bird of the greatest possible value to man, an end which, so far as our Museums are concerned, is to be accomplished chiefly in their exhibition halls.

That science which is sufficient unto itself has no excuse for its existence. If our studies of birds have no bearing on the progress and welfare of mankind they are futile. That they have such a bearing, and in an exceptional degree, we know to be undeniable; it is obviously, therefore, the function of the Museum to demonstrate this connection in such a manner as to render apparent the bird's place in nature and its relation to man.

In attempting to accomplish this end, the composition of what we may collectively term our audience should receive the same careful consideration which is given by the lecturer, who, under not dissimilar conditions, adapts his discourse to the character of his hearers.

EXHIBITION COLLECTIONS.

Generally speaking, we may divide the visitors to our exhibition halls into two classes:—First, those with a purpose; second, those with no definite object.
The wall-plates, brackets, and strips are of iron; the rack is therefore fire-proof and there are no upright supports or partitions to interfere with the placing of cans or cabinets.
What constitutes a Museum Collection of Birds?

The first class contains students, self-instructing or with teachers, as, for example, classes from schools, writers, artists, etc. The second class consists in part of mere sightseers, and, in part, of those whose greater intelligence or education increases their appreciation of anything which claims their attention.

Students' Collections.

Without question we should first meet the wants of those who presumably will make the best use of the material we may display for their instruction. I would, therefore, give attention, in the first place, to the wants of the student. Fortunately, in most instances, his needs can be supplied with comparatively little expenditure. Educational, as well as ever-present financial considerations, therefore, urge our giving him early attention.

It should, however, be remembered that we are catering to amateur, not professional or advanced, students of birds. The latter will refer to our research, not exhibition, collections. With this distinction in mind, the writer's experience leads him to believe that fully 90 per cent. of those who visit an exhibition-collection of birds with a definite object in view, do so to identify some bird they have seen in the vicinity. A complete representation of the local avifauna will, therefore, not only furnish the information desired by the greater proportion of our purposive visitors, but collectively it reveals the character of the local ornis, always a matter of general interest. The arguments on behalf of these local collections are indeed too obvious to require statement, but suggestions may be made as to their manner of arrangement.

The practice of including a seasonal as well as a systematic collection of birds in such an exhibition seems highly desirable. The systematic collection will, of course, contain all the birds which have been recorded from the area in question with, it is suggested, the "Accidental Visitants," which form no constant part of the ornis, in a group by themselves.

The labels may give the scientific and local name or names of the bird, its manner of occurrence, dates of migration, if a migrant, and numerical abundance. All the plumages should
be represented, but duplicates should be displayed only when it is required to show all the parts of the body to equal advantage. It is, of course, desirable, but by no means essential, that the specimens should be taken in the region under consideration.

The seasonal collection of birds, on the other hand, should contain only the birds of the month. The collection will, therefore, be composed of two parts: the first will contain Permanent Residents, or those species which are present throughout the year; the second part will contain migrant species. These should be removed or replaced as circumstances require, the change being made at the first of each month to represent the changes, if any, which we may expect to occur in that month. In January, for example, the seasonal collection of Birds Found Within 50 Miles of New York City, which is displayed in the American Museum of Natural History, contains, in addition to the ever present Permanent Residents, only the Winter Visitants, the two combined forming the local avifauna of the month.

February 1, there will be added to the migrant group the few species which we look for from the south in that month. One month later, the March migrants will be included, and, at the proper time, those due in April and in May. Meanwhile, as the winter birds and transient migrants pass onward to more northern breeding grounds, they are removed, and at the conclusion of the migration in June we shall have left in our migrant group only the Summer Residents, or birds which have come from the south to nest, and these, with the Permanent Residents, constitute our summer bird-life. The composition of the collection now remains unchanged until the autumnal migration necessitates further alterations.

Such a collection thus not only graphically illustrates the migration of local birds, but at all times represents the existing conditions, and thereby greatly facilitates identification of local birds by narrowing the field of possibilities.

In addition to the individual labels already mentioned, labels should be provided here for each seasonal group of birds, as, for example, Permanent Resident, Winter Visitant, etc., while labels for each month should emphasize the
THE CAMBRIDGE CAN.

The can is made of tin, the opening being surrounded by a gutter lined with rubber into which the broad bearings of the cover are pressed by clamps. The wooden-sided, pasteboard-bottomed trays, of varying depths, run on tin strips which are readily placed in the slits in the front and back of the can at any desired height. The can here shown is 18 inches deep, 18 inches high, and 14 inches wide. Larger sizes are respectively twice and four times the width, but the height and depth remain unchanged.
characteristics of the bird-life of the season. As a guide to
such a collection an annotated list of the birds known to
occur in the region may be published, which will be of value
in the field, study, or exhibition hall.

Useful adjuncts to this students' collection have been found
to be exhibits of feet, wings, bills, tails, and feathers, designed
to illustrate terms used in descriptive ornithology, together
with a list of standard books on ornithology, their prices and
publishers. A library containing the books mentioned should
be available for the students' use.

If the Class Aves has not already been treated in a general
Synoptic Collection, here might be placed such an admirable
"Index" collection as is contained in the Central Hall of the
British Museum in Cromwell Road, where the general struc-
ture of birds, both internal and external, and their special
characters are displayed in a manner which may well be
emulated. The educational value of Synoptic exhibits of this
nature is so out of proportion to the space and material they
require, that they should have a place in the exhibition hall
of every Natural History Museum.

**Systematic Collections.**

Still attending to the wants of the student and teacher,
next in importance to the local collection, from which may be
obtained assistance of a practical, personal nature, is a system-
atic collection, representing only the leading types of birds,
living and extinct. The smaller this collection can be made,
without omitting well-marked forms, the more readily will
it convey an idea of the limits of variation in the Class Aves,
and the relationships of birds as shown by classification.

When essential to a clear demonstration of taxonomic
characters, mounted skeletons should be exhibited, but it is
believed that, as a whole, osteological material should be con-
signed to a department of Comparative Anatomy.

Labels for this systematic collection may consist of (1)
Species label, giving a scientific and vernacular name. The
latter should preferably be the one in common use in the
country where the bird is best known; if such does not exist,
a name which has been published may be employed; failing
this, an appropriate title, if acceptable, a translation of the scientific name may be adapted. The distribution of the species, preferably expressed on a chart, may follow. The place of capture of the individual is, of course, recorded in the Museum register and it does not seem essential that it appear on the exhibition label, except in the case of occurrences of exceptional interest.

(2) Family labels, in which the number of species contained in the family should be given a prominent place, since it may not be indicated by the number displayed; and

(3) Maps showing the geographical distribution of the family.

The systematic collection of birds of the British Museum, both as regards material and labels, may well serve as a model for exhibits of this nature. Since, however, I would supplement the systematic with faunal collections, the number of birds displayed in the former may be reduced to the minimum.

Faunal Collections.

Faunal collections may be arranged to show the characteristic bird-life of the major faunal areas. Collections of this nature are not only lessons in zoogeography, but, as in the case of local collections, convey, as a whole, an impression of the ornis of a given region, while, without examination of each individual label, the main faunal label conveys at least a general idea of the range of each species. Furthermore, a faunal arrangement facilitates identification or examination of the birds from a known country.

Here may be effectively displayed photographs illustrating characteristic types of country in the various faunal areas, and also the habitats of certain birds.

Facilities for Teachers and Artists.

For teachers with classes who, in addition to using these local, systematic, and faunal collections, desire to make more detailed study of certain forms or groups, a classroom may be set aside, where, on request, specimens from either the research, or exhibition, collections may be placed for purposes of demonstration.
METHOD OF ILLUSTRATING CLIMATIC OR GEOGRAPHIC VARIATION IN BIRDS.

The leading types of the twenty odd races of Song Sparrow (*Melospiza cinerea*) are placed on the chart near the centre of their respective breeding ranges. The ranges are coloured to correspond with the prevailing tone of the plumage of the birds inhabiting them. A descriptive label explains the significance of this striking variation in colour and in size.
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For artists and photographers, similar facilities should be provided, and, to supply the special needs of the former, anatomical preparations, spread wings, casts, etc., should be accessible.

**Popular Collections.**

Long-continued observation forces the conclusion that however well we may have met the wants of those in quest of ornithological lore through the display of collections similar to those above outlined, we are still very far from bringing to the public at large any conception of the scientific, economic, and aesthetic value of birds.

A discouragingly large proportion of the visitors to our exhibition halls wander aimlessly past systematic or faunal collections, and, with interest unawakened, leave them after a superficial inspection which has profited them little, if at all.

It is not to be expected that we shall make ornithologists of every sightseer, but beyond question there are facts in connection with the life of birds which, if properly presented, would claim the attention of the least observant.

The expression “life of birds” possesses here a special significance, for it is, of course, the living, not the dead, bird which makes its appeal to the eye and ear. However well, therefore, our systematic and faunal collections may serve their ends, they assuredly have conveyed no impression of the bird as the most eloquent expression of Nature’s beauty, joy, and freedom, of the bird’s intelligence or economic importance, and they are, therefore, far from representing the value of birds to man or the possibilities of bird study.

One of the essentials, then, of an exhibition collection of birds is that it contain features which shall not only force the attention of the casual visitor, but that their influence shall spread beyond the Museum walls and induce the presence of those whose interest has been aroused by a description of their attractions.

In practice it has proved possible to achieve this result by appealing to the objectless public through the universal love of the beautiful: not by the display of cases of gaudily coloured birds, but by carefully planned and executed groups
which, so far as is possible within Museum walls, shall represent the bird in Nature, or, in other words, the living bird in its haunts: I refer here not only to groups with natural accessories of branch, leaf, and blossom representing the nesting habits of a single species, but more particularly to those which aim to portray some more striking scene in bird-life where vast numbers of birds of one or more species together form what has become known as a "bird colony."

In reproducing such groups on a large scale, it is possible to use a painted background so effectively that at a short distance one cannot readily distinguish where the group proper ends and the background begins. Not only is the beauty and realism of the group thereby greatly enhanced, but the introduction of birds into the painting makes it possible to represent Nature in a way which would be impracticable if one employed mounted birds alone.

In this manner we have, among other subjects, represented in the American Museum, a nesting colony of a thousand or more Flamingoes, of which only twenty-nine are mounted birds, while the others are painted, many of them approximately life-size.

The possibility of this kind of exhibit descending to the level of mere theatrical scene-painting, or the chromo effects of the commercial taxidermists' lurid backgrounds is appreciated; it is urged, therefore, that such backgrounds be prepared only by competent artists, both as regards birds and landscape, that they represent an actual scene, not a fanciful one, and that they be not employed when the group is so small that a proper panoramic effect cannot be secured and the unpleasant productions of the taxidermist are too closely approached.

Groups of this nature are doubtless not only the most satisfactory means of representing bird-life, but the backgrounds themselves, painted from Nature, adequately portray a definite locality, and are in themselves highly educational.

It should also be remembered that where such backgrounds contain the work of prominent bird artists they possess a peculiar value which time enhances. Consider, for example, the interest which would be attached to such a painting by
FLAMINGO (Phoenicopterus ruber). Group in the American Museum of Natural History.

The group is twenty feet long and eight feet wide, and contains twenty-nine birds. Background painted by L. A. Fuertes (birds), and C. J. Hatteil (landscape). Birds mounted by H. Lang.
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Audubon, depicting on a large scale a flight of Passenger Pigeons, a common sight of his day, but which the world will never see again, and of which no adequate portrayal exists.

While claiming the attention primarily through their beauty, groups of this nature permit of the display, in a most satisfactory manner, of many facts pertaining to the life-history of the species they include; for example, haunts, courtship, nesting-site, nest, eggs, the care of and development of the young, manner of feeding, flight, relation of colour to environment, molt, etc.

It is, of course, implied that these groups shall be based upon detailed field studies in which the camera, as a graphic recorder, plays an important part.

Special Groups.

Elaborate reproductions of unusual scenes from bird-life do not, however, offer the only means of halting the steps of the casual stroller through our exhibition halls. Groups which illustrate a fact, theory, or subject, appeal to every receptive mind. Simplicity of treatment is here recommended, in order that the object in view may not be obscured by unimportant accessories; nor should they, on the other hand, be made too technical.

Bird-life affords such a wealth of subjective material that, unless one has unlimited means and space at one’s disposal, a selection is made with difficulty. Birds’ plumage, as their distinctive character, offers perhaps the most desirable, as well as the most attractive, feature for subjective treatment. Groups, therefore, which illustrate the relation between colour and environment (protective coloration), colour and habit (deceptive or aggressive coloration), colour and climate, colour and age, colour and sex, colour and season; the molt, albinism, melanism, etc., naturally suggest themselves.

Similarly, the relation between structure and habit may be demonstrated by means of exhibits in which the uses of the bill, wing, tail, and feet are shown.

Variation by artificial selection may be illustrated by
groups of domesticated birds with their feral ancestors, while cases of favourite cage-birds, birds of literature, etc., have a popular interest.

**Birds' Nests.**

In order to appreciate the conditions encountered by the avian architect, one must study a bird's nest where the bird placed it. Nests, therefore, are shown most satisfactorily in the groups previously mentioned, with their natural surroundings.

Synoptic exhibits may also be prepared, designed to show the bird's skill as a weaver, mason, upholsterer, etc., the nature of the materials used by birds in nest-building, and the factors which govern the character of the nest. For example, locality as it affords suitable material with variations incident to civilization (string substituted for fibres, etc.), structure of the builder (Woodpeckers), character of the young at birth, accompanied by examples of precocial and altricial birds, etc.; changes in site induced by civilization may be illustrated by the Chimney Swift, Wren, Bluebird, etc.

**Birds' Eggs.**

In the writers' opinion, the educational value of a collection of birds' eggs may be fully encompassed by a small synoptic exhibit, such as is contained in the British Museum, in which the number of eggs in a set, size, shape, texture of the shell, variations, etc., are subjectively treated. Oology, however, is so popular a phase of ornithology that more detailed exhibits are required, and we may respond to the demand with a hope that the study of birds' eggs may eventually lead to a study of birds.

Eggs may be exhibited in the nests or separately, those of local species being given special attention; but, in any event, it is extremely desirable that they be accompanied by photographs from nature showing the nests in situ.

**Photographs.**

The camera has come to play so important a part in bird-study, and the results obtained often depict so satisfactorily,
GROUP REPRESENTING THE SUMMER BIRD-LIFE
OF THE IRRIGATED PORTIONS OF THE SAN JOAQUIN VALLEY, CALIFORNIA,
IN THE AMERICAN MUSEUM OF NATURAL HISTORY.

The group is twenty feet long and eight feet wide, and contains seventy-nine birds representing fourteen species. Background painted by C. J. Hittell, the birds being introduced in it by L. A. Fuertes. Birds mounted and installed by H. S. Denslow.
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not only the bird, its haunts, and nest, but some of the most remarkable scenes in the bird world, that assuredly no exhibit of birds is complete which is not supplemented by bromide enlargements, transparencies, or other media presenting photographically facts in bird-life.

Economic Ornithology.

It is of the first importance that this practical side of ornithology, which will appeal to many not impressed by the scientific or æsthetic value of birds, should be adequately treated in our exhibition halls. Groups may show the feeding habits of insect-, seed-, rodent-eating, and scavenging birds, and be accompanied by stomach-contents, charts, diagrams, and tables designed to show at a glance the usefulness of birds, and, at the same time, to impress the observer with the necessity of affording them proper protection.

Commercial economics may also be dealt with here, and the use and abuse of the bird as an asset illustrated by the Ostrich and Eider on the one hand, the Tern and Egret on the other.

Man's Influence.

A closely-related exhibit may show changes in bird-life due to man's influence through destruction for plumage or food, and changes in the character of environment. Species which have increased or altered their habits to adapt themselves to new conditions may also be included.

School Collections.

Comparatively few teachers can or do bring their classes to a Museum. Frequently it is impracticable for them to do so. At a very slight expense, small collections, containing half a dozen mounted common birds, may be prepared to extend the Museum's influence to the school's, and establish a bond with those who are actively engaged in educational work.

These little travelling Museums may be sent from school to school, or be borrowed by the teacher as she would take a book from a circulating library. The birds should be fully
labelled with especial reference to their manner of occurrence locally, and each collection may be accompanied by a type-written or manifolded leaflet in which the colour, structure, and food of the birds contained in it are treated subjectively.

It is found in practice that the modest little boxes in which this teaching material is carried from place to place surprisingly extend the Museum’s sphere of usefulness. Thus from September, 1904, to June, 1905, the 500 specimens contained in the 100 boxes kept in circulation by the American Museum were studied by 191,678 pupils of New York City schools.

The foregoing suggestions are not presented as original, for most of them are embodied in exhibits in one Museum or another, though some are the direct outcome of the writer’s attempts to supply the needs of the student and arrest the attention of the heedless. It is hoped, however, that they may be welcomed by those in charge of Museum exhibits of birds as a means of calling attention to the possibilities which birds offer for both technical and popular display; thereby, perhaps, leading to an appropriation or donation which will permit of the fulfilment of the end in view.
A TRAVELLING SCHOOL COLLECTION OF BIRDS.
THE
ORNITHOLOGICAL CORRESPONDENCE OF THE LATE
PROFESSOR JOHANN FRIEDRICH NAUMANN.

By Paul Leverkühn.

(Les Correspondances Ornithologiques du Professeur Fréd. Naumann,
Présentation de lettres de Temminck, Boie, Brehm, Kaup, Bechstein.
Gloger, Bruch, and others.)

Ladies and Gentlemen,

Naumann is but a name to nine out of ten British ornithologists, and the proportion of them who have held in hand a volume with that name on the title page must be smaller still. Yet it was borne by two men who, taking them all round, were the most practical ornithologists that ever lived—for their personal knowledge of the birds of Central Europe was not exceeded by that of any of their contemporaries; and it may be fairly doubted whether any of their successors, vastly improved as are the modern means of acquiring such knowledge, have attained as high a standard. With these emphatic words the venerable Professor Alfred Newton began a short article about the Naumann festival at Cöthen, which took place in the first days of the month of May this year. Fortunately, the very modest abode of the Naumanns has remained from generation to generation in the hands of the family; the old cottages in which Johann Andreas and Johann Friedrich Naumann produced their wonderful standard works having been succeeded by others of richer and of more modern style; the famous little forest near Ziebigk remains unaltered to this day, and conceals the melancholy grave of the father Naumann, which is covered by a mass of luxurious ivy, and ornamented with an eagle of bronze, opening his mighty wings against intruders. In this forest the Naumanns observed the feathered world, favoured
by several circumstances, such as, for example, inundations, pernicious enough for the peasants, but useful for the birds' friends. The rich collections of birds formed by the father and his two sons formed the basis of their keen investigations, valuable and conclusive up to our own day. In the little castle of Cöthen most of their "types" are yet to be seen, one of the Anhalt Dukes having protected the great naturalist, whose high merit he recognized, and in this manner some of the Naumann relics have been preserved.

But there was more! When paying a visit to the sanctuary of Ziebigk in 1904 for accomplishing my biographic and bibliographic notes for the new third edition of the Naumanns' gigantic work, I discovered in an old forgotten wooden cupboard of rude handiwork a large quantity of folded, dusty papers, much eaten and pierced by worms. The ornithological letters written to and from Johann Friedrich Naumann had slept there undisturbed for a hundred years. Even the first glance in the late hours of night gave me an idea of the importance of my discovery, the famous names of our greatest authorities in ornithology appearing before my eyes. As the granddaughter of the author was kind enough to entrust me with these precious papers for scientific purposes, I began to study them directly on my return to Sophia. Letters dating from the beginning of the nineteenth or from the end of the eighteenth century are quite different from those of the present day. At that time people had more leisure, were not over-excited, did not know electricity, the telephone, or the telegraph, and they related interesting items to their friends in a form which to-day would be suitable only if destined for the printer. As the means of communication were very primitive, much time elapsed between two letters from the same person, but it was due to this that a correspondence acquired the character of a quiet current, never over-hurried or accidentally interrupted. I mention this because many people of our time condemn the publishing of letters "not written for publication." Well, there are letters and letters. Not every one is worth printing; but letters giving details on scientific matters, replies to questions of striking interest, or tales about voyages to foreign places—about which, perhaps, little had been known—
Correspondence of the late Prof. Naumann.

such letters not only deserve to be published, but it is our duty to make them known, otherwise we run the risk of seeming to despise and undervalue the life and labours of our classical authors.

Naumann travelled in Hungary, at that time really locupletissima avium—very rich in birds indeed; but he published only a short report about his impressions. He knitted friendly relations with the ornithologists of the date; one of these was the poor Petényi, whose numerous manuscripts have, alas! been lost with only a few exceptions. His biographer, Otto Herman, complains that all his interesting correspondences had disappeared; I am fortunately able to say that his letters to Naumann are preserved, as well as those of Emerich von Frivaldsky, Földváry von Földvár, and the Baron Löbenstein, who contributed also to the ornithological exploration of Hungary.

I cannot give here a complete list of learned men, some fifty in number, whose letters I am now endeavouring to arrange; let me quote only some few names: Bechstein, the head of the Academy of Forestry of Dreyssigacker, the father of German ornithology, as Naumann himself calls him; Bekker, one of the authors of the celebrated "Darmstädter Ornithologie," a work so beautiful that it may rival those of John Gould; the two Boie's, so well known to every specialist for systematics; Bruch, the ingenious monographer of the Gulls; Ehrenberg, the famous traveller in Abyssinia, whose discoveries with the microscope have rendered him immortal; Faber, the enthusiastic explorer of Icelandic bird-life, who died in his best years; Gloger, the father of bird protection; Kaup, the inventor of the rather puzzling quinary system, who published in the earliest English ornithological periodical the "Contributions to Ornithology" by Jardine; Lichtenstein, the director of the Berlin Museum, occupying a high rank in classification and systematics; Meckel, Nitzsch, and Rudolph Wagner, the very stars of the heaven of zootomy—the two last the discoverers of the so-called pterylography, or the science of the distribution of feathers on the bird's body; Meyer, of Offenbach, the famous author of the "Taschenbuch," whose collection formed the first beginning of the Senckenbergian Museum at
Francfort-on-the-Main. We meet the Greek explorers, Count von der Mühle and Michahelles, known to every student of Lord Lilford’s papers on Mediterranean ornithology; then the Dresden naturalist Reichenbach, author of the “most complete natural history of the world”; the good old Schinz at Zürich, who may well be called the father of Swiss ornithology; Sturm, the translator and editor of Gould’s “Rhamphastide,” and his brother, who finished Naumann’s life-work; Dietrich aus dem Winckell, one of the highest authorities on hunting and sport; F. A. L. Thiennemann, the founder of scientific oology; and others. As time will not suffice to give even a superficial idea of the contents of the correspondence I must be satisfied with giving you a single specimen, which I borrow from the very charming interchange of thought between Naumann and Temminck at Leyden. Both of them show a zeal and an enthusiasm which make us, their poor followers, tremble with admiration.

Temminck had proposed to Naumann to add a series of illustrations to the second edition of his famous “Manuel d’Ornithologie.” Naumann could not accept this offer, founding his refusal upon the following statement, which gives us a touching picture of his private life.

Naumann wrote the 25th July, 1816:—

“I am the owner of a small country seat, which gives food to me and to my family but does not allow of any luxury. I do everything in my estate myself, and very often with my own hands, my income not permitting me to engage other help. In this way I look after my little garden myself; here I cultivate about 700 kinds of foreign plants. Besides this I am a mechanic, and I make all my instruments and outfit for the garden and the estate—even my guns, and other implements of wood, bone, and metal. I am always occupied: to-day as a carpenter, to-morrow as a locksmith, or a gun-maker, or a turner—for I make my pipes myself—or a gardener, or a supervisor in the cornfields. My recreations are my laboratory and my aviary, as well as shooting and observing birds. But plants and insects interest me likewise. Society has no charm for me, and I frequent it only that I may not become quite a savage. In the autumn, when the
birds' migration begins, I abandon many of these different occupations for others, such as preparing birds, arranging my observations, painting, and copper-engraving. My old father polishes the plates and prints them with a press constructed by himself. The only work we leave to other people is the printing of the letterpress and the illumination of the copper-plates. In the winter I read natural history books, periodicals, and travels."

Temminck, the very rich Dutch zoologist, replied in a similar tone (14th October, 1816) as follows:—

"Le relevé exact que vous me faites de vos nombreuses occupations a de quoi me surprendre et augmente beaucoup l'estime que je vous portais déjà: il est digne d'admiration de voir le même homme exercer des sciences, des arts et des métiers si différents les uns des autres mais qui tous tendent en vous vers le même but honorable. Quant à moi je suis le factotum des mes nombreuses collections tantôt général et tantôt soldat. C'est moi qui dresse tous les quadrupèdes, les oiseaux et les poissons; au passage des uns et des autres je varie mes courses tantôt sur mer, le long du rivage, ou sur les bords de nos lacs, ou de nos marais; toutes les nombreuses dépouilles d'animaux dont je me sers en troc ou en cadeau pour mes amis, sont préparées de ma main; l'hiver je m'occupe à dresser les quadrupèdes et les oiseaux exotiques, que je reçois en robes sèches et quelques fois mal préparées; je travaille alors à la classification de mes collections, à leur conservation et le soin est destiné alternativement à mes occupations littéraires ou au devoir de la société. L'été je m'occupe de zoologie d'Europe et je tâche de rendre service à mes amis et à mes correspondants; c'est alors que je rassemble les matériaux que je travaille dans les longues soirées d'hiver."

What a delicious life! What a childlike description! I could have read to you, Ladies and Gentlemen, some scientific remarks about special questions of an interest for the ornithologist pur sang, but instead of doing so I have chosen this passage, because it may give you, perhaps, a better foretaste of the whole. It is my intention to publish the Naumann letters, with biographical and bibliographical information about every correspondent, and, as far as possible, with their
portraits, in the form of a supplementary volume to the new third folio edition of Naumann's work. Much material that has been found besides about the author and his life, together with some original engravings, will be added if you and the general public will encourage such an enterprise.
ON THE MIGRATION OF BIRDS.

By Otto Herman,

Late M.P., Director of the Hungarian Central Office of Ornithology, etc.

(Delivered by Mrs. A. Ginever, née Ilna de Györy.)

At the moment when I am to begin my short lecture, I am under the impression of the surroundings and of the occasion on which I have the privilege of speaking. Surroundings and occasion impose upon me duties I cannot afford to lose sight of.

To speak on the migration of birds is an easy, and, at the same time, a difficult task.

Easy, if the phenomenon of migration is looked upon from the point of view of the impression it makes upon the mind of man—difficult if we would do justice to the requirements of the subject as a scientific study.

It would be easy for me to draw a richly-coloured picture of the arrival of our pets in spring; to describe the feelings of the inhabitant of the moderate zone called forth by the sight of the first swallow. The popular songs of all the nations of this zone teem with joy at the return of the songsters to wood and field; the poets, too, the noblest, are inspired thereby. Perhaps I might succeed in interlarding my description with oriental shades which might make a lasting impression on the practical sons of Albion, who take a lively interest in the enumeration of these facts.

The reverse of the vernal picture and the feelings awakened by it, is the autumnal migration. The disappearance of our faithful house and garden friends, the sudden silence of wood and meadow, makes us sad, because it tells of evanescence, being the herald of inclement weather, thus rendering our depression doubly acute. The autumnal migration leaves its impression on the mind of the people, too, an impression sometimes so powerful that a vast nation cannot shake off the shackles of disconsolation. I need only refer to the German song of the swallow, written by...
Herlossohn and set to music by the classical composer Abt, which is familiar alike to cottage and palace, as a testimony of this general harmony of feeling.

I might, perhaps, add some fresh tints, but my feeling of duty forbids me to do so.

The fact that I have to speak in the heart of England, on the occasion of a strictly scientific Congress, is decisive.

It is an easy question to decide what direction the learning of England requires me to take. England has given the world three stars of the highest order. The first was Bacon of Verulam, who advises us, in considering the phenomena of Nature, to adopt the method of experience, a course which amounts to the exclusion of mere speculation and especially of fancy. The second was Isaac Newton, who by the law of gravitation has taught us the omnipotence of the laws of Nature, and has explained the equilibrium of the universe, thus putting exact science in the foreground. The third was Charles Darwin, who has conquered the rigidity of the conception of organisms, and has explained the idea of evolution.

The example of these three great men must cause me, as well, especially on English soil, to confine myself to facts, to the exclusion of sophistry, fancy, and belief in authority.

Before, however, I undertake the development of this theme, I beg to insert the following brief sketch.

In spite of all Bacon, Newton, and Darwin did—in spite of the victorious advance of the exact and inductive branches of science—speculative theories held the day, even during the nineteenth century, in the field of the migration of birds, taken as a science. This lay, and lies even to-day, in the nature of the phenomenon itself. The power of flight of birds, of nocturnal migration, and many other unknown circumstances, led people to talk of "riddles"—even of "miracles." They would not, and still refuse to, admit that it is our knowledge which is at fault—a fact which is not conducive to experiments, leading to the pronouncing of judgments which were void of positive foundation and of any actual inductive basis.

One of the most wonderful pictures of human intellect is displayed to our eyes when we learn that the great German
On the Migration of Birds.

Emperor, Frederick II. (1194 — 1250), as aueps — i.e., fowler and falconer—was induced to have recourse to the method of experience and to follow Bacon's precepts long before Bacon lived, and that his views on the migration of birds were far better and more valid than those of many a famous author of the nineteenth century. The Emperor knew that birds pass from colder regions to warmer ones, and vice versa; that not all birds are birds of passage; that some of them pass only from the mountains to the valleys, and vice versa; that the movement is dependent upon temperature and food supply; that they meet before commencing migration; that land birds move in a certain order, in two convergent lines—e.g., cranes—even that the bird at the head of the flight has to accomplish the hardest work and is therefore relieved; all absolutely correct opinions. It is a thousand pities that the concluding part of the manuscript is lost, and that we are therefore not in a position to know where, in the opinion of the Emperor Frederick, the birds actually do pass; but the words "warmer regions" are sufficient to prove that the Emperor had no "riddles," but only natural things in mind.

But in this field, as in others, the above period was followed by a time of decadence, a natural consequence of departing from immediate experience: the characteristic of this age of decadence was speculation, which laid under contribution old authorities and the axioms established by them.

Then arose the so-called immersion-theory with all its appurtenances; the belief that birds of passage do not leave us at all, but spend the winter sleeping partly at the bottom of some water, partly in caverns or hollow trees. Even serious natural scientists of the eighteenth century, as Geoffroy de St. Hilaire—1772—still believed in winter-sleep; this writer, indeed, pretended to have seen with his own eyes sleeping swallows, which must certainly have been bats. Your great countryman, E. Jenner, the benefactor of mankind, had to protest against this theory, as he did in 1824; yet this misbelief has nevertheless prevailed in more or less obscure writings until the present day.

Even in the high-class works of famous authors of our time, echoes of this mediæval belief in miracles are still
discernible: mention is made of the gift of presentiment, of the miraculous, of puzzles which, if reduced to Bacon's terminology, are nothing but "want of inductive knowledge and of positive notion resulting therefrom."

It would require the foresight and patience of a Theseus to unravel the labyrinth of peasants' maxims dealing with the world of birds and the foretelling of the weather.

Taken as a whole, Science did not get much farther than the amassing of data of arrivals and departures which finally formed a chaos that daunted and still daunts the boldest authors.

Most of them preferred to take the thing at the easy end: to draw far-going conclusions from a few data, as their ingenuity, or sometimes only their fancy, dictated.

This state of things naturally resulted in many singular contradictions, of which I would like, with your kind permission, to mention a few.

Naumann: There are definite routes of migration.
Homeyer: There are no definite routes of migration.
Weismann: The birds learn how to migrate.
Gaetke: The birds act by instinct.
Palmen: Orientation is a traditional gift.
Weismann: Orientation is congenital.
Gaetke: There is no leadership.
Weismann: There is leadership.
Wallace: The weather has no essential influence.
Homeyer: The weather has an essential influence.
Naumann: Temperature plays a very important part.
Augot: Temperature is not an incentive.
Lucanus: The flight takes place at a height of 3000 feet.
Gaetke: The flight goes on at a height sometimes of 35,000 feet.
Brown: The original home of the birds is the tropics.
Deichler: The original home is not the tropics; etc., etc.

The prevalence of the speculative tendency in endeavouring to explain the movement, led many authors to assume migra-
tion-routes and to schematize them, even before they were corroborated, on maps. If we draw the most important of these migration-routes on a map of the eastern section of the Northern Hemisphere, an entanglement of lines is obtained. If all the routes indicated by the authors are indicated, we get a Gordian knot. We are overcome by the feeling that it is impossible for the birds to pass along these routes.

Some ornitho-cartographs, instead of migration routes, draw, so to say, only lines of stupendous boldness over points where no human being has ever set his foot.

I do not want to enter here into a critical discussion of the subject. I take the facts as they exist authorizing us to continue our investigations on this basis, and therefore in an inductive way. In order to do this, we must proceed in a strictly methodical manner.

I shall now, in brief outline, elucidate the principles of the method.

The migration of birds is a phenomenon of movement from one zone to the other, and vice versā. It follows therefrom that space and time are the basis of the phenomenon, and that the question cannot be solved from the phenomena of one locality or point only, even if this be a whole country.

The solution is only possible elucidating the phenomenon along its whole course.

From the nature of the subject it follows that the task can only be accomplished by a division of labour, which labour ought to be evenly divided, as far as possible, over the whole area.

The migration of birds corresponds in the main with the seasons of the year and is thus, as a phenomenon, phaenologically connected with the subject we call Meteorology.

Meteorology owes its great success to the networklike division of the areas, to the uniformity of observation and of working out of the data.

The migration of birds ought to be treated exactly in the same way, viz., in organical connection with Meteorology.

The short space of time at my disposal prevents me from
entering on a detailed exposition of the method. So I shall only touch on the essential points.

We must work out the myriad data recorded in literature methodically according to space and time and draw from the average figures thus obtained the conclusions relating to the progress of migration; so much for the past. The new observations must be carried out at all points uniformly and worked out, year after year, according to the same even method.

But you will ask me, whether I am able to point to the practicability of the method? I answer, in the case of our Hungarian method, certainly. I shall, therefore, abide by the Swallow; and the question is now, what do we know of the spring-migration of the Chimney Swallow in Hungary?

In 1898 more than 5900 masters of elementary schools, and other men also, decided to observe the arrival of the Chimney Swallow and to report the results of their observations to the Hungarian Central Office. These observers, covered the area of Hungary very well. They sent in their data on special post-cards; the points of observation were geographically determined and then schematized on particular maps, each day separately. In such a way we obtained 54 day maps, each with as many dots as there were points of observation. The result was: Beginning of the migration, March 10th, 3 points; culmination, March 30th, 343 points; end, May 2nd, 15 points.

Let us give here some of the concrete forms:

1.—Address Side of the Post-Card.

Portómentes az 1897. évi 76.788. számú kereskedelmiügyi miniszteri rendlet alapján.

⇒ Magyar

Ornithologiai Központ

BUDAPEST

VIII., Nemzeti Muzeum.
2.—The Questions.

Hirundo rustica. The autumn of 1898.

Assembled . . . . The_____th

The bulk disappeared . . The_____th

The last swallow was seen The_____th

_______th________1898

County

District Signature

3.—Day-Map of March 15th.

4.—Day-Map of March 20th.
5.—Day-Map of March 25th.

6.—Day-Map of March 30th (Culmination).

7.—Day-Map of April 4th.
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8.—Day-Map of April 9th.

9.—Day-Map of April 14th (Advance in the Alps).

10.—Day-Map of April 19th (Full Advance in the Alps).
Hereby the arrivals are seen to increase until March 30th, when they culminate, and then they decrease. We see furthermore that the arrivals fluctuated according to the state of the weather, that the settling of the Alpine region began only at the middle of April, that the plain, the hilly portion (Transdanubian district), and the Transylvanian plateau differ with respect to the time of migration and that, therefore, Hungary may be divided into four migration areas. Furthermore, it was remarked that the settling did not take place on narrow routes of migration, also not in a broad front, but that it resembled the scattering of the seed by the sower, where many a seed might be flung this side of or beyond the place for which it was intended. It was, moreover, proved that the
mean day of arrival in Hungary, for the year 1898, was April 8th—since rectified to April 7th, on the basis of more than 10,000 data. From these series followed the settling maps which show that the Swallow settles in Hungary in spring, coming from S.; the White Stork from S.E. to N.W.; the Wagtail, from W. to E.; the Woodcock, from S.W. to N.E.; the Cuckoo, from S.E. to N.W.; etc. All positive facts which it would not have been possible to establish by the old method.

And if you ask me what else we have determined by our method? I answer as follows: we know that the Swallow settles in the areas of Europe from Gibraltar to Luleå in 105 days; that the young Swallows are already fledged in Gibraltar, when the old ones for Luleå only arrive; that the settling of Hungary may last as long as 70 days; that the Swallow remains here on an average 167 days. This must be sufficient; if I were to enumerate all the facts brought to light by the inductive method, I should be obliged to put your patience to a severe test, but the result would only be to show that Hungary is the best-observed and the best worked-out country. The whole work is still only a local one, even if taken in the widest sense of the word.

By means of our historical data and with our system of observation-stations which have been working these ten years, we have determined the average time of arrival of all migratory birds known in Hungary, and there is no doubt that, if our example is followed by other countries, we shall obtain, year after year and for each observation point separately, an always improving picture of the movement and of its fluctuations. This would be a decided gain.

We, Hungarians, work now only with 300,000 critically determined data. This is much, but yet far from enough, if we take into account the areas still absolutely unknown or from which we hardly possess any data.

For the working out of the migration of the Cuckoo, we have hitherto collected from the whole area of distribution 30,000 positive data; but we are still without records from the Iberian peninsula, the Balkans and the larger part of Italy.

From England, on the contrary, we possess a most
marvellous series concerning the appearance of this bird. It was placed at our disposal by Mr. Thomas Southwell of Norwich, and comes from the Marsham family in Stratton-Stawless, who have kept a faithful record of the arrival of the Cuckoo, with a few intermissions, from 1739 to 1904—a fact which does unspeakable credit to the many generations who have continued the work.

When, however, all regions are as well explored and as well known as possible—at least as well as Hungary is—and not till then, will the true nature of the phenomenon of migration be revealed to us.

But, people will say: it is an enormous, a Herculean task to make millions of observations and to work them out methodically. That is true enough!

But, I ask: which of the tasks human intellect has accomplished in the interests of its own enlightenment has been easy? Not one!

It is our evident duty to carry out the work of ornitho-phenological observation: in this task I count, in the first place, on the Ornithologists of England, the heirs of Derham, a man who, as far back as two centuries ago, busied himself with the science of observation.

What is required of us is to throw into the balance a sense of duty, courage, and unbending resolution.

Before closing, however, I must take into account the realistic tendency of the time. We often hear the question asked: what can a knowledge of the migration of birds profit us? The profit is a twofold one.

1. The solution of the problem is in the interest of science, of intellectual progress, and therefore of the highest advantage to mankind.

2. It will only be by a solution of this problem that we will be able to get a correct notion of the great part that birds play in the household of Nature.

The millions of birds which, season after season, wander from one zone to the other, represent an enormous aggregate of labour; and this not only by their flight itself, but by their search for food.

This labour and the search for food act in the organic life
of nature as does the regulator of a steam-engine, at one time accelerating, at another retarding.

By migration this labour is transferred from one zone to the other; it is indispensable and can only be performed by birds, whose bodily structure corresponds in many respects to peculiar tools.

A full insight into the nature of the work done by birds will give us a correct notion of their usefulness or injuriousness to man and lead us to rational action for their protection.

Some notion of the masses of birds in question may be gathered from an inspection of the hecatombs of winged creatures which year by year during migration shatter their heads through contact with lighthouses.

I thank you, Gentlemen, for the patience and indulgence with which you have listened to my remarks.
SUR UN ATLAS DES PLANCHES COLORIÉES DE L'ORNITHOLOGIE DE BRISSON ATTRIBUÉ AU PEINTRE MARTINET, PROVENANT DE LA VENTE ALPH. MILNE-EDWARDS.

PAR LE DR. LOUIS BUREAU.

Directeur du Muséum d'histoire naturelle de Nantes.

J'ai acquis, à la vente Alphonse Milne-Edwards, en Mai, 1901, sous le No. 537, un "Atlas des planches coloriées de Brisson" (sans titre ni texte) que je mets sous les yeux des membres du Congrès international d'Ornithologie.

Cet exemplaire, probablement unique, offre de l'intérêt relativement aux questions de nomenclature et de priorité.

La Xe édition du "Systema naturæ" de Linné, point de départ de la nomenclature, date de 1758.

Elle a été accompagnée ou suivie des ouvrages ornithologiques de G. Edwards, 1758-64, Borlase 1758, Moehring 1758, Klein 1759 (Stemmata avium).

C'est alors que vient prendre rang, dans l'ordre chronologique, l'important ouvrage de Mathurin-Jacques Brisson :

"Ornithologie ou méthode contenant la division des Oiseaux en ordres, sections, genres, espèces et leurs variétés." Paris, 1760, 6 vol. in-4, av. suppl. (en français et en latin, sur deux colonnes), et 261 planches noires.

La même année parurent deux ouvrages de Klein :


Brisson (Mathurin-Jacques), né à Fontenay-le-Comte, le 30 Avril, 1723, fut maître de physique et d'histoire naturelle des enfants de France, censeur royal, membre de l'Académie des sciences et ensuite de l'Institut. Il avait été attaché à Réaumur dans sa jeunesse ; il l'aidait dans ses travaux et

1 Michaud, "Bibliographie Universelle," nouvelle édit.
dirigeait le cabinet de ce naturaliste. Il succéda à l'abbé Nollet pour la chaire de physique au collège de Navarre, et fut chargé par le gouvernement d'établir des paratonnerres sur plusieurs édifices publics, et d'examiner ceux que des artistes et des physiciens moins experts avaient construits. Brisson est mort à Boissy, près de Versailles, le 23 Juin, 1806. Quelques mois avant sa mort, une attaque d'apoplexie effaça toutes ses idées, les connaissances qu'il avait acquises par un travail long et assidu, et tous ses souvenirs, même ceux de la langue française; il ne prononçait plus que quelques mots de l'idiole poitevin qu'il avait parlé dans son enfance.

"L'Ornithologie de Brisson" (1760) comprend environ 1500 espèces. Les planches, au nombre de 261, contiennent 500 oiseaux dessinés et gravés en taille-douce par Martinet, dont 350 ne l'avaient jamais été, et, de ces dernières, 320 n'avaient pas été décrites.

Les planches oblongues sont généralement pliées et incorporées dans les 6 volumes; parfois, elles sont reliées, à part, en deux volumes oblongs, ce qui porte le nombre des volumes à 8.

Un exemplaire de cette édition (1760) de la "Bibliothèque Nationale de Paris," comprend deux atlas oblongs avec planches d'un mauvais coloris et à filet noir. Il figure ainsi sur le Catalogue.


Suivant Brunet, il y aurait des exemplaires sur grand papier.—Ces exemplaires seraient à examiner.

La texte latin de "l'Ornithologie de Brisson" a été réédité in extenso, en 1763 (par les soins de Pallas, dit-on), sous le titre :

"Ornithologia sive synopsis methodica sistens Avium Divisionem in Ordines, Sectiones, Genera, Species, ipsarumque Varietates," etc. Lugduni Batavorum, apud Theodorum Haak, 1763, 2 vol. in-8.


Seebohm⁵ a écrit : "Je tiens pour hors de doute que l'édition de 'Ornithologie de Brisson,' qu'on dit avoir été publiée en 1788, existe réellement et qu'elle est une reproduction de celle de 1760."

Malgré les autorités qui je vies de citer, l'existence de l'édition de 1788 reste problématique :

Brunet⁶ ne la cite pas, et, elle n'existe pas, à Paris, à la Bibliothèque Nationale, à la Bibliothèque du Muséum, aux Bibliothèques Sainte-Geneviève, Mazarine, de l'Arsenal, Carnavalet, ni à la Bibliothèque de l'Institut, dont Brisson était membre. Toutefois, il est bon de faire observer que cette dernière ne fut fondée qu'en 1804.

Si l'édition de 1788 existe, il est peu probable qu'elle ait été achevée, car on ne s'explique pas comment les six volumes, avec le supplément et 261 planches auraient pu tenir en un seul volume in-4°.

Il me semble donc que, désormais, il ne doit plus être permis de citer l'édition de 1788, sans donner des preuves à l'appui de son existence.

"L'Atlas des planches coloriées" de Brisson que j'ai l'honneur de soumettre à l'examen des membres du Congrès, présente les particularités suivantes :

Les planches, au nombre de 261, comme celles en noir de l'édition originale, dont elles sont un tirage sur papier fort, non plié, in folio, grand format (0.42 m. x 0.31 m.), portent,

Sur un Atlas des Planches Coloriées de Brisson.

gravés sur cuivre, à la suite du nom de l'oiseau, la pagination, et, au-dessous : à gauche, le tome et le no. de la planche ; à droite, le no. d'ordre de 1 à 261 destiné au classement (indications qui manquent dans l'édition de "l’Ornithologie de Brisson," 1760, en 6 volumes). Cet atlas est relié (reliure Milne-Edwards) en 2 vol., in folio, contenant les planches 1 à 120, et 121 à 161.

Le tirage a été fait—évidemment en vue du coloriage—sur un papier semblable, en plus forte, à celui des "Planches enluminées de Buffon" (1769 à 1784), œuvre également de Martinet.

Le coloris est manifestement de l'époque, c'est-à-dire de la fin du xviiième siècle, et le filet qui encadre chaque planche est jaune, comme celui des Planches enluminées.

Si'on ajoute que beaucoup de figures n'auraient pu être fidèlement enluminées, sans que le coloriste eut sous les yeux les types de Brisson, ou acquiert la presque certitude que c'est l'exemplaire du peintre Martinet.

À en juger par les additions faites à la lettre et gravées sur cuivre, que j'ai mentionnées, il est probable que l'atlas en question a été préparé pour une édition ultérieure, peut être pour celle dite de 1788, dont je n'ai pu constater l'existence.

Dans la préface de son "Ornithologie," écrite en 1759, et publiée, comme tout l'ouvrage, en 1760, Brisson parle de la x° édition du "Systema Naturae de Linné" (1758), avec quelques critiques sur l'insuffisance des descriptions.

Mais, sa classification, il faut le reconnaître, marque un progrès sur celle de son célèbre prédécesseur. Se basant sur la conformation des pattes et des becs, il divise les Oiseaux en 26 Ordres, contenant 119 Genres sous lesquels sont rangées environ 1500 espèces ou variétés.

Ses descriptions sont faites sur nature, avec méthode et précision, et presque jamais il ne manque d'indiquer où se trouvent les échantillons qu'il décrit.

"Pour ce qui est de l'exactitude des descriptions des autres espèces," dit Brisson, "j'en donne garants les Auteurs qui me les ont fournies ; et afin qu'on puisse les distinguer les unes des autres, j'ai marqué de ** les espèces qui j'ai décrites sur l'Animal même, et de * seulement celles que je n'ai vues qu'en partie. Le reste de leur description et les descriptions
150 Alfred Newton:
entières des espèces qui n'ont aucune marque, je les ai faites
d'après les différents Auteurs cités dans cet ouvrage : et
j'ai toujours préféré de suivre ceux qui ont dit avoir vu
l'Animal."

Si on tient compte que Brisson a publié son Ornithologie
en 1760, deux ans après la x° édition du "Systema Nature
de Linné" (1758), point de départ de la nomenclature, qu'il
a fait souvent usage de la nomenclature binomina latine, en
décrivant des espèces nouvelles, ou concevra de quel intérêt
est l'Atlas colorié, provenant de la Bibliothèque Milne-
Edwards. Tout semble indiquer qu'il a été préparé pour une
nouvelle édition, et qu'il est l'œuvre de Martinet dessinateur
de Brisson, et peintre des "Planches enluminées" de Buffon
(1765-1784), exécutées sous la direction de Daubenton, le
jeune.

REMARKS ON THE PRECEDING.

BY ALFRED NEWTON, M.A., F.R.S.

Dr. Louis Bureau having most kindly submitted to my
inspection the very interesting coloured copy of the plates
from Brisson's "Ornithologie," which he exhibited to the
International Congress of Ornithologists, as well as the
"Mémoire" upon it, which he at the same time communi-
cated to the members, I have great pleasure in complying
with his request that I should offer some remarks thereon.

Until he reached the fifth volume of his work, Brisson
cited only the sixth edition (Holmiæ: 1748) of the "Systema
Natureæ" of Linnaeus. Thenceforward he cited the tenth
edition, published in 1758, and in the "Avertissiment" to
his "Supplément" (vi., p. 4.), stated that he had not been
able to get that work till long after his own had begun to be
printed. It may be observed that sometimes he fails wholly
to cite Linnaeus—as in the genus Ispida and Merops; but I
can suggest no reason for these omissions.

The octavo edition of Brisson, published at Leyden in 1763,
treats the synonymy of the species very briefly, and one may
remark of it that all the species included in the "Supplé-
ment" to the first edition (Paris: 1760) are relegated to their
Remarks on the Preceding.

proper place according to the system followed. This shows that the second edition must have been supervised by some one having competent knowledge of Ornithology, and turning to Walsch’s "Naturforscher," for 1774 (Heft 1, pp. 267, 268 note), one finds on the authority of "C. G. v. M." (Christopher Gottlieb von Murr) that the Editor was Pallas.¹

What strikes me as the most extraordinary thing in Dr. Bureau's copy of these plates is the change in their lettering, which he has accurately described in his "Mémoire," but it must be remarked that the pagination inserted in the copy is that of the edition of 1760, and includes references to the "Supplément," which of course could not have been done until the work was finished, and, moreover, that could not have any reference to the alleged edition of 1788. Consequently this copy of the plates throws no light on the question of the existence of such an edition, and though this copy be at present the only one known showing the change of lettering I can hardly think that it can be unique. To change the lettering of so many plates (261) must have been costly, and one can hardly imagine the object of making it, if only a single copy of each was to be printed. Other copies I think are likely to be found now that attention is called to this peculiarity of lettering—not at all necessarily coloured, but in black and white as they are ordinarily found.

With regard to the coloration of this copy, when compared with that of the "Planches enluminées," also executed by Martinet for Daubenton, it seems to me probable that the same colourists were employed on both works, for the effects of time on each are nearly the same. The same tints, whether keeping their colour well, faded, or vanishing, show the same results. In each the greens have suffered the most by becoming much darker. But this same condition of the plates shows that the colours used had the same chemical composition, and thus that the colourists of the two works were most likely the same. I must, however, add that the coloration of the "Planches enluminées" seems to have

¹ Referring to the six species of Couroucou given by Brisson in his original work, von Murr writes: — "Aber der vom Herrn Pallas besorgten Leydener Ausgabe, in 8, 1763, T. II, ist, S. 91, der Trogon Ceylonensis Le Couroucou de Ceylon völlig beschreiben," u. s. v.
been more carefully executed than that of this copy of Brisson's work. I have been long interested in a species of parrakeet, the *Palaeornis eques*, which formerly inhabited the Ile de Bourbon (now called de la Réunion), where it has been for many years extinct. This bird is figured by Brisson (iv., pl. 27) and by Daubenton (No. 215). Neither figure can be said to be good, but the latter fairly agrees with Buffon's description of it ("Hist. Nat. Oiseaux," vi., p. 143), while the former fails to show many of its peculiarities, though these are mentioned in Brisson's description. For instance, there is no indication of the "bande transversale jaune," which he mentions as being under the throat, nor of the "étroite bande noire qui se recourbe de chaque côté de la gorge, et remonte jusqu'au demi-bec inférieur," while this lower mandible is reported as being wholly bright red, instead of being "du rouge obscur à sa base." That these are not very important characters, I admit; but it is on little points like these that the value of a portrait, whether man or bird be the subject, rests, and the want of attention to them is here evident.

I cannot conclude these brief remarks without expressing my deep sense of indebtedness to Dr. Bureau for the great pleasure he conferred on me by allowing me to examine this very curious work, and my congratulations on his liberality in entrusting so valuable a possession to my hands.
THE FIRST BIRD LIST OF EBER & PEUCER (1549),
AND ITS RELATION TO THE
"AVIUM . . . HISTORIA" OF WILLIAM TURNER (1544).

With Notes on the Editions known in this country, and their location.

By HENRY SCHERREN.

The publication in 1903 of Mr. A. H. Evans's English version of William Turner's De Historia Avium gave Prof. Newton the opportunity of calling attention to the Appellationes Volucrum quoted by Gesner under the names of Eber and Peucer. In a notice of Mr. Evans's work Prof. Newton offered a friendly challenge to German ornithologists. "We have taken from them," he said, "an English author whom they have long held in captivity. Why should they not generously retaliate by setting free a prisoner—nay, two prisoners—of their own nation, and give us a reprint of the Appellationes Volucrum of Eber and Peucer?" No German ornithologists have responded; and though I am not in a position to offer a reprint, as is here hinted at, it may be that a few notes on the subject may possess some interest; and I have to express my obligations to Prof. Newton for valuable help and encouragement.

Both Eber and Peucer are better known as theological disputants in a stormy period than as ornithologists working in the field, or pursuing their investigations by means of skins or books. According to the Allgemeine Deutsche Biographie, Paul Eber was born at Kitzingen in 1511, and became a professor at Wittenberg, where he lectured on philosophy, philology, mathematics, astronomy, history, and especially natural science, in which he followed the Ancients. He published at Wittenberg, in 1556, an explanation of the Second Book of Pliny's Natural History; but there is no copy in the British Museum or the Bodleian Library. We cannot, however, place implicit reliance on the article, for it puts the publication of the first edition of the Vocabula at Leipsic in 1556, while two earlier editions are known in this
Henry Scherren:

country. Caspar Peucer, born at Bantzen in 1525, became, in 1554, professor of mathematics at Wittenberg. He married a daughter of Melanchthon, and was the bosom friend of Luther. The Bird List ascribed to them was not, so far as I can ascertain, published independently, but formed part of a small volume, that went into at least six editions. The title page of the first edition in the British Museum runs thus:—

**VOCABVLA | REI NUMMARIAE | pôderum & menfurarum Græca | Latina, Ebraica quorum intel- | lectus omnibus necellarius eft | collecta ex Budei, Iachi- | mi Camerarij & Philippi | Melanth. | Annotationibus**

Additæ sunt & Volucrum & | Pîlcium appellationes collectae, a Paulo Ebero & Casparo | Peucero. | Witebergae | 1549.¹

The scope of the book is sufficiently indicated by the title. There is no pagination; and the make-up consists of title and blank; the weights and measures, probably the work of Eber and Peucer, 41 pp.; names of birds 10, of fishes 9, of plants and trees 7, Authors’ address to the reader 8, and blank, in all = 78.

**VOLVCRVM | ADPELLATIONES.**

AQuila, aëros Adler genera aqui | larum Sex πέγαρος uel veβροφόνωρ hinnularia | huius pullum prius- | quam cauda albicet Im | musulum, vocant, Romanis | anguri- | bus notum. p. 30.²

μύρφος que Næuia, νεττοφόνωρ que | anataria πλαγγος | πέρκνος. p. 32.

μελαναίετος fululía λαγωφόνος. p. 34.

περνιόπτερος, γυπαίετος & δραυπε- | λαργος quæ Ciconia | montana. p. 34.

¹No pains have been spared by the author and his friends to make the transcript verbally correct. He regrets that it cannot claim to be literally so, owing to the difficulty of reproducing the contractions and ligatures of the original text in a modern-faced type. Italic letters in a Latin word represent a contraction in the original.

²These figures refer to Mr. Evans’s edition of Turner’s “Birds,” where further information will be found.
The First Bird List of Eber and Peucer.

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Δλιάτερος que marina aquila ein fischadler. p. 34.

γρήγορος ein edelarn. p. 36.

Accipiter iεραξ decem accipitrum | genera p. 16.
Θρυόρχης a numero testium latine bu | teo ein ßusaer. p. 16.
Αυσάλων aegalo anglice fnerlæ. p. 16.

φαουσοβονος fμβάνυτυος accipiter pa | lumbarius ein Σyther. p. 18.

γερμανικ ορίζων. p. 16.

Circus ein falck. p. 18.

Accipiter iεραξ decem accipitrum | genera p. 18.

θυτρωρχης Subbuteo ein Ἠβίχτη | Cybindus Plinio nocturnus accipi | ter qui perpetuum bellum cum aquí | la gerit. p. 18.


στρυγίας fringillarius ein stornfalk. p. 18.

λεόν η fμνυλόδος rubetarius Ρu | neraher. p. 18.

Ardea éρωδος ein Reiger tria ge- | nera harum. p. 38.

άυστραίας stellaris eadem que onocro | talus Plinij Rordrume rofdom fωλξ. p. 38.

Auriuittis χρυσορίκτης goldfinck thumpfaff gumpel. p. 40.

Atricapilla melanokόρφος grafs- | mücklein, alias curruca ιπολαίς. p. 44.

Alauda κορίδος η κορίδαλος cristata | que galerita & cafsita dicitur ein leech gregalis que ger. ein heidelerech. p. 80.

Anser χίν γανς. p. 22.

Anas νηττα endt. p. 22.

Argathvlis άκανθελις. p. 102.

CAPRIMULGUS ΔΥΡΟΘΥΛΑΣ EIN PFALL | quiddam noctuae simile gran- | dior merula. p. 48.

Carduelis θραυσίς ein distelsfinch. pp 40, 50.

Ceruleo κνάυος ein brachbogel zimmer. p. 52.
Collurio κολλυριον de genere tur | dorum eis Μεαμετ

vagill.

Culeilega κυκτολόγος τιν bath- | stelt veli matracilla.

Ciconia πελαργος τιν storchp.

Columba περιστερα τιν taube ge | nera columbarum.

Liuia πελειας τιν holsttaube.

Palumbes φαττα τιν ringstau- | be.

Turtur τρύγων τιν turteltaube.

Pipiones iunge tauben.

Vinago δωρις species colurnae.

Coturnix όρτες τιν wachtel.

Cornix κορωνη τιν Λεια.

στερμολόγος frugilega species | est corniceris τιν ήχερ.

Cycnus κωνός τιν Schwan | ior.

Ceruus κοραξ Ῥαβ.

Cerulus κύμιλος.

Cuculus κοκκες Χουκικ.

Curruca ντολαις titling anglice | iuxta Albertum γραμμ- |

rhenu.

Crex κρης | τιν sechrich.

Cinclus κυκλος ἤ Ἰεινβίφφερ.

Cataracta καταρακτις.

Cinamomum κυμαμαμον δρατων.

Chalcis χάλκις quem Homerus | κυμάδηρ.

Fringilla στιχή buchfinch.

Fringilla montana δραστιχ τιν | rowedt.

Ficedula συκαλός ζειζζίν.

Florus ἄδος imitatur vocem | equi.

Fulica αείθφος willcume.

Gauia λάρος Gauia alba τιν χι- | bitz Gauia cinerea,

segal.

Gallus ἀλεκτωρ ἱαν.

Gallina ἀλεκτρως ἑμν genera gallinarum.

Gallinago ἀσκάλωπαξ ἱόλης- | schneppfr.

Gallinae Nouelle mertshennen.

Gallinnæ veteranæ kluchhenen.

Matrices bruethenen.

1 The i has dropped from the word "culicilega" above.
The First Bird List of Eber and Peucer.

Gallina Aphricana uel Melea-gris eiu hurhenn. p. 82.
Vragen eiu aurhau tētra. p. 166.
Attagen eiu birchhau ᄜttagēn | attagēs. p. 40.
Perdīx eiu felthun.
ōtus lagodias ġaschthun.

Galgulus kōloś gruensprecht. p. 88.
Graeculus kōlos trīa eorum ge- | nera. p. 90.
Korakiaõ vēl Pyrthocorax birchdātel. p. 90.
Monedula līkōs ģ Bōmolōkos dōtel. p. 90.
ϕαλοκοκοραQDebug Helusiticorum walb- | rapp. p. 92.
Grus ġvānus eiu kranich. p. 94.
Vipiones tunge kranich. p. 96.

Cinclus kūgōlos .defaultValue σtouvngvēn eiu stünhiber, eadem est
ēvēx a- | pud Theocritum. uel motacil | la Bachsteltz. p. 22,54.

Iunco χoīkulos eiu viettmuss. p. 102.
Lingulaca γλωττis. p. 104.
Ligurinus vel Spinus, oḵavūs | kirīsbingh. p. 104.
Luscinia aíthōn nachtigal. p. 108.
Luteus χλοφερ eiu gēlgorst. p. 106.
Luteola χλοφēs eiu ʒirifich. p. 108.

Mergus dēthē eiu daucher. p. 110.
Merops gruensprecht sed dubium. p. 112.
Merula kōttvphos amfēl. p. 114.
Motacilla σtouvngvēs hach steltz | quam putant esse eam
qua e a | Theocrito dicitur αγx. p. 54.

Noctua γλάεx nachteln genera | Noctuarum. p. 120.

vaنكοκοραQDebug cicunia,
ελεός aluco.
āγγολος vlula. p. 130.
Olor cóntos Schwan.
Ortygometra matrix.
Cenchramos coturniens dux ein | Schrer.
Offifraga nutrit pullos aquilarum.
Φρίνη sanqualis Plinio.

Parus acéphalos ein meus, genera | parorum.
Fringilago στιγάτης ein Koelmeis.
atéganos monticolae ein meusmeis.
Parus tertius quem Angli Non- | niam nominant.
Pardalus puluer.
Passer στροφέος speirling.
Passer magnus græsthammer.
Pauo τίων pflauw.
Phoenix.
Pica κόττα ein elster

Picos Martius δρυνοκολαπτής ein | specht genera picorum
Mar- | tiorum tria.
Minimus minor merula græs- | specht.
Medius, major merula ein græf- | specht.
Maximus paulo minor gallina | elster-specht.

Psitacus papagei Ψιττάκος.
Platea τελεών lostfrigan.
Porphyrio.

Regulus τροχίλος πρεσβίτος βασι- | λεως ζαυνχουμίρε.
Rubecula ερυθράκος rottkelche.
Ruticilla φωνικούρος rotlitert.
Rubicilla πυρρώλας ein bludi-finck.
Rubetra βάτισ ein klein bruch- | bogle.

Salus áγιος pugnat cum asino.
Sitta ɛττη ein nulhacker ein | meri-specht.
Struthiocamelus οτρούθος λυβίκος | ein straus non volat
nec a terra attollitur.
Sturnus ɛφός ein stare.
The First Bird List of Eber and Peucer.

Tetrao τέτριξ ουρα τυάπ. p. 166.
Tinnunculus κεκχως στριγαλ. p. 166.
Tyrannus πυράννος γαλάθενειν. p. 168.
Trynga πρυγγας ωαλφρειν. p. 170.
Visciuros ςιβαρος προπιε ειν | θραμμετβογελ. p. 170.
Pilaris προχας ειν δροιτελ. p. 172.
Iliacus λαος ειν ωτιγιατ βο- | γελ. p. 172.
Vireo χιλόριον λιττουλ. p. 172.
Vrinatrix κολυμβρυς ειν δευ- | χερ. p. 176.
Vultur γιψ ειν γεφθερ. p. 176.

The List given above is a transcript of that in the first edition of the Vocabula; it is purely nomenclatural, though some descriptions were added in the second edition (1552). To exemplify this, the entry Caprimulgus, in which the name Pflaff recalls the Swiss goatherd with whom Turner conversed, is given from the second edition, and a note is added on the same passage in the other editions. Turner surmised, of course correctly, that the goatherd was jesting with him. The jest seems to have appealed to Eber and Peucer.

1552. WITEBERGAE | M.D. LII. Caprimulgus, ὁ ἄγοβηλος, ειν Pflaff, in | τερδιν ρεεετιτ, νοττα ρεεντι αεετι αεεμε | merula, minor puεκλο το ςφος βλακκος ρυγι | ubera caprarum | fur tim, que exhausta emoriunt- | tur, & capris quas ita mulserunt, cecitas oboritur.
1558. VITEBERGAE. | ANNO, M.D. LVIII. The same wording but the omitted ε in βλακ[ε]κος is inserted, and the whole has been reset.
1559. LIPSIAE | M.D. LIX. The wording the same, but different type. The Greek, too, is of a fount unlike the rest.
1570. LIPSIAE M.D. LXX. Identical.
1578. Not seen by me.

A single passage in Gesner De Avibus (iii., 104) in which Eber and Peucer are referred to is known to me. It runs
190 Henry Scherren.

thus: "Eber et Peucerus boscades interpretantur anates sylvestres, quibus rostra latiuscula et sima, color cinereus nigredine variatus. Germanice dictus Mittelendten id est mediae magnitudinis anates." In the Vocabula of 1549 the entry is simply "Bosca aquatica"; but in that of 1552, the only other which Gesner could have used, the entry runs:—

\[ \text{Borcaoues, quibus rostra latiuscula } \& \text{ sima, color nigredine variatus, mittelenten.} \]

It is only right to say that Prof. Newton has informed me that there are a good many other passages in Gesner. There are copies of six editions in this country, 1549, 1552, 1558, 1559, 1570, and 1575. The first five are in the British Museum Library; the Bodleian has a copy of that of 1558, and Prof. Newton possesses one of 1575, which I have not yet seen.

I submit that the occurrence of the jest that pfaff, or paphus, was another name for the Caprimulgus, only to be found, so far as I can ascertain, in Turner, who first gave it currency, and in the List under discussion, is strong evidence as to a common origin.\(^1\) This probable conjecture is turned into certainty by the testimony of the compilers of the Vocabula. In their address to the reader they have specially referred to the List of Birds (to be found in all the editions known to me): "Addidimus et volucrum adpellationes magna ex parte collectas a viro doctissimo Anglo, amico nostro, qui utinam cum et mari et fecundioribus fluminibus propior sit etiam piscium nomina colligat."

Only to William Turner can these words apply. To him, therefore, must be given the credit of this List in its original form in the edition of 1549; and the obligations of the compilers did not end there, as will be seen from the short extract from their edition of 1552.

\(^1\) Since writing the above I have found from Grimm's Wörterbuch that pfaff is still sometimes employed in the same sense, and that Brehm (Das Leben der Vögel, 1861, p. 475) so used it.
ON EXTINCT AND VANISHING BIRDS.

A short Essay on the Birds which have presumably become extinct within the last 500 years, and also of those Birds which are on the verge of extinction, including a few which, though not yet so far gone, are threatened with extinction in the near future.

By the Hon. Walter Rothschild, Ph.D., M.P.

The theme I have chosen on this occasion doubtless strikes many as being a rather melancholy one; but its extreme interest, I hope, will compensate for its sadness.

There may be some also who think that I ought not to include under this heading such birds as the Moas, Harpagornis, Cemiornis, etc., which have been attributed to the geological Pleistocene epoch by such great authorities as Dr. H. O. Forbes. I think, however, that we have pretty conclusive evidence that many of the Moas were alive up to 300 years ago, and as the other birds were clearly contemporaneous they ought to be included in this paper. Taking first the absolutely extinct species: these are at once divisible into two main sections: firstly, those species only known at the present time from bones, eggshells, and a few feathers; and secondly, those of which entire specimens exist in museums, or of which we know the exact appearance from paintings, drawings, and the descriptions of early travellers.

Both these categories are again divisible into three separate sections: first, those exterminated by man; second, those which owe their extermination indirectly to man; and third, those which appear to owe their extinction entirely to natural causes, either outward influences or the physical condition of the creatures themselves.

In the first section we find species which have been exterminated by man, who used their flesh as food, while others, such as the Dodo, appear to have been to some extent wantonly slaughtered. In the second section, man has contributed indirectly to the destruction of these birds by the introduction of animals of prey, noxious insects, and other birds. In section 3 the outside influences consist of volcanic
eruptions, destruction of food, and apparently the exhaustion of the protoplasmic constituents of the creatures themselves. The latter circumstance, as a factor in the extinction of species, is certainly the most interesting, as it raises an almost unlimited number of questions for discussion, and opens up a very wide field for research.

Starting with the birds only known from bones, etc., I will take the Ratitae first, as they have awakened the most widespread interest. The two families Dinornithidae and Aepyornithidae included the largest known of birds, both fossil and recent. They were inhabitants of New Zealand and Madagascar respectively.

According to the traditions of the Maoris, when they arrived in New Zealand, some 600 years ago, the islands were covered with these huge struthious birds, which varied in size from that of a bustard to the enormous Dinornis maximus, which was over 12 feet in height. According to Maori traditions (which are very correct in most things, though scanty in amount) they used to kill very few in a direct manner, as the hunting of Moas, as these birds were called, was uninteresting owing to their sluggish, slow habits, but they killed them wholesale by setting fire to the scrub and grass, and then collecting the ready roasted meat. This is proved by finding remains of hundreds of Moas which have perished in the swamps, evidently fleeing from bush fires, as some of the bones show traces of fire. Of the Moas the following 30 species, divided by recent authors into 8 genera, are described: I. Dinornis with 7 species; maximus, the largest, 12 feet high, Glenmark Swamp, South Island; robustus, one of the commoner forms of which a fine almost complete skeleton is exhibited, South Island; novaezealandiae, a form which has received a number of names, giganteus, validus, etc., and is very rare, Glenmark; potens, east side of South Island; excelsus, Te Aute; torosus, northern part of South Island; and struthioides, a species common to both islands. II. Anomalopteryx, 2 species; didiformis from both islands, and parva from the South Island. This is the smallest of the Moas, with the exception of Pseudopteryx gracilis and Mesopteryx curtus. Mesopteryx, 7 species; antiquus, geranoides, and curtus, from the
North Island, very small species; *didius*, a small species which had blackish-grey feathers tipped with white, and was feathered on the legs down to the phalanges; it evidently was the Dinornithine representative of the *Rhea darwinii* among existing Ratitae; *M. dromaeoides* was found in the North Island, and *plenus* is the South Island representative of this race. *M. casuarinus* is a species common to both islands, and known not only by several more or less complete skeletons, but by masses of bones from the South Island, as well as complete eggs, and the feathers were pale brown, with darker centres and edges, similar to those of *Apteryx australis*. *Emeus*, 3 species; *crassus*, from the South Island, is very common, as also is the larger *rheides*; *gravis* was a smaller form also found in the South Island. *Pachyornis*, 5 species; *elephantopus*, a short but extremely bulky bird, with enormous, nay, gigantic, legs and feet; it came from the South Island, as do all the *Pachyornis*. *P. ponderosus* is a form distinguished from the former principally by smaller size and higher and rounder processes at the hinder angles of the basi-sphenoid of the skull; *P. pygmaeus* is very rare, and imperfectly known from 2 metatarsi, 1 femur, and 1 tibia, but is evidently a *Pachyornis*, and a dwarf one; *P. immanis*, the fourth species; the fifth species is *P. rothschildi*, Lydekker, of which the type bones are exhibited. *Megalapteryx*, 2 species; *hectori* is the South Island species and *tenwipes* is the North Island species which has the distinction of being the only North Island form of which the skull is known properly. *Palaeocasuarius*, with 3 species, was discovered by Dr. H. O. Forbes, and the following are the 3 forms: *haasti*, larger than any cassowary, *elegans*, as big as *C. casuarius*, and *velox*, a small form. *Pseudapteryx*, 1 species, *gracilis*, is a North Island form, to my mind also a Moa, and not an ancestor of *Apteryx*.

The Moas, except *M. dromaeoides* and *plenus*, were distinguished by the total absence of wings and many species even having completely lost the shoulder girdle as well. They probably all had a hind toe, but it has been only proved in four or five.

The Moas were probably exterminated in the North Island about 500 years ago, and in the South Island practically so about 100 to 150 years later, though it is
probable that individuals lingered on up to 1650 or 1700. It is evident from all traditions that the Maoris only became cannibals after the extinction of the unfortunate Moas.

I exhibit a skeleton of Dinornis robustus, one of Anomalopteryx parvus, cast of egg, and some feathers of Mesopteryx casuarinus, and an egg and drawing of M. didinus, as well as a restored drawing of Dinornis giganteus, a skeleton of Anomalopteryx didiformis, and a skeleton of Pachyornis elefantopus.

We now pass to the Madagascar Aepyornithidae, which are only known from bones and eggs; there are 13 species described, divided into two genera, Aepyornis and Mullerornis, of which A. titan is much the largest; Aepyornis with 10 species, maximus, medius, modestus, ingens, lentus, mulleri, tita, cursor, hildebrandti, and grandidi, of these the most perfectly known is A. hildebrandti, of which several nearly complete skeletons are in museums. Of maximus, titan, and medius, besides various bones, complete eggs are in collections. The three species of Mullerornis, e.g., M. betsilei, agilis, and rudis, are small slender forms, as yet very incompletely known. The Aepyornithidae were enormously bulky birds and had a hind toe, though even A. titan was not so tall as Dinornis maximus.

I exhibit a skeleton of Aepyornis hildebrandti, some bones, a restored leg, and two eggs of A. titan, and an egg of A. maximus.

In the deposits in Madagascar in which are found the remains of Aepyornis there also occur numerous bird bones. In addition to a number of odd bones of Ducks, etc., Mr. Andrews has described four species—two Geese, a Darter and a Rail—Centornis majori, Chenalopex sirabensis, Plotus nanus, and Tribonyx roberti from the collections of Dr. Forsyth Major and his assistant, Monsieur Robert.

We now come to a very large number of most interesting species, known only from osseous remains, which were contemporaneous with the Moas in New Zealand. I will first deal with the Rallidae, as they have excited immense interest owing to the discovery of a living species of Notornis. The first of these are the large Ostrich Coots Aptornis, comprising
two species, a smaller, only known by one almost complete skeleton in the Canterbury Museum, New Zealand, and the type bones, and which was named otidiformis by Owen, and the larger A. defossor, to which all other known bones belong. This genus is distantly related to Ocydromus. We next find a large extinct Woodhen, Ocydromus insignis, Forbes, of more than double the size of the living forms. We now come to the remarkable genus Notornis, which was founded by Owen, on a North Island skull. I propose to deal further with this genus under 'Birds on the verge of Extinction,' and so will only mention here the species known from bones only. These are Notornis mantelli and Notornis parkeri, both from the North Island, the latter being smaller and slenderer.

Then New Zealand had, at the period dealt with, a number of very remarkable flightless Geese, allied to the Butterfly Goose of Australia, Cereopsis; these giant geese were found in several species all over New Zealand, of which Cnemiornis calcitrans and minor occurred in the South Island, and C. gracilis in the North Island. A large Duck allied to the Australian B. lobata, and called Bizziura lautouri, as well as a true Cereopsis Goose, Cereopsis novaeseelandiae, have turned up in the New Zealand bone deposits of this epoch. A very large Cormorant, Phalacrocorax major, has also been described, and Chenopsis sumnerensis, an extinct ally of the Australian black Swan.

In addition to these we find that there lived contemporaneously with the Moas, a huge Eagle, Harpagornis moorei, which probably fed on small Moas, and was, apparently, like the famous Samar Eagle, Pithecophaga jefferyi, discovered by Whitehead. We also have bones of two very large Harriers, Circus hamiltoni and C. teateensis, discovered by Mr. A. Hamilton, and a giant Penguin, over 6 feet high, Palaeoedypus antarcticus, as well as a Raven, Palaeocorax antipodum.

By far the most interesting discovery of late years has been, however, that of the beds of bird remains on the Chatham Islands. Here were found, half buried in the sand of the low cliffs, great masses of bird bones of many species, both living and extinct, and the condition and situation of these bones prove very conclusively that the cause of extinction in
many cases was purely physical, though in the Moriori middens most of the species occurred. Another most interesting fact connected with these extinct Chatham Island birds is that some of them are representative species of the forms peculiar three hundred years ago, to the Mascarene Islands.

Among the many hundreds of thousands of bones from these deposits in the possession of the author and Dr. H. O. Forbes, it has been possible to make out a number of species such as *Nestor, Ocydromus, Carpophaga, Columba, Chenopsis, Catarrhactes, Puffinus, Diomedea*, and many others, all of which still await final description, but the best represented forms consist of the extraordinary Chatham Raven, *Palaeocorax moriorum*, the large Rail, *Diaphorapteryx hawkinsi*, a Coot, *Palaeolimnas chathamensis*, another Rail, *Nesolimnas dieffenbachi*, and a Snipe, *Gallinago chathamica*. *Diaphorapteryx* and *Palaeolimnas* take the place on the Chatham Islands of the Mascarene *Aphanapteryx broecki* and *Palaeolimnas newtoni*.

In the Mascarene Islands, during the excavations in the Mare aux Songes and on Rodriguez, besides the bones of the birds we have fuller knowledge of from the old travellers, there have been found bones of other species, and the following have been established from the evidence of odd bones or even fragments only: Mauritius Goshawk, *Astur alphonsi*; Mauritius Barn Owl, *Strix sauzieri*; Mauritius Bittern, *Butorides mauritiana*; Mauritius Lobed Goose, *Sarcidornis mauritianus*; Mauritius Duck, *Anas theodori*; and lastly, the Rodriguez Owl, *Athene murivora*; and the Rodriguez Dove, *Alectroenas rodericanus*. Of these we know nothing except that they were first mentioned about 1560, and lasted till about 1680.

We now come to the second section of entirely extinct birds, namely, those of which we know the external appearance. I will commence with the avifauna of the Mascarene Islands. When the early Dutch and French travellers first landed on these islands they were astonished to find them covered with gigantic land tortoises and a multitude of very strange birds. The most widely known and striking birds were the large flightless Pigeons, the Dodos, or Drontes. There were 3 species of these birds, viz., the Dodo, *Didus ineptus*, of Mauritius; the White Dodo, *Didus borbonicus*, of Réunion; and lastly, the Solitaire, *Pezophaps solitarius*, of Rodriguez.
Of the Dodo we have a number of skeletons, drawings, and a few mummified remains, and at least two were exhibited alive in Europe. This unfortunate and defenceless bird was slaughtered by the hundred by the sailors who often for months lived on its flesh, but also often killed it for pure mischief, while finally the work of extermination was completed by the pigs, goats, and monkeys, introduced into the islands. The White Dodo is only known from two Dutch pictures done from a live bird brought to Amsterdam; while of the Solitaire we have a number of very complete skeletons and descriptions by Leguat and Dubois.

Then we find a number of curious Parrots, which have completely vanished, but various drawings by old travellers and the careful descriptions of Leguat and Dubois enable us to know their appearance. On Mauritius there were two, one of which we only know from Dubois’ description to have been green, with a red head and tail, which I will call Necropsittacus francicus, nom. nov.

The other was the gigantic Lophopsittacus mauritianus, a bird considerably larger than a Microglossus, and of a grey-blue colour, and with a unique upright crest. Of this bird bones and a drawing only exist. On Bourbon were several Parrots, one the famous Mascarinus mascarinus allied to Coracopsis, but coloured brown, black and lavender, with red beak. Of this there is one stuffed specimen in Paris, and one in Vienna. A second was a Palaeornis, with double collar, named eques, which is now asserted to be the same as the Mauritius species, but I doubt this very much. In the case of my surmise being correct, the Mauritius bird must stand as Palaeornis echo, Newton. On Rodriguez were two Parrots; one, Necropsittacus rodericanus, a very large Parrot allied to Palaeornis, but with head, tail, and wings red. Of this we have bones as well as Dubois’ and Leguat’s descriptions; the second species was grey, probably a Vaza (Coracopsis).

On Mauritius were also found two smaller Pigeons, the violet, grey, and red Alectraenas nitidissima, allied to A. pulcherrima of the Seychelles, and the brownish-red Nesoenas mayeri. The former is now only represented by three stuffed specimens—1 in Mauritius, 1 in Edinburgh, and 1 in Paris, while of the latter 3 are in Paris, 3 in London, and 2 in Cambridge.
On Mauritius also occurred a large Scops Owl, known only from the drawing and description found among Commerson’s journals and the works of the artist Jossigny.

Then all the Mascarene group were inhabited by some curious Starlings. On Réunion the Crested Starling, *Fregilupus varius*, was found, of which a number of specimens are known; among others: 4 in Paris, 4 elsewhere in France, 1 in London, 1 in Stockholm, 1 in Florence, 1 in Turin, and a few others. Of the Rodriguez black and white *Necropsar rodericanus* no specimen is known, but a good description is given by Leguat, and we have numerous bones. Of *Necropsar lequati* only the type in the Liverpool Museum from Verreaux is known, and that, though probably from Mauritius, is marked as coming from Madagascar. Each of the islands was inhabited by several species of Rail and Coot. On Mauritius we know of 2, the so-called Poule Rouge, *Aphanapteryx broecki*, of which we have numerous bones and a good sketch by Broeck, reproduced by Frauenfeldt, and the Coot, *Palaeolimnas newtoni*, of a black colour. On Rodriguez we had 3 species at least; the large, 6 feet high, “Géant,” *Leguatia gigantea*, white and pink; the “Oiseau Bleu,” like a gigantic Notornis, or titanic blue Water Hen, which is called *Apterornis caerulescens*, and lastly, Leguat’s Rail, *Erythromachus lequati*, like a large dark-grey Weka, with the naked space round eyes, bill and legs red. Of these we only know the “Géant” and “Oiseau Bleu” from Leguat’s descriptions and figures.

We have no indications of Rails on Réunion, but I feel certain there were representative species now extinct.

The giant Coot, *Palaeolimnas newtoni*, was twice the size of our *Fulica atra*, and black, with a very large white frontal shield, only known from bones and description. The large species of Scops Owl mentioned before, Professor Oustalet has characterised from the drawing by Jossigny, and the very full description of Commerson, as *Scops commersoni*. Then there existed on the Mascarenes, in Leguat’s time, a large Heron of the type of a Night Heron, and which was named *Ardea megacephala*, by Milne Edwards. We also find in the older voyages mention made of several species of Hornbill, *Foudia bruante*, is also quite extinct on Rodriguez.
Bucerotidae, which must, from their descriptions, have been near the species of Hydrocorax still existing.

We must now pass to the group of islands in the Pacific, consisting of New Zealand, the Chatham Islands, etc., which will, I am sad to say, furnish us with many examples for this essay.

First, taking the outlying islands: on Norfolk and Philip Islands the fine Parrot, Nestor productus, has quite vanished, as well as the great flightless white Rail, Notornis alba, and the fine green-and-white fruit Pigeon, Hemiphaga spadicea. Of the Parrot, some 30 specimens exist in museums, among which there may be mentioned 3 in the British Museum, 1 in Liverpool, 2 in the provinces, 1 in Florence, 1, the type, in Philadelphia, 1 in Washington, 1 in Tring. Of the Notornis, we only know one solitary specimen, in the Vienna Museum, from the Leverian collection. Of the Pigeon, there are about a dozen known: 1 at Tring, 1 in the British Museum, 3 at Liverpool, 1 in Paris, 1 in Frankfort, 1 at Naples, 1 in Philadelphia, 1 in Wiesbaden, and, perhaps, 2 or 3 others. The cause of extinction of these three fine birds is not far to seek, when we remember that for more than sixty years their home was the station for the more refractory and desperate convicts transported from England. On the Chatham Islands the two flightless Rails, Cabalhus modestus and Nesolimnas dieffenbachii, have been quite wiped out by the cats, rats, and weasels introduced by the settlers; then the little brown-and-white Fern bird, Bowdleria rufescens, and the so-called black Tit or black Robin, Miro traversi, have fallen victims to man and his satellites.

Then the New Zealand Quail, Coturnix novaezealandiae, has become absolutely extinct through the combined actions of man, bush fires, and vermin. On the North Island there existed up to a few years ago a species of Laughing Owl, Secoglaux, called by Sir Walter Buller Secoglaux rufifacies, but the only known specimen is a young bird of which the tail and hind-neck are artificially made up from two other species of Owl, so that I, for one, would never have described it.

From Kangaroo Island the Black Emu, Dromaeus ater, has been hunted down out of existence, and only 4 specimens remain,
1 stuffed and 1 skeleton in Paris, 1 skeleton in Florence, and 1 stuffed in Liverpool. On Stephens Island there existed up to a few years ago, unknown to man, a small rock Wren, *Traversia lyalli*, but it fell a victim simultaneously with its discovery, for the only known 11 specimens were saved from being devoured by the lighthouse cat, which has completely exterminated the species. These 11 specimens are distributed as follows: 8 at Tring, 1 in the British Museum, and 2 in New Zealand.

The next places which have to be discussed are the Pacific and Polynesian Islands. Starting with the Japanese empire we find the very extraordinary brown and crimson Grosbeak, from Bonin-Shima, *Chamaepructus ferreirostris*, which has never been found since Kittlitz’s time, and of which only the two types in the collection of the British Museum and those collected by Kittlitz are known, while *Geocichla terrestris* was only found by the latter. Coming to the Hawaiian Islands the list of vanished forms is rather large; on Oahu *Psittirostra psittacea deppei*, *Hemignathus ellisiatus*, *Heterorhynchus lucidus*, *Moho apicalis*, *Phaeornis oahuensis* and *Pennula sandvicensis* have completely ceased to exist; on Hawaii also we find *Chaetoptila angustipluma*, *Ciridops anna* and *Pennula millsi* are absolutely extinct. Of these there only exist of *Psittirostra p. deppei*, the 2 types at Tring, a fine series at Berlin, most of which have only recently been transferred there from Kiel; of *Hemignathus ellisiatus* there are 1 in Berlin, 1 in Paris, and 1 in Philadelphia, of *Heterorhynchus lucidus* there exist 1 in Berlin, 1 in London, 1 in Liverpool, 2 at Cambridge, 2 in Philadelphia, and 2 in Paris. Of *Moho apicalis* there are 2 in Vienna, 2 in London, and 1 at Tring. Of *Phaeornis oahuensis* there is no specimen extant. Of *Pennula sandvicensis* we only possess the unique specimen in Leyden, and Forster and Ellis’ drawings. Of *Chaetoptila* there exist only the type in Washington, 1 specimen at Cambridge, 1 in Honolulu, and 1 at Tring. Of *Ciridops anna* only 3 specimens are known, 2 at Tring, and 1 in Honolulu. Lastly of *Pennula millsi*, 6 specimens all told are on record, 2 at Tring, 1 at Cambridge, 2 in Honolulu, and 1 is said to be in Mexico.

In Polynesia we find that *Hypotaenidia pacificus* has
On Extinct and Vanishing Birds.

entirely vanished from Tahiti, while *Pomarea nigra*, of the Society, Marquesas and Tongatahu Islands, is said to have ceased to exist.

We also must reluctantly admit that in all probability the two Sandpipers, *Prosobonia leucoptera* of Tahiti and Eimeo, and *Aechmorhynchus cancellatus* of Christmas Island and the Paumotu group, have ceased to exist.

Of all these very few examples are known, not 6 in all, and of *Prosobonia* only the single specimen in Leyden; while of *Hypotaenidia pacificus* only Forster’s rough sketch remains. In the extreme Northern Pacific the fine Cormorant, *Phalacrocorax perspicillatus*, has been exterminated. It formerly inhabited Bering Island, and it is only known from 2 specimens in the British Museum, 1 in St. Peters-burg, and a few bones in American museums. The last region we have to record vanished forms from is the West Indies and Atlantic coasts. In addition to a number of birds mentioned by Ledru and others, which cannot be identified, we find that 7 species of Macaws, 2 *Chrysotis* and 2 *Conurus* have vanished from this earth. As the French travellers have given us very exact descriptions of some of these, we must, I fear, although no specimens exist, give them names, in order to fit them into the system.

On Cuba there was the fine Macaw, *Ara tricolor*, of which there are some 7 or 8 specimens in Museums, but it now appears to be quite extinct. I am exhibiting the specimen belonging to the Liverpool Museum. In Jamaica two Macaws occurred, one, which I propose to call

*Ara gossei*, nom. nov.,

had a yellow head and hind neck, scarlet cheeks, sides of neck and back, the breast and wing coverts deep blood-red, wings light blue, tail red, with yellow anterior portion. The specimen described was shot in 1765, in the mountains of Hanover Parish, 10 miles east of Lucea, Jamaica, by Mr. Odell.

The second species I propose to call

*Ara erythrocephala*, nom. nov.

It had the head red, rest of body bright green, wings and

*On the Galápagos Islands the large black Finches of Charles Island, Geospiza magnirostris and G. dentirostris, have vanished.*
coverts blue, tail scarlet, tipped with blue above, underside of tail and wings, intense fiery orange. It came from the mountains of Trelawny and St. Anne’s, and was procured by Mr. White, proprietor of the Oxford Estate. Then on Guadaloupe there was a very large Macaw of an intense violet purple colour, which I propose to call

Anadorhynchus purpurascens, nom. nov.

This bird was called “Onécouli,” by the Caraïbes, according to Fernand Columbus. The Chrysotis, of Guadaloupe, was a large species about the size of Chrysotis augusta, of Dominica, called Chrysotis violaceus, by Gmelin, head, neck and breast, slate-grey, centre of belly, with a few green and black feathers, back and wings green, coverts yellow, bend of wing crimson. The Conurus, of Guadaloupe, which I will call

Conurus labati, nom. nov.,

was entirely green with a few red markings on the crown of the head, beak white.

The Macaw of Martinique, which I propose to call

Anadorhynchus martinicus, nom. nov.,

was of a deep blue all over except the breast and abdomen, which were of a fiery orange. The Chrysotis, of Martinique, was green, with red marks in the tail, and with a slate-grey head with a small red patch on the crown. It has been named Chrysotis martiniaca by Mr. Clark. The Conure is merely mentioned by Labat.

The Macaw of Dominica, which has been named Ara guadaloupenensis, had the head, neck, back, and underside fiery red, the wings showed various shades of red, blue, and yellow, and the tail was entirely red.

No doubt many other Parrots have vanished unknown to us from the West Indies; among others mention has been made of one on Barbados.1

In the recent eruptions of Mont Pelée on Martinique and La Soufrière on St. Vincent, the Thrushes, Myadestes sibilans of St. Vincent, Myadestes genibarbis of Martinique,

1 On Jamaica the large blackish Petrel, Aestrelata jamaicensis, has been exterminated by the Mongoose.
Cinclocerthia gutturalis, and Ramphocincrus brachyurus of Martinique, as well as the magnificent Chrysitis gueldingi, of St. Vincent, have been practically wiped out. The last two birds I have to bring before you are the best known of the extinct species; I refer to the Great Auk, Alca impennis, and the Labrador Duck, Comptolainus labradorius. Of the former some 71 stuffed birds and skins, 9 skeletons and 74 eggs exist in collections, while of the latter 33 specimens are recorded, and I believe there is a 34th in Dublin.

We now come to the birds on the verge of extinction, and here again the number of vanishing forms is enormous. We will begin with the Mascarene Islands as before. On Rodriguez, Palaeornis exsul is almost extinct, and only two specimens have up to now been preserved, and are in the Cambridge Museum. On the Seychelles another Ringed Parrakeet, Palaeornis wardi, is practically gone, for whereas a few years ago it was fairly common on Mahé, it is now confined to the small island of Silhouette, near Mahé, and is even there almost extinct. On Mauritius we still find a few specimens of the Parrakeet which is generally identified as Palaeornis eques, formerly found on Réunion, but I believe it is distinct from this species, and must therefore stand as Palaeornis echo, Newton. The numbers of this bird, however, have been so reduced that it is bound to be exterminated in a very few years. The two Thrushes, Ixocincla olivacea of Mauritius, and Ixocincla borbonica of Réunion, are rapidly vanishing owing to relentless persecution by man for food, and by rats, Minah birds, cats, etc., introduced into the islands.

The very curious swallow, Phedina borbonica, is an inhabitant of the Mascarene Islands, but like so many birds of this group will soon vanish from the face of the earth. The crested Flycatcher of Réunion and Mauritius, Trochocercus borbonica, has also arrived at the vanishing point. The Shrikes, Lalage rufiventer and L. newtoni, are already very rare and evidently becoming extinct. Foudia flavicans, the Yellow Weaver of Réunion, is almost destroyed, and

* On the small island, called Martha's Vineyard, "The Heath Hen," Tympanuchus cupido, has been exterminated, while those which are still there have been introduced from the mainland, and are T. americanus.
Drymoeca rodericana is a bird whose existence is nearly ended.

Coming to the New Zealand region, we find Cyanorhamphus subflavescens, of Lord Howe's Island and Cyanorhamphus cooki, of Norfolk Island, practically extinct; the Laughing Owl, Sceloglaux albifacies, from the South Island of New Zealand, has almost vanished, as also has the North Island Thrush, Turnagra tanagra. The North Island Robin, Miro albifrons, will also soon be a bird of the past, the White-headed Tit, Citonyx albicilla, has become extremely rare, as has also Pogonornis cincta, the Stitch bird; both these were from the North Island, but are now confined to the Barrier Islands. We also find that the Huia, Heterolocha acuvirostris, is very much reduced in numbers; while Hypotaenidia mülleri (Pl. vii.), of Auckland Island, and of which only the type is known, is apparently gone, most likely owing to the introduction of cats. Mergus australis, and Nesnotetta aucklandica, also of Auckland Island, are rapidly vanishing.

The next bird I have to mention has caused an immense sensation, this is the South Island Notornis, Notornis hochstetteri. Notornis was a genus founded by Professor Owen, on the skull and a few bones of a large Rail brought from the North Island, and he called the bird Notornis mantelli. This bird was looked upon as quite extinct and did not attract much attention at the time, but ornithologists were thrown into great excitement when the first news came of the existence alive of Notornis. So far 4 specimens are known: 1 in Dresden, 2 in London, and 1 in New Zealand.

On Lord Howe's Island the large Rail, Ocydromus sylvestris, is on the verge of extinction.

Proceeding to the Sandwich Islands we find a number of birds rapidly becoming extinct. The famous Mamo, Drepanis pacifica, is almost a thing of the past. This was the bird from which most of the feather cloaks were made. Then we find the Hemignathus lanaiensis so scarce that only 3 specimens are known, and it is practically extinct on Lanai. Loxops rufa, of Oahu, has been so reduced in numbers that if there are any at all they do not exceed a dozen, all told, alive to-day, and the only specimens, in collections, 9 in number, are in the British, Berlin, and Tring Museums, and in the collection of
HYPOTAENIDIA MUELLERI.
Count Berlepsch. Then we find that the Petrel, Puffinus newelli, from Kanai, has been almost exterminated by the rats, cats, and the Mongoose. The Sandwich Island Goose, Nesochen sandviciensis, only found on the slopes of Mount Mauna Loa, Hawaii, has been almost exterminated by the combined attacks of man and the mongoose. Coming to Polynesia we find that the black Rail, Pareudiastes pacificus (Pl. viii.), is almost, if not quite gone. On the Galápagos Islands the Mockingbird, Nesomimus trifasciatus, of Gardiner Island, and Phalacrocorax harrisi, of Narborough, are almost extinct. In North America we find the wild Turkey, Meleagris americana, on the verge of extinction, and the Carolina Parakeet, Conurus carolinensis, and Californian Condor, Pseudogryphus californianus, are well on their way to disappear for ever from this world. The fine Ivory-billed Woodpecker, Campephilus principalis, has also been destroyed to such an extent that it is almost impossible, if not quite, to find a living specimen.

In the West Indies we find that the two Jamaica Amazon Parrots, Chrysotis collaris, and Chrysotis agilis, are very nearly extinct, while on Martinique the introduction of a carnivorous Opossum has almost exterminated the Capped Petrel, Aestrelata haesitata. On the mainland of America the Passenger Pigeon, Ectopistes migratorius, down to quite lately existed in countless millions all over the United States; Audubon records the fact that he watched flights of these pigeons which took 6 or 7 hours to pass, and they were flying many deep, and in width as much as several hundred feet. Now, as in the case of the American Bison, reckless slaughter has reduced the numbers of this fine bird to almost vanishing point.

On Jamaica the Tube-nosed Goatsucker, Siphonorhis americanus, has not been found for many years, and may have ceased to exist.

In Europe the little St. Kilda Wren, Troglodytes hirtensis, is rapidly vanishing, and on the Azores the Bullfinch, Pyrrhula pyrrhula murina, is almost gone.

The third category of birds which fall within the scope of this essay are the birds which, though still fairly numerous, are threatened with extinction in the extremely near future.
The bulk of these are to be found in the New Zealand region, in the Sandwich Islands, and the West Indies. In the New Zealand region the introduction of stoats, weasels, polecats, cats, etc., to destroy the rabbits, is the chief cause of destruction, and a very few years will see the annihilation of most of the indigenous birds. The following are those principally threatened: On New Zealand: *Turnagra crassirostris*, *Xenicus longipes*, *Xenicus gilviventris*, *Xenicus stokesi*, *Acanthidositta chloris*, *Acanthidositta citrina*, *Stringops habropilus*, *Ocydromus australis*, *Ocydromus earli*, the so-called *Ocydromus brachypterus*, which is a melanism of *Ocydromus earli* or *australis*, *Anarhynchus frontalis*, *Apteryx australis*, *A. australis mantelli*, *Apteryx haasti*, *Apteryx oweni*, and *Apteryx oweni* *occidentalis*. We also find on New Zealand that *Certhiparus novaezealandiae*, *Clitonyx ochrocephala*, *Anthornis melanura*, *Bowdleria punctatus* and *Bowdleria fulvescens* are seriously threatened. On the Chatham Islands we find that a very few years will see the end of the following birds: *Anthornis melanocephala*, *Gallinago pusilla*, *Cyanorhamphus forbesi*, *Hemiphaga chathamensis* and *Thinornis novaezealandiae*, while on Antipodes Island *Cyanorhamphus unicolor* and *Cyanorhamphus erythrotis* are doomed.

I now come to what I consider the most dastardly outrage imaginable, and it only shows to what lengths greed will take men. On Antipodes, Auckland, and the Macquarie Islands, there have been established huge cauldrons, and the unfortunate and absolutely helpless Penguins are being boiled down for making oil. Already some 200 or 300 tons of this oil have been made, representing the slaughter of some millions of Penguins, and a very few years will see the blotting out of *Aptenodytes patagonica*, *Megadyptes antipodum*, *Catarhactes schlegeli*, *Catarhactes pachyrhynchos*, and *Catarhactes sclateri*. On the Sandwich Islands, on Hawaii, *Telespiza palmeri*, *Viridonia sagittirostris*, and *Chloridops konae*, are seriously threatened. On Kauai the introduction of the Mynah, *Acridotheres tristis*, and the black rat, means the doom of *Phaornis myodestina*, *Phaornis palmeri*, *Chasiempis sclateri*, *Moho braccatus*, *Lorops caeruleirostris*, *Himatinone stejnegeri*, *Oreomyza bairdi*, *Oreomyza parva*, *Hemignathus procerus*, and *Heterorhynchus hanapepe*; while on
Molokai the black Mamo, *Drepanorhamphus funereus*, is doubtless seriously threatened.

In the West Indies the Amazon Parrots, *Chrysotis augusta*, and *Ch. bouqueti*, from Dominica, and *Chrysotis versicolor*, from St. Lucia, are rapidly diminishing in numbers, and it is not many years before they will also vanish.

In conclusion, I have only to remark that the formidable list I have brought before you proves very clearly that man is the greatest enemy to all other living creatures; but also I think that it is evident that in very few cases is man the final direct cause of the extermination of a species, but he is still indirectly guilty in most cases, for the introduction of vermin and animals of prey, and creatures foreign to the country, generally finishes what man himself has begun. A few of the foregoing species have died out from natural causes, and I think it would be of scientific value if, in the case of species not yet quite gone, some investigations into these causes could be inaugurated.

The accompanying tables will give concisely the various species under the categories they belong to. I also have appended a list of the specimens exhibited, and it only remains for me to thank those who have lent me specimens for exhibition, namely, Dr. Scharff, Dr. H. O. Forbes, Professor Dr. Lampert, Count Berlepsch, and Professor Dr. A. König, who lent me the *Aestrelata jamaicensis*, the *Ara tricolor*, *Necropsar lequati*, and the *Dromaeus ater*, the *Rallus müller*, 2 of the 3 *Loxops rufa*, and one of the 3 Great Auks, *Alca impennis*. With these 8 exceptions all the specimens exhibited are the property of the Tring Museum.

**Quite Extinct.**

Known from Bones, Feathers, and Eggshells only.

*Dinornis maximus* *

" robustus *

" novaeezelandiae *

" potens *

" excelsus *

" torosus *

" struthioides *
Anomalopteryx didiformis *
   parvus *
Mesopteryx antiquus *
   geranoides *
   curtus *
   didinus *
   dromaeoides *
   plenus *
   casuarinus *
Emeus crassus *
   gravis *
   rheides *
Pachyornis elephantopus *
   ponderosus *
   immanis *
   rothschildi *
   pygmaeus *
Megalapteryx hectori *
   tenuipes *
Palaeocasuarius haasti *
   elegans *
   velox *
Pseudapteryx gracilis *
Aepyornis maximus ‡
   titan ‡
   medius ‡
   modestus ‡
   ingens ‡
   lentus ‡
   mülleri ‡
   cursor ‡
   hildebrandti ‡
   grandidieri ‡
Mullerornis betsilei ‡
   agilis ‡
   rudis ‡
Centrornis majori ‡
Chenalopex sirabensis ‡
Tribonyx roberti ‡
Plotus nanus ‡
On Extinct and Vanishing Birds.

Aptornis defossor *
“” otidiformis *
Ocydromus insignis † *
Notornis mantelli *
“” parkeri *
Cnemiornis calcitrans *
“” minor *
“” gracilis *
Biziura lautouri †
Cereopsis novaezealandiae *
Chenopis sumnerensis †
Phalacrocorax major †
Harpagornis moorei †
Circus hamiltoni †
“” teauteensis †
Palaeaeudyptes antarcticus †
Palaeocorax antipodum †
“” moriorum †
Diaphorapteryx hawkinsi †
Palaeolimnas chathamensis †
Gallinago chathamica †
Astur alphonisi † * †
Strix sauzieri † * †
Butorides mauritiana † * †
Sarcidiornis mauritianus † * †
Anas theodori † * †
Athene murivora † * †
Alectraenas rodericanus † * †
Ardea megacephala † * †

Quite Extinct.—Externally Known.

Didus ineptus, Linn. *
“” borbonicus *
Pezophaps solitarius *
Lophopsittacus mauritianus † *
Mascarinus mascarinus † *
Palaeornis eques † *
Necropsittacus rodericanus * †
“” francicus * †
Coracopsis ? * †
Alectraenas nitidissima *
Nesoenas mayeri * †
Scops commersoni * †
Fregilupus varius *
Necropsar rodericanus *
Foudia bruante
Aphanapteryx broecki *
Palacolimnas newtoni *
Leguatio gigantea *
Apterornis caerulescens *
Erythromachus leguati *
Hydrocorax sp. ? †
Nestor productus *
Notornis alba *
Hemiphaga spadicea *
Cabalus modestus †
Nesolimnas dieffenbachi * †
Bowdleria rufescens † †
Miro traversi † ‡
Coturnix novaezealandiae * †
Traversia lyalli †
Sceloglaux rufifacies † spec. dub.
Dromaeus ater *
Chaunoproctus ferreirostris † ‡
Psittirostra psittacea deppei †
Hemighnatthus ellisianus †
Heterorhynchus lucidus †
Moho apicalis †
Phaeornis oahuensis †
Pennula millsii * †
Chaetoptila angustipluma †
Ciridops anna †
Hypotaenidia pacificus † ‡
Pomarea nigra † ‡
Prosobonia leucoptera †
Aechmorhynchus cancellatus †
Phalacrocorax perspicillatus *
On Extinct and Vanishing Birds.

On the verge of extinction.

This bird was described by Du Tertre (Hist. Gen. Antill. Vol. 2, p. 248), as follows:—Head, neck and back pale satiny azure blue, breast and abdomen pale yellow, tail red.
Heterolocha acutirostris *†
Hypotaenidia müleri †‡
Mergus australis *‡
Nesonetta aucklandica *‡†
Notornis hochstetteri †*
Ocydromus? sylvestris †
Drepanis pacifica *
Hemignathus lanaiensis †
Loxops rufa ‡
Puffinus newelli †
Telespiza flaviceps †‡
Nesochen sandvicensis *†
Pareudiastes pacificus †‡
Nesomimus trifasciatus †*
Phalacrocorax harrisi *
Meleagris americana *
Conurus carolinensis *
Pseudogryphus californianus *
Chrysolitis collaris *†
,, agilis *†
,, guildingi *‡
Aestrelata haesitata †
Ectopistes migratorius *
Siphonorhis americanus †
Campephilus principalis *
Pyrrhula pyrrhula murina *

Threatened with Extinction.

Turnagra crassirostris †*
Prosthemadera novaezealandiae †
Anthornis melanura †
Xenicus longipes †
,, gilviventris †
,, stokesi †
Acanthidositta chloris †
,, citrina †
Stringops habroptilus †
Ocydromus australis ††
,, earli †

*Ocydromus brachypterus = melanism of earli or australis.*
Anarhynchus frontalis * †
Apteryx australis † *
   "   " mantelli † *
   "   " haasti † *
   "   " oweni † *
   "   " oweni occidentalis † *
Certhiparus novaezealandiae † *
Clitonyx ochrocephala †
Bowdleria punctatus †
   "   " fulvescens †
Anthornis melanocephala † *
Gallinago pusilla *
Hemiphaga chathamensis *
Thinornis novaezealandiae *
Cyanorhamphus unicolor *
   "   " erythrotis *
   "   " forbesi *
Aptenodytes patachonica *
Megadyptes antipodum *
Catarrhactes schlegeli *
   "   " pachyrhynchos *
   "   " sclateri *
Telespiza palmeri †
Viridonia sagittirostris †
Chloridops kona †
Phaeornis myadestina †
   "   " palmeri †
Chasiempis sclateri †
Moho braccatus †
Loxops caeruleirostris †
Himatione stejnegeri †
Oreomyza bairdi †
   "   " parva †
Hemignathus procerus †
Heterorhynchus hanapepe †
Drepanorhamphus fumereus †
Chrysotis augusta * †
   "   " bouqueti † *
   "   " versicolor * †
Trogodytes troglodytes hirtensis *
Those marked with an * have been or in all probability will be directly exterminated by man or owe their scarcity to him.

Those marked † appear to owe their destruction indirectly to man through his introduction of their enemies.

Those marked ‡ owe their destruction to natural causes.

**Specimens and Drawings Exhibited.**

<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Dinornis maximus</em></td>
<td>1 Restored drawing</td>
</tr>
<tr>
<td><em>Anomalopteryx didiformis</em></td>
<td>1 Egg and skeleton</td>
</tr>
<tr>
<td><em>Anomalopteryx parvus</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Mesopteryx didius</em></td>
<td>1 Restored drawing</td>
</tr>
<tr>
<td><em>Mesopteryx casuarinus</em></td>
<td>1 Cast of egg and feathers</td>
</tr>
<tr>
<td><em>Dinornis robustus</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Pachyornis elephantopus</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Pachyornis rothschildi</em></td>
<td>Type leg bones</td>
</tr>
<tr>
<td><em>Megapapteryx tenuipes</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Aepyornis maximus</em></td>
<td>1 Egg</td>
</tr>
<tr>
<td><em>Aepyornis titan</em></td>
<td>2 Eggs, some bones, and cast of leg</td>
</tr>
<tr>
<td><em>Aepyornis hildebrandti</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Aptornis defossar</em></td>
<td>1 Skeleton</td>
</tr>
<tr>
<td><em>Palaeocorax moriorum</em></td>
<td>Skulls and bones</td>
</tr>
<tr>
<td><em>Diaphorapteryx hawkinsi</em></td>
<td>2 Skeletons, skulls and bones</td>
</tr>
<tr>
<td><em>Didus ineptus</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Didus borbonica</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Pezophaps solitarius</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Lophopsittacus mauritianus</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Necropsittacus rodericanus</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Alectranaeus nitidissima</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Fregilupus varius</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Necropsar leguati</em></td>
<td>1 Skin</td>
</tr>
<tr>
<td><em>Foudia bruante</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Necropsar rodericanus</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Aphanapteryx broecki</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Lequatia gigantia</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Apterornis caerulescens</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Erythromachus leguati</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Nesolimnas dieffenbachii</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Prosobonia lencoptera</em></td>
<td>1 Drawing</td>
</tr>
<tr>
<td><em>Aechmorhynchus cancellatus</em></td>
<td>1 Drawing</td>
</tr>
</tbody>
</table>
On Extinct and Vanishing Birds.

Ara gosser
Phalacrocorax perspicillatus
Palaeornis exsul
Palaeornis wardi
Notornis hochstetteri
Palaeolimnas chathamensis 1 Skeleton, skulls and bones
Gallinago chathamica 1 Skeleton
Palaeornis exsul 1 Drawing
Palaeornis wardi 1 Drawing
Nestor productus 1 Skin, 1 drawing of N. norfolcensis
Notornis alba Drawing
Hemiphaga spadicea 1 Skin
Cabalus modestus 5 Skins
Nesolimnas dieffenbachii Drawing
Bowdleria rufescens 4 Skins
Miro traversi 4 Skins
Coturniz novaeseelandiae 2 Skins
Dromaeus ater 1 Stuffed, 1 drawing
Psittirostra pittacea deppei 2 Skins
Moho apicalis 1 Skin
Pennula millsi 1 Stuffed, 1 Skin
Chaetoptila angustipluma 1 Skin
Cirridops anna 2 Skins
Hypotaenidia pacificus Drawing
Ara tricolor 1 Stuffed
Tympanuchus cupido 4 Skins
Alca impennis 2 Stuffed, 1 skin, 2 eggs
Camptolaimus labradorius 2 Stuffed
Oestrelata jamaicensis 1 Stuffed
Myadestes sibianus 2 Skins
Myadestes genibarbis 2 Skins
Rhamphocinclus brachyurus 1 Skin
Palaeornis echo 3 Skins
Cyanorhamphus subflavescens 3 Skins
Sceloglauza albifasciis 1 Stuffed, 4 skins
Turnagra tanagra 2 Skins
Miro albirostris 6 Skins
Clitonyx albicilla 6 Skins
Pogonornis cinerea 7 Skins
Heterolocha acutirostris 6 Skins
<table>
<thead>
<tr>
<th>Species</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hypotaenidia mulleri</em></td>
<td>1 Stuffed and drawing</td>
</tr>
<tr>
<td><em>Mergus australis</em></td>
<td>3 Skins, 1 stuffed</td>
</tr>
<tr>
<td><em>Nesopetta aucklandica</em></td>
<td>1 Stuffed, 5 skins</td>
</tr>
<tr>
<td><em>Drepanis pacifica</em></td>
<td>2 Skins</td>
</tr>
<tr>
<td><em>Hemignathus tanaiiensis</em></td>
<td>3 Skins</td>
</tr>
<tr>
<td><em>Loxops rufa</em></td>
<td>2 Skins</td>
</tr>
<tr>
<td><em>Telespiza flaviceps</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Nesochen sandviciensis</em></td>
<td>1 Stuffed</td>
</tr>
<tr>
<td><em>Pareudiastes pacificus</em></td>
<td>Drawing</td>
</tr>
<tr>
<td><em>Nesomimus trifasciatus</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Phalacrocorax harriisi</em></td>
<td>2 Skins</td>
</tr>
<tr>
<td><em>Cowurus carolinensis</em></td>
<td>5 Skins</td>
</tr>
<tr>
<td><em>Pseudogryphus californianus</em></td>
<td>1 Stuffed, 2 skins, 1 egg</td>
</tr>
<tr>
<td><em>Chrysotis agilis</em></td>
<td>1 Skin</td>
</tr>
<tr>
<td><em>Chrysotis guildingi</em></td>
<td>3 Skins, 2 stuffed</td>
</tr>
<tr>
<td><em>Oestrelata haesitata</em></td>
<td>1 Skin</td>
</tr>
<tr>
<td><em>Ectopistes migratorius</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Campophillus principalis</em></td>
<td>2 Stuffed, 2 skins</td>
</tr>
<tr>
<td><em>Trogodytes hirtensis</em></td>
<td>3 Skins</td>
</tr>
<tr>
<td><em>Pyrrhula pyrrhula marina</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Turnagra crassirostris</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Anthornis melanura</em></td>
<td>8 Skins</td>
</tr>
<tr>
<td><em>Xenicus longipes</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Xenicus stokesi</em></td>
<td>2 Skins</td>
</tr>
<tr>
<td><em>Xenicus gilviventris</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Acanthodisitta chloris</em></td>
<td>2 Skins</td>
</tr>
<tr>
<td><em>Acanthodisitta citrina</em></td>
<td>3 Skins</td>
</tr>
<tr>
<td><em>Traversia lyalli</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Stringops habroptilus</em></td>
<td>1 Stuffed, 4 skins</td>
</tr>
<tr>
<td><em>Ocydromus australis</em></td>
<td>1 Stuffed, 9 skins</td>
</tr>
<tr>
<td><em>Ocydromus earli</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Ocydromus brachypterus</em> = melanism of <em>O. earli</em> or <em>O. australis</em></td>
<td>6 Skins</td>
</tr>
<tr>
<td><em>Ocydromus? sylvestris</em></td>
<td>3 Skins</td>
</tr>
<tr>
<td><em>Anarchynchus frontalis</em></td>
<td>4 Skins</td>
</tr>
<tr>
<td><em>Apteryx australis</em></td>
<td>1 Stuffed, 1 skeleton, 4 skins</td>
</tr>
<tr>
<td><em>Apteryx australis mantelli</em></td>
<td>2 Stuffed, 3 eggs, 5 skins</td>
</tr>
<tr>
<td><em>Apteryx haasti</em></td>
<td>1 Stuffed, 4 skins</td>
</tr>
<tr>
<td><em>Apteryx oveni</em></td>
<td>1 Stuffed, 2 eggs, 6 skins</td>
</tr>
<tr>
<td><em>Certhiparus novaezealandiae</em></td>
<td>4 Skins</td>
</tr>
</tbody>
</table>
Clitonyx ochrocephala 4 Skins
Bowdleria punctatus 4 Skins
Anthornis melanocephala 4 Skins
Gallinago pusilla 5 Skins
Cyanorhamphus forbesi 4 Skins
Hemiphaga chathamensis 3 Skins
Thinornis novaezealandiae 4 Skins
Cyanorhamphus unicolor 6 Skins
Cyanorhamphus erythrotis 4 Skins
Aptenodytes patagonica 1 Stuffed, 2 eggs, 4 skins
Megadyptes antipodum 1 Stuffed, 4 skins
Catarrhactes schlegelii 4 Skins
Catarrhactes pachyrhynchus 4 Skins
Catarrhactes sclateri 4 Skins
Telespiza palmeri 5 Skins
Viridonia sagittirostris 4 Skins
Chloridops kona 4 Skins
Phaeornis myadestina 3 Skins
Phaeornis palmeri 4 Skins
Chasiempis sclateri 8 Skins
Moho braccatus 6 Skins
Loxops caeruleirostris 4 Skins
Himatione stejnegeri 4 Skins
Oreomyza bairdii 5 Skins
Oreomyza parva Skins
Hemignathus procerus 6 Skins
Heterornis hanapepe 5 Skins
Drepanorhamphus junceus 1 Skin
Chrysotis augusta 4 Skins
Chrysotis bouqueti 3 Skins
Chrysotis versicolor 3 Skins
Ixocinclta olivacea 1 Skin
Kaiseradler und Aasgeier am Horst.
Von Paul Leverkühn.

"Οπον ἐὰν ὁ τὸ πτ choc, ἐκεὶ συναχθῇσονται οἱ ὄντων.
Οπον τὸ σῶμα, ἐκεὶ καὶ οἱ ὄντων ἐπιστασθα ὄντων. ¹


In Bulgarien ist der Kaiseradler etwa so häufig, wie der Mäusebussard in Deutschland; er hat mit diesem unedlen Raubvogel einige verwandte Charakterzüge. Allerdings ist sein Erscheinen ein weit imponierenderes, als das des Mausers; seine Grösse und sein majestätischer Flug erheben ihn weit über jenen. Nicht in allen Theilen des Landes ist er gleich verbreitet; er liebt weder das Hochgebirge, wo ihn der Steinadler (Aquila falea) vertritt, noch dichte Wälder, aber jene ausgedehnten steppenartigen Strecken offenen Landes mit einzelnen Feldbäumen, mit Wiesen und Bächen, auch leichtes Hügelland mit den Ausläufern bewaldeter Berge beherbergen ihn in grosser Anzahl. Mit seines Gleiches ist er verträglich und rauft selbst am Luder nur wenig und sozusagen spielend. Auf verhältnissmässig engem Gebiete horsten die Paare nebeneinander.

Wenn der harte Winter im Weichen begriffen ist, Anfang

¹ Ev. Matth. XXIV., 28; Ev. Luc. XVII., 37.

Nur wenige Tage werden auf die Lösung der Wohnungsfrage verwendet; anders, wenn ein neues Logis hergestellt wird. Wenn auch die Aeste nach menschlicher Beurtheilung sehr tragbar sind, so schleppt doch der Kaiseradler unverhältnissmassig viel Material heran und macht keinen rechten Unterschied darin, ob die Aeste, auf denen er baut, sehr

tragfähig sind oder nicht; so kommt es, dass aus hohen Wipfeln, welche bei jedem Sturmstosse schwanken, manchmal der ganze zu schwere Bau herabfällt oder umkippt. Dieser Horstneubau dauert ziemlich lange, denn der Vogel arbeitet langsam oder träge. Ich habe beobachtet, dadurch, dass ich täglich zum Horste ritt, dass bis 14 Tage Bauzeit verstreichen, ehe das erste Ei gelegt wird. Wenn aber die Begattung zu früh erfolgt, und das erste Ei legereif geworden ist, so tritt auch wohl eine Ueberhastung ein: auf sehr schwankem Unterbau, in so kleinem Neste, dass der Vogel weit darüber hinausragt, womöglich noch in ganz niederem Baume wird der Bau schnell vollendet, um das Ei aufzunehmen.


In der Vorstellung des grossen Publikums ist der Adlerhorst etwas unerreichenbaren oder wenigstens sehr schwer zugängliches:

Auf Arkanas Bergen ist ein Adlerhorst,
Wo vom Schlag der Wogen seine Spitze borst.
Adler, setz’ dich oben auf den Felsenthron,
Deutschen Landes Hüter, freier Wolkensohn!


² Wilhelm Müller, Freiheit.
Kaiseradler und Ausgeier am Horst. 221


Unbekümmert um die Witterung, um ein frühes oder spätes Eintreten des Frühlings, beginnt der Kaiseradler das Eierlegen. Mit grosser Sicherheit kann man die letzten Märztagen und die erste Aprilwoche als den Zeitpunkt ansehen, wo das erste Ei sich im Horste vorfindet. Schon nach der Ablage des ersten pflegt das Weibchen im Horste zu sitzen, ohne aber das Ei zu bebrüten; nur bei sehr sonniger warmer Witterung verlässt es die Brutstätte für längere Zeit, um im Aether herrliche Kreise zu ziehen, vielleicht nach Beute spähend, oder um auf einem Erdhügel, einem Grabenwall, einem erhöhten Punkte eines Ackers zu sitzen und auf Ziesel zu äugen. Nach 2 oder 3 Tagen folgt das zweite und in etwa 20% der Fälle ein drittes Ei. Mehr als 3 Eier werden niemals in ein Nest gelegt; zwei Eier ist bei weitem das häufigste; aber auch ein Ei wird zuweilen gelegt und bebrütet, ohne dass es sich um ein nachgelegtes zu handeln braucht. Von diesem Momente an verlässt das Weibchen den Horst nur noch selten, während ihm das Männchen Frass auf den Horstrand bringt. In der Nacht hält sich der treue Gemahl unfern des Horstbaumes auf einem anderen Baume auf, wenn keiner in der Nähe auch wohl auf demselben.
Unter beiden Bäumen findet man ausser dem weissen Geschmeiss die sehrvoluminösen Gewölle, welche aus zahlreichen Knöchelchen von Säugethieren und seltner von Vögeln, aus Haaren von Ziesel, Mäusen, Ratten, Maulwürfen und anderem zusammengesetzt, eine längliche Walzenform haben und ziemlich fest sind.

Die Eier variieren sehr an Gewicht und Grösse, weniger in der kugelig bauchigen Form; ältere Weibchen legen grössere und meist nur 2 Eier; die intensiven röthlichbraunen Flecken finden sich selten bei allen Eiern eines Geleges; bei nassem Wetter haften regelmässig den Eiern grosse Patzen lehmiger Erde von den Fängen des Brutvogels an, deren Farbe sich auch der Eischale mittheilt. Das Korn ist ziemlich grob und nicht von dem des Schell-oder Schreiadlers zu unterscheiden; durchfallendes Licht zeigt eine schöne dunkelgrüne Farbe des Innern.


Ein Adlerbaum und ein Adlerhorst ist eine Wohungsstätte für manche andere Thiere. Ich spreche nicht von den

Zur Biöcenose des Kaiseradlers am Horst gehört die Nähe eines Platzes, auf welchem Ziesel (*Spermophilus citillus*) wohnen. Er sitzt oft träumerisch am Boden und muss sie mit einer uns überraschenden Gewandtheit erbeuten. Das Ziesel läuft so schnell, dass selbst gute Schützen es oft verfehlen; wie der in seinen Bewegungen ziemlich plume Kaiseradler es zustande bringt, sie zu fangen, habe ich leider nie selbst gesehen.

Nach etwa 4 Wochen schlüpfen die Jungen aus und zwar in Intervallen, wodurch auch die fast stets beträchtlich verschiedene Grösse erklärt wird. Die piepende, etwas tremulierende Stimme lassen die Jungen ganz früh im weissen Dunengefieder ertönen; man kann sie meist unten am Baume vernehmen. Dem Menschen gegenüber sind die Jungen eher zutraulich und besitzen nicht die wunderliche Eigenschaft

1 Ornith. Monatsschr., 1888, S. 208.


Bis dahin wird die junge Brut mit grosser Liebe von den Eltern gehütet. Wie ein Adler sein Gefieder über seine Jungen streckt, heisst es zutreffend in einem Kirchenlied aus dem 17. Jahrhundert: Nicht nur die Jungen, auch die Eier werden nur im Falle drohender Gefahr verlassen. Ich habe darüber merkwürdige Erfahrungen des Nachts und bei Regen gemacht. Ist das Wetter schön, so flieht der brütende Vogel bei Annäherung des verdächtigen Menschen auf etwa 80 oder 100 Gänge; den pflügenden Ackersmann lässt er aber ohne alle Furcht bis unmittelbar unter seinem Horst arbeiten, ohne abzufliegen. Wenn es regnet, bleibt das Weibchen auf den Eiern sitzen, bis die eisernen Kletterschlüsse des Steigers

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1 Paul Gerhardt n. 1667 m. 1676. Soll't ich meinem Gott nicht singen u.s.w.
Kaiseradler und Aasgeier am Horst.

dröhnend an sein Ohr schlagen. In der Nacht bleibt der Vogel sitzen, bis der Kletterer unmittelbar unter dem Horste angelangt ist.


Auch wahre "Tragödien der Nester" finden statt: dass der Sturm zuweilen den grossen Bau zerzaust, wurde schon erwähnt. Einmal in meiner Praxis kam es vor, dass ein zerbrochenes Ei unter dem Horst, ein zweites auf dem äussersten Rande des umgekippten Nestes lag; in einem andern Fall, in der Fruska Gora, lagen die zerbrochenen Eischalen im verwitterten Horste.

1000 Quadratkilometern fand ich 48 Horste, davon 19 belegt. Ich will annehmen, dass mir 20% entgangen sind, demnach im ganzen 58 Horste auf diesem Terrain sich befanden. Bulgarien ist 95220 Quadratkilometer gross, davon fallen 12170 Km, welche mit Gebirge von 900-2800 Meter Höhe bedeckt sind, fort; von dem Rest mögen noch 3050 Km abgerechnet werden für Gebiete, die durch Ortschaften, Sümpfe, Flüsse und zu dichte Wälder dem Kaiseradler keinen geeigneten Brutaufenthalt gewähren. Ein einfaches Proportions-Exempel ergiebt daraus, wenn man das gleiche Verhältniss zu Grunde legt, für ganz Bulgarien, dass auf diese 80000 Km² 4608, davon 1824 besetzte Horste des Kaiseradlers vertheilt sind.


In diesem Thale bemerkte ich jahrelang hintereinander einen Aasgeier, ohne seine Horststelle ausfindig machen zu können. Dreimal wurde ich durch gute Freunde am dünnen Seile oben vom Felsengrat herab in die Tiefe hinabgelassen zu


Ecken des St. Sava-Ordens seinen Platz hat, und ob die weissen Adler im Hohenlohischen Haus-und Phönix-Orden, im Modenesischen Orden des Adlers von Este, im Russischen weissen Adler-Orden und im Sachsen-Weimarschen Orden vom weissen Falken, den Aasgeier zum Ähnen haben, kann ich nicht versichern.


Einen dritten Horst fand ich in einem schwer zu begehenden Thale des Oberlaufes des Iskers auf der Suche nach dem köstlichsten, was der Field-Ornithologisst suchen und finden kann; auf der Suche nach Gypaetus. Die Stelle war im strengen Sinne des Wortes unzugänglich und gegen menschliche Eingriffe gehegt, denn selbst, wenn man sich abgesetzt hätte, so würde man zum Horst doch nicht gelangt sein, da das Seil etwa 6 Meter von dem stark zurücktretenden Felsenloche entfernt geblieben wäre. Von unten konnte man vollends nicht hinzu gelangen.


Als wir das nahe Gestad erreichten, sahn wir von ferne
Eine Felsenhöh' am Meer an der Spitze des Landes,
Hoch gewölbt und umschattet von Lorbeerbäumen. Hier pflegten
Viele Ziegen und Schafe des Nachts zu ruhen; und ringsum
War ein hohes Gehege von Felsenstücken gebaut.

Also war es: der Schäfer gewährte uns Gastfreundschaft mit Ziegenkäse und Schafmilch—einf Rückblick in die Zeit des edlen Eumaios. Als wir staunend unter die vorgewölbte natürliche Felsengrotte traten, flog aus ihr, just über dem Schafstall, etwa 5 Meter hoch, ein aegyptischer Aasgeier ab, der dort friedlich in unmittelbarster Nähe der Haustiere seine Jungen gross zog.

Am Salève bei Genf habe ich den Aegypter 1889 noch ange troffen, vielleicht brütete er damals noch in den Grandes Gorges, als ich zwölf Jahre später, 1901, mit der Zahnradbahn die selbe Strecke durchfuhr, war der schöne Vogel verschwunden!

Die Zeit reicht leider nicht, den Begriff „Aasgeier“ weiter zu fassen und den Gänsegeier in die Betrachtung zu ziehen, schon über die Naturgeschichte des Aegypters am Horste musste ich mich leider kürzer fassen.

Auch der edelste und seltenste aller, der Bartgeier, hätte unter dem Worte Aasgeier mit abgehandelt werden können, aber für diesen Hochharistokraten allein würde ich die vorgezeichneten 20 Minuten verbraucht haben.—Ich muss daher Abschied nehmen mit der Erklärung, dass die Beobachtung der grossen Raubvögel am Horst zu den grössten Genüssen des Feldornithologen gehört, dass die Naturgeschichte in ihrem unendlichen Reichthum immer neue Falten des weiten Gewandes offenbart, und dass die grossen Gefahren, welche

1 Odyssee, IX., Vers. 181-185.
das Aufsuchen, das Erklimmen und Betrachten der Intimitäten des Brutgeschäfts mit sich bringen, gleichzeitig zu den schönsten Belohnungen im Leben desjenigen gehören, welcher das Studium der Vögel im Freien sich erwählt hat.
ON SOME ANTARCTIC BIRDS.

By Edward A. Wilson, M.B., F.Z.S.,

Surgeon and Naturalist on board the “Discovery.”

Of the ornithological work done in the Antarctic during the three summers and two winters, which were passed by the members of the British Expedition in the “Discovery,” nothing proved of greater interest than the breeding habits of the Emperor Penguin (Aptenodytes forsteri).

Nor were any of the photographs brought home by that expedition more truly unique or interesting than those of the Emperor Penguin and its young, which were obtained at the Cape Crozier rookery by Lieutenant-Engineer Skelton, R.N.

In dealing with the birds of the very remote region in which the “Discovery” wintered, it must be remembered that we were actually situated at the limit of possible animal habitation, that is to say, that quartered as we were on the edge of Ross’ Great Ice Barrier in McMurdo Sound, we had with us in winter no birds at all of any sort or kind, and in summer only three species in any considerable number.

Certainly we had an occasional straggler from the open seas to the North, such as a Giant Petrel (Ossifraga gigantea) now and then, and a few Snow Petrels (Pagodroma nivea), and a few of Wilson’s Petrels (Oceanites oceanicus), but beyond these, none.

We had, however, at the distance of a few days’ sledging, one of the largest of all known rookeries of the Adélie Penguin (Pygoscelis adeliae), as well as a second smaller one a trifle nearer. We had also many hundreds of Skuas (Megalestris maccormicki), which bred freely on certain rocky headlands, and remained with us from October until the end of March.

But far beyond these in interest, and the one saving grace in an area which was otherwise too far south for profitable work at Ornithology, was the fact that at Cape Crozier, not fifty miles from our winter quarters, we had a colony of about a thousand Emperor Penguins.

Here it was that we found their eggs, here too their young ones, and here we were able by some half dozen sledge
journeys at different times to collect facts and make observations, which together build up one of the most quaint life-histories imaginable.

Arriving at this rookery in the early days of spring, in September, the coldest month of the whole Antarctic year, we found to our surprise that the eggs were already hatched. Indeed, had it not been for a happy accident, our collection of this hitherto unknown egg would have been very incomplete.

It so happened, however, that during incubation, which must occupy about seven weeks, and which, therefore, must commence very early in July, in the cold and darkness of mid-winter, there had been a fall of ice from the cliffs beneath which the sitting birds were collected on the sea ice of the frozen bay.

This fall had so scared them that many birds left their eggs, and many, no doubt, were also buried in the débris. Those eggs that were left we found, frozen and deserted; and a series of fourteen, very variable in size, but all of a pyriform shape, and with a whitish chalky surface, now lies in the British Museum of Natural History.

The story of the Emperor Penguin nursery is quaint, and not a little pathetic. There is one chicken hatched to every dozen adults, and each adult is possessed with an intense desire to nurse this chicken. Which bird laid the egg, or incubated it, or to which bird the resultant chicken rightly belongs, is a matter of no concern to any one, for where might is right the present owner is the nurse, and until driven by hunger to leave the chicken to another, either he or she—for both act as "sitting hens"—takes care to keep the chicken off the ice by holding it upon the feet, tucked in between the legs, and covered by a fold of loose skin and feathers from the abdomen.

This method of holding the chicken and the egg is common to the Emperor and the King. The object with the former is to prevent contact with the ice, and with the latter to keep the chicken dry in the wet and muddy quagmire wherein the King Penguins squat during incubation.

Allowing, then, that the Emperor Penguin chicken has been hatched at the end of August, it has to weather a month of
temperatures constantly as low as $-40^\circ$ F., and occasionally even as low as $-67^\circ$ F.

But it has to weather worse than cold and climate, for each time it changes hands it runs the risk of being done to death in the scrimmage for possession which follows from the overpowering desire to brood implanted in the breasts of a dozen unemployed adults, each weighing some 70, 80, or even 90 lbs. In this scrimmage the chicken in many cases comes off second best, and not only has its skin rent by the claws of the parents, but is certainly so often badly damaged as to shortly die. In this way, taking an average for the two years during which we observed them, we found that no less than 77 per cent. of the chickens hatched were dead before they had shed their down.

Such a mortality seems incredible, but was the result of a careful count of dead chickens lying on the ice.

This nursery then remains intact until the sea ice breaks up, that is, until about the end of the first week in November; and it was during the spring gales of 1903 while we were laid up in our tent and sleeping bags for no less than eight days out of eleven that we were able to watch and surmise how the exodus of chickens still in down was managed.

Each day a squad of Penguins, a hundred at a time, seeing the ice break up with the south-westerly blizzard, used to go and wait at the edge of the ice by the open water till the piece on which they stood broke off and drifted up with them to the pack ice further north.

There seems to be no doubt that these birds make use of the general break up of the sea ice in the early summer to transfer their nestlings still in down and unfit to enter the water, to the northern belt of pack ice. Here, of course, we could not follow them, for we ourselves were in the ice, held fast till three months later, but in January when on our way down south through this very belt of pack (and others have noted this also) we found young Emperors about two-thirds grown, then fully feathered, but with the grey heads and white throats of immaturity.

That other rookeries exist along the edge of the Great Ice Barrier, and in King Edward's Land as well, there cannot be
much doubt, and from the extensive distribution of Emperor Penguins scattered far and wide over the Antarctic region one cannot but think that the mortality in this particular rookery at Cape Crozier was perhaps unusual and excessive.

By the end of December it seems the Emperor chick is feathered and independent, and in January and February the adults collect in very large numbers to undergo their moult. For about three weeks they remain on the ice and refuse to enter the water, living the while on their abundant coat of fat. After this they seem to wander in larger and smaller companies, from ten to thirty and forty being met with here and there on sea ice as the darkness of the winter months comes on. In June they will have collected at their rookeries, and in July they begin to sit, for in the first days of September, as I have said above, the young ones are all hatched out, and no eggs can be found but such as have been deserted.

With this barest outline of what will before long be published in detail by the Trustees of the British Museum it is necessary that my Abstract be closed; and for the same reason I have purposely omitted to mention details of the other birds that came under our observation in McMurdo Strait, and in such other parts of the Antarctic as were examined both by sea and by sledge journeys, all of which will shortly appear in the full reports on the scientific work of the voyage of the "Discovery."
SOME NOTES ON THE HYBRIDISING OF DUCKS.

By J. Lewis Bonhote, M.A., F.L.S., F.Z.S.

The following notes are the first fruits of a series of experiments which I have been carrying on during the last few years. To many, hybrids convey an idea of uninteresting mongrels, or possibly those, who may have heard of the work being at present carried out in this country by Mr. Bateson and others, will expect to read of a further series of experiments in Mendelism. In my experiments I have purposely avoided the question of the Mendelian Laws, nor have I hitherto made any attempt to prophesy as to the results of any particular cross, but my object has been rather to try and effect many crosses with a view of testing their fertility, and by very carefully watching the results, to attempt to throw further light on some of the great and fundamental problems that underlie and permeate every branch of the science of Zoology, such as variation, heredity, reversion, and so forth.

Although it is as yet far too early, in the course of these experiments, to attempt to enunciate any laws or lay down any definite theories with regard to these problems, yet these notes will, I hope, show that the first five years' study has not been wholly without result.

My best thanks are due to Professor Alfred Newton, at whose suggestion this work was undertaken, and the gratitude I owe for his kindly encouragement and sympathy is incalculable.

The five species concerned in my experiments are as follows: (i) The Mallard (Anas boschas), (ii) The Spotbill (Anas poecilorhyncha), (iii) The Grey or New Zealand Duck (Anas superciliosa), (iv) Meller's Duck from Madagascar (Anas melleri), (v) The Pintail (Dafila acuta). The accompanying table will show at a glance the various crosses and how they were produced. Altogether young have been reared from about fifty nests, averaging about four nestlings each.

In dealing with these complicated crosses it was found imperative to make use of a new series of terms by which to denote them, the word hybrid itself meaning merely 'a cross.' Professor Newton kindly wrote on my behalf to Professor
# Genealogical Table

To show the various Duck Crosses obtained in Illustration of a Paper, by J. Lewis Bonhote (May, 1866).

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Mell, M = MPSZ = MPSZ MPS (No Result) MPS = MPS MPS = SMZ SMZ = SMZ SMZ = Mell, M.

MPSZ Mell, MPSZ

MPS MPSZ SMZ SMZ Mell.

Light Forms underlined.

- **M** = Mallard (*Anas boschas*).
- **S** = Spotted (*Anas poecilorhyncha*).
- **Z** = New Zealand (*Anas superciliosa*).
- **P** = Pintail (*Anas acuta*).
- **Mell** = Meller's Duck (*Anas melleri*).
Skeat, asking him what term he would suggest. It was finally decided to adopt Professor Skeat's proposal of the root yevos, prefixed by the Greek numerals, so that while all crosses may be designated as hybrids, a cross between two species becomes a digen, between three species a trigen, between four a tetrigen, between five a pentagen, and so on.

I propose first of all to give a description of the different crosses, and leave to the second portion of the paper any deductions that are to be drawn.

The Pintail-Mallard.

The only birds I have had of this cross are a pair bred in Norfolk, which I received through the kindness of Mr. J. H. Gurney.

The Spotbill-Mallard.

Cross (1) M ⊲ S = M.S.
Cross (2) (M ⊲ S) ⊲ M = 3 M.S.
Cross (3) M ⊲ (M ⊲ S) ⊲ M = 11 M.S.
Cross (4) (M ⊲ S) ⊲ [(M ⊲ S) ⊲ M] = 7 M.58.

This cross has been performed in the four above-mentioned ways, which, as will be noted, chiefly differ from each other by the greater preponderance of the Mallard element.1

Immediately under the heading of each cross will be given the exact method or methods by which that cross was obtained. The Drake is always placed first, and each mating is contained within brackets. By this means it is possible to give, in short, a rough pedigree of each bird. As for example:—

\[(M ⊲ S) ⊲ (P ⊲ M) ⊲ \{Z ⊲ [(M ⊲ S) ⊲ M]\}.

This may be written out genealogically, as follows, taking the different single letters only, until it has all worked down. Each bracket represents a generation. The numerals only refer to the letter they immediately precede. By this means the different proportions of each species in any one bird may be seen at a glance.

\[
\begin{align*}
M ⊲ S \\
M ⊲ S & P ⊲ M & M.S ⊲ M \\
M.S ⊲ P.M. & & Z ⊲ 3 M.S. \\
2 M.S.P. & & 4 Z. 3 M.S.
\end{align*}
\]

The sign ⊲ is one used in genealogies, and appears to the writer, after due consideration, to be more correct than the usual × or multiplication sign.

It may here be noticed that, as a rule, individuals of the same cross and generation are remarkably uniform. Two forms may sometimes be recognisable, but, in these cases individual variation is very slight, so that there will never be any doubt as to which type any particular individual should be referred.
Cross (1), of which I have had a couple of Drakes kindly given me by Mr. Gurney, of Norwich, much resembles, in its full plumage, a pure Mallard, excepting that the upperparts show rather less vermiculation, and the lower parts on the breast and vent have no vermiculations, and are pure white. The white ring of the Mallard on the neck is clear and distinct. The whole of the top of the head and nape is very dark brown, and shows only the slightest traces of a greenish gloss. The sides of the head and throat are buff, grizzled with dark brown. There is a pale superciliary streak. The bill is black, with a yellow spot at the tip, but the amount of black is not constant in the same individual.

I have seen skins of a dark form of this cross which resembled the Mallard still more closely and had no white on the underparts. Particulars of the mating were not forthcoming so that one cannot say whether it was produced by the male parent being a Spotbill or not. It is interesting, however, to note this fact as showing that two types may occur in this cross, as we shall also find occurring commonly in some of the other crosses.

**Adult Drake. Eclipse Plumage.**

The feathers of the mantle and scapulars are brown slightly vermiculated with greyish, while on the longer feathers the vermiculation tends to disappear and their edges become paler, a feature common to both the Spotbill and Mallard in eclipse. The head very closely resembles that of the pure Spotbill, but the crown has a slight greenish gloss as in the Mallard. The chin is white. The underparts as a whole resemble those of the pure Spotbill, but the ground-colour of the chest feathers is slightly rufescent and the markings rather more arrow-shaped than in that species. The breast and vent are much whiter and less spotted.

Crosses (2) and (3) do not appreciably differ from each other. The Drakes in full plumage very closely resemble the pure Mallard except that the general tone of the underparts is much lighter with a tendency to become white over the fore

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end of the sternum. The feathers of the breast also show a continuation of the chestnut with a trace of a dark subterminal spot. The tail feathers are much darker than in the Mallard, being dark brown with merely light or white edgings. The beak is blackish, with a yellow spot on the tip and a trace of yellow at the base of the culmen.

Cross (4) is somewhat inbred, having had the same individual for father, grandfather, and great-grandfather. Only one brood of 9 (6 ♂, 3 ♀) has been reared.

The Drakes are of two types, the one, of which there are four individuals, resembles the males of crosses (2) and (3) very closely, except that the chestnut feathers on the breast which show a small subterminal black spot are more numerous.

The other type differs in being much lighter in coloration. The whole of the top of the head, including the post orbital patch, is of a dull metallic green. The neck is buffish white, grizzled with dark brown. Cheeks rufous. The white ring round the neck very distinct. Beak black, with yellow tip and traces of yellow at the base of the culmen. Feathers of the mantle vermiculated, and the long scapulars show a certain amount of white on their outer vanes. The flank feathers are vermiculated with brown, some of them showing a subterminal black spot surrounded by a rufous area. The chestnut of the chest is pure and deep-coloured, but on the sides and round the base of the neck, it tends to become spotted, the spots in some cases forming bars. The underparts are pure white, slightly greyish on the vent.

The Ducks of Crosses (1), (2) and (3) are hardly to be distinguished from a pure Wild Duck, except that they invariably show some white on the breast, and the bill is black with the characteristic yellow spot of the Spotbill. The long inner secondaries show more white than is usual with the Wild Duck, but it is not nearly so intense as in the same feathers of the Spotbill. The markings on the chest are also paler and less distinct than in the Wild Duck. The ♂ ♂ of Cross (4) resemble the above, but are somewhat lighter.

* Cf. Flank feather of P.M.S. trigen, second generation (Pl. xii., fig. 11).
the feathers of the back. On the chest we find a small portion, which in the Mallard is chestnut, quite white, and the feathers bordering this white tract are white with a subterminal chestnut or brownish spot. The beak is greenish, with a black line along the culmen.

In the light variety the adult Drake on the back is similar to the form just described, but the feathers are slightly darker and less vermiculated. The tips of the major coverts show traces of rufous (Pintail). The head resembles that of the Mallard, but the ring tends to run up behind the neck. The breast and underparts are pure white, sometimes showing very faint traces of vermiculation on the vent. Under tail coverts dark as in the Mallard. There is a patch of chestnut on either side of the chest, and sometimes faint traces of that colour right across. The flank feathers are boldly vermiculated, and some of them suffused with rufous (Pl. xii., fig. 9).

Eclipse Plumage. Dark Variety. The feathers of the back are dark brown, with narrow, irregular, and broken bars of buff, while some of the feathers are pure brown. The back, therefore, as a whole, resembles that of the Pintail in eclipse, but the pure dark brown feathers are common to all three species. The head chiefly resembles that of the Spotbill, but is rather more rufous in colour—a Pintail feature; there is no trace of Mallard. The chin is white, there is a slight trace of the white ring at the base of the neck, which is curious, seeing it is the eclipse plumage. The feathers of the chest are white, with dark subterminal spots, sometimes forming one or two bars, and a broad buff margin. These spotted feathers, except for their buff margins, are identical with those of the Spotbill, but where the spots have formed into bars and crescents, the feather absolutely matches in colour and markings those found on a Shoveler Drake when coming out of eclipse in November (see Pl. xii., fig. 4). The feathers on the remainder of the underparts are white, with dark spots, which closely resemble those on the pure Spotbill, except that the spots are smaller. On the flanks, however, the spots enlarge and coalesce into broad bars, similar, but not so bold, as the bars in the pure Spotbill, and there is also
a tendency to vermiculation, which is found, but to lesser extent, in the pure Pintail.

Eclipse Plumage. Light Variety. (Pl. x.)

Differs on the back from the dark variety in the light bars being broader and more broken up, so that the feather should really be described as dark brown irregularly peppered with buff, a feature that I have been unable to match on any species, although, having in view the eclipse of the dark variety, this pattern is probably due to a combination of the Spotbill and Pintail characters. The head is the same as in the dark form; the ring round the neck is present and conspicuous. Across the chest and at the sides of the shoulders we have—the amount depending on the proportion of chestnut in the full plumage—a subterminal spot of dark brown, margined with buff, on pure white feathers. The underparts are white, except for the vent, which is spotted; the flank feathers are similar to those of the dark variety, except that the vermiculations are less, and the black spots bolder.

Ducks. Dark Variety.

The Duck on the head and upperparts is indistinguishable from the Wild Duck. The feathers of the chest very closely resemble the same feathers in the eclipse plumage of the "light variety" Drake just described, but the markings are more horseshoe-shaped and may be considered as intermediate between the Pintail and Mallard. The breast is similar to that of the Pintail, but whiter; the flank feathers in colour and pattern resemble those of the Wild Duck, but the pattern is more distinct and clearly defined—a Pintail feature. Looked at casually from below the bird bears a superficial resemblance to a hen Gadwall.

Light Variety.

The back of the Duck of this variety resembles so far as I am aware that of no known pure wild breed, although I have noticed something similar occasionally among tame farmyard Ducks and also in a supposed Sheldrake—Wild Duck hybrid in my possession. Along the whole extent of the back, including mantle, scapulars, rump and upper tail coverts, the centre of each feather is dark brown, those on the rump
PINTAIL-MALLARD-SPOTBILL TRIGEN.

♂ 1st Generation. Eclipse Plumage.

(Same individual as in Pl. IX.)
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showing a greenish gloss; the dark colour forms a stripe of moderate but even width, being bordered with pale rufous buff, peppered with the darker colour. These feathers give the bird a somewhat unique appearance, but the pattern is apparently derived from that of the Wild Duck by compressing the dark colour into an even stripe along the centre of the feather and the buff colour of the margins being broken up with darker peppering. The head is merely a light edition of the Wild Duck, the chin being pure white and the dark markings on the side of the face much fewer in number. There is a trace of the white ring of the Mallard, and the feathers of the chest are similar to those in the dark variety, but the dark colour is restricted to a subterminal spot. The remainder of the underparts are pure white with a few of the flank feathers somewhat resembling those of the Wild Duck.

**Mallard—Spotbill—Pintail.**

Second Generation.

Cross (1) \([M \rightarrow S] \rightarrow (P \rightarrow M)\] \(\rightarrow [(M \rightarrow S) \rightarrow (P \rightarrow M)]\).

Cross (2) \([M \rightarrow S] \rightarrow (P \rightarrow M)\] \(\rightarrow [(M \rightarrow S) \rightarrow M]\).

I have tried Cross (1) for four seasons, both the birds being of the dark variety, but have never succeeded in hatching any young from them, although birds of the dark variety when paired up with other crosses have proved perfectly fertile.

With birds of the light variety, however, I have experienced no difficulty in raising birds of Cross (1), and the results have always all been referable to the light variety.

In Cross (2) the ♂ parent belonged to the dark variety, and both light and dark forms appeared in the progeny.

Cross (1). Dark variety. None hatched.

Cross (2). Dark variety. The Drake in full plumage in nowise differs from the Drake of the first generation, except that the bill is that of a pure Spotbill.

Eclipse plumage: unknown.

Duck: unknown.

**Light Variety.**

The Drakes resulting from Crosses (1) and (2) (there is
only one example of Cross (2) are similar. The Ducks are unknown.

Drakes in full plumage resemble those of the first generation (p. 241) throughout, except for the head. The vent is perhaps a little darker, but that is not a constant character; the flank feathers also in some individuals show much more red, and more rarely a trace of a subterminal spot, and some feathers are indistinguishable from those on the flank of a Wigeon (Cf. Pl. xii., figs. 9 and 10). The head is a uniform dark brown, almost black; it shows a green metallic gloss only in a broad stripe behind the eye, meeting its fellow of the opposite side on the nape; the feathers on the top of the head from the base of the culmen to the junction of the metallic stripes have light brown edgings, this portion of the head resembling that of the pure Pintail. The metallic bands are precisely similar in position to the metallic portion on a Teal's head, but slightly duller in colour, while the dull dark colour over the rest of the head is most nearly matched by a Shoveler's head when coming out of eclipse. The bill, unlike that of the first generation, is purely Spotbill.

Eclipse plumage. Similar to that of first generation.

**Mallard—Spotbill—Pintail.**

Third Generation. (See Pl. xi.)

\[
\begin{align*}
\{ ([M \simeq S] \Rightarrow (P \Rightarrow M)) & \Rightarrow ([M \simeq S] \Rightarrow M) \} \Rightarrow ([M \simeq S] \\
& \Rightarrow (P \Rightarrow M) \}
\end{align*}
\]

Only one brood of this cross (3 $\varnothing$ 1 $\varnothing$) has been reared. The Drakes are, perhaps, the most remarkable birds that have been bred during these experiments. The general appearance in full plumage is that of the first generation (light variety) $\varnothing$ in eclipse. The back is a mixture of the back of the $\varnothing$ (light variety), in eclipse, while some feathers are like those of the light $\varnothing$, both these feathers, be it noted, resembling in pattern those of no known pure species.

The head is precisely as in the light $\varnothing$ in eclipse, except that the sides of the face and cheeks are white. The underparts are pure white, but the sides of the chest are chestnut, with black subterminal spots. The flank feathers are very duck-like, being
brownish, with irregular broad arrow-shaped bars. The upper tail-coverts are glossy metallic green, a few of them showing buff edgings, and the recurved feathers are as in the first generation birds.

Shortly summed up we have here a bird, in full plumage, the only traces of whose parentage are to be found in the recurved tail-coverts and chestnut chest. The back represents characters unlike those of any known species, and showing both the ♂ and ♀ characters of a former generation; the flank feathers are essentially ♀ in character, and the whole animal most nearly approaches the eclipse plumage of the same cross two generations back.

Eclipse Plumage. I have been hitherto unable to describe the eclipse plumage of this form, but shall hope to do so next year. I have noted, however, that there is an eclipse moult, and that, besides the loss of chestnut breast and recurved tail-coverts, the flanks become spotted.

Altogether three birds, similar to the above, have been bred.

Duck. The Duck of this cross is very similar to the Duck (light variety) of the first generation, and has the same peculiar coloration on the back, only slightly lighter. The supraorbital stripe and the outer webs of some of the primaries are, however, white. It also shows very plainly the white ring round the neck, a purely male character in the pure species.

Among these Pintail trigens it may, therefore, be interesting to note:—

(a) That among the Drakes, the bill in the first generations is a combination of Pintail and Mallard, and in all succeeding generations Spotbill.

(β) That whereas in full plumage the Drakes chiefly resemble a mixture of the Pintail and Mallard, in the eclipse plumage the Spotbill is predominant.

(γ) That the light form tends to be more unlike its parental wild species than the dark.

(δ) That in each successive generation (and interbreeding has only been possible with the light form) the tendency is for the brighter colours to be lost until the full-plumaged birds of the third generation
resemble roughly birds of the first generation in their eclipse plumage.

(c) During the course of this general lightening of colour, we find a general resemblance to a Gadwall shown by the ♀ P.M.S. of the dark form. The eclipse-feathers on the chest of the light ♀ are barely distinguishable from those of a Shoveler in the latter stages of its eclipse plumage. Rufous flank-feathers are found resembling those on a Wigeon (see Pl. xii., figs. 9 and 10), and finally the head of the ♀ of the second generation is a combination of Pintail, Teal, and Shoveler in eclipse.

With regard to the rufous feathers on the flanks of these trigens—

In the first generation it is merely a rufous-tinge not affecting the general vermiculation.

In the second generation we find the rufous-tinge has in some feathers entirely supplanted the vermiculation over a portion of the feather and in this stage closely resembles the flank-feathers of a Wigeon. On some feathers a small subterminal spot is found.

In the third generation the subterminal spot has become a large broad horseshoe-shaped bar with further vermiculations tending to coalesce and form a second bar, while the ground-colour has become rather brown than rufous.

(c) The third generation were undoubtedly weak, only small broods being reared. Both sexes are fertile, but so far I have not succeeded in hatching any young from them.

MALLARD—SPOTBILL—NEW ZEALAND.

In this cross we again find two types, but so far among the Drakes only. These types really differ chiefly in the amount

So far as I am aware, it has not yet been noted that the Shoveler Drake has an intermediate plumage between the eclipse and his full plumage. I merely mention it here, since it is to this "intermediate plumage" that I refer. Since the above was written I have described this plumage—Bull. B.O.C., Vol. XVI., p. 64, Feb. (1906).
of Mallard which is apparent, so that it will be convenient to designate them as the "Mallard type" and "Spotbill type."

In the Mallard type the feathers of the back (mantle and scapulars) are dark brown, with rather lighter edgings, but those on the anterior portion of the mantle have pale narrow rufous bars. Feathers of the rump dark brown, showing faint lighter edges, and the four central tail coverts are recurved as in the Mallard. Crown of head from base of culmen black, with light edgings to the feathers, resembling the crown of the head of the Pintail. Metallic green stripe behind the eye meeting its fellow of the opposite side on the nape; rest of head dull black, grizzled with buff. Chest dark chestnut, with irregular subterminal spots, sometimes forming bars or crescents in some cases indistinguishable from those of a Mallard in eclipse. Remainder of underparts dull grey with narrow vermiculations of dark brown under tail-coverts, with a tinge of rufous. Bill yellow, dark on culmen.

In the "Spotbill type" the feathers of the mantle and scapulars are dark brown, edged with buff, the inner secondaries showing a clear, but narrow, white rim, along the edge of the outer vane. The top of the head is nearly black, with a few traces of buff edgings. A light stripe runs on either side from the base of the bill over the eye to the back of the head, and a broad dark stripe runs through the eye from the base of the bill. The cheeks and chin are dull rufous buff, grizzled with darker brown, which tends to form an irregular stripe. There is a white spot on the front of the throat, representing the white ring of the Mallard. The chest is pale buff, each feather having a large dark subterminal spot. The breast is white, the feathers boldly spotted with dark brown, especially on the vent. Under tail-coverts rufous, with a large dark subterminal spot on each feather. Bill greenish, with black along the culmen.

As will be noted from the above descriptions the chief differences between the two forms lie in the increased amount of Spotbill characters, especially on the underparts in the second form. It is also well to note that the head of the Mallard form is not unlike the head of the Pintail trigen of
the second generation, and shows Pintail and Teal characteristics, which species had no part in its parentage.

Eclipse plumage: unknown.

Duck.—On the back the Duck resembles the Drake, the feathers being dark brown, with light margins. The head is similar to that of the Wild Duck, but darker on the crown. Chest feathers, pale buff, with dark brown V-shaped portion, and lighter rhachis; on the breast the dark portion of the feathers remains unaltered, but the margins are much broader and pure white, so that the general appearance of the breast is white; on the vent the dark colour becomes more visible. The flank feathers are dark brown with light edgings and light rhachis. The general appearance below is remarkably like a Pintail. The bill is black, with a yellow spot at the tip. Only one variety in the Ducks of this cross has hitherto appeared.

Mallard—Spotbill—New Zealand.

Second Generation.

(Mallard type.)

\[
\{Z \leftarrow [(\text{M} \leftarrow \text{S}) \leftarrow \text{M}] \} \leftarrow \{Z \leftarrow [(\text{M} \leftarrow \text{S}) \leftarrow \text{M}] \}
\]

Adult Drake. Full Plumage.

Feathers of the mantle and back dark brown, with very narrow light edgings at the base of the neck; these dark brown feathers are broken by narrow rufous bars. Median upper tail coverts slightly recurved. Feathers of the crown dark brown, with buff edgings. Rest of head rufous, grizzled with brown along the post-orbital patch and sides of the neck. A very small, short and narrow post-orbital stripe of metallic green. Underparts pure white, slightly spotted on the vent, narrow band across the chest and sides of latter chestnut. Flanks pale brown, irregularly and broadly blotched and barred with dark brown. Bill black with yellow tip.

Eclipse plumage: unknown.

The Duck closely resembles the Pintail trigen (light variety) Duck, having the same peculiar pattern on the back. The underparts are pure white, except for a narrow chest band
of rufous buff with small dark sub-terminal spot on each feather.

A pure white Drake with deep yellow bill and feet has been reared in one of the broods of this cross.

**Mallard—Spotbill—Pintail—New Zealand.**

Cross (1) \[(M \sim S) \sim (P \sim M)\] light variety \(\sim Z\).

Cross (2) \[(M \sim S) \sim (P \sim M)\] dark variety \(\sim \{Z \sim \)

\[(M \sim S) \sim M]\}.

Of Cross (1) one brood of two \(\sigma\) and \(\varphi\) only has been reared and are described below. They have been paired together and proved quite fertile but no young, owing to an accident, were reared.

**Cross (1) Adult Drake. Full Plumage.**

Feathers of the mantle and scapulars dark brown with light edgings, those on the back and rump entirely dark brown with traces of light edgings on the upper tail-coverts, the two central feathers of which are attenuated and slightly raised at their tip. The crown of head is dark brown with traces of buffish edgings, and the remainder of the head, with the exception of a narrow dark brown stripe through the eye, rufous-buff grizzled with darker. The chest feathers are pale chestnut with dark brown horseshoe-shaped markings; the breast, white, with slight traces of dark brown in the middle of each feather, the darker colour being however entirely hidden by the white margins. On the vent the feathers are dark brown with narrow whitish edgings. Under tail coverts dark brown with broad rufous margins. Feathers of the flanks dark brown, with narrow buff-edgings and a narrow V-shaped buff bar. Bill greenish-yellow with dark marking down the culmen. Legs orange.

Eclipse plumage: unknown.

The Duck is very similar in general appearance to the Drake but the buff margins to the feathers of the upper parts are broader and more pronounced. The head is more like that of the Wild Duck. Feathers of the flanks, buff, boldly marked with dark brown as in the Wild Duck, but the
markings are more pronounced. Bill bluish slate with black over the culmen. Legs greenish-yellow.

Cross (2) Adult Drake. Full Plumage.

Feathers of the mantle dark brown, with narrow grey vermiculations; rest of the back and rump dark brown, showing traces of metallic green on the upper tail-coverts, the central feathers of which have a slight upward curve. Feathers of the crown of the head dark brown with light edgings. The post-orbital stripe, narrow at its anterior end and badly defined, metallic green, some of the feathers with light tips. Rest of the head very pale buff, almost white, with dark brown or buffish tips to many of the feathers, these tips being most conspicuous on the cheeks and sides of the neck. Ring round neck pure white. Underparts pure white, sides of the chest chestnut with white edgings. Flanks vermiculated as in the Mallard, some of the feathers showing rufous spots. Under tail coverts black with broad white margins.

Eclipse plumage: unknown.

Mallard—Meller’s.¹

M ↔ Mell.

A pair of these birds bred in the Zoological Society’s Gardens in 1904 is in my possession. The Drake of the pure bred Meller’s Duck is a dark form of our common Mallard.

Adult Drake. Full Plumage.

Feathers of the mantle, back and rump uniform dark brown, those of the upper tail-coverts showing a slight greenish sheen, the central ones have a tendency to curve upwards, but are not recurved. Crown of the head very dark brown, the feathers having narrow light edgings; streak behind the eye on either side bright metallic green; sides of face, neck and chin rufous, grizzled with dark brown, the latter colour predominating under the chin to the almost complete exclusion of the rufous. The chest is very deep chestnut, each feather having a dark sub-terminal spot, the rest of the underparts are dull whitish, vermiculated with narrow bars of dark brown, and with dark median tips.

¹ Anas melleri, from Madagascar.
On the Hybridizing of Ducks.

The feathers of the flanks are similar, but the vermiculations are clear and distinct, and in some there is a dark median spot, divided by a light buffish bar. Tail feathers dark brown, with two irregular buffish bars on the outer webs. Under tail coverts black. Bill and feet as in the Mallard.

Eclipse Plumage.

Undescribed, but generally resembling that of the Mallard.

Duck.

Very similar to a wild Duck, but rather larger in size, and more rufous in colour. The upper parts are dark brown, each feather margined with rufous buff. Head buff, grizzled with dark brown, the colour being most intense on the crown. Breast and underparts, including flanks, rufous, becoming paler on the vent, each feather having a broad blackish V-shaped mark, giving it a general appearance as though it were striped with black.

Mallard—Spotbill—New Zealand—Meller's.

Mallard—Spotbill—New Zealand—Meller's.

{\[\frac{(M \approx S)}{(P \approx M)} \approx Z\approx (M \approx Mell.)}.

Adult Drake. Full plumage.

Feathers of the back dark brown, the longest scapulars and feathers at the base of the neck showing a tendency to vermiculation. Rump very dark brown, with dark, greenish gloss; median upper tail coverts recurved. Crown of head and post-orbital patch dull metallic green, grizzled with light buff; remainder of head buff, grizzled with dark brown, becoming almost pure rufous on the cheeks. Neck ring of Mallard present. Chest very deep chestnut, with one or two incomplete dark brown bars on most of the feathers. Remainder of underparts white, with a tendency to become spotted, the white becoming brownish on the vent. Flank feathers white, with large dark sub-terminal spot, or V-shaped bar, and showing traces of vermiculation. Under tail coverts whitish, vermiculated with dark brown, some feathers being almost pure black. Bill black, with yellow tip.

Eclipse plumage: unknown.

The Duck on the back is similar to the Pintail trigen (light variety). Head rufous buff, darker on the crown, and with
dark grizzled stripe through the eye. Underparts whitish, spotted with black, except for a small patch in the centre of the breast, which is pure white, and the chest band which is more deeply coloured. Bill black, with yellow tip.

**MALLARD—SPOTBILL—PINTAIL—NEW ZEALAND—MELLER’S.**

\[
\{(M \sim S) \sim (P \sim M) \sim Z \sim (M \sim \text{Mell.})\}
\]

Only one bird of this cross, a Drake, has so far been reared. He is a remarkably large bird. The description of the full plumage is as follows:

- Feathers of the mantle dark brown with transverse vermiculations forming two narrow buffish bars.
- Scapulars vermiculated with rufous and dark brown; inner secondaries brownish grey with whitish sheen.
- Feathers of the rump and upper tail coverts dark brown, the latter having a greenish gloss, and the four central ones recurved.
- Top of the head dull black, with brown edgings to the feathers; there is a broad streak behind the eye with greenish gloss, but showing traces of light brown.
- Sides of face buffish, grizzled with brown. Chin and throat very dark brown, grizzled with buff.
- The white ring of the Mallard is just visible in the front of the throat. Chest deep chestnut, the feathers having white margins, and in some cases a black subterminal spot, underparts grizzled greyish, darker on the vent and light, almost white, on the breast; the flanks greyish, vermiculated with dark brown, and suffused with rufous.
- Under tail coverts black. Bill greenish yellow, with irregular black marks on the culmen, feet pale orange.

**CONCLUSIONS.**

I propose to deal with the conclusions, which may be legitimately argued from a close study of the foregoing under five heads, viz.:—(i.) Fertility, (ii.) Sex, (iii.) Colour of eggs, (iv.) Reversion, (v.) Colour.

I. **FERTILITY.**

Hybrids, as a general rule, are supposed to be infertile, and such is certainly the case, so far as our present knowledge is.
concerned with the greater number of species, but certain exceptions obtain, amongst which we may mention some of the Game Birds and Pigeons. This fertility or infertility does not seem to follow any definite laws; for instance crosses between various species of the Bovide are generally fertile, whilst among the Equide there is no authentic instance of such fertility. Among the Anatide trigen hybrids are by no means unknown. M. Rogeron, in France, and Sir Richard Graham, in this country, have obtained several such crosses, but so far as I am aware they have not succeeded in raising any young from them. My trigen prove, however, for the most part (the dark form of P.M.S. trigen when bred inter se being the only exception), perfectly fertile, either when bred inter se, with digens or with pure species; and the two tetragens which I have been able to test have also proved quite fertile, both inter se and when crossed with a digen, so that provided the stock does not become ‘inbred’ it seems probable that fertility between the various species of Anatide is the rule rather than the exception.

The five species with which my experiments have so far been conducted and that have been united in a single individual are very distinct; in three of them the sexes are different and the Drakes have an eclipse plumage, while in the other two the sexes are alike and the eclipse plumage is absent. They are inhabitants of the Palearctic, Oriental, Australian, and Ethiopian regions, and one of them, the Pintail, is a member of a distinct genus, so that the objection not unfrequently brought forward that fertile hybrids are, as a rule, but varieties of one species, cannot in this case hold good, and we must accept fertility between as many as five species of the Anatide as an accomplished fact.

II. Sex.

The question of the sex of hybrids, more especially in relation to their colour, is a point of extreme interest, but one on which the facts at hand are insufficient to point to any definite conclusions.

I am now further able to add my pentagen Drake, by whom I have a fine brood this year (1906).
It is generally assumed that a large percentage of hybrids belong to the male sex. This arises from two causes.

1. Among the Game Birds and Ducks, where hybrids have been most frequently noticed, the males have fine and distinct plumages, whereas the females are all dull coloured and resemble each other more or less closely, so that although a male hybrid would be at once recognized, the females would often be passed over.

2. There is a considerable mortality among the females. As a rule, when full broods are reared, the sexes are about in equal proportions, but if only a small proportion of the brood reach maturity there is a large preponderance of males. In the full broods the proportion of females was 45 per cent. as against 25 per cent. in the small broods, and when we take into account that only one Duck in three rears a full brood, the preponderance of males is easily accounted for. My experiments, however, clearly show that at birth the sexes among hybrids are nearly equal in numbers, and in that respect do not differ from species when bred pure.

Among the first generation of the Pintail-Mallard-Spotbill trigens there is moreover a curious fact in relation to sex and colour, although as yet its meaning is somewhat obscure.

If the brood be small and only contain the light form they will probably all be males; if it contains both light and dark forms we may expect light males and dark males and light females, but there will pretty certainly be no light females unless there be also some dark males, and females of the light form will be present before females of the dark form. In other words the various forms of Pintail trigens will probably be produced in the following order, viz., (1) light males, (2) dark males, (3) light females, (4) dark females, and in a mixed brood the dark males would not appear before the light males, or the light females before the dark males and so on. I would not, however, lay too much stress on this fact as it needs further corroboration in other crosses.

III. Colour of the Eggs.

In the pure species the colour of the eggs in the Pintail
and the Mallard is similar and of a greenish tint, while the Spotbill and New Zealand Duck lay cream-coloured eggs. Among the Spotbill-Mallard digens, and Pintail-Mallard-Spotbill trigens the eggs (with one exception, those laid by a dark trigen) are invariably greenish, but in the New Zealand-Mallard-Spotbill trigens the eggs are without exception cream-coloured.

IV. REVERSION.

By "reversion" is meant resemblances shown in hybrids to species other than their parents, these resemblances being supposed to belong to an older and more archaic type. This idea was proved by Darwin in the case of domestic Pigeons which reverted to their wild ancestor, the Rock Dove, and has also been established by several other observers in the case of cultivated species of plants, but has never, so far as I am aware, been proved true in the case of hybrids between wild species. Bearing in mind how much further removed in point of time pure wild species are from their common ancestor as compared with domestic forms, and also the difficulty experienced in crossing wild species, it is not surprising that reversion in the case of wild forms should lack proof. Nevertheless when it has been tried it has not been apparent, and under the next heading I hope to bring forward some cogent reasons to show that, if it exists, it must be considered on very much broader lines than has hitherto been the case.

As instances of resemblances to species, other than those contained in their parentage, that have appeared in the course of these experiments, we may note a resemblance, especially on the underparts and in size, shown by a young female Pintail trigen to a hen Gadwall; also a close resemblance shown by a New Zealand trigen Duck to a female Pintail, or, again, the head of a New Zealand trigen Drake with markings resembling some of those found on the Teal and Pintail, and, lastly, flank feathers from a Pintail trigen of the first generation, which are chestnut and practically indistinguishable from those of a Wigeon.¹

¹ Examples of these, as well as of the hybrids, were exhibited at a meeting of the Zoological Society in March, 1905—P.Z.S., 1905, Vol. I., p. 147.
It has seemed best, for reasons which will shortly be apparent, to deal with colour under a separate heading, although it has usually been treated as the most obvious and easily distinguishable character by which reversion might be recognised.

The first point to notice is that among the Pintail-Spotbill-Mallard trigens, as well as among the New Zealand-Spotbill-Mallards—the only two trigens of which a sufficient number have been bred—we find two and only two forms occurring. As already stated, under the description of these forms, we have in the Pintail trigens the light and dark varieties, and in the New Zealand trigens the form in which the Mallard is dominant, and the form in which the Spotbill is dominant, the New Zealand characters, although present, being swamped by those of the other species. Furthermore these dimorphic forms resemble typical wild dimorphic species (e.g., the Arctic Skua), from the fact that, although there is never any doubt as to which form any particular individual belongs, yet it is rare to find two individuals that are precisely similar.

One of the most striking results of hybridisation, especially when carried beyond the first generation, is that it seems to produce a flood of variation, a fact that was, I believe, first noted by Pallas, and when we come to examine these results critically we find that such hybrids may show either:

(i.) Resemblances to one or other of their parents.
(ii.) New variations
   
   (a) Resembling species other than their parents.
   
   or (b) Resembling no known species.

(iii.) White coloration.

At the present time it is part of our creed that "species" represent varieties which have become fixed and perfected by natural selection, and that those species existing to-day are of the type most suitable to their particular surroundings and needs, unsuitable varieties having been immediately eliminated by the relentless action of natural selection.

But although natural selection has so far overcome variation as to cause species to breed to all intents and purposes
true, yet the "power to vary" does not seem to have been in any way overcome, so that variations, showing either considerable departures from the normal, or only slight aberrations, are continually making their appearance even among wild species, and are only seeking for favourable conditions in order to become permanent.¹

The fixity of a species is, therefore, largely, if not entirely, dependent on the power of natural selection to restrict, for it cannot annihilate, variation.

If then variation can make itself felt in the face of natural selection, how much more is it likely to do so when the fixity of a species is artificially disturbed by hybridisation. And since it is generally allowed, as has been stated above, that species represent suitable varieties, which have become fixed and perfected through many generations, we should expect, when the restrictions of natural selection have been partially removed by hybridisation, to find varieties appearing which in some characters will resemble, or tend to resemble, species other than their parents. But at the same time, if my argument holds good, we should also expect to find that varieties would appear that resemble no known species, these last representing the unsuitable variations that have been eliminated by natural selection. In point of fact my experiments show that this is precisely what we do find. The birds noted under "Reversion" (ante p. 255) are instances of successful varieties that are now found perfected as species in various parts of the globe; while, as instances of unsuccessful varieties which have reappeared, we may note the rumps of the hybrid Mallard-Pintail, the bill of the tetragen M.P.S.Z., and perhaps, the best example, the third generation, light trigen (Pl. xi).

Consequently, it seems to me that there is considerable probability that these generally accepted instances of

¹ It would be out of place to dilate here on these varieties that are continually cropping up in Nature, but I may mention one or two examples. I have in my collection a Teal, showing a tendency to the white wing of the Mallard; Eider Drakes occasionally show the black V characteristic of the Pacific species; in the pattern of its feathers "Sabine's Snipe" shows certain affinities with the Great or Solitary Snipe. These are all instances of varieties tending towards other species, while as an instance of a variety resembling no known species, I may mention the case of *Atheine chiadria*, a variety of *Atheine noctua*, recently described from Italy.
"reversion" are merely variations, which happen to resemble other species and cannot be considered as evidence that the species so resembled are archaic forms, or that they are less remote from the common ancestor from which all the Anatidae may be supposed to have originated.

Some time ago in a paper to the Linnean Society I attempted to show how the presence or absence of colour tended almost invariably to make its appearance first of all on certain definite tracts common to mammals and birds alike, and for which I proposed the name "poecilomeres" (ποικίλης μερος—spotted part.)

It may perhaps be worth while to briefly recapitulate a few of the main characters of these poecilomeres so far as they concern the class Aves.

Poecilomeres are situated on the following parts—viz., chin, malar stripe, maxillary stripe, a spot above and slightly in front of the eye, a spot below and slightly behind the eye, the ear, crown of the head, occiput, fore-end of sternum, vent, rump, thighs, wrist, and shoulders (above and below).

Now there is hardly any species of bird on which one or more of these poecilomeres is not "picked out" (to use a painter's expression) in some colour different from that of the surrounding parts, and in fact most of the so-called recognition or protective markings will be found on these patches.

On the other hand, among many species the differentiation of colour on the poecilomeres is not so conspicuous as to attract the eye or to serve in any way for protection or mimicry, yet we still find them marked by differences of colour so slight that unless specially looked for they would never be noticed.

Or, again, some species occasionally, but not invariably, show a few white feathers on certain parts of their body, and when such is the case it will be found that these white feathers appear on the poecilomeres.

In a paper on the Hybridisation of Ducks it would be out of place to dilate on poecilomeres at too great a length, and since there is hardly a species in which examples of these poecilomeres may not be found, I will content

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1 Summary published Proc. Linn. Soc., Vol. XXIX., p. 185 (1904); more detailed account in "Knowledge," December, 1903, January to April, 1905.
myself with the bare mention of a few common species to exemplify the different classes of these spots.

The Kingfisher (*Alcedo ispida*), shows the various head poecilomeris very clearly, and as examples of inconspicuous differences on these tracts, the rump of the hen Sparrow (*Passer domesticus*) and hen Chaffinch (*Fringilla coelebs*), the malar stripe and dark ear patch of the hen Yellow Bunting (*Emberiza citrinella*), and the dark ante-orbital patch of the Barn Owl (*Strix flammea*), are familiar examples.

And, lastly, as an instance of the class where a few white feathers frequently, but not invariably, appear, the young of the Cuckoo (*Cuculus canorus*) forms a good example.

These spots may, however, sometimes appear in a transitory manner, as, for instance, when a change of plumage (not necessarily moult) is occurring, and in the paper referred to above the instance is brought forward of a young male Shoveler (*Spatula clypeata*) in which the metallic colour on the head first showed itself on the post-orbital and auricular poecilomeris, gradually meeting and joining up across the head with the crown and occipital poecilomeris, and then finally spreading forwards, and it may be well to note that the joining up of the auricular and post-orbital poecilomeris formed a metallic patch similar in size and position to that found in the $\mathcal{G}$ Teal (*Anas crecca*), and, further, in the last stage, when the whole head, except the portion round the beak, was metallic, the markings were similar to those found permanently in the hen Scaup (*Fuligula marila*). Now these resemblances taking place in the normal pure-bred wild Shoveler, the question of reversion does not come in, and no one would suppose these resemblances due to anything more than transitional variation, and it is the object of this portion of the paper to show that variation in colour follows along definite lines.

As a further illustration of how widely spread these lines are throughout the Mammalian and Avian kingdoms we may note the assumption of the brown head in the case of the Black-headed Gull (*Larus ridibundus*) which invariably follows every year on lines similar to those related in the case of the Shoveler, and, as I have before pointed out, the
method by which on the approach of winter the Stoat assumes his white dress, is (although the change is from brown to white) again conducted along precisely similar lines.

Now these "poecilomeres" being differentiated in colour from those parts of the body immediately surrounding them it follows, and will be easily apparent, that for the same reason they will often form the distinctive characters and markings of many species, so that throughout the Avian kingdom these tracts may be traced from being the distinguishing characteristics of well-marked species to inconspicuous, though permanent, markings, to markings visible only during a change of plumage, or, finally, only occurring as sporadic variations.

We noticed above (p. 256) that hybridisation tended to let loose a flood of variation, and in view of the fact that these "poecilomeres" occur as variations in a state of nature, it was not at all surprising, though none the less significant, that all the variations appearing among the hybrids were found to start on one or more of these "poecilomeres."

To take a few examples: in the Spotbill-Mallard trigen we find the first trace of the white, which in trigens frequently spreads all over the underparts, on the fore-end of the sternum, or again in the eclipse plumage of the Light Pintail trigen (P.M.S.) we find the only spotted part to be the vent "poecilomere." On the head of the second generation Light Pintail trigen the crown of the head has less sheen on it than the part between the eye and the ear—a point which we find still more clearly and distinctly marked in the next generation. Now the metallic part joining the eye and ear represents the tract formed by the junction of the post-orbital and auricular "poecilomeres" (which we have already noted as occurring in a transitional state in the young male Shoveler, and permanently in the adult male Teal), while the browner portion along the top of the head represents the tract formed by the junction of the nasal and crown poecilomeres, and is found permanently in the drake Pintail (Dafila acuta). So that in these cases, although we have resemblances to other species, the resemblances might equally well be considered as variations following the lines of the "poecilomeres."
COMPARISON OF FEATHERS FROM HYBRIDS AND PURE SPECIES.
On the Hybridising of Ducks.

In the New Zealand trigen we find these same tracts still more marked, and by carefully reading the descriptions in the earlier portion of this paper many other examples of variations occurring on poecilomeres will be found, which it is unnecessary to recapitulate here.

We trust, therefore, to have made it clear that the variations among these hybrids, although at first sight they may seem to appear sporadically all over the birds, do in reality make their appearance along very definite lines and in definite tracts and that these lines and tracts are those which occur throughout the Mammalian and Avian kingdoms as "poecilomeres."

Now some of these patches, which have just been shown to be variations following the lines of the poecilomeres, might possibly be also considered (as in fact has been previously suggested) as instances of reversion to the Teal and Pintail.

And which view are we to take? Are they to be considered as "reversions"—doubtful term taken to imply an older form and more ancestral type—or as "variations" showing resemblances to two well-known species, such resemblances owing their origin to variation following the well-defined lines which I have above and more fully on a former occasion shown to hold constant and good for the whole of the higher vertebrates?

If we accept the hypothesis of reversion, in the concrete instances noted above, we have then to answer the further questions: (1) Are the Pintail, Teal, Gadwall and Wigeon, to which resemblances are shown all of a more ancestral type than the Mallard group, which is the most widely spread genus?

(2) If from dealing with hybrids of five species "reversion" is obtained to four other genera, is it not likely that it is only a matter of hybridising more species to get resemblances to more genera, and that instead of coming back to one type as reversion would lead us to expect, we seem to be "reverting" to many types?

And furthermore, if we hold to the reversion theory how are we to account for those varieties that resemble no known species, which occur pari passu with the others?

If, however, these resemblances to other species are considered merely in the light of variations that are following
a definite and wide-spreading law we have, in my opinion, a far more reasonable and adequate explanation of the facts.

In another sense, again, "reversion in the abstract" may occur, and by this we mean the general tendency shown among these hybrids for the plumage of the sexes to become more and more alike, and what follows therefrom, viz., the suppression of the brighter plumage of the Drake and elimination of the eclipse plumage, but this is a matter about which our data are as yet insufficient.

The only remaining point to be noticed is that of the "white coloration" which has appeared in so many cases. It is first apparent as a sternal poecilomere in the Mallard-Spotbill digens and in the Mallard-Spotbill-Pintail trigens of first generation we find it very much more marked and covering the whole of the underparts. In the second generation of the same cross it is visible on the sides of the face as well, although in this case the white is not pure, but buffish, with dark mottlings, and the third generation we find to be still lighter. In some cases the orbital "poecilomeres" in the females are clearly marked in white.

Now what is the explanation of this white colour? At first sight from the complete white underparts of the Pintail trigens one would be tempted to say that it was merely due to the Pintail, but as it occurs in other crosses which have no Pintail in their parentage, and as moreover when it appears it is common to all ages and both sexes, some other explanation must be sought. Now we notice that the more inbred these Pintail trigens become, the lighter they are, and further I have just reared an extremely light brood of Mallard-Spotbills which are also much inbred, and this renders it extremely probable that the light colour is due to lack of vigour caused by inbreeding. In my paper to the Linnæan Society, quoted above, I gave many instances of lack of vigour producing white coloration among birds in captivity, and I believe that in the case of these hybrids lack of vigour is the cause of the white, which one may again notice as always occurring first of all on the poecilomeres.

The matter, however, has a further complication: if the white is, as I allege, due to lack of vigour, why is it that the white Pintail trigens are fertile inter se, while so far I have
On the Hybridising of Ducks.

been unable to cross the dark Pintail trigens? And, further, I have this year bred a pure white New Zealand trigen which was always the strongest and largest of the brood and is now the sole survivor, and has since proved perfectly fertile. I have merely noted these apparent contradictions here to show that I am not unmindful of them, and in fact an explanation is not impossible; but the matter is not as yet fully elucidated, and consequently the explanation is best deferred.

This completes my notes so far as they have gone, and if it may be justly said that they are somewhat incomplete, nevertheless it may with equal fairness be maintained that they are suggestive enough to warrant the hope that the time and money spent has not been in vain, and I would hope that others more favourably placed than myself may take up and try to elucidate some of these problems that form the bedrock of modern zoological science.

SUMMARY.

This paper being from its nature somewhat lengthy and involved, a short summary may not be out of place. The various crosses that have been bred are shown in a table at the beginning, and the method of indicating the exact parentage of any particular cross is fully explained on p. 237. As we deal with crosses of more than two species it was felt that a new term to denote these would have to be invented, and with the help of Professor Newton and Professor Skeat, the terms di-, tri-, tetra-, penta-, etc., with the suffix -gen, have been adopted.

The first part of the paper deals with the actual crosses that have been obtained showing exactly how they have been produced and accompanied by careful descriptions. All deductions from the experiments have been kept for the latter half, and the matter treated under five general headings, viz. :-

(1) *Fertility*, in which it is shown that most of the crosses under review are perfectly fertile.

(2) *Sex.*—Where it is pointed out that at birth the sexes are approximately equal, but that during infancy there is a greater mortality among the hens, which gives rise to the opinion that most hybrids are Drakes.
(3) Notes on the colour of the eggs.
(4) Reversion.—Where resemblances to other species are pointed out.
(5) Colour.—Where the attempt to show that hybridisation by breaking down the fixity of a species tends to produce variation, that this variation follows without exception along certain definite tracts, known as poecilomeres, and that it is from this cause, and not from the usually accepted theory of reversion that we get resemblances to other species.

It is pointed out, however, that the tendency of the sexes to resemble each other may be due to a form of reversion.

The appearance of White Coloration, which also follows the lines of poecilomeres is commented on and ascribed to lack of vigour.

**Explanation of Plates.**

Plate IX. \((M \rightarrow S) \rightarrow (P \rightarrow M)\). ♂ 1st generation. Full plumage.

Plate X. Same bird as Plate IX. Eclipse plumage.

Plate XI. P.M.S. ♂ 3rd generation. Full plumage.

Plate XII.

fig. 1. Breast feathers from pure Spotbill ♂.

2. Breast feathers from P.M.S. ♂ (dark variety). Eclipse plumage.


5. Breast feather from adult P.M.S. ♂ (dark variety).


Series of Flank feathers showing in successive generations the approach towards ♀ type of feather, as well as resemblance to a Wigeon. All from birds in full plumage.

9. From trigen P.M.S. 1st generation.

10. From pure Wigeon ♂.

11. From trigen P.M.S. 2nd generation.

12. From trigen P.M.S. 3rd generation.

13. From pure Pintail ♀.
THE PRINCIPAL AIDS OF MODERN ORNITHOLOGY.

By Ernst Hartert.

I have often been asked by young persons interested in Ornithology and eager to advance our knowledge, and I have often asked myself, what can we do best in the interest of our beloved science, what is most needed? The answer has never been easy, nor short.

The aim of Ornithology is, of course, to study and explore everything connected with birds: their external and internal structure, their nests and eggs, development, seasonal changes, habits, and everything else, to name and to classify the birds as best as we can, so that we can speak of them, and to understand their relation to each other, as well as to spread our knowledge.

There are, however, branches of our science which are more or less neglected than others, certain questions of special importance requiring special care in their solution.

I wish to speak here of scientific Ornithology alone, and I do not propose to consider kindred subjects, such as Bird Protection and Aviculture. Bird Protection is a modern inclination and a very noble and laudable pursuit—but it will be discredited if dilettantes without knowledge become dominant in it and venture to make laws. It will cease to have a noble aim if its advocates do not strictly adhere to truth and facts, and it will only have a future, if we admit that birds should be protected for their own sake. That birds in general are "useful" is a fallacious theory—we want to protect them because we love them, and because we wish to save them. We wish to save the mighty eagle and the noble falcon as well as the sweet songsters, the fishing and fruit-eating birds as well as those which live on disagreeable insects. Severe "bird-laws" will not help very much, and especially not in countries where they are not or cannot be enforced. "Bird-laws" in the wilds of Africa are nothing but a trouble and a difficulty for the conscientious collector for scientific purposes, and those in England are useless as long as every hedgerow and common is pilfered by our hopeful
boys; as long as countless eggs are wantonly destroyed by boys and uneducated keepers and gardeners—similar and worse things happen in other monarchies. Continental ornithologists can tell us of the destruction of seabirds on Juist, and of the shooting and catching in Italy during springtime. Education of boys and public, and the preservation or creating of breeding-places will be more valuable than "bird-laws"—and wherever "bird-laws" prevent and hinder collecting for scientific purposes, they go beyond their justifiable limit.

Aviculture is generally a hobby, and a very interesting one, but not strictly a branch of science, although sometimes scientific questions have been and will be solved by its means, especially when experiments are made with that purpose.

Much time and energy is spent in egg-collecting; this is now generally called "oology," a word originally applied to the study of eggs—and it is an usurpation of an ignorant, though ardent, egg-collector to call himself an "oologist." Naturally we wish to know all eggs and everything in connection with them, but time and energy are wasted if no attempt is made to identify the birds who laid these eggs, and without an intimate knowledge of the forms of birds which inhabit the country where a collection is made. Insufficiently identified eggs are more harmful than useful to science. Therefore in less known countries, eggs should be identified by preserving and carefully labelling the parent bird, and this should even be done, in certain cases, in better known countries, as for example, where several species of Creepers (Certhia), and the so-called Marsh-tits (Parus), and others inhabit the same area.

The same must be said about the field-notes: they are of very little value to science unless the birds which are observed are perfectly (not only superficially) known, and in all doubtful cases they must be procured, preserved, and carefully labelled. Even in West and Central Europe many species and subspecies are insufficiently known. That this is true becomes evident if we remember that most British and other Ornithologists are still in ignorance about the two species of Marsh-tits and Creepers occurring in most countries of Europe; that we do not know the exact limits in Germany
of many forms which have eastern and western representatives; that the detailed distribution of many birds in France is unknown; that our knowledge of Spanish Ornithology is as yet imperfect, etc., etc. With regard to labelling, it is most important that more care should be bestowed on this. How often do we receive birds with a verbal or written statement that they "come from" such and such a place, and how often do we find that such information is imperfect or erroneous, leading to very wrong assumptions and harmful conclusions. One specimen from a hundred, or more, may have been shot elsewhere, and just that one is sure to be of great importance. I have had some wonderful experience in this sort of thing, and I feel uneasy, if I do not actually distrust, over every locality given by verbal or written declaration, unless the birds bear a label, firmly attached to the legs, stating exact locality, date, name of collector, and, if possible, other details. It is pitiable to see how unsuitable, how large, heavy, clumsy, or, in other cases, how small, with insufficient room to write on, or of what perishable material labels are made, with what bad ink they are written, or how otherwise objectionable they frequently are. But, however bad they may be, however disgusting they may seem, they should be treated as if they were sacred, because they, and they alone, are the proof that a given specimen genuinely comes from that and that place. In a scientific collection—and collections should be made for scientific purposes—an original label should never be removed for any reason whatever. It is time that museum authorities should realise this, and that they should strictly enforce on their staff the iron rule that no label must ever be removed or replaced, and that the deplorable state existing in many large and celebrated museums ceases for ever. A copied label is always open to doubt.

Another thing which is much neglected is the "make" of a skin. Most persons can learn to make a good skin, and not only is it disgusting to see ugly made and distorted skins, but good and uniformly made skins show differences much easier and better, and are, therefore, a great advantage to scientific work. One more word about collections in museums.
As they are intended for study, and not only for the officers at such museums, they should be available for scientific work, and should be lent and sent freely to all qualified persons. If a collection is only used by a few persons, the work and money spent on it is hardly justified. A large group of birds can seldom be fully understood from the material in one single museum, while all the series together in various collections may fully elucidate it.

Ornithology has advanced further than many other branches of zoology: in Ornithology the importance of the study of geographical forms has been fully realised. It is now widely understood that dreary species-mongering is not the gist of science, but that the study of even the minutest geographical forms, or subspecies, as they are now universally (if somewhat unfortunately) called, is all-important, as it throws a new light on the perception of bird-life, bearing, as it does, upon the development of such forms, and helping us to grasp the relationship of the latter to each other. It is obviously of more importance to know how a certain Wagtail differs in the various parts of the area inhabited by it, than to know whether there are 36 or 37 so-called species of Motacilla. In order to speak of our objects they must have names, and there are few ornithologists who still object to the simple and practicable method of “trinomials,” which is known to every one of us. It is gaining more and more ground as it is more understood, and in a very short time nobody will seriously object to it.

On the other hand, it is most important that it should be understood that the naming of a form is no joke, but a serious undertaking. The reckless creating of synonyms and of nude names is offensive, and we must carefully consider all sides of the question, and especially try to compare good series before we characterise and name supposed new forms.

Doubtless some of our friends have been hasty and gone too far in some instances. Though we must go into minute details if we want to be scientific, we must base our judgment on as much material as possible; we must become acquainted with the various ages and seasonal changes which are produced by moult and wear of plumage, etc., etc. Moreover, we must
know geography—not the political boundaries of countries, but the physical aspect of the land. If we do this we shall, perhaps, understand why closely-situated countries have different subspecies, and we shall get a wonderful insight into the working of nature, which magnifies our interests and makes us, if possible, still more enthusiastic and ardent in our pursuits.

To enable us to study in such a way we must collect more—not in a superficial, old-fashioned way, by trying to get every species represented, but more judiciously, by getting series of even the commonest birds from every possible geographical area, well-labelled, and with notes upon the nature of the country—whether that is treeless desert, rich meadow, bare rock or swamp, and so on. Then again, if we understand and know all the local forms, species, and subspecies of birds and their distribution, we shall find the field-observations, which form the most pleasant pastime in the life of every ornithologist, much more interesting and of much more value, the variations in eggs will have an increased interest and value, the aviculturist will, sometimes, know better why a certain bird is wilder, or sings better or worse, and last, but not least, the observations of migration will cease to be a mass of data, becoming important, and teaching us much sooner the directions and routes which the birds take, if we can trace the home of migrants from examination of specimens.

In collecting, special attention should be paid to islands which are being cultivated, because it is there that species disappear, for various reasons, and it is desirable that sufficient material should be preserved before a species disappears. Scientific collecting has never yet exterminated a bird, and where the numbers of a species have come down to a few specimens, no human power will be able to save it, and it is better for them to be preserved in a museum than that they should perish unknown.

The anatomy of birds is still very imperfectly studied, and it is hoped that it will throw much light on the actual affinities of many birds. We are as yet far from a final "system" based, as every system worthy of the name must be, on the real affinities of birds. At present much of our
system is more a sort of feeling and guess-work than the result of deep research. This is especially the case with the Passeres. Here it is where work is most required, but it is possible that anatomical studies will rather lead to negative results than to positive ones, inasmuch as they may very likely show that some of our so-called families are not separable at all. Great care is necessary in reaching conclusions, and here, too, the examination of many species and specimens is necessary. There is, in my opinion, more individual variation than many people imagine, and two doubtful genera are not good genera, because two species, one out of each—say, *Turdus musicus* and *Merula merula*—are distinguishable by their skeletons. All the species of the genus should (if possible) be studied, and especially the doubtful ones.

But I must conclude. Let me say in a few words that much work is still to be done in all branches of Ornithology, but that this work must be done more thoroughly, more conscientiously; that it must be based on a wider basis than usual; that deductions should be made from as much material as possible, and that we should most of all increase and shape our knowledge of the various species and geographical forms of birds which forms the most important basis of all our work. A great help and step to this end is the conscientious study of entire genera or families, while the scattered and often hasty descriptions of single new species and subspecies are very often only a bother to one who reviews, studies, and finally knows a certain genus or family. On the whole, however, we can look confidently, hopefully and well pleased on the present state of Ornithology, and we only hope that the interest in it may continue to grow, and that our work will increase in depth as far as it lays in our power.
SOME ORNITHOLOGICAL RESULTS OF THE
SCOTTISH NATIONAL ANTARCTIC EXPEDITION.*

By W. S. Bruce, F.R.S.E.

Any account of the birds taken by the Scottish National Antarctic Expedition must at present necessarily be incomplete, since the collections are still in the hands of Mr. William Eagle Clarke awaiting identification and description. So far, I can only refer to Mr. Eagle Clarke's first paper in the 'Ibis,' on the Birds of Gough Island. Others are following at a later date.

The "Scotia," it may be remembered, left Scotland on November 2nd, 1902, and was absent for nearly two years, returning to the Clyde on July 22nd, 1904. During that time she made two voyages to high southern latitudes, cruising about 8000 miles, mostly in entirely unknown seas. The expedition also wintered in the South Orkneys, discovered 150 miles of new Antarctic coast-line, viz., Coats Land, and visited Gough Island, besides several other of the Atlantic oceanic islands.

I am glad to be able to report that altogether the bird collections are the largest and most interesting that have ever been brought back by any South Polar Expedition, but, at present, my remarks must chiefly be confined to the birds of Gough Island.

Gough, or Alvarez Island as it should be more correctly called, is an uninhabited island, and situated about half way between Cape Town and Buenos Aires, in mid-Atlantic, in latitude 40°19' S. and longitude 9°44' W., and about 200 miles to the south and east of the Tristan da Cunha group. It is small, being only about eight miles long and four broad. It is of volcanic origin, rising from the mid-Atlantic to a height of 4380 ft. above sea level; it has been unvisited except by a few sealers, and on two occasions by

* This paper was profusely illustrated with lantern slides, showing the adults, young, and eggs, of almost all the true Antarctic birds seen by the Expedition.

British men-of-war. The general appearance of the island is very beautiful, being excessively green, even on the precipitous cliffs with which its coast is bounded, broken only by occasional ravines, some of which do not descend to sea level. Thus a series of fine cascades is formed, falling directly into the sea or on to a very narrow beach; all the lower parts of the island up to fully a thousand feet are thickly covered with tussock-grass and buckthorn-trees, which form a shelter for many of the birds inhabiting the island.

Up to the time of the visit of the "Scotia" only 12 species of birds were known; the naturalists of the "Scotia" obtained altogether 19 species, 12 of which were new to the ornis of the island, and 2, if not 3, new to science, making altogether a total of 24, if not 25. Of these there are only three terrestrial forms, all of which are species peculiar to the island, viz., two Finches of the genus Nesospiza, and a flightless Gallinule, Porphyriornis comeri.

"The two species of Nesospiza are the most interesting, not, however, because they are novelties, nor because we owe our knowledge of them to the researches of the Scottish Expedition, but because they differ very considerably from their single congener, N. acunhae, peculiar to Tristan da Cunha, where it is now confined to Inaccessible Island, though it was formerly also found on the main island of the group."

The "Water-hen" differs only slightly from that found on Tristan da Cunha. These three terrestrial endemic birds are entirely unknown elsewhere. Gough Island therefore must be looked upon ornithologically as an outlier of the Tristan da Cunha group. Except a Penguin, the other birds of Gough Island are Tubinares. The following is the list of birds captured by the Expedition or previously recorded:


4. Sterna vittata, Gmelin.
5. *Anous stolidus* (Linn.). Noddy. Also at Tristan da Cunha.


8. *Oceanites oceanicus* (Kuhl.).

9. *Cymodroma grallaria* (Vieillot). A Petrel seen and secured along with the former, and not known at Tristan da Cunha.

10. *Puffinus assimilis* (Gould). Two captured by Dr. Pirie in a hole, being detected by croaking.

11. *Priionus cinereus* (Gmelin). Many were seen and taken.

12. *Majaqueus aequinoctialis* (Linn.). A large black Petrel.


15. *Ossifraga gigantea* (Gmelin). Nelly or Giant Petrel—all of a dark hue.


17. *Prion desolatus* (Gmelin).

18. *Pelecanoides urinatrix* (Gmelin). Only previously obtained in the South Atlantic, and at the Falkland Islands.

19. *Diomedea exulans* (Linn.). The Wandering Albatross; many seen.


21. *Diomedea melanophrys*, Temm. This record Mr. Eagle Clarke thinks doubtful; it may have been *Thalassogeron eximius*.

22. *Thalassogeron*, sp. inc. This bird is of great interest since it does not entirely agree with the description of any known species. It was captured sitting among herbage.

The Hon. Walter Rothschild and Dr. Hartert say that it resembles *T. carteri* of N.W. Australia.

23. *Phoebetria fuliginosa* (Gmelin). The sooty Albatros with a yellow stripe on the bill and uniform brown plumage.

Captain Hutton found these birds breeding in the Auckland Islands and Antipodes Island in October.


Of the true Antarctic birds I am not in a position to speak in detail, since they are not yet worked out, but a full account by Mr. Eagle Clarke will presently appear in the 'Ibis.' Penguins and Petrels formed the order of the day; the only other birds seen being two Skuas, the Dominican Gull, the blue-eyed Shag, and the Sheathbill (*Chionis alba*). The eggs and young of most of these birds were secured, and of a special interest was the finding of the eggs of the Cape Pigeon (*Daption capensis*), which were previously unknown to science.
Section I.

SYSTEMATIC ORNITHOLOGY,
GEOGRAPHICAL DISTRIBUTION,
ANATOMY AND PALÆONTOLOGY.

VORTEILE UND NACHTHEILE MODERNER
ARTEN- UND UNTERTRENBESCHREI-
BUNG UND NAMENGEWUNG.

VON PROF. DR. RUDOLF BLASIUS.


Da ich bei der hochgeehrten Versammlung die Kenntniss der Nomenclatur-Regeln als bekannt voraussetzen muss, will ich mich nur auf einige wenige Hauptpunkte derselben beschränken.
In I.: "Die zoologische Nomenclatur" heisst es in Par. 1 und 2:
"Die wissenschaftliche Benennung der Thiere ist für das Subgenus und alle übergeordneten Kategorien (also Genus, Familie, Ordnung, Classe u.s.w.) mononominal, für die Species binominal, für die Subspecies trinominal."

In IV.: "Über die Schreibweise derGattungs- und Artnamen in Par. 2:
"Die zu Artnamen verwandten Eigennamen oder Vornamen können mit grossen Anfangsbuchstaben geschrieben werden.

In allen anderen Fällen wird der Speciesname mit kleinen Anfangsbuchstaben geschrieben."

In VII.: Das Prioritätsgesetz, Par. 1:
"Gültiger Name einer Gattung oder einer Art kann nur der Name sein, mit dem sie zuerst bezeichnet worden ist, unter der Bedingung,
"(a) dass dieser Name veröffentlicht und definirt oder angedeutet worden ist, und
"(b) dass der Autor den Grundsätzen der binären Nomenclatur folgte."

Par. 2: "Die zehnte Ausgabe des Linné'schen 'Systema Natuare,' 1758, ist das Datum der konsequenten allgemeinen Anwendung des binären Nomenclatursystems in der Zoologie. Es wird daher dieses Datum als der Ausgangspunkt der zoologischen Nomenclatur und der Wirksamkeit des Prioritätsgesetzes angenommen."


1. Prioritätsgesetz.

Es scheint mir unzweifelhaft, dass man bei der Aufstellung der eben citierten internationalen Regel für das Jahr 1758 nur an die 10te Auflage von Linné's "Systema Naturae" gedacht hat und nicht an andere auch 1758 erschienene zoologische Werk mit binärer Nomenclatur.

Da erschien in No. 16/17, 27. Bd. des Zoologischen Anzeigers vom 3. Mai 1904 eine Arbeit von Franz Poche,
Vorteile und Nachtheile Moderner Namengebung.

Berlin: "Ein bisher nicht berücksichtigtes zoologisches Werk aus dem Jahre 1758, in dem die Grundsätze der binären Nomenclatur befolgt sind." Der Autor meint:


Mit grosser Liebenswürdigkeit hat sich F. dieser nicht gerade interessanten Arbeit unterzogen und mir folgende Resultate mitgetheilt:—

"Uebersetzung 1758 Titel.


Von Vosmaer rührt her:—

(1) Die Dedication an den "Prinz Wilhelm von Oranje,"
während Moehring sein Buch dem Prinzen Friedrich August von Anhalt dedicierte, welche Dedication bei Vosmaer fehlt.

(2) A. Vosmaer’s voorrede (Vorrede) S. 3-6. Sie enthält nichts was der Mühe werth wäre; vielleicht folgende Stelle:

"Vielleicht verwundern sich viele Leser, warum wir dieses Buch, statt Linné, zur Uebersetzung für unsere Landgenossen wählten," die Antwort lautet, dass Moehring den Spuren Linné’s folgend, einige bemerkenswerte Verbesserungen machte.

(3) A. Vosmaer’s Bemerkungen über einige der vorhergehenden Geschlechter, S. 78-97.

Diese Bemerkungen zeigen, dass Vosmaer einige Vogelgeschlechter nach ihm vorliegenden Exemplaren ausführlicher als Moehring beschreibt durch gewisse Zusätze, oder er giebt gelehrt Bermerkungen aus anderen Werken.

Aber nirgends ist ein wissenschaftlicher Name gegeben.


S. 81. Zu Geschlecht 7 (Moehring S. 14: Caryocactes):

"Vor 2-3 Jahren sehr häufig in Holland."

S. 82. Zu Geschlecht 8 (M.S. 15 Pyrrhocorax mit Citat "Eenige Paradijvogelen by Seba”).

Giebt einige Bemerkungen zu den Abbildungen bei Seba und Exemplaren, die er (Vosmaer) auf der Auktion von Seba’s Vögeln kaufte.

S. 84-86. Zu Geschlecht 20 (M.S. 20 Ispida).

Vosmaer sucht hier einige bei Edwards und Seba abgebildete Arten zu deuten und gedenkt eines dreizehigen Vogels.


Bemerkt hier sehr richtig die Zähnelung der Innenseite des Nagels der Mittelzehe.

S. 90. Zu Geschlecht 64 (S. 89) (M.S. 50 Spheniscus).

Vosmaer hat hier den Seepapagei vor sich (Fratercula arctica)

"= Anas Arctica, Clusii.

= Alca Hoieri, Willughby

werden nicht selten im März bei Scheveningen geschossen. Vor einigen Jahren wurde auf dem Fischmarkt in Rotterdam
Vortheile und Nachtheile Moderner Namengebung.

im Magen eines Kabeljau ein ganzer noch unverdauter See-
papagei gefunden (??)"

Das einzige Interessante bis jetzt.
Aber hier kommt gleich eine köstliche Geschichte:
S. 91. Zu Geschlecht 67 (M.S. 52 *Lepturus*).
Tropikvogel.

Über diesen Vogel herrschen noch viele Zweifel. In der
Sammlung Seiner Durchlauchtigsten Hoheit (Prinz Wilhelm)
befindet sich ein Nest, ähnlich dem Pirol, aber länger,
sackartig; dabei befindet sich ein Zettel mit der Aufschrift:
"Nid d’un Tropical." (NB. "Troupial" = *Icterus*.) Wenn
dies das Nest des Tropical ist, muss es ein sehr kleiner
Vogel sein. Solch ein Nest macht kein Schwimmvogel"
(Sehr richtig!).

S. 92. Zu Geschlecht 80 (M.S. 60 *Ibis*).
Vosmaer beschreibt hier sehr genau den roten Ibis
(*Eudocimus ruber*). Dazu eine Note von Nozeman, in welcher
er nach Belon den schwarzen Ibis (*Plegadis falcinellus*)
beschreibt.

S. 94. Zu Geschlecht 81 (M.S. 60 *Ardea*).
Moehring gibt die Unterschiede zwischen Reiher und
Storch; für Reiher u.A. die Zähnelung des Innenrandes der
Mittelzehe.

Dazu bemerkt Vosmaer "wenn dies wirklich so wäre,
müsste *Caprimulgus* zum Geschlecht der Reiher gehören." (!)

S. 94. Zu Geschlecht 86 (M.S. 63 *Trochilus*).
Die Avocette ist gemeint.

Holländisch Kluit: "Nach Nozeman waren sie 1756 in
Wieringerwaard so häufig, dass er (Nozeman) sie bei den
Bauern in den Baumgärten als Vogelscheuche hängen sah."

Vosmaer.

I. Tab. 60 f. 2 and 3.
"Dieses Exemplar habe ich auf der Auktion von den
Herrn Seba gekauft; es ist ein Papagei "Parkiet," d.h.,
irgend ein langschwänziger Papagei.

S. 95. Zu Geschlecht 103 (M.S. 71 *Columba Adfinis*). "Seba
Thes. I. Tab. 66 f. 2 and Tab. 67 f. 2."
"Den Tab. 67 f. 2 abgebildeten Vogel habe ich auf der
Auction von Seba gekauft; es ist keineswegs eine Taube."
Folgt Beschreibung der Kennzeichen, wonach sich die Gattung aber nicht bestimmen lässt.


S. 97. (Schluss der Bemerkungen.)


(5) S. 98-100. “Verzeichniss der im vorhergehenden citirten Schreiber (besser Werke), welche über Vögel geschrieben haben” also Literaturverzeichniss.

Von Nozeman ist geschrieben hinter Vorrede von Vosmaer.

(1) Seite: “Bericht des Übersetzers.”

Er sagt darin, dass es sehr schwer war, die richtigen Namen (holländisch) zu finden, dass die Vogelkunde noch sehr verwirrt und dass die Anmerkungen zwischen [ ] von ihm (Nozeman) herrühren. Derartiger Anmerkungen sind sehr wenige (kaum 1 Dutzend) und sie betreffen nur Citate (von Willughby, Albin, Ray u.s.w.)

In Uebrigen ist die Übersetzung von Nozeman eine wörtliche Übersetzung, nur, dass den lateinischen Namen des Genus bei Moehring, noch der holländische Name vorgesetzt ist, wie auch den Ordnungsnamen, z. B. :


Classis I. Bende I. (=Haufen, Bande).

*Hymenopodes* Vliespooten—Hautfüsse

*Ordo I.*

*Picae* Anksteren *Picae* (=Elstern)

*Collyrio* Warvogel. *Collyrio* (=Wirrvogel)

*Buco* Grootbeck. *Buco* (=Grossschnabel)

*Tragopan* Jagervogel, Rhinocerosvogel, *Tragopan* (=Jägervogel)
Vorteile und Nachtheile Moderner Namengebung. 281

Colius

Groenspecht von Seba, Colius (=Grünspecht von Seba)
S. 25.

Ordo II.
Rang II.

Smalle-Platbeekken
(= Enge Platttschnäbel)

Platyrhynchae (= Platyrhynchae)

Spheniscus Papageiducke, Spheniscus
(= Papageitaucher)


Jedermann wusste schon damals, dass Linne mit Meleagris den Truthahn meinte, denn auch Nozeman setzt sehr richtig "Kalkoen" (Kalkun) dabei.

S. 52 sein Genus 48. Meleagris. Also auf das Perlhuhn.

Nozeman & Vosmaer geben auch die "Kennzeichen der Geschlechter" wörtlich nach Moehring wieder, nur, dass sie den holländischen Namen beifügen und hier und da eine kleine Veränderung:


"(§Willughby Tab. XVII. f.1.2.3) Nieuhof (Nihof) beschreibt ihm unter dem Namen von Jagervogel: Oost-Ind. zee—en landreize pag. 292 mit einer Abbildung. Ist der doppelte Schnabel (besser Doppelschnabel), welchen derselbe Schreiber auf S. 284 abbildet von derselben Gattung?"

Dazu Poche S. 500 "Tragopan Moehr. ist an die Stelle von Buceros auct. zu setzen"! Ja, aber welcher Species?? und nun gar S. 502 "Hellmayria"!! Moehring S. 78 "Buteo Avis Paradiseace species Seba." Nozeman & Vosmaer S. 69 "Ein Bussard" u.s.w. und unter Anmerkung S. 95. wird gesagt, dass er (Vosmaer) das Exemplar Seba's kaufte und dass es "ein Parkiet," d.h., irgend ein langschwänziger Papagei war.

Es ist doch geradezu unbegreiflich, wenn Poche (S. 503) sagt:

"An die Stelle von Palaeornis Vig. hat der Name Buteo Moehr. zu treten."


Noch sei bemerkt, dass Nozeman & Vosmaer S. 14 unter "Caryocatactes" "Nussknacker" sicher den Tannenhäher meinen.

Doch nun Schluss!

Hiernach ist die Ausgabe Moehring's von 1758 eine wortgetreue Uebersetzung mit unwesentlichen, wie oben angegebenen Notizen."
Vorteile und Nachtheile Moderner Namengebung.

Diese Sache brachte ich auf der letzten Jahresversammlung der Deutschen Ornithologen-Gesellschaft in Berlin zur Sprache und äusserte mich dahin, dass
(1) Bei der Aufstellung der internationalen Nomenclatur-Regeln nur an die 10. Ausgabe von Linne, 1758, gedacht wäre und dass also nur diese als Ausgangspunkt der binären Nomenclatur anzunehmen sei und
(2) Dass eine Uebersetzung eines vorher, also in diesem Falle 1752 erschienenen Buches überhaupt für die Priorität nicht mehr in Frage kommen könnte.

Einige Ornithologen, wie König (Bonn) waren meiner Ansicht, andere, wie Reichenow (Berlin) meinten, dass die Frage doch nicht so einfach zu entscheiden sei und der Beschlussfassung eines internationalen Congresses vorzubehalten sei. Ich würde es deshalb eventuell für richtig halten, damit alle Zweifel über die Zulässigkeit der Moehring'schen Namen gehoben werden, wenn dieser internationale Ornithologen-Congress sich dahin schlüssig machte, die Moehring'schen Namen nicht zu berücksichtigen.


Der zweite Punkt betrifft das Gross- und Kleinschreiben der Speciesnamen.

Wie ich im Eingange meiner Mittheilung vortrug, können die zu Artnamen verwandten Eigennamen oder Vornamen mit grossen Anfangsbuchstaben geschrieben werden.

Als Anhang möchte ich bemerken, dass ich die internationalen Nomenclatur-Regeln so verstehe, dass Alles, was über das Schreiben der Species-Namen darin gesagt ist, auch für das Schreiben der Subspecies gilt. Sollten darüber aber irgend welche Zweifel gehobt werden, so würde es angezeigt sein, das ausdrücklich nochmals auf diesem internationalen Ornithologen-Congresse auszusprechen.

Der dritte Punkt betrifft die binomiale Bezeichnung der Arten und die trinomiale der Subspecies.

Als Linne, wohl der grossartigste Reformator der beschreibenden Naturwissenschaften, der jemals gelebt hat, seine binäre Nomenclatur einführe, waren bei der Ausgabe seiner 10ten Auflage des Systema naturae 554 Vögel bekannt, jetzt kennen wir schon zwischen 15000 und 16000 Arten. Von der Ansicht Linne’s, die Art als ein ziemlich unveränderliches Ganzes zu betrachten, das nur geringe individuelle Abänderungen darbietet, ist man dadurch immer mehr und mehr
abgekommen, dass man dieselbe Art aus verschiedenen Gegenden des Verbreitungsbezirkes sammelte und grösseere Suiten mit einander vergleichen konnte. Dadurch brach sich die Ansicht mehr und mehr Bahn, dass viele Arten gewisse locale, geographische Verschiedenheiten zeigen. Naturgemäss zeigte sich das Bedürfniss, diese geographischen Verschiedenheiten auch in der Nomenclatur festzulegen und daraus entwickelte sich die trinominale Nomenclatur der Subspecies.

Derjenige, der zuerst derartige geographische Abweichungen mit besonderer Vorliebe beschrieb und ihnen sogar den Character verschiedener Arten gab, war Chr. L. Brehm. Unter anderen war es namentlich mein Vater, I. H. Blasius und Schlegel, die diese Artenmacherei bekämpften und auf das Bestehen der localen Rassen, geographischen Formen, Subspecies Werth legten. Die Amerikaner (vorher schon Schlegel!) waren wohl die ersten, die die trinominale Nomenclatur am intensivsten durchführten und jetzt ist sie mit vollem Rechte allgemein angenommen.

Es ist begreiflich, dass es manche Ornithologen giebt, denen diese ungeheure Zunahme von Species, Subspecies, dieses Riesenwachsthum von verschiedenen Namen unbequem wird und die sich, leider häufig mit einem gewissen Ingrimm, dagegen aufbäumen.

Meiner Ansicht nach hat es aber eine volle Berechtigung, diese Subspecies auch in der Nomenclatur festzulegen. Seitdem man, wohl von der Mitte der 70er Jahre an, einen besonderen Werth auf die Zugverhältnisse der Vögel gelegt hat, seitdem, zum grossen Theile veranlasst durch das permanente internationale Komité, die verschiedensten Länder, so namentlich Ungarn, den Zugverhältnissen der Vögel eine besondere Aufmerksamkeit geschenkt haben, sieht man den grossen wissenschaftlichen Werth derartiger scharf characterisierter Localformen für die Festlegung des Vogelzuges wohl allgemein ein.

Aber man sollte doch möglichst sparsam mit den Namen sein, um den Wortschwall nicht noch weiter zu vermehren. So kann ich es z.B. nicht billigen, wenn man, wie neuere Autoren es thun, jeder Subspecies 3 Namen giebt; es reicht vollständig aus, wenn man z.B. den europäischen Kolkraben,
wie ihm Linné 1758 beschreibt, *Corvus corax* L., nennt; wozu soll man ihn *Corvus corax corax* bezeichnen. Die übrigen Formen, wie *varius* (Faroer), *tibetanus* (Tibet), *sibiricus* (Sibirien) etc. müssen natürlich 3 Namen haben.

Einen noch grösseren Wortschwall hat Kleinschmidt vorgeschlagen, indem er sogenannte Formenkreise annimmt, und für einen Formenkreis noch einen neuen Namen einführt. So schlägt er z.B. für den braunkehligen Wiesenschwätzer *Pratincola rubetra* L., den "Formenkreis."

*Pratincola Pratensis*, vor und führt darin auf:

Zunächst ist es gegen die internationalen Nomenclatur-Regeln, *Pratensis*, ein einfaches Eigenschaftswort, gross zu schreiben, und dann können wir das Wort *Pratensis* als ganz überflüssig bezeichnen, viel richtiger ist es doch, einfach wie bisher zu sprechen von

*Pratincola rubetra* L., dem schwedischen Braunkehlchen, und von

*Pratincola rubetra Spatzi*, Tunis.
*Pratincola rubetra dalmitica*, Dalmatien.
*Pratincola rubetra Noscae* (Kaukasus), etc.

Ebenso ist es zoologisch-wissenschaftlich nicht zu billigen, alle diese Formen, wie Sharpe es in seinem neuen Handbuch thut, als Arten aufzuführen; ich hätte es auch lieber gesehen, wenn Hartert in seinen Vögeln der paläarctischen Fauna alle die verschiedenen Subspecies nicht unter fortlaufender Nummer aufgeführt, sondern nur die wirklichen Arten in fortlaufender Nummer und dann bei jeder Art die Subspecies unter a, b, c, d, etc., aufgenommen hätte.

Auch in diesem Punkte wäre es höchst wünschenswerth, für die Folge eine Gleichmässigkeit, den internationalen Regeln der Nomenclatur nach, zu erreichen.

**Artenschreibung.**

Es ist gewiss ein grosses Verdienst, neue Arten, bezw.


Vollkommen pflichte ich der von vielen, unter anderen von Hartert, ausgesprochenen Ansicht bei, dass man Subspecies nur auf Grundlage grösserer Serien beschreiben soll, und nicht nach einigen wenigen Exemplaren, die gerade zufällig einige vielleicht ganz individuelle Abweichungen zeigen.

Ich bin zum Ende gelangt und gestatte mir zum Schlusse meine Wünsche und Vorschläge nochmals kurz zusammenzufassen:

1. Möhring wird bei der Priorität in der Nomenclatur nicht berücksichtigt.
3. Species- oder Subspecies -Namen nach Eigennamen gebildet, können gross oder klein geschrieben werden.
4. Die trinäre Nomenclatur ist bei den später beschriebenen
Subspecies allgemein durchzuführen, die zuerst beschriebene Form der Art wird, wie bisher, mit 2 Namen, nicht mit 3 Namen bezeichnet.

5. Der Vorschlag Kleinschmidt's, für den Formenkreis noch einen neuen Namen zu wählen, wird nicht angenommen und nicht weiter verfolgt.

6. In fortlaufender Nummer werden nur die Arten, nicht die Unterarten aufgeführt.

7. Unterarten werden nur auf Grundlage grösserer Suiten beschrieben und nur in dem Falle aufgestellt, dass man sie nach den angegebenen Characteren wirklich bestimmen kann.
MONOGRAPHIE DE LA
STERNE DE DOUGALL (STERNA DOUGALLI).

PAR LE DR. LOUIS BUREAU,

Directeur du Muséum d'histoire naturelle de Nantes,
Professeur à l'École de Médecine.

I.—INTRODUCTION.

Le jeudi 11 mai 1868, je mis à exécution le projet, depuis longtemps formé, de visiter l'archipel de Hoedic et Houat, sur les côtes du Morbihan. L'isolement de ces îles, sans relations régulières avec le continent, les nombreux îlots rocheux dont elles sont entourées, me semblaient des conditions favorables pour les recherches ornithologiques.

Le soir, à 4 h, 15, mon cousin, M. George de Lisle et moi, nous montâmes, dans le port de Nantes, avec mon frère Léon, à bord d'une embarcation de plaisance, le Saint-Colomban, qu'il possédait à cette époque.

Nous descendîmes la Loire, pendant la nuit, et, le lendemain, à 8 h. du soir, nous mouillions dans l'anse, abritée par une petite jetée, qui sert de port à l'île d'Hoedic.

Contrariés par des vents de N.-O. au moment d'atteindre, il nous avait fallu louvoyer au large des îlots des Grands et Petits Cardinaux sur lesquels se tenaient de nombreuses Sternes.

Le 16, à 7 h. et demie du matin, une embarcation du pays nous conduisit sur les Grands Cardinaux où nous débarquâmes une heure après.

Les Sternes y étaient assez nombreuses, bien que la ponte ne fut pas encore commencée.

Il y en avait de deux espèces : la Sterne Pierre-Garin, Sterna fluviatilis et une autre plus élancée, à poitrine rose, munie de longs filets blancs à la queue, que nous rencontrions pour la première fois : c'était la Sterna dougalli. Son cri aigre, rauque et trainant différait beaucoup du cri de la Sterna fluviatilis. Dans son vol gracieux et léger, elle tenait la queue presque fermée, en sorte que les longs filets latéraux,

Nous abattimes une Sterne de Dougall, puis rapidement quatre autres qui vinrent planer au-dessus de la première victime ; mais, comme il arrive souvent, ces oiseaux s’éloignèrent bientôt hors de portée de fusil.

Dans la journée, nous trouvâmes cette espèce, en nombre moindre, sur le rocher de Dravante-Braz, où quelques couples se reproduisirent probablement parfois, puis, sur l’île aux Chevaux où nous tuâmes quelques nouveaux spécimens. La ponte n’était pas encore commencée. Le soir, nous regagnâmes Hoedic.

Le 17, en nous rendant à l’île de Houat, nous rencontrâmes aussi quelques Sternes de Dougall sur l’îlot de Beg-Creiz, sur lequel nous descendîmes. Les oiseaux y paraissaient définitivement établis ; mais il n’y avait pas encore d’œufs.

Enfin, le 18, nous fimes voile vers Nantes.

Ce voyage fut le début de mes recherches ornithologiques sur les côtes de Bretagne, au cours desquelles il m’a été donné de recueillir les principales observations qui font l’objet de cette note.

Je suis heureux d’ajouter que l’examen des nombreux spécimens du British Museum, mis à ma disposition, par notre savant président du Congrès international d’Ornithologie, tenu à Londres, Dr. R. Bowdler Sharpe, m’a permis d’étendre mes recherches sur cette espèce.

Avant d’étudier la biologie de la Sterne de Dougall, il me paraît utile de donner une description succincte de ses différents plumages, dans l’ordre de leur développement.

II.—DESCRIPTION DES PLUMAGES
DE LA STerna dougalli.

Jeune en duvet.—“Tout le corps couvert d’un duvet épais, laineux, terminé par de longs poils, ayant tendance à rester agglutinés en pinceaux sur les parties supérieures, surtout dans les premiers jours de l’éclosion. Dessus de la tête, du corps, des ailes, cuisses et flancs d’un jaunâtre fauve, avec des taches noirâtres plus petites, plus nombreuses, plus allongées et réparties plus également que chez Sterna caneriaca ; parties
inférieures d’un blanc pur. Sous la gorge, une tache noirâtre descendant plus ou moins sur les parties latérales du cou. Au-dessous de l’œil une large tache d’un jaune clair parfois maculée de très petites taches noires. Pattes d’un brun noirâtre (bien qu’elles soient rouge vermillon chez l’adulte). Bec plus grêle, plus allongé que celui de Sterna cantiana de même âge, rose à la base avec la pointe des deux mandibules noirâtre.”

Jeune en premier plumage.—Front de coloration variable, blanchâtre, plus ou moins lavé de gris ou de jaunâtre, avec des taches allongées d’un brun noirâtre; dessus de la tête et nuque avec des taches brun noirâtre, plus larges et plus nombreuses, formant calotte. Dos, scapulaires, petites et moyennes couvertures des ailes gris perle, plus ou moins lavé de jaune clair, suivant les individus, avec les plumes portant un cercle noirâtre subterminal, très accusé sur les scapulaires. Croupion et couvertures supérieures de la queue gris perle très clair, ou blanchâtre. Toutes les parties inférieures blanc pur, avec quelques stries transverses brunâtres sur le devant et les côtés du cou. Aux ailes, une bande gris noirâtre, sur les petites couvertures, le long du bord cubital. Rémiges primaires : la première à barbes externes noirâtres, avec une bande de même couleur, large de 3 mm. environ, sur la partie externe des barbes internes; les neufs autres d’un gris perle plus foncé que chez l’adulte, saupoudré de gris clair, avec une large bordure blanche à la pointe et sur les barbes internes. Rémiges secondaires d’un gris perle un peu plus foncé que chez l’adulte, largement bordées extérieurement de blanc. Queue faiblement échancrée. Filets blancs, souvent avec une petite tache noirâtre, à l’extrémité, sur les barbes externes, près de la tige; les autres rectrices gris perle sur les barbes externes, blanches sur les barbes internes, avec une tache noirâtre près de la pointe, sur les barbes externes. Bec noir; pattes noirâtres; iris brun foncé.

Nota.—La coloration des rémiges, des rectrices, du bec et des pattes, ne permettent par de confondre le jeune en premier plumage avec ceux de S. fluviatilis et de S. macrura.

Mue complète.

Tout le plumage est renouvelé.

Jeune en hiver ou après la première mue.—Semblable à l'adulte en noces dont il diffère seulement par le front et les lorum blancs, mouchetés de noir, les parties inférieures d'un blanc à peine teinté de rose, une bande gris foncé sur les petites couvertures des ailes, le long du bord cubital. Bec noirâtre, pattes rouge orangé pâle.

Les rémiges primaires et secondaires, entièrement renouvelées et développées avant que la mue de printemps commence à se produire, sont celles que l'adulte conservera pour son plumage de noces.

Sous cette livrée, la queue est généralement en mue, son développement complet n'étant achevé qu'au moment où l'oiseau perdra de nouveau son petit plumage pour prendre la livrée des noces. Il en résulte que le premier plumage d'hiver n'est pas longtemps complet. (Voyez la biologie.)

Mue partielle.

Les ailes et la queue ne muent pas.

Adultes en noces, mâle et femelle.—Dessus de la tête et nuque d'un noir profond ; dos et couvertures supérieures des ailes d'un gris perle très clair, devenant presque blanc sur le croupion et les couvertures supérieures de la queue. Rémiges primaires : la première à barbes externes noirâtres, avec une bande de même couleur large de 3mm. environ sur la partie externe des barbes internes, les neuf autres d'un gris perle très clair, velouté, avec une large bordure blanche à la pointe et sur les barbes internes. Rémiges secondaires d'un gris perle très clair, largement bordées extérieurement de blanc ; bas des joues blanc ; côtés et devant du cou, poitrine, abdomen et sous-caudales d'un blanc lavé d'une belle teinte rose, qui s'atténue après la saison des amours et disparaît peu à peu chez les spécimens préparés. Queue d'un blanc à peine lavé en dessus d'un légère teinte gris perle avec la plume externe blanche, subulée, filiforme et très longue. Bec noir dans toute sa longueur (mai), avec la fine pointe couleur de corne ; pattes rouge vermillon ; iris brun foncé.
La Sterne de Dougall.

En juin, la base des deux mandibules commence à se colorer en rouge vermillon, et, cette couleur, gagnant de plus en plus, finit par envahir, à la fin de juillet, la moitié postérieure de la mandibule supérieure et le tiers postérieur seulement de la mandibule inférieure. À la fin de juillet, les pattes, de rouge vermillon qu’elles étaient, deviennent rouge orangé.

**MUE COMPLÈTE.**

*Tout le plumage est renouvelé.*

*Adulte en hiver ou d’un an révolu.*—Semblable au premier plumage d’hiver. Sous cette livrée, la Sterne de Dougall peut porter une raie gris foncé sur les petites couvertures des ailes, comme le jeune en premier plumage d’hiver, ou n’en pas avoir. La queue, ayant mué de bonne heure, est bien développée, à longs filets blancs, ce qu’on observe rarement dans le premier plumage d’hiver. (Voyez la biologie.)

**Différence entre le mâle et la femelle.**—La femelle diffère du mâle par une taille généralement un peu moindre dans toutes les parties, les filets de la queue moins longs, le corps un peu plus svelte, ce dernier caractère ne pouvant être apprécié que sur l’oiseau en chair.

Toutefois, certaines femelles atteignent la taille de mâles de petites dimensions, comme le montre le tableau qui suit.

Je ne connais aucun critérium pour reconnaître, après la préparation, le sexe d’individus, de taille moyenne; mais j’hésite rarement à déterminer, d’après l’aspect extérieur, celui d’une Sterne de Dougall en chair. Sur 22 mâles et 11 femelles de sexe constaté, les spécimens dont l’aile pliée dépassait 0m.235 étaient des mâles, et ceux dont l’aile s’est trouvée inférieure à 0m.228 étaient des femelles.

**DIMENSIONS**

**PRISÉES SUR LES OISEAUX EN CHAIR.**

<table>
<thead>
<tr>
<th></th>
<th>Mâles.</th>
<th>Femelles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long. du bout de bec à l’extrémité des plumes médianes de la queue</td>
<td>m. 0.290 à 0.310</td>
<td>m. 0.290 à 0.300</td>
</tr>
</tbody>
</table>

**22. Mâles. 11. Femelles.**
Les filets dépassent les plumes médianes de la queue de ? à 0'150 ? à 0'110
Envergure - - - 0'690 à 0'720 0'680 à 0'700
Long. du l'aile pliée - 0'228 à 0'245 0'220 à 0'235
Les ailes dépassent les plumes médianes de la queue de - - - 0'055 à 0'060 0'060
Long. du bec, depuis le front - 0'033 à 0'041 0'035 à 0'040

Variété.—Un mâle entièrement blanc à l'exception du noir de la tête et d'une faible teinte rose aux parties inférieures, a été capturé, par M. Blanc, dans la Régence de Tunis.

III.—BIOLOGIE DE LA STERNE DE DOUGALL.

Arrivée.

La Sterne de Dougall arrive au printemps sur les côtes de Bretagne, se reproduit et part, avec les jeunes, dès que ceux-ci sont en état de voler.

L’époque de l’arrivée ne m’est pas connue avec exactitude, n’ayant pas séjourné, à l’époque convenable, dans le voisinage des lieux de reproduction. Le 15 mai 1868, jour où je vis pour la première fois cette espèce sur les Grands Cardinaux, est la date la plus hâtive à laquelle je l’ai observée.

Elle recherche, pour se reproduire, les îlots rocheux les plus solitaires et les plus difficilement accessibles, en raison des écueils et des courants violents qui les entourent. Jamais je ne l’ai vue s’établir sur les îles sablonneuses, ni sur les îlots formés par des amas de galets. Ces dernières stations, dont on trouve quelques exemples sur les côtes du Morbihan et du Finistère sont habitées par Sterna fluviatilis et S. minuta.

Dans certaines régions, cependant, elle ne paraît pas dédaigner les îles sablonneuses ; en effet, Thompson, en Irlande, Brewer, aux États-Unis, M. Hartert à l’île d’Aruba, sur les côtes du Venezuela, ont observé qu’elle pratique un creux dans le sable et y entasse parfois quelques herbes.

La Sterne de Dougall. 295

De deux îlots, voisins l'un de l'autre, elle choisit presque toujours celui du large, le plus battu par les flots et exposé à la tempête, laissant à Sterna fluviatilis l'îlot le plus abrité.

De même, lorsqu'elle doit partager une place à nids avec S. fluviatilis et S. cantiaea, on la voit prendre possession, de préférence, du côté qui regarde la haute mer.

Elle s'établit sur le sommet de l'île, tantôt presque dénudé, tantôt couvert de Graminées parmi lesquelles domine Festuca oraria Dumortier, formant une véritable prairie émaillée des fleurs roses de l'Armeria maritima et des touffes d'une belle Malvacée, Lavatera arborea. A ces plantes, il faut joindre la végétation habituelle des rochers maritimes, composée des espèces naines et peu nombreuses que les botanistes ragent sous la dénomination de plantes halophiles.

Le plus grand difficulté que rencontre l'observateur dans l'étude de la Sterna dougalli, est l'association presque constante de cet oiseau, dans tous les pays qu'il habite, avec des espèces de même genre.

En France, la Sterne de Dougall se reproduit en compagnie de Sterna fluviatilis et de S. cantiaea ; dans les Îles Britanniques avec S. fluviatilis, S. macrura et S. cantiaea ; sur les côtes de l'Amérique du Nord avec S. fluviatilis et S. macrura ; dans la mer des Antilles avec S. anaeasthet.

Il resulte de ces associations que les œufs de la S. dougalli ont été souvent confondus avec ceux des espèces voisines.

Dans les recherches que j'ai poursuivies sur la Sterne de Dougall, je me suis attaché à étudier les œufs de cette espèce, comparativement à ceux de S. fluviatilis. Pour cela, j'ai recherché des îlots sur lesquels les espèces étaient distinctement cantonnées, ou, mieux encore, ceux qui n'étaient habités que par une seule espèce.

Je crois être parvenu ainsi, sinon à connaître toutes les variations dont les œufs de la Sterna dougalli sont susceptibles, au moins à apporter pour cette étude des matériaux qui pourront être utilisés dans la suite.

Sur les côtes d'Angleterre et de l'Amérique du Nord où Sterna macrura vient se joindre à S. fluviatilis et S. dougalli les difficultés d'étude doivent être plus grandes encore.

1 De αλς αλος, sel.
Nid.

La Sterne de Dougall ne fait souvent aucun préparatif pour déposer ses œufs ; elle pond à nu sur le sol, que ce soit le rocher, la terre ou l'herbe.

Toutefois, il n'est pas rare de la voir construire un nid dans lequel entre, sans distinction, tout ce qu'elle trouve aux alentours.

Le Festuca oraria Dumortier, graminée la plus répandue sur ces îles, y formant parfois prairies, haut de 25 à 30 centim., aux feuilles linéaires, étroites, assez rigides, enroulées-sécatées, forme toujours la plus grande partie du nid, dans lequel entrent, en moindre proportion: tiges et fleurs de Armeria maritima Willd., Spergularia rupestris Lebel, Plantago coronopus L., Poa loliacea Huds., petites feuilles de Lavatera arborea L., etc., mêlés à quelques débris de Lichens et d'Algues.

Parfois, le nid repose sur un endroit découvert, parfois aussi il est placé au milieu des herbes qui le dérobent à la vue. L'oiseau se trace alors un court sentier pour y arriver ou même un petit tunnel à travers les herbes, comme l'a également observé M. Blanc sur un ilot de la Régence de Tunis.

Enfin, ce qui caractérise mieux encore la Sterne de Dougall, c'est l'habitude qu'elle a, lorsqu'elle en trouve l'occasion, de déposer ses œufs, à une faible profondeur, dans des excavations naturelles, sous les rochers et les grosses pierres qui font saillie à la surface du sol.

Jamais je n'ai vu la Sterna fluviatilis, sa compagne habituelle, établir son nid sous ces sortes d'abris ; aussi, lorsque les deux espèces habitent un même îlot est-ce là l'un des moyens les plus sûrs de se procurer les œufs de la Sterne de Dougall.

Époque de la Ponte.

Je crois pouvoir indiquer, avec assez d'exactitude, l'époque à laquelle a lieu le commencement de la ponte.

Le 16 mai 1868, sur les Grands Cardinaux et l'île aux Chevaux, le lendemain 17, sur Beg-Creiz, où étaient établies des Sternes de Dougall, la ponte n'était pas commencée.
Le 20 mai 1871, mon frère Etienne, descendit sur les Grands Cardinaux, avec le yacht à vapeur la Chantrerie, appartenant à notre ami M. Rogatien Levesque ; un vingtaine de couples de la Sterne de Dougall étaient établis sur l’île ; il n’y avait que quelques œufs. La ponte venant de commencer, les oiseaux étaient défiant et approchaient peu de leurs nids.

D’après ces observations, il me semble qu’on peut fixer approximativement du 16 au 20 mai le commencement de la ponte.

On verra, plus loin, que l’époque des premières éclosions concorde pleinement avec ces dates.

Il est plus difficile, on le conçoit, de préciser à quelle époque les S. dougalli cessent de pondre. Cependant, mes calculs, basés sur le degré d’incubation des œufs et la date des éclosions les plus tardives, me font admettre que la ponte, qui n’est plus, à la fin de la saison des nids, que de un ou deux œufs, se poursuit pendant tout le mois de juin, exceptionnellement jusque dans les trois ou quatre premiers jours de juillet, c’est-à-dire pendant un mois et demi environ.

La Sterna fluviatilis arrive, sur les côtes de Bretagne, dès la mi-avril et la ponte commence avant la fin du mois, c’est-à-dire 15 à 20 jours avant celle de la Sterna dougalli.

Toutefois, les deux espèces cessent de pondre à la même époque, comme j’ai pu le constater par l’état de développement des jeunes, à la fin de la saison des nids.

Le spécimen le plus en retard de S. fluviatilis qu’il m’a été donné d’observer est un jeune de 8 jours environ qui était, avec des individus plus âgés, sur un îlot auprès de Belle-Isle-en-mer, le 2 août 1873. En calculant comme je l’ai fait précédemment, l’éclosion remontait au 26 juillet, et, le commencement de la ponte, supposée de 2 œufs, au 4 juillet. Or c’est exactement l’époque des pontes les plus tardives de S. dougalli.

Œufs.

Les auteurs s’accordent assez généralement sur le nombre de trois œufs comme chiffre normal de la ponte. C’est, en effet, à ce nombre que s’arrête, sur les côtes de Bretagne, comme sur les autres points de l’Europe, les côtes occiden-
tales de l'Amérique du Nord (Brewer) et les îles de la mer des Antilles (Hartert) la ponte de la Sterne de Dougall.

Dr. Bowdler Sharpe nous apprend que, suivant M. Proud, sur les côtes du Pays de Galles, les œufs sont invariablement au nombre de deux. Mais je suis convaincu que ce chiffre est dû à des circonstances fortuites.

Peut-être, cependant, n'en est-il pas ainsi des observations de M. Blanc, en raison de la différence de latitude à laquelle elles ont été faites. Ce naturaliste, en effet, affirme que la Sterne de Dougall, dans l'île de Djerba, sur les côtes de Tunisie, ne pond jamais qu'un seul œuf.

Suivant Brewer, qui a observé la Sterne de Dougall, sur les côtes des États-Unis, on trouve accidentellement quatre œufs dans une même nid ; mais, dans ce cas, l'un diffère des autres et a été probablement déposé par une autre femelle.

Une opinion assez généralement répandue est qu'il n'existe pas de différence entre les œufs de S. dougalli, S. fluviatilis et S. macrura.

Quelques auteurs cependant, entre autres MM. H. Saunders, 1889 et 1894; et R. B. Sharpe, 1897 ; ont bien saisi les caractères généraux des œufs de S. dougalli.

Ces œufs, en effet, ont une forme et une coloration souvent caractéristiques.

Ils sont étroits et allongés blanchâtres, blanc crème ou blanc jaunâtre, avec des taches d'un brun roux ou noircâtre, petites et disséminées sur toute la surface de la coquille.

Mais, comme il y en a de moins allongés, à fond jaune d'ocre ou fauve, à taches larges et diffuses, il devient difficile, parfois même impossible, de différencier ces derniers des œufs de S. fluviatilis. Un examen plus attentif devient donc nécessaire pour établir, dans la mesure du possible, les caractères différentiels des œufs de ces deux espèces.

La tableau suivant donne les diamètres de 65 œufs de Sterna dougalli.

2 Saunders, H.—“Ibis,” 1896, p. 250.
La Sterne de Dougall. 299

Œufs de Sterna dougalli comparés à ceux de S. fluviatilis.

<table>
<thead>
<tr>
<th>Grand diamètre observé seulement chez S. dougalli.</th>
<th>mm. œufs.</th>
<th>Grand diamètre observé chez S. dougalli et S. fluviatilis.</th>
<th>mm. œufs.</th>
<th>Grand diamètre observé seulement chez S. dougalli.</th>
<th>mm. œufs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.D. 35 P.D. 37 (1) 29 (2)</td>
<td>1</td>
<td>G.D. 38 P.D. 37 (2) 28 (1) 29 (2) 30 (1) 31 (3) 32 (8)</td>
<td>2</td>
<td>G.D. 46 P.D. 28 (1) 29 (2) 30 (1) 31 (1) 32 (1)</td>
<td>4</td>
</tr>
<tr>
<td>&quot; 37 &quot; &quot; 37 (1) &quot; &quot; 29 &quot; &quot; 28 (1) &quot; &quot; 30 (1) &quot;</td>
<td>1</td>
<td>&quot; 41 &quot; &quot; 27 (1) &quot; &quot; 28 (1) &quot; &quot; 30 (2) &quot; &quot; 50 (2) &quot;</td>
<td>4</td>
<td>&quot; 47 &quot; &quot; 27 (1) &quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot; 36 &quot; &quot; 29 (2) &quot; &quot; 28 (1) &quot; &quot; 32 (2) &quot; &quot; 60 (2) &quot;</td>
<td>1</td>
<td>&quot; 42 &quot; &quot; 30 (2) &quot; &quot; 29 (1) &quot; &quot; 40 (3) &quot; &quot; 80 (4) &quot;</td>
<td>5</td>
<td>&quot; 48 &quot; &quot; 29 (3) &quot;</td>
<td>1</td>
</tr>
<tr>
<td>&quot; 37 (1) &quot; &quot; 29 &quot; &quot; 31 &quot; &quot; 33 (4) &quot;</td>
<td>1</td>
<td>&quot; 43 &quot; &quot; 29 (4) &quot;</td>
<td>8</td>
<td>&quot; 49 &quot; &quot; 30 &quot;</td>
<td>2</td>
</tr>
<tr>
<td>&quot; 28 &quot; &quot; 30 &quot; &quot; 32 &quot; &quot; 34 (5) &quot;</td>
<td>1</td>
<td>&quot; 44 &quot; &quot; 30 (5) &quot; &quot; 31 (6) &quot;</td>
<td>19</td>
<td>&quot; 50 &quot; &quot; 32 (7) &quot;</td>
<td>65</td>
</tr>
</tbody>
</table>

Mes observations, faites sur 65 œufs de S. dougalli et 50 œufs de S. fluviatilis, m'ont conduit à reconnaître que si on venait à mélanger ces 115 œufs on pourrait trier, avec certitude, 45 œufs de S. dougalli et 30 œufs de S. fluviatilis, au total 75 œufs (40 œufs : soit 20 de S. dougalli + 20 de S. fluviatilis ne pouvant être reconnus au moyen des mesures).

Il résulte de ces constatations que, dans une récolte d'œufs faite, sans aucun soin, sur un îlot habité par ces deux espèces, j'estime pouvoir reconnaître, 69 pour cent. des œufs de S. dougalli et 60 pour cent. des œufs de S. fluviatilis qui s'y trouveraient mélangés.

Ces déterminations reposent : 1° sur la longueur absolue du grand diamètre, 2° sur le rapport des deux diamètres entre eux.

1° Longueur du Grand diamètre.—Le grand diamètre des œufs de S. fluviatilis varie dans des limites relativement faibles : 38 mm. à 45 mm., tandis que celui des œufs de S. dougalli est beaucoup plus variable : 35 mm. à 49 mm. Il en résulte que les œufs dont le grand diamètre est inférieur à 38 mm. ou supérieur à 45 mm. se sont trouvés appartenir à S. dougalli.
2° Rapport entre le Grand et le Petit diamètre.—Les œufs dont le grand diamètre 38 mm. à 45 mm. s'observe dans les deux espèces, peuvent encore être, en partie, reconnus, en tenant compte du rapport des deux diamètres.

Les œufs de *S. dougalli* sont, en effet, généralement plus allongés que ceux de *S. fluviatilis*, leur petit diamètre étant proportionnellement plus petit.

Parmi les œufs qui ont des dimensions communes aux deux espèces, un œil exercé ferait encore un triage en se basant sur la forme plus effilée du petit bout dans l'œuf de *S. dougalli* sur la coloration généralement blanchâtre ou blanc crème, sur la petite dimension des taches et leur répartition sur toute la coquille ; mais le résultat de ce procédé pourrait être entaché d'erreur.

Les œufs de la *Sterna dougalli* ont été figurés par Thiennemann, Hewitson, Seedohm, et J. Rohweder, Rey, E.—Les figures données par Seebohm rendent parfaitement les caractères de l'espèce.

**Incubation.**

La durée de l'incubation n'est pas connue. En raison de la difficulté d'accès des places à nids, de la récolte des œufs faite par les pêcheurs, de l'état souvent mauvais de la mer, cette observation se fera peut être encore longtemps attendre. Je suppose l'incubation de 18 jours environ. La femelle reste sur ses œufs par un temps couvert et frais ; mais, pendant les belles journées, elle les abandonne aux rayons du soleil, aussi n'est-il pas rare de trouver une place à nids momentanément déserte. Toutefois, mâles et femelles surveillent de loin le danger, et arrivent de tous les points de l'horizon dès qu'une embarcation approche de l'ilot.

Le mâle, suivant Brewer, nourrit la femelle pendant qu'elle couve.

1 Thiennemann, Fortpflanzung, 1845-54, pl. LXXXV., f. 2 a, b, c, d.
2 Hewitson, W. C. Coloured Illustration of the Eggs of British Birds, etc., third ed., London, 1856, ii., p. 474; pl. CXXXII.
5 Rey, E. G. Die Eier der Vögel Mitteleuropas, pl. 121.
Éclosion.

J'ai pris, sur l'île Baguenère, la plus au large, le 18 juin 1893, au milieu de plus jeunes individus, quatre *S. dougalli* âgées d'environ 10 jours, ce qui reporte au 8 juin la naissance. En calculant 18 jours d'incubation et un jour d'intervalle dans la ponte des trois œufs, le premier œuf aurait été pondu vers de 17 mai, ce qui est précisément, comme je l'ai dit plus haut, l'époque du commencement de la ponte.

On peut donc admettre que les *premières éclosions ont lieu à la fin de la première semaine de juin*.

Pour calculer les dernières éclosions, on peut avoir recours à la date à laquelle se font les pontes les plus tardives. J'ai pu établir, par le degré d'incubation des œufs, que la ponte cesse dans les trois ou quatre premiers jours de juillet. En ajoutant 18 jours d'incubation, on peut conclure que les *dernières éclosions ont lieu le 21 ou le 22 juillet*.

Ce calcul se trouve vérifié par l'observation directe des jeunes. Le 5 août 1877, j'ai capturé, sur le Toulinguet, deux jeunes âgés d'environ 15 et 12 jours, ce qui fait remonter l'éclosion aux 21 et 24 juillet, dates que je considère comme très tardives.

Par suite de l'enlèvement des œufs, la ponte commencée du 16 au 20 mai, se poursuit, au plus tard, jusque dans les trois ou quatre premiers jours de juillet. Il en résulte que la récolte des œufs est d'autant plus préjudiciable à la colonie qu'elle est faite à une époque plus tardive. Les œufs enlevés fin de mai et dans la première quinzaine de juin sont promptement remplacés par de nouvelles pontes, tandis qu'une récolte faite à la fin de juin cause à l'espèce une perte irréparable. L'oiseau, épuisé par la ponte et l'incubation, n'a plus la force ni le temps d'élever une nouvelle couvée.

**Jeune en Duvet.**

Ce n'est pas avec *S. fluviatilis*, comme on pourrait le supposer, que le poussin de la Sterne de Dougall a le plus d'affinité. Le jeune en duvet qui s'en rapproche le plus, comme l'a fait remarquer M. Howard Saunders en 1894, est celui de *S. cantiaca*.

Ayant décrit plus haut le poussin de *Sterna dougalli*, je donne, comme complément, un tableau parallélique qui fera
bien ressortir les caractères distinctifs des jeunes en duvet de ces deux espèces.

**JEUNE EN DUVET.**

*Sterna dougalli.*

Tête en rapport avec la taille de l'oiseau.

Dessus de la tête, du cou, du corps et des ailes couvert d'un duvet *jaune fauve* avec de nombreuses taches noirâtres, petites, allongées, ayant tendance à se fondre les unes avec les autres. Livrée terne dans son ensemble.

Sous la gorge une tache *noirâtre* descendant plus ou moins sur les côtés du cou. Parties inférieures blanc pur.

Bec *faible*, allongé, *rose* dans les trois quarts postérieurs, noir à la pointe.

Pattes *brun noirâtre* dans les premiers jours, devenant noires ensuite.

**Nota.**—La livrée des poussins est très constante.

*Sterna cantiana.*

Tête volumineuse, disproportionnée avec la dimension de l'oiseau.

Dessus de la tête, du cou, du corps et des ailes couvert d'un duvet variant du *blanchâtre au jaune paille*, avec des taches peu nombreuses, larges, noirâtres et bien distinctes les unes des autres. Livrée claire dans son ensemble.

Gorge *blanche ou blanc jaunâtre*. Parties inférieures blanc pur.

Bec *robuste*, court, avec l'angle de la mandibule inférieure très accusé, livide dans les troisquarts postérieurs, avec une tache noirâtre, plus ou moins accusée, vers la pointe.

Pattes noirâtres.

**Nota.**—Les poussins présentent entre eux d'assez notables différences. Parfois, le duvet des parties supérieures est *blanchâtre ou jaunâtre*, avec de rares petites taches noirâtres sur la tête et le corps, ce qui leur donne une livrée claire qu'on n'observe pas chez *S. dougalli*. 
Je n’ai trouvé mention, dans aucun auteur, de la coloration du bec et des pattes du poussin de la Sterna dougalli. La coloration rose du bec dans les trois quarts postérieurs, rapproche S. dougalli de S. fluviatilis ; mais, ce qu’on est surpris de constater, chez la première, c’est la coloration des pattes d’un brun noirâtre. Ce dernier caractère, joint à la coloration générale du duvet, donne au poussin la plus grande ressemblance avec celui de S. cantiaca. Sa petite taille, proportionellement au degré de développement, permet toutefois de l’en distinguer à première vue.

La couleur rose de la base du bec se maintient pendant une douzaine de jours seulement, jusqu’au moment où le poussin commence à se couvrir de plumes. Elle disparaît si rapidement ensuite, qu’à l’âge de vingt jours l’oiseau emplumé a le bec entièrement noir, couleur qu’il conservera jusqu’au commencement des amours.

J’ai élevé des jeunes de la S. dougalli de tout âge jusqu’au développement complet du premier plumage.

Le jeune en duvet de S. fluviatilis ne peut pas être confondu avec ceux de la S. dougalli et de la S. cantiaca que je viens de décrire. Voici, en effet, ses caractères.

Le poussin de S. fluviatilis a toutes les parties supérieures jaune d’ocre, avec quelques taches noires sur le sommet et le derrière de la tête, trois raies longitudinales sur le dos et une raie sur les ailes de couleur noire, la gorge d’un brun noirâtre, les parties inférieures blanches, le bec rose dans les deux tiers porteurs, les pattes rose tendre.

JEUNE EN PREMIER PLUMAGE.

A 30 jours l’oiseau se soutient déjà sur les ailes, et fait de petits vols sur le rocher ; à 35 ou 40 jours, au plus tard, il quitte définitivement l’île sur laquelle il est né. Les ailes ont à peu près atteint leurs dimensions définitives, 0m.210 à 0m.220 (au lieu de, chez l’adulte : ♀ minimum 0m.220 ; ♂ maximum 0m.245) ; mais la queue est peu fourchue, et dépourvue de longs filets.

Le jeune en premier plumage ne peut pas être confondu avec celui de la S. fluviatilis. Chez S. dougalli : la plume externe de la queue entièrement blanche, portant parfois
une petite tache noirâtre à l'extrémité, sur les barbes externes, près de la tige ; le bec et les pattes noirâtres sont des caractères distinctifs.

Les jeunes quittent les places à nids dès qu'ils sont en état de prendre le vol, pour n'y plus revenir de l'année ; aussi, rien n'est plus rare que d'en rencontrer dans le voisinage de l'île qui abrite la colonie.

On ne les voit même pas s'arrêter sur les côtes, contrairement à ce qu'on observe chez S. fluviatilis et S. Cantiaca, dont jeunes et vieilles se réunissent, en août, en troupes nombreuses et séjournent, parfois assez longtemps, avant de gagner leur résidence d'hiver.

Je ne connais, en effet, que deux captures de jeunes en premier plumage faites sur les côtes de la Loire-Inférieure sur des points assez éloignés des lieux de reproduction.

Le premier spécimen fut tué à Saint-Michel-Chef-Chef, à l'embouchure de la Loire, le 28 août 1878, par mon cousin M. Charles Roy. Le second a été rencontré, près le Plateau du Four, au large des côtes de la Loire-Inférieure, dans une bande de S. fluviatilis, par M. R. Levesque, le 23 août 1898 (Coll. E. Bonjour).

La rareté de ces captures fait que l'ornithologiste n'a guère qu'une seule ressource, pour se procurer le premier plumage dans son entier développement, c'est de s'emparer des jeunes et de les élever jusqu'à ce qu'ils aient atteint leur 40e jour.

Les jeunes des premières éclosions quittent les places à nids vers le 15 juillet, ceux des éclosions les plus tardives à la fin d'août.

Je n'ai jamais vu d'adultes ni de jeunes en septembre.

Les Sternes de Dougall, comme beaucoup d'oiseaux, ont, pour leurs petits, la plus vive sollicitude, et cela surtout au moment où ceux-ci s'aventurent pour la première fois en mer. Nous en fûmes témoins, feu mon ami Ernest Bonjour et moi, dans une excursion que nous fimes à l'îlot du Toulinguet, de 5 août 1877.

A cette époque, je n'avais encore pu me procurer qu'une jeune prenant ses premières plumes, aussi désirions nous, l'un et l'autre, obtenir des jeunes en premier plumage. Nous descendimes sur l'îlot où nous capturâmes deux jeunes, âgés...
d'environ 12 et 15 jours, que nous élevâmes jusqu'à complet développement.

Près de l'île principale, formée de Grès armoricain, est un rocher détaché, d'une grande dureté, dont la base est devenue polie et glissante sous l'action répétée des vagues.

Quelques couples se reproduisent, sans être jamais inquiétés, sur cet îlot d'un accès difficile, aussi espérais-je y capturer quelques jeunes si je parvenais à y descendre.

Par une mer calme, l'embarcation put approcher suffisamment du rocher pour me permettre de descendre sur une saillie, muni d'une corde destinée, en cas de besoin, à faciliter la descente.

La saison étant avancée, les jeunes étaient déjà partis, à l'exception d'un seul, parvenu à son entier développement, qui fuyait devant moi en battant des ailes. Tout à coup, se voyant pris, il fit un suprême effort et s'envola. Ses faibles ailes pouvaient à peine le soutenir. A tout moment, je m'attendais à le voir tomber à l'eau. Mais, le mère vigilante, qui suivait les péripéties du drame, voyant le danger imminent, arriva aussitôt, passa au-dessous de son enfant, et, à plusieurs reprises, le souleva sur ses ailes. Toujours prête à lui porter secours, elle ne le quitta plus et nous vîmes les deux oiseaux s'éloigner et disparaître dans le lointain.

Le British Museum possède des individus en premier plumage de différentes provenances :

"z' ♂ juv. sk. Channel Rock, Torres Straits. Voy. H.M.S. 'Alert.'"

Ce jeune, capturé en juin 1881, n'a pas tout à fait atteint sa taille définitive ; il a environ 39 jours.


"v" juv. sk. Chatham, Massachusetts, Sept. (F. H. Brackett) Salvin-Godman Coll."

Jeune femelle en premier plumage, tuée le 24 sept. 1884, dont l'aile n'a pas tout à fait atteint sa longueur définitive (la 1re rémige ne dépassant pas encore la 2e). La mue n'est pas commencée, mais n'aurait pas tardé à se produire, comme le montre le spécimen ♂, de même provenance, dont je parlerai à propos du jeune en hiver.
JEUNE EN HIVER, OU APRÈS LA PREMIÈRE MUE.

La Sterne de Dougall, après première mue, ne s'observe pas sur les côtes de Bretagne. On peut même dire que le jeune ne commence presque jamais à muer dans nos parages.

Je n'ai obtenu, en effet, qu'un jeune, tué au voisinage des îles Baguenères, dans les derniers jours de juillet 1898, sur lequel on commence à constater le début de la première mue. Cet oiseau, presque parvenu à sa taille définitive (aile pliée 0m.217), porte déjà quelques plumes scapulaires de second plumage d'un gris perle; mais aucune trace de mue ne se manifeste encore aux rémiges ni aux rectrices.

Cette précocité de la mue est exceptionnelle sur les côtes de Bretagne. Les spécimens américains, dont la reproduction et l'évolution du plumage se font aux mêmes époques qu'en Europe, montrent que la mue du petit plumage commence normalement en septembre. La mue des rémiges et des rectrices commence plus tard.

Le spécimen suivant du British Museum en est un exemple:—

"m" ♫ juv. sk. Chatham, Massachusetts Sept. (F. H. Brackett), Salvin-Godman Coll."

Cette jeune femelle, tuée le 20 septembre 1880, est parvenue à toute sa taille, la 1re rémige dépassant la 2e de 10mm. ce qui est l'état normal de l'aile parvenue à son complet développement. Le petit plumage commence à muer; mais les rémiges et les rectrices ne tombent pas encore.

La migration des jeunes, nés sur les côtes d'Europe, ne paraît pas avoir été observée. Cependant, on sait que ces oiseaux hivernent dans l'Afrique du Sud où ils achèvent leur première mue.

Cette première mue d'automne est une mue complète atteignant les ailes et la queue. L'oiseau revêtit alors un second plumage ou premier plumage d'hiver qui, parfois, ne diffère pas du plumage d'hiver qu'il prendra les années suivantes. En effet, la bande gris foncé des petites couvertures des ailes, qui paraît constante dans le premier plumage d'hiver, se montre parfois, en hiver après une seconde mue, c'est-à-dire chez l'oiseau d'un an révolu.

Les rémiges primaires du premier plumage, d'une teinte
La Sterne de Dougall.

uniforme gris perle foncé (à l’exception des barbes externes de la première qui sont noirâtres) avec une large bordure blanche à la pointe et sur les barbes internes, sont remplacées, dans le second plumage ou premier plumage d’hiver, par des plumes formant deux groupes de coloration distincte, qui persisteront pendant la saison des noces: 1re, 2e et 3e sont d’un gris perle foncé, largement bordées de blanc à la pointe et sur les barbes internes, tandis que les sept autres sont d’un gris perle très clair, largement bordées de blanc à la pointe et sur les barbes internes.

Un caractère propre à cette première mue est que la chute du petit plumage est déjà très avancée quand celle des rémiges et des rectrices commence à se produire. Cependant, ces plumes sont entièrement renouvelées avant le commencement de la mue du printemps. Mais, il résulte de ce retard que le développement complet des ailes et de la queue et particulièrement des longs filets blancs latéraux de cette dernière n’est achevé que peu de temps avant la mue de printemps qui doit donner à l’oiseau le plumage de noces. Il en résulte que le premier plumage d’hiver complet est de courte durée, tandis que le second plumage d’hiver, comme nous le verrons plus loin, achevé plus tôt, dure bien plus long-temps.

Le British Museum possède plusieurs spécimens, de différentes provenances, prenant leur premier plumage d’hiver. Pour bien saisir l’évolution de ce plumage il est nécessaire de classer ces spécimens suivant leur âge, ce qu’on obtient par l’examen des rémiges primaires, dont la chute se fait régulièrement de dedans en dehors, c’est-à-dire de la 10e à la 1re (nomenclature dont je fais usage, ici, comme étant la plus commode). En procédant ainsi, on obtient, en allant du spécimen le plus jeune au plus âgé, la série suivante (H. Saunders: Cat. Brit. Mus., xxv., p. 74):

1. Imm. sk. Cape of Good Hope. Sir A. Smith [P.]
2. Imm. sk. Cape York, Torres Straits (Cockerell).

Sous la livrée que je viens de décrire, les individus originaux de l'Europe fréquentent l'Afrique du Sud.
ADULTE EN NOCES.

À l’approche du printemps, avant son retour en Europe, l’oiseau subit une seconde mue ou mue partielle, qui n’atteint que le petit plumage. La tête se couvre d’une calotte noire, le blanc des parties inférieures, sauf celui de la gorge et des côtés de la tête, prend une belle teinte rose ayant le brillant du satin, les pattes deviennent rouge vermillon. Le bec, resté noir jusqu’au milieu de mai, commence alors à se colorer en rouge à la base.

Les spécimens qui arrivent sur les côtes de Bretagne au commencement de mai, revêtus de cette belle livrée de printemps, ont achevé leur mue et sont tous semblables, à queue blanche, qu’ils soient nés au printemps précédent ou qu’ils aient déjà niché.

Certaines Sternes, au contraire (Sterna caspia, S. cantiana) reprennent parfois, après leur première mue complète, quelques taches brunes à la queue, ce qui permet de reconnaître les individus d’un an, dans leur plumage de noces.

J’estime que toutes les Sternes se reproduisent dès la première année, tandis que, chez les Laridés, la reproduction n’a lieu qu’à l’âge de deux ans (Laruss ridibundus et espèces voisines) ou de trois ans (Laruss marinus, L. argentatus, L. fuscus, etc.).

La seule modification qui s’opère sous nos yeux, chez la Sterne de Dougall adulte pendant la reproduction, est celle que le bec subit dans sa coloration.

À leur arrivée, au commencement de mai, toutes ont le bec entièrement noir qui caractérise la livrée d’hiver. Ce n’est que dans les derniers jours de mai ou les premiers jours de juin, qu’on voit du rouge apparaître à la commissure du bec et gagner graduellement, d’arrière en avant, les deux mandibules, en sorte que, pendant le reste de leur séjour, en juin, juillet et août, les adultes ont une base du bec rouge vermillon, sur une longueur plus ou moins étendue.

Cette extension se fait avec assez de régularité pour qu’on puisse, par l’examen du bec des spécimens européens conservés en collection, se faire une idée assez exacte de la date de capture.

En général, en mai, le bec est entièrement noir, au 15 juin,
le rouge s'étend de la base du bec jusqu'à l'extrémité postérieure des narines ; à la fin de ce mois, il atteint la moitié de la mandibule supérieure et se maintient ainsi jusqu'à l'époque du départ.

**Départ des Adultes et des Jeunes.**

Le départ des adultes, après la reproduction, a lieu _en même temps_ que celui des jeunes.

Mais, la date varie en raison des vicissitudes plus ou moins grandes qu'éprouve la colonie.

Si la tranquillité est complète et que tout marche à souhait, chose qui se voit lorsque le mauvais temps prolongé n'a pas permis aux pêcheurs de descendre sur les places à nids, les jeunes sont en état de prendre le vol dès le 15 juillet, et la colonie disparaît aussitôt.

Mais, il est rare que les choses se passent ainsi. Il suffit d'une descente sur l'île pour que les oeufs soient enlevés et que les premières éclosions subissent un retard.

Il arrive, enfin, que des femelles, déjà épuisées par la ponte, déposent un œuf ou deux dans les derniers jours de juin ou, au plus tard, dans les trois ou quatre premiers jours de juillet.

Dès lors, la date du départ est subordonnée au sort réservé aux couveuses. Si on vient à détruire leurs dernières espérances, c'est le départ à bref délai ; si, au contraire, rien n'entrave l'incubation des derniers œufs pondus et l'éducation des jeunes, le séjour se prolonge jusqu'à la fin d'août. Dans les premiers jours de septembre, il n'y a plus aucun espoir de trouver adultes ou jeunes au voisinage des places à nids.

M. Rogatien Levesque a eu l'occasion de préciser, en 1898, l'époque du départ d'une belle colonie établie sur les îles Baguenères, qui n'avait pas notablement souffert. Le 25 juillet les Sternes de Dougall étaient nombreuses ; le 28 il n'en restait presque plus.

Les Sternes communes ou Pierre-Garin, qui fréquentent les côtes de Bretagne, ne se comportent pas comme les Sternes de Dougall, à l'époque du départ.

Au lieu d'émigrer aussitôt après avoir abandonné les lieux de reproduction, les _Sterna fluviatilis_ se réunissent sur des îlots, dès les derniers jours de juillet, en bandes nombreuses.
composées de vieilles et jeunes des deux sexes auxquels se mêlent, dès le commencement d’août, des spécimens étrangers, ainsi que le prouvent l’abondance des oiseaux, et, parfois, la présence de quelques Sternes arctiques (Grands Cardinaux, 6 août 1898), venues des côtes d’Angleterre ou autres régions du nord.

Jeunes et vieilles opèrent de fréquents déplacements, mais continuent à se montrer sur les côtes maritimes ou les eaux douces de l’intérieur pendant le mois de septembre, parfois même jusqu’à la fin d’octobre (le Croisie, deux jeunes, 22 Octobre 1886).

**Adulte en Hiver.**

J’ai parlé de la première mue à propos premier plumage d’hiver et de la seconde mue à propos de l’adulte en noces. Il me reste à dire quelques mots de celle qui suit l’incubation et donne à l’oiseau le plumage d’adulte en hiver.

Les adultes commencent à muer aussitôt après la saison des nids. Il en est toutefois qui disparaissent, fin d’août, avant d’avoir perdu aucune plume.

Cependant, parfois, dès le milieu de juillet, la mue débute par la chute de la 10e rémige primaire, c’est-à-dire la plus interne.

Un adulte, en pleine mue, de la collection E. Bonjour, offert au Muséum de Nantes, tué dans le voisinage du plateau du Four, au large des côtes de la Loire-Inferieure, le 25 août 1898, permet de constater comment s’opère la mue complète qui suit la reproduction.

Des plumes blanches apparaissent parmi les plumes noires du front.

Aux ailes, la chute des rémiges primaires se fait régulièrement de dedans en dehors, en commençant par la 10e (la plus interne) et celle des rémiges secondaires régulièrement de dehors en dedans, en commençant par la 1e (la plus externe).

La queue, en pleine mue, se présente dans les conditions les meilleures pour suivre le remplacement des plumes qui la composent.

La chute des rectrices est régulièrement symétrique des deux côtés, et s’est faite dans l’ordre suivant:
Elle a débuté par les plumes médianes (6ᵉ, en comptant de dehors en dedans). Les deux rectrices No. 5 sont tombées ensuite, puis, successivement les deux filets No. 1 et les deux rectrices No. 4.

Les rectrices anciennes, No. 2 et 3, étant encore en place, on ne peut pas voir comment s'achève cette mue. Mais, les observations que j'ai faites sur Sterna fluviatilis me font présumer que les plumes No. 3 tombent ensuite et les No. 2 les dernières.

La mue de la queue se fait donc d'une façon symétrique, suivant l'ordre : 6, 5, 1, 4, et, probablement, 3, 2, ce qui est la marche ordinaire chez Sterna fluviatilis.

Le schéma ci-joint, dans lequel les plumes anciennes sont représentées par — , et les plumes en voie de développement par . . . fait bien ressortir le mode de renouvellement de la queue. Les . . . . indiquent la longueur qu'atteindront définitivement les rectrices.

Chez un spécimen adulte prenant le plumage d'hiver (w" La Guadeloupe, septembre), indiqué vix ad. sur le Catal. du British Museum, la queue est dans un état de mue exactement semblable. C'est, en effet, la marche normale, et celle qu'on observe aussi à la première mue.

L'adulte en hiver, c'est-à-dire après la reproduction, porte, parfois, comme le jeune en premier plumage d'hiver ou après la première mue, une raie gris foncé sur les petites couvertures des ailes.

Certains adultes, sous cette livrée, ont été considérés comme des jeunes, d'âge indéterminé. Ce sont, parmi les individus du British Museum : w' ♂ vix ad. de la Guadeloupe et z' immature de St. Vincent, W. Indies, dont je parlerai plus loin.


Ce qui permet de distinguer l'adulte en plumage d'hiver, du jeune après la première mue, malgré la similitude de leurs livrées, c'est l'évolution du plumage, visible sur l'oiseau en mue.

Le schéma de la queue, que j'ai donné ci-dessus, montre
Sterna dougalli, mâle adulte en mue.
Plateau du Four, Loire-Inf., 25 août 1898.
La Sterne de Dougall.

comment l'observateur doit procéder, pour déterminer l'âge d'une Sterne en plumage d'hiver. Si quelques variantes se produisent dans l'ordre de la chute des rectrices, suivant les individus, j'ai appris par expérience que les 2ᵉ et 3ᵉ rectrices tombent toujours les dernières. Il en résulte que l'attention doit être portée sur ces plumes : si elles sont du premier plumage, l'oiseau prend le premier plumage d'hiver ; si, au contraire, elles appartiennent à un plumage d'adulte, l'oiseau prend un plumage d'hiver pour la seconde fois au moins.

La bande grise qu'on observe souvent, en hiver, sur les petites couvertures des ailes n'est pas plus un criterium de jeune âge, chez cette espèce, que chez S. fluviatilis. Cette bande grise s'est montrée constante chez la Sterne de Dougall en premier plumage d'hiver (3 spécimens), et, il est à croire qu'elle ne manque jamais à cet âge ; mais elle se montre, parfois aussi, comme on va le voir, chez l'adulte en plumage d'hiver.

Je classerai les adultes en plumage d'hiver du British Museum, comme je l'ai fait pour les jeunes en premier plumage d'hiver, d'après leur degré d'avancement dans la mue, en me basant sur l'ordre dans lequel se fait la chute des rémiges primaires :


Les 7 rémiges primaires externes ne sont pas encore tombées ; l'oiseau adulte, ne fait que commencer sa mue d'automne ; il est encore en noces. Une ligne gris foncé commence à se montrer sur les petites couvertures des ailes, le long du bord cubital. Le petit plumage est très usé. La queue usée est en mue. Le bec a déjà repris la coloration noire qui caractérise la livrée d'hiver. Les pattes ont perdu la couleur rouge vif des noces, pour prendre une teinte orangée.


Les 5 rémiges primaires externes ne sont pas encore tombées. L'oiseau ne fait que commencer à perdre son plumage de noces. Quelques plumes blanches apparaissent au front, pas de ligne grise apparente au bord cubital.
La mue de la queue dont je crois inutile de donner le schéma, ne se fait pas, ici, d'une façon symétrique et régulière. La chute s'est faite suivant ces formules : à droite : 5°, 1°, 4° (les 2°, 3°, 6° sont anciennes); à gauche : 6°, 5°, 1°, 4° (les 2° et 3° sont anciennes).


Ce spécimen est un vieux prenant le plumage d'hiver. Les 5 rémiges primaires les plus externes subsistent encore, les anvers sont tombées. Front et lorum blancs avec quelques taches noires; dessus de la tête et occiput noirs. Une raie d'un gris foncé sur les petites couvertures des ailes. La queue effectue sa mue symétriquement et suivant la marche ordinaire, déjà observée dans la première mue, 6° ou médiane, 5°, 1° ou filet, 4° (les rectrices 3° et 2° ne sont pas encore tombées). Bec noir, pattes orangées.


Ce spécimen, semblable au précédent, est un vieux prenant le plumage d'hiver. Le plumage est usé; le front est blanc maculé de noir; une raie gris foncé se voit sur les petites couvertures des ailes le long du bord cubital (ce qui a fait considérer cet oiseau comme non parvenu à l'état adulte). Les 5 rémiges primaires externes ne sont pas encore tombées. La queue très usée n'a renouvelé que les trois plumes médianes. Bec ayant repris la coloration noire, pattes rouge orangé.

La détermination de l'âge de ces deux derniers spécimens ne présente aucune difficulté : 1° les plumes de la queue qui ne sont pas encore tombées sont celles de l'adulte et non du premier plumage; 2° l'époque à laquelle se fait la mue des ailes et de la queue, chez ces individus d'origine américaine (août et septembre) suffirait à prouver que ce ne sont pas des jeunes.

En effet, sur les côtes de l'Amérique du Nord, les vieux individus, après la reproduction, perdent leurs rémiges et rectrices en août et septembre, tandis que les jeunes, qui opèrent leur première mue, ne commencent à perdre ces mêmes plumes que beaucoup plus tard.
La Sterne de Dougall.

C'est du reste une règle générale chez les Sterninae : les adultes font une mue complète en août-septembre, aussitôt après la reproduction, tandis que les jeunes dont le petit plumage commence à muer dès l'âge de deux mois (août-septembre) ne perdent que deux ou trois mois plus tard les grandes plumes des ailes et de la queue.


Ce spécimen, tué le 10 octobre 1878, à Ansevata, Nouvelle-Calédonie, est une femelle adulte en plumage d'hiver, à laquelle il ne reste plus à muer que la 1ère rémige primaire. Front et lorum blanc tachés de noir ; nuque noire ; une bande grisâtre à l'aile, sur le bord cubital. La queue, en partie renouvelée, possède encore les deux filets blancs très usés du plumage de noces. Bec noir ; "pattes rouge orangé."

RÉSUMÉ DE LA BIOLOGIE DE LA STERNE DE DOUGALL.

En résumé, la Sterne de Dougall arrive au commencement de mai, sur les côtes de Bretagne. La ponte, qui est de 3 œufs, jamais plus, commence du 16 au 20 mai, et, cesse, au plus tard, dans les trois ou quatre premiers jours de juillet. Les premières éclosions ont lieu vers le 8 juin, les dernières le 21 ou le 22 juillet.

Le jeune en duvet ressemble davantage au jeune de Sterna cantica qu'à celui de Sterna fluviatilis. Il a les pattes brun-noirâtres.

Revêtu de son premier plumage, il quitte l'île sur laquelle il est né, fin d'août, à l'âge de 35 à 40 jours et émigre aussitôt avec les adultes. Je n'ai jamais vu d'adultes ni de jeunes en septembre.

Les spécimens européens émigrent, en hiver, vers l'Afrique du Sud.

Le jeune commence rarement à effectuer sa première mue pendant son séjour en France ; parfois, cependant, le petit plumage commence à muer fin de juillet ; mais, la mue des rémiges et des rectrices, comme cela s'observe chez toutes les Sternes, à lieu beaucoup plus tard, et n'est achevée que peu de temps avant la mue partielle de printemps, qui doit donner
au jeune le premier plumage de noces. Il en résulte que le premier plumage d'hiver est de courte durée.

En mars, l'oiseau est en plumage de noces: calotte noire, parties inférieures d'un blanc lavé de rose, pattes rouges. Le bec, qui est encore noir, commence, fin de mai, à se colorer en rouge à la base.

La ponte a lieu en mai, et la mue totale de l'oiseau qui a niché, commence dès la fin de juillet. On voit ainsi que les adultes revêtent leur plumage d'hiver beaucoup plus tôt que les jeunes de l'année.

Pendant la mue, qui donne aux jeunes et aux adultes le plumage d'hiver, la détermination de l'âge ne présente pas de difficulté, tant que les 2e et 3e rectrices, qui seront renouvelées les dernières, ne sont pas encore tombées.

Chez la Sterne de Dougall, la bande gris foncé qu'on observe sur les petites couvertures des ailes, le long du bord cubital, dans le plumage d'hiver, n'est pas un caractère constant du jeune âge, cette bande existant parfois chez l'adulte après la 2e mue d'automne. Il résulte de ce fait que le jeune en 1er plumage d'hiver, après mue achevée, et l'adulte, d'un âge révolu, en hiver, peuvent être semblables.

Je ferai remarquer, de nouveau, que le premier plumage d'hiver, est en quelque sorte éphémère, puisque, aussitôt achevé, le petit plumage tombe pour faire place au plumage de noces.

Par contre, le plumage d'hiver des adultes est de longue durée.

A un an, la Sterne de Dougall en plumage de noces a la queue d'un blanc pur, comme les spécimens plus âgés.

Elle diffère en cela de Sterna cantiana et S. caspia dont les jeunes, en première plumage de noces, portent souvent des taches plus ou moins accusées à l'extrémité des rectrices, caractère qui révèle leur jeune âge.

IV.—DISTRIBUTION GÉOGRAPHIQUE.

La Sterne de Dougall, est une espèce essentiellement maritime, qui vit en colonies à l'époque de la reproduction, et recherche les îlots les plus solitaires et les plus difficiles d'accès.
La Sterne de Dougall.

Il est rare qu'elle s'égare dans l'intérieur des terres, au moment des migrations, et, sa reproduction, sur certains lacs, même au voisinage de la mer, comme on l'a parfois avancé, reste chose douteuse.

C'est une espèce essentiellement cosmopolite, répandue sous les tropiques et dans les régions tempérées entre le 57° de latitude nord et le 34° de latitude sud.

Ses colonies sont réparties sur la surface du globe en quatre groupes distincts, qui ont chacun leur autonomie. Ces sont :

1° Le groupe de l'Europe et de l'Afrique occidentales.
2° Le groupe des côtes orientales de l'Amérique du Nord et de l'Amérique centrale.
3° Le groupe de l'Asie méridionale.
4° Le groupe de l'Océanie.

L'espèce manque seulement dans les régions froides des deux hémisphères et dans la partie orientale de l'Océan Pacifique.

Il est rare de voir la Sterne de Dougall prendre seule possession d'un îlot. Le plus souvent elle partage sa retraite avec d'autres espèces du genre.

C'est ainsi que, sur les côtes de Bretagne, elle niche avec Sterna fluviatilis et S. cantiaca ; sur celles des îles Britanniques avec S. fluviatilis, S. macrura et S. cantiaca ; dans la Méditerranée avec S. fluviatilis ; sur les côtes orientales de l'Amérique du Nord, avec S. fluviatilis, S. macrura ; en Australie, avec S. bergii et S. anæsthetæ.

La distribution géographique de la Sterne de Dougall à déjà été traitée par M. H. Saunders, dans un article dont j'ai fait un large usage, et j'ajoute que la bibliographie qu'il a donnée, de cette espèce, dans son remarquable Catalogue of the Birds in the British Museum, 1896, xxv., p. 70, m'a été de la plus grande utilité.

A.—Europe.

France.

Aujourd'hui, la Sterne de Dougall ne se reproduit plus, en France, que sur quelques îlots des côtes du Morbihan et du

1 Saunders, Howard, Ibis, 1896, p. 246.
Finistère, où son existence est sérieusement menacée par les progrès constants de la civilisation.

En dehors de ces derniers refuges, l'apparition accidentelle de cette espèce est si rare qu'on aurait peine à trouver, dans les collections, quelques spécimens tués sur d'autres points des côtes françaises.

Un coup d'œil jeté sur les documents relatifs à l'ornithologie de nos départements littoraux permettra de se rendre compte de l'état actuel de nos connaissances sur les moeurs de cet oiseau.

Dans cet examen, je suivrai les côtes de France, en commençant par le nord.

Nord et Pas-de-Calais.—Les auteurs qui ont écrit sur le nord de la France: Degland, 1830, 1843, 1849, A. de Norguet, 1866 ; Degland et Gerbe, 1867 ; M. Van Kempen, 1889 ; ne signalent aucune capture faite dans ces départements.

Somme.—La Sterne de Dougall a été observée pour la première fois en France, par de Lamotte, dans la baie de Somme, comme nous l'apprend Temminck : 

"Je dois cette espèce aux soins obligeants de M. de Lamotte, à Abbeville." Et, plus loin : "M. de Lamotte m'a dit avoir trouvé des couples de cette espèce nichant sur les côtes de Picardie en compagnie dans les mêmes lieux que le pierre garin."

Il est à craindre que Temminck ait fait erreur, relativement à la ponte de cette espèce sur les côtes de Picardie, en n'interprétant pas fidèlement les paroles de de Lamotte.

En effet, les côtes basses et sablonneuses de la Somme ne conviennent guère à cette espèce, et Vieillot nous apprend, comme on va le voir, que la petite troupe observée par de Lamotte ne séjourna que deux ou trois jours sur les côtes de Picardie :

"Ne trouvant dans les auteurs aucune description qui puisse être rapportée à cet oiseau d'Europe, nous le regardons comme une espèce inédite, et nous lui avons imposé le nom du naturaliste observateur [l'Hirondelle de mer de Lamotte,

La Sterne de Dougall.

Sterna delamotta] à qui nous en devons la connaissance, et qui l’a tué au mois de mai 1819. Il faisait partie d’une petite troupe composée de huit à dix individus, qui sont restés pendant deux ou trois jours sur les sables maritimes de la Picardie, où ils faisaient la chasse aux insectes qui se trouvent sur les plantes aquatiques.  

Degland 1830 2 et 1843 5, F. Marcotte 1860 4, A. de Norguet 1866 5, Degland et Gerbe 1867 6 n’ont fait que reproduire les renseignements ci-dessus.

M. Magaud d’Aubusson qui a chassé en baie de Somme, pendant de longues années, m’écrit, à la date du 31 mars 1905, qu’il n’a tué, sur les côtes de la Somme, qu’un seul exemplaire de cette belle espèce et qu’un autre lui fut envoyé de la baie d’Authie.


1 La chasse aux Insectes ne me paraît pas être dans les habitudes de cette espèce.—L.B.
7 Lemetteil, Catal. raisonné des Ois. de la Seine-Inf., 1874. II., p. 321.
10 Canivet, Emmanuel, Catal. des Ois. du dép. de la Manche, etc. Paris et St-Lô, 1843, in-8.
Ille-et-Vilaine.—On manque de documents sur l'ornithologie de ce département.

Finistère.—De Lamotte qui avait eu la bonne fortune de tuer la Sterne de Dougall, comme espèce de passage accidentel, sur les côtes de la Somme, découvrit, quelques années plus tard, en Bretagne, une colonie de cet oiseau, établie à nicher sur l'île aux Dames, dans la baie de Morlaix. Cet observateur n'ayant rien publié, il est difficile de préciser à quelle époque fut faite cette découverte; cependant il est à croire que ce fut en 1824.

Temminck, en 1820, dans le tome II. de son Manuel d'ornithologie, parle seulement des captures faites par de Lamotte sur les côtes de Picardie, et, il en est de même de Vieillot, en 1823, dans son Tableau encyclopédique, p. 390.

Or, c'est deux ans plus tard, en 1825, que ce dernier auteur annonce, en ces termes, la découverte faite par de Lamotte sur les côtes de Bretagne:

"On rencontre cette rare espèce non seulement sur les côtes de l'Angleterre, mais encore dans les îles de la Bretagne, surtout celle qu'on appelle l'île aux Dames, où l'a trouvée M. Jules de la Motte, naturaliste très-distingué et excellent observateur. Elle place son nid à la cime des rochers; ses œufs sont plus petits que ceux du Sterne Pierre-garin; son cri a beaucoup de rapport avec celui de ce dernier."

De Lamotte recueillit des œufs de la Sterne de Dougall sur l'île aux Dames et les fit connaître à Temminck qui en a bien décrit les caractères: "Les œufs sont plus grands que ceux de l'Arctique, d'un blanc de lait, marqués de taches et de points noirs et bruns."

La collection Degland, à Lille, contient un spécimen étiqueté "d., Été 1838, îles de Bretagne," qui provient certainement des chasses de de Lamotte.

J'ai visité l'île aux Dames, le 21 juin 1880. Il n'y avait pas de Sternes de Dougall, mais seulement quelques couples de Sterna flaviatilis et de Fratercula arctica.

1 Vieillot et Oudart, La galerie des oiseaux, 1825, p. 225, pl. coll. ccxxv.
2 Temminck, Manuel d'Ornithologie, 2e édit., suppl. IV., p. 458.

Le château du Taureau est construit sur un îlot de la baie de Morlaix, voisin de l’île aux Dames.

Dans ces dernières années, feu Delamare-Debouteville a enrichi le Muséum de Rouen de spécimens qu’il tua sur les îles des côtes occidentales du Finistère.

Dans cette région je l’ai observé la Sterne de Dougall nichant sur différents îlots : Banec 27 juin 1880 ; Kerouroc 28 juin 1880 ; le Toulinguet 6 juin 1876, 5 août 1877.

Morbihan.—Taslé père parle de la Sterne de Dougall comme : “Sédentaire et de passage irrégulier sur les côtes maritimes. P. C.”

Blandin, d’après les communications que je lui fis, la cite sur plusieurs îlots dont je vais parler. Mais la dit, par erreur, sédentaire.

J’ai rencontré la Sterne de Dougall nichant : sur les Grands Cardinaux 16 mai 1868, 17 juillet 1869, 22 juin 1870, 20 mai 1871, 15 juillet 1884, 4 juillet 1886, 4 août 1886, 4 août 1886.

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2 Le Dr. J. Blandin, dans une notice intitulée : Oiseaux qui sont de passage dans la Bretagne ; Congrès scientifique de France tenu à St.-Brieuc en 1872 et tiré à part, sous le titre : Oiseaux migrateurs qui visitent la Bretagne et causes de leurs migrations ; St.-Brieuc, sans date [1873], a cité ce travail en l’attribuant à Maingon, médecin de la marine, à qui Souvestre dédia son ouvrage. Depuis cette époque, l’erreur a fait son chemin, et, le Tableau systématique, publié dans un ouvrage devenu rare, a toujours été cité comme l’œuvre de Maingon.

3 Emile Souvestre dit cependant, p. 137 : “Enfin M. Hesse nous a fourni tous les détails relatifs à la zoologie. Il a pourtant été aidé dans son travail par les notes de M. Le Borgne de Kermorvan, savant naturaliste de Quimper.”
Louis Bureau:

1898, 11 juillet 1901; Malvan ou île aux Chevaux et Grimaud-Tost 13 juillet 1884, commencement de juillet 1896, 12 et 14 juillet 1900; Grimaud-Pel, 13 juillet 1884, 5 juillet 1886; les Benignets 19 juillet 1869, 15 juillet 1884, 5 juillet 1886, 15 juillet 1896; les Bagueneres 1er juillet 1868, 19 juin et 28 juillet 1893, 14 juillet 1896, fin juillet 1897, 9, 25, 28 juillet 1898, 6 et fin juillet 1899; les îles Domois 19 juin 1893.

Loire-Infrérieure.—En 1863, Blandin¹ a mentionné la Sterne de Dougall, comme oiseau de passage périodique, en Loire-Infrérieure, sur un renseignement incertain qui lui fut donné par Théophile Peligry, naturaliste préparateur, à Nantes. Mais, des colonies de cette espèce ayant été découvertes dans les parages de Hoedic et de Houat (Morbihan), Blandin², put écrire, en 1879, avec juste raison: “Se trouve en petit nombre, aux mois de mai et d’aout entre le Croisie et Belle-Ile-en-mer.”

En 1872, l’abbé Vincelot³, d’Angers, a écrit: “La Sterne de Dougall niche sur la Roche-Percée, vis-à-vis du Pouliguen, non loin de l’embouchure de la Loire; de là elle fait des excursions assez régulières en Anjou.”

Cette assertion repose sur des renseignements inexacts qui furent fournis à l’auteur. Les îlots de Pierre-Percée (et non Roche-Percée), Baguenaud et Leven, sont situés sur une même ligne, à proximité des stations balnéaires de Pornichet, la Baule et le Pouliguen.

Pierre-Percée, dont je connais la population ornithologique depuis de longues années, n’a jamais donné asile qu’à quelques couples de S. fluviatilis. Ces oiseaux y effectuent leur ponte; mais il est rare qu’ils donnent le jour à des petits, l’île étant fréquemment visitée par les pêcheurs et les touristes dans les belles journées de printemps.

Bien que les côtes de la Loire-Infrérieure soient peu éloignées des places à nids du Morbihan, je ne puis citer, pour

ce département, que deux captures déjà mentionnées au cours de cette note :

1° Une jeune en premier plumage, tuée à Saint-Michel-Chef-Chef, à l'embouchure de la Loire, le 28 août 1878 (coll. L. Bur).

2° Un mâle adulte, en mue, Plateau du Four, 29 août 1898, coll. Bonjour (Mus. de Nantes).

Vendée.—Aucune capture n'a été constatée, jusqu'à ce jour, sur les côtes de la Vendée. Rouillé, pharmacien aux Sables d'Olonne, qui a collectionné les oiseaux pendant de longues années, ne l'y a pas rencontrée. Impost 1 n'a admis cette espèce ni dans les "Oiseaux de passage de l'île de Noirmoutier," 1844, ni dans l'article plus étendu sur les oiseaux de cette île, qui parut, en 1809, dans l'ouvrage de François Piet, sur l'île Noirmoutier, intitulé : Mémoires laissés à mon fils, réimprimé, sous le titre : Recherches topographiques, statistiques et historiques sur l'île de Noirmoutier 2.

Blandin, chargé d'annoter cette nouvelle édition, crut devoir ajouter, en note, la Sterne de Dougall et plusieurs autres espèces, qu'il supposait fréquenter accidentellement ces parages.

Dans un mémoire, où se sont glissées de regrettables erreurs, le baron Henri Aucapitaine 3 a écrit, en parlant de la Sterne de Dougall : "J'ai des œufs de cette espèce provenant des falaises de Chatel-Aillon, près la Rochelle et de l'île du Pilier (Vendée)."

S'il est à peine besoin de relever une telle assertion pour les côtes de la Rochelle, il l'est peut-être encore moins de la


2 Ces mémoires ont été imprimés par l'auteur lui-même, format in-4, à l'aide d'une petite presse à main et au nombre de 16 exemplaires, répartis, d'après ses intentions, ainsi qu'il suit : un à la Bibliothèque nationale, un aux bibliothèques de Nantes, la Roche-sur-Yon, les Sables-d'Olonne, de Poitiers. Le surplus est resté entre les mains de ses enfants, parents et amis.


réfuter pour le Pilier, près l'île de Noirmoutier, îlot rocheux de 1000 mètres de circonférence, muni d'un fort, construit sous Louis XIV., d'un phare depuis 1829, et, sur lequel, depuis 1793, le gouvernement a entretenu une garnison, supprimée seulement dans des dernières années.

Charente-Inférieure.—Edouard Beltrémieux\(^1\) cite la Sterne de Dougall, avec cette simple mention: "Rare, de passage accidentel."

Gironde et Landes.—Aucun auteur n'a signalé cette espèce sur les côtes de ces deux départements.

Basses-Pyrénées.—Dubalen\(^2\) parle de la Sterne de Dougall en ces termes: "De passage très irrégulier. Quelques sujets capturés aux environs de Bayonne figurent au Muséum de cette ville.—Rare."

Départements du centre.—Espèce essentiellement maritime, la Sterne de Dougall s'égaré très rarement dans d'intérieur des terres.

J. B. de Montessus\(^3\) a cependant obtenu un spécimen tué en Saône-et-Loire, en mai 1881 (Coll. de la Soc. d'hist. nat. d'Autum).

On trouve mention de la présence accidentelle de cette espèce en Maine-et-Loire, dans le mémoire de l'abbé Vincelot\(^4\) dont j'ai déjà parlé. Mais cette assertion ne repose sur aucune capture. D'autre part, le docteur P. Maisonneuve a eu l'obligeance de m'informer qu'il n'avait fait que reproduire\(^5\) la citation de l'abbé Vincelot.

**Iles Britanniques.**

La Sterne de Dougall, assez répandue autrefois sur les


\(^4\) **VINCÉLOT, Abbé**, Les noms des oiseaux expliqués par leurs mœurs, Angers, 1872, 4e édit., II., p. 347.

La Sterne de Dougall.

Côtes des Îles Britanniques, y est devenu si rare que Seebohm\(^1\) écrivait, en 1896 : "Il est douteux que la Sterne rose (Roseate Tern) se reproduise aujourd'hui sur quelques points des Îles Britanniques."

Quoique tout espoir de la voir reprendre ses anciennes places à nids, grâce à des mesures de protection, ne soit pas perdu, il n'en est pas moins certain qu'on aurait quelque peine aujourd'hui à en faire une étude suivie, sur le vivant.

C'est la raison qui m'a déterminé à présenter, mes observations, sur cette élégante espèce, à mes Confrères du Congrès international ornithologique de Londres.

M. H. Saunders\(^2\) a énuméré, comme il suit, la cause de sa disparition : "Il est hors de doute que cette espèce a considérablement diminué, non pas tant par la faute des collectionneurs—car il est rare de rencontrer des spécimens de provenance anglaise—que par les récoltes d'œufs immodérées faites par les pêcheurs et les ravages causés dans les parties de chasse, où l'on a l'habitude de visiter les îles sur lesquelles cette Sterne niche avec d'autres espèces, et d'en charger des embarcations, soit pour fournir des plumes pour les chapeaux de dames, soit pour le seul plaisir de tuer. Cette Sterne est d'ailleurs très capricieuse dans ses apparitions, et, non seulement elle n'hésite pas à abandonner une localité où elle est persécutée par l'homme, mais elle fuit devant l'envahissement de sa congénère, plus grande et au bec plus robuste, la Sterne commune, \textit{S. fluviatilis}."

Ecosse.

La Sterne de Dougall a été décrite et figurée pour la première fois, en 1813, par le Colonel Montagu, dans le Supplément de son \textit{Ornithological Dictionary}. Le Docteur MacDougall, de Glasgow, découvrit cette espèce, en 1812, nichant en compagnie de nombreuses \textit{Sterna fluviatilis}, sur deux petits rochers plats, situés dans le Firth of Clyde, nommés Cumbrae Islands, et envoya au Colonel Montagu, en même temps qu'une peau\(^3\), d'intéressants détails sur les


habitudes de cette nouvelle espèce. La *Sterna fluviatilis* y était si abondante que MacDougall et son compagnon auraient difficilement fait un pas sans écraser les œufs ou les jeunes.

R. Gray a écrit, en 1871 : "Depuis la découverte de la Sterne rose dans les Cumbrae Islands, par le Dr. Dougall, en 1812, on sait qu'elle fréquente de nombreuses localités sur toute l'étendue de l'Écosse, et quoique depuis bien des années elle ait entièrement disparu des "Allans" où elle fut primitivement découverte, on la rencontre encore en nombre considérable dans beaucoup de contrées de l'ouest. La principale place à nid, d'un accès difficile, est située dans le détroit de Kilbrannan, qui sépare Arran de Kintyre. Il y a deux ou trois ans je récoltai un plein panier d'œufs dans cette localité, et cela en quelques minutes, mais je regrettais bientôt d'en avoir pris une si grande quantité, lorsque je m'aperçus en quittant cet endroit, qu'un certain nombre de couples de la Sterne commune volaient au-dessus de ma tête, mêlés à l'espèce rare; j'en conclus en effet que quelques-uns des œufs placés dans mon panier n'appartenaient pas à la Sterne rose. Tous furent vidés, et trente spécimens environ sont encore en ma possession. Ils semblent un peu plus longs, d'une couleur plus claire, et marqués de taches plus petites que ceux des Sternes arctique et commune.

"Quelques paires de ce très élégant oiseau habitent sur Inchmoin, dans le Loch Lomond, où elles nichent en compagnie des deux espèces précédées et des Lesser et Sandwich Terns [*Sterna minuta et S. cantiaca*]. Cette île est la propriété de Sir James Colquhoun, Bart., et est sévèrement gardée comme c'est chose certaine.

"La Sterne rose fréquente encore les Culbin Sands, dans le Morayshire, et a été aussi rencontrée dans l'Est Lothian par M. Turnbull, suivant qui elle n'est pas rare et niche dans l'île de May."


2 M. H. Saunders a déjà fait remarquer que la reproduction de la Sterne de Dougall, espèce essentiellement maritime, dans le Loch Lomond, est chose douteuse.

3 Turnbull, *Birds of East Lothian*, p. 34.
La Sterne de Dougall. 327

Cette place à nids, située entre le 56° et le 57° de latitude Nord, est la plus septentrionale qui ait été signalée. L’espèce ne semble pas remonter plus haut sur les côtes d’Europe. Sur celles d’Amérique, elle ne remonte pas, à beaucoup près, à cette latitude.

Angleterre.

En 1826, Selby1 rencontra sur les îles Farne, dans le Northumberland, “une nombreuse colonie occupant un large emplacement près de celui habité par l’arctique, et une seconde station sur une des Walmsies.”

La Sterne de Dougall a disparu des îles Farne pendant de longues années ; mais est revenue, en petit nombre, à différentes reprises, s’établir sur son ancienne place à nids, comme nous l’apprennent les observations de MM. J. E. Harting et H. Saunders :

“Quelques couples,” dit M. Harting2, “furent reconnus, à leur longue queue, et à leurs cris discordants, en mai 1863, quand je visitai ces îles avec feu le Dr. Embleton. Il s’y était procuré les œufs de cette espèce, l’année précédente, et m’en avait envoyé deux. En mai 1864, je reçus un autre œuf de cette Sterne, qui fut pris dans cet endroit par un ami de Newcastle qui avait l’habitude de visiter chaque année les îles Farne, et connaissait bien les oiseaux qui s’y reproduisent. En 1866, M. Saunders eut connaissance d’un seul nid de Sterna dougalli, trouvé au même endroit, contenant trois œufs (Zoologist, 1866, p. 189).”

En 1880, suivant M. Saunders3, plusieurs couples revinrent à leur ancienne place à nids, au mois de mai ; quelques-uns furent tués, sinon tous, au mépris de la loi, par le gardien du phare de la Trinity, qui envoya les oiseaux en chair à un collectionneur de Birmingham.


En 1880 et 1881, plusieurs couples s’établirent sur les

1 SELBY, British Birds, 1833, II., p. 470, pl. 89, f. 1 et 2.
Noxies, suivant M. Harting, et, on sait que deux paires, au moins, nichèrent sur ces îles en 1892.

La Sterne de Dougall visite accidentellement les côtes du Norfolk (Stevenson, Birds of Norfolk, III., p. 300).

Naumann a décrit un jeune en premier plumage qui faisait autrefois partie de la collection Plossis, aujourd'hui au Muséum de Leipzig. Ce spécimen fut tué sur la côte du Norfolk, le 10 Octobre 1819. En raison de la date de capture exceptionnellement tardive il mériterait d'être examiné.

Un adulte a été tué près Hunstanton, dans le Norfolk, par M. G. E. Hunt, le 12 juillet 1880. Il fut envoyé à Lord Lilford qui l'offrit au Muséum de Norwich, comme nous l'apprend M. J. H. Gurney.

M. Gurney ajoute, en note : "Un beau spécimen adulte de la collection de M. Robert Rising, d'Horsey, à ma connaissance, n'a pas été tué dans Norfolk."

Sur la Côte Ouest de l'Angleterre, Hewitson dès 1846, a signalé la Sterne de Dougall nichant aux îles Foulney, sur les côtes du Lancashire, où elle fut retrouvée par M. John Hancock, il y a quelques années.

M. Harting vit cet oiseau à l'île Walney, sur la côte du Lancashire, le 31 Mai, 1864, et trouva un nid contenant trois œufs qui, par leur forme allongée et leurs taches caractéristiques, lui parurent appartenir à cette espèce, sans qu'il put les identifier d'une façon satisfaisante. Le nid se composait de petits morceaux de bois et de fragments de sandgrass, tandis que les autres Sternes déposaient leurs œufs dans une simple dépression du sable.

Deux œufs provenant des côtes du Pays de Galles, en juin, par M. J. T. Proud, de Bishop Auckland, figurent au British Museum. D'après les observations faites par M. Proud, en 1896, grâce aux mesures de protection qui ont été prises, cette espèce a reparu sur ses anciennes places à nids.

Trois spécimens du British Museum par Jas. Griffin et

1 Harting, "Zoologist," 1893, p. 233.
5 "Zoologist," 1864, p. 9163.
La Sterne de Dougall.

D. W. Mitchell, proviennent des îles Scilly et 3 œufs, étiquetés Cornwall, par D. W. Mitchell, sont probablement de ces mêmes îles.

Irlande.

La Sterne de Dougall qui se reproduisait autrefois, suivant Thompson, sur nombres d'îlots de la côte Est de l'Irlande, semble en avoir à peu près disparu. En 1827, on la trouva à Mew Island (11 juin) une des trois îles Copeland, et on l'obtint, à différentes fois, de cette localité, jusqu'en 1850, époque à laquelle on constata que l'île avait été abandonnée, non seulement par cet oiseau, mais par les autres espèces de Sternes. Les autres localités où l'on a rencontré la Sterne de Dougall sont, d'après Thompson : sur la côte Est : Couswater Point, dans la baie de Belfast ; Portaferry (Strangford Lough) ; Rockabill, sur la côte de Dublin ; Lambay Island, Drogheda et la baie de Dublin ; sur la côte Ouest : Wexford et Roundstone, sur la côte de Galway.

Au British Museum se trouvent 3 œufs étiquetés : "Glashedy Island, May, H. Saunders coll."

Suivant M. Harting, on ne connait actuellement aucune retraite de cette espèce sur les côtes d'Irlande.

Belgique.

La Sterne de Dougall paraît se montrer bien rarement sur les côtes de Belgique, d'après les renseignements donnés par de Selys-Longchamps et M. Alph. Dubois.

Toutefois, M. Croegaert, naturaliste à Anvers, écrivit à ce dernier : "J'en ai vu un jeune exemplaire tué dans nos environs en septembre 1880."

Hollande.

Suivant Temminck "On la voit accidentellement en aôut et septembre sur les côtes de Hollande."

Il est bon de faire remarquer que cette dernière date est bien tardive.

1 Thompson, W., The Natural History of Ireland, III. (1850), p. 271.
4 Temminck, Manuel d'ornith., suppl. 1840, IV., p. 457.
Louis Bureau :

Allemagne.

Le Baron von Droste dit avoir obtenu, une fois, la Sterne de Dougall, de l'île de Borkum ; mais M. H. Saunders fait observer que cette capture est très douteuse.

Dans un récent article, dont je dois communication à mon ami feu le Dr. Paul Leverkühn, M. Krohn, de Hambourg, a résumé, comme il suit, l'état des connaissances acquises sur la présence de la Sterne de Dougall sur les côtes septentrionales de l'Allemagne :


Amrum.—D'après Kjärbolling elle nichait—1852—cà et là, sur la côte ouest. Suivant M. Rohweder elle fréquente régulièrement plusieurs îles de la mer du Nord ; mais c'est seulement sur Amrum que se reproduisent quelques paires.

M. Rohweder considère cet oiseau comme un visiteur d'été nichant régulièrement dans le Schleswig-Holstein et dit qu'en 1877 il a trouvé quelques couples dans la dune de Remsend à l'île Amrum et un seul dans l'île de Sylt, sur la presqu'île de Hörnum.

Le Dr. Paul Leverkühn qui a également observé la Sterne de Dougall dans l'île Amrum et dans la presqu'île de Hörnum.

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3 Krohn, Ornithologische Monatschrift, 1905, 30 Jahr., p. 303.
6 Kjärbolling, Danmarks fugle, 1852, p. 328.
7 Rohweder, Die Vögel Schleswig-Holstein, etc., Husum, 1875, p. 24.
écrit : "Sur les îles septentrionales de la Frise, les jours de la Sterne de Dougall sont comptés. Si cette espèce ne recherche pas quelques autres places à nids (et je ne saurais lui en recommander aucune, à part quelques îles Hallingen désertes, qu’elle ne paraît pas aimer) la vie balnéaire l’aura bientôt chassée d’Amrum et de Sylt."

Dans le Danemark, "la place à nid, la plus anciennement connue et la plus au nord," dit le Dr. P. Leverkühn, "située sur une petite île dans un lac (dans le N.—O. du Jutland, par 57°), a disparu il y a environ trente ans parce que le lac a été desséché. A Kingkjöbingfjord (sud du Jütland), où Kjærbolling a trouvé nichant, au commencement de 1850, elle n’a pas été observée depuis plusieurs dizaines d’années."

M. Dresser reproduit la lettre suivante de M. Benzon, de Copenhague, dans laquelle celui-ci l’informe que le Dr. Heiberg trouva la Sterne de Dougall nichant à Sperring Sø, près Thisted, en Danemark, en 1874, sur une île où se trouvait une nombreuse colonie de *Larus ridibundus, Sterna anglica* et *S. cantiana*. Dans l’année en question cette espèce arriva vers la mi-avril.

"Le 16 mai," dit M. Benzon, "le Docteur prit un œuf, et, le 20 mai, deux œufs d’un autre nid. Ils étaient semblables à ceux de *Sterna anglica*, placés sur la partie la plus élevée de l’île, sur du sable sec couvert d’un court gazon, un peu en dehors de l’endroit où niche *Sterna anglica*. Les oiseaux étaient sur les nids, de sorte qu’il n’était pas possible de se tromper. Ces œufs qui sont maintenant dans ma collection, sont très caractéristiques et diffèrent notablement de d’autres qui m’ont été fournis d’Amérique, d’Allemagne, et d’Angleterre comme appartenant à la Sterne rose. Ces derniers ressemblent pour la couleur et les dimensions aux œufs de *Sterna anglica*; tandis que les trois dont je viens de parler se rapprochent davantage des variétés claires de *Sterna anglica*;

mais ils sont de dimensions plus faibles. Ils sont couleur de terre, gris-jaunâtre clair, à coquille marquée de quelques taches gris-violet, avec des taches brunes ou brun-noirâtre à la surface. Leurs dimensions sont 44 millim. × 34; 44 × 35 et 45 × 33, tandis que ceux qui me sont parvenus d'ailleurs, comme étant de cette espèce mesurent de 38\(\frac{1}{2}\) × 30 à 42 × 29\(\frac{1}{2}\) millim. J'ajoute qu'en 1875 la Sterne rose, reparut à la même place, mais n'y nicha pas, et, en 1876, ayant visité l'île, en compagnie du Dr. Heiberg, je n'en vis pas."

Je ferai observer que les trois œufs récoltés par le Dr. Heiberg, près Thisted, ne sont certainement pas de *S. dougallii*. Les petits diamètres: 33, 34, 35 mm. sont trop grands, pour appartenir à cette Sterne. Autrement dit ces œufs sont trop renflés, et, il est bien probable qu'ils sont de *S. fluviatilis*.

Les deux autres œufs dont M. Benzon n'indique pas la provenance: 38\(\frac{1}{2}\) × 30 et 42 × 29\(\frac{1}{2}\) mm., ne présentent pas de caractères distinctifs, ces dimensions étant communes aux œufs de *S. dougallii* et *S. fluviatilis*.

**Suède et Norvège.**

On a dit que la Sterne de Dougall s'était montrée en Scandinavie, mais le professeur Nilsson fait observer qu'il ne l'y a jamais rencontrée. Il est douteux qu'elle y ait été observée.¹

**Suisse.**

Les renseignements relatifs à la présence accidentelle de la Sterne de Dougall, en Suisse, ont été résumés, en 1904, par M. Victor Fatio² d'une façon très précise:

"On en cite une capture sur le lac de Neuchâtel," dit M. V. Fatio, "et quelques-unes sur le Léman. Je trouve dans les notes de mon père que deux sujets de cette espèce, adultes en livrée de noces, avec belle teinte rosée aux faces inférieures, furent tués sur ce dernier lac, du côté de Genève, l'un en mai 1841, l'autre en juillet 1848; le premier avait

¹ Dresser, A History of the Birds of Europe, 1870.
La Sterne de Dougall.

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été vu en compagnie de quelques autres individus de son espèce. Selon Lunel, un mâle et une femelle adultes en noces de cette belle espèce auraient été tués aussi, le 17 mai 1860, près de Versoix, non loin de Genève. Enfin la collection locale du Musée de Genève compte deux exemplaires, aussi adultes en noces, de la Sterne de Dougall tués sur le Léman; peut-être l’un d’eux provient-il des captures signalées ci-dessus par Lunel. Les individus qui se sont égarés jusque sur le Léman, parfois en petite société et le plus souvent en mai, étaient tous adultes et en livrée de noces; cependant, bien que l’époque de leur passage fut un peu tardif, il est peu probable qu’ils aient niché dans le pays.

Bassin de la Méditerranée.

Avant la découverte récente de la reproduction de la Sterne de Dougall, faite par M. Blanc, naturaliste préparateur à Tunis, à l’île Djerba, située à l’entrée du golfe de Gabès, sur la côte S.E. de la Tunisie, cette espèce était considérée comme très rare et ne faisant que des apparitions accidentelles dans la Méditerranée.

Pyrénées-orientales.—En 1863, Louis Companyo admit la présence de cet oiseau, dans les Pyrénées orientales; sans ajouter aucun renseignement.

Gard.—En 1840, Crespon, de Nîmes, écrivit: "Cette espèce est rare chez nous, du moins je ne l’ai trouvée que deux fois parmi les liasses d’autres Hirondelles-du-mer que l’on apporte sur les marchés de notre ville."

En 1844, cet auteur ajoute que c’est seulement au printemps que cet oiseau se trouve dans le Midi.

Bouches-du-Rhône.—Le Dr. J. B. Jaubert, dans sa 13e lettre sur l’Ornithologie de la France méridionale, désignant, par erreur, la Sterna dougalli sous le nom de S. paradisea Brünn, comme il l’a reconnu plus tard, dans les Richesses

1 Note de G. Lunel, suppl. à la 2e éd. de l’ouvrage de Necker sur les Oiseaux des environs des Genève, 1864.
3 Crespon, J., Ornith. du Gard, etc. Nîmes et Montpellier, 1840, p. 479.
4 Crespon, J., Faune méridionale, Nîmes et Montpellier, 1844, II., p. 117.
5 Jaubert, Dr. J. B., Rev. et Mag. de Zool., juillet 1896, 2e sér., VIII., p. 324.
ornithologiques du midi de la France, dit qu'elle se montre quelquefois en Camargue où se reproduisent communément Sterna nigra, S. minuta, S. hirundo [S. fluviatilis Naum.] et S. caspia.

Italie.—La Sterne de Dougall ne paraît avoir été observée que deux fois en Italie : la première, en Ligurie, de 22 juin 1822, suivant Calvi1, la seconde à Massaciuccoli, Toscane, en mai 1839, d'après Dr. E. H. Giglioli.2 Ce dernier exemplaire figure au Musée Royal de Florence.

Grèce.—Von der Mühle3 dit qu'un jeune lui fut envoyé, comme provenant de Grèce, après son retour en Allemagne.
Selon Krüper, cette espèce serait extrêmement rare en Grèce.

Îles Baléares.—M. H. Saunders4 a examiné un adulte, de la collection Canon Tristram, tué en mai dans les îles Baléares.

Tunisie.—En 1896, M. J. I. S. Whitaker5 annonçait que la Sterne de Dougall et la Sterne commune étaient abondantes, en été, dans le sud de la Régence de Tunis, et particulièrement sur l'île Djerba, qui est le lieu favori de reproduction des Sternes.
Cette découverte, accueillie avec quelque doute, fut bientôt confirmée par une lettre adressée à M. Howard Saunders6, à la date du 29 février 1896, dans laquelle M. Whitaker faisait connaître les renseignements qui lui avaient été fournis, avec preuves à l'appui, par M. Blanc, naturaliste-préparateur, à Tunis.

Espagne et Portugal.
On ne connaît aucune capture sur les côtes d'Espagne et du Portugal.

Açores.
M. du Cane Godman nous apprend que M. S. Dabney, de

1 Calvi, G., Catalogo d'ornitologia di Genova. Genova, 1828.
3 Von der Mühle, Beiträge zur Ornith. Griechenlands, 1844, p. 146.
4 P.Z.S., 1876, p. 652.
La Sterne de Dougall.

Fayal, et lui ont rencontré la Sterne de Dougall aux Açores. Il suppose qu’elle y arrive après la Sterne commune.

B.—Afrique.


M. l’abbé Ernest Schmitz, supérieur du Séminaire de Funchal, a eu l’obligeance de m’adresser, en communication, un jeune en premier plumage, tué le 23 mai 1905, sur la petite île de Porto Santo, près Madère, qui ne laisse aucun doute sur la reproduction de l’espèce dans cette localité.

Ce jeune, âgé de 35 à 40 jours, comme le prouvent la longueur de l’aile pliée 0m.192, et, mieux encore la 1re rémige, plus courte que la 2e de 0m.005, n’a pas encore atteint sa taille définitive. Il est arrivé exactement à l’état où l’oiseau quitte le rocher qui l’a vu naître.

On peut dès lors, en calculant 18 jours d’incubation et quatre jours pour la ponte des trois œufs, reporter la ponte du premier œuf de cette nichée du 23 au 28 mars. Or, on sait que, en France, la ponte commence du 16 au 20 mai, c’est-à-dire six à sept semaines plus tard.

Il est à remarquer que la Sterne de Dougall n’a été signalée sur aucun point de la côte occidentale d’Afrique dont elle ne doit cependant pas s’écarter beaucoup dans sa migration d’automne vers l’Afrique du sud et à son voyage de retour.

Le British Museum possède deux spécimens du Cap :

"i ♂ ad. st.; h ♀ ad. sk. Cape of Good Hope, Sir A. Smith." Ces deux spécimens, sans date de capture, sont en plumage de noces. La femelle mesure : aile, 0m.234, bec commençant à rougir à la base, 0m.038; elle est de la taille des femelles qui se reproduisent en France.

"b imm. sk. Cape of Good Hope. Dr. Crozier." Cet oiseau est un jeune, en mue, prenant le plumage d’hiver ; pattes commençant à prendre une teinte orangée.

Sur la côte orientale d’Afrique, on l’a rencontrée à Port Elizabeth, dans la baie d’Algoa, Colonie du Cap. Trois adultes de cette localité (m. n. o. sk.) de la collection de M. Howard Saunders font partie du British Museum.

Ogilvie-Grant, Ibis, 1890, p. 442.
L'examen de ces spécimens m'a donné les résultats suivants:

- \( m \), en nociès, sans sexe, aile 0m.239, bec 0m.028 rouge à la base jusqu'en avant des narines, les filets dépassent les plumes médianes de la queue de 0m.108.

- \( n \), en nociès, sans sexe, aile 0m.238, bec 0m.037 rouge dans la moitié postérieure, les filets dépassent les plumes médianes de la queue de 0m.096.

- \( o \), en nociès, sans sexe, aile 0m.231, bec un peu brisé à la pointe, rouge dans la moitié postérieure, les filets dépassent les plumes médianes de la queue de 0m.123.

Ces échantillons ont les caractères des Sternes de Dougall qui se reproduisent en France. \( m \) n'est pas caractérisé comme sexe; \( n \) et \( o \) sont évidemment des mâles.

M. Saunders a cité la Sterne de Dougall comme visitant le Natal. Oscar Neumann\(^1\) tua un mâle, en avril 1893, près de Tanga, Afrique orientale allemande.

Il est hors de doute que les individus de l'Afrique du Sud, dont je viens de parler, à en juger par leur forte taille, se rattachent à la forme européenne.

Il n'en est certainement pas de même du spécimen de Madagascar dont je vais parler:

Sir Ed. Newton\(^2\) a signalé la Sterne de Dougall, en 1863, sous le nom de \textit{Sterna melanorhyncha}, et, depuis cette époque elle a été citée, dans la même région, par Schlegel (1866), Schlegel et Pollen (1868), Hartlaub (1877), Alph. Milne-Edwards et Alf. Grandidier (1879).\(^3\)

Un individu en nociès du British Museum, provenant de Madagascar, sans date ni sexe, mais sans aucun doute femelle, a le bec entièrement rouge et sa taille est inférieure à celle des femelles de France: aile 0m.211 (l'aile de ma plus petite femelle de Bretagne a 0m.220), bec 0m.036.

Ce spécimen n'appartient certainement pas au groupe des Sternes de Dougall qui visitent au printemps l'Europe. C'est un oiseau originaire d'Asie.

Suivant M. H. Saunders, l'espèce se reproduit dans les îles

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\(^{2}\) Newton, Ed., A second visit to Madag., Ibis, 1863, p. 469.

La Sterne de Dougall.


C.—Asie.

La Sterne de Dougall est assez répandue dans les mers de l'Inde et de l'Indo-Chine où sont établies d'importantes colonies qui se reproduisent à la même époque qu'en France.

Quoique semblables pour le plumage aux spécimens d'Europe, les oiseaux de cette région me paraissent se relier à la forme de Madagascar, et avoir une individualité propre, leurs dimensions étant faibles et leur bec devenant rouge, jusqu'à la pointe, sur la fin de la saison des nids.

Ceylan.—M. E. W. H. Holdsworth a rencontré la Sterne de Dougall sur la plage de Colombo, en juillet 1869. Plusieurs de ces spécimens, examinés par Gould et M. H. Saunders, étaient jeunes. Le commandant Vincent Legge a également trouvé cette espèce à Ceylan et M. Parker l'y a observée nichant.


Les deux mâles m'ont donné les dimensions suivantes : aile pliée 0m.217 ; bec, du front à la pointe 0m.037—0m.038. Ces dimensions sont faibles pour des mâles. Ce sont celles des femelles de France. Nous allons observer la même diminution de taille aux îles Andaman.

Îles Andaman, Golfe du Bengale. — Les îles Andaman, explorées par Capt. J. R. Wimberley et Colonel Wardlaw Ramsay, sont un important lieu de reproduction de la Sterne

1 Saunders, Ibis, 1896, p. 248.
3 Holdsworth, P. Z. S., 1872 (Sterna gracilis Gould).
5 Parker, Str. Feath., 1880, IX, p. 489.
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de Dougall. Le capitaine J. R. Wimberley y obtint deux oiseaux et des œufs, en juin, et offrit à M. Saunders trois œufs qui figurent au British Museum.

On possède sur la Sterne de Dougall des îles Andaman les relations de Lord Walden et de Hume. Le British Museum possède, de cette localité, 21 adultes en nces (9 mâles et 12 femelles) tués en mai, juin, juillet, août et septembre.

L'examen de ces spécimens m'a donné les résultats suivants: la saison des noces et, par suite, celle de la ponte est la même que sur les côtes de France. Le bec est entièrement noir au commencement de mai. Le rouge commence à se montrer à la base du bec vers la fin de ce mois; gagne le milieu en juin; mais, au lieu de s'arrêter là, comme chez les spécimens d'Europe, il s'étend, en juillet, jusqu'à la pointe. C'est alors, comme l'a fait remarquer M. H. Saunders, S. gracilis Gould, dont le type, d'Australie, conservé au British Museum, est identique, pour le plumage, avec S. dougalli.  

Envisagés au point de vue des dimensions, les spécimens des îles Andaman, comme ceux de Ceylan, sont généralement petits. On peut s'en rendre compte par le tableau suivant:

<table>
<thead>
<tr>
<th></th>
<th>Aile pliée</th>
<th>Long. du bec depuis le front.</th>
<th>Aile pliée</th>
<th>Long. du bec depuis le front.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>m.</td>
<td>m.</td>
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<td>m.</td>
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<tr>
<td>Des Andaman 9 Mâles 6°21°—6°22°</td>
<td>0°03°—0°039</td>
<td>12 Femelles 6°21°—6°23°</td>
<td>0°03°—0°036</td>
<td></td>
</tr>
<tr>
<td>France 6°22°—6°25°</td>
<td>0°03°—0°041</td>
<td>6°22°—6°23°</td>
<td>0°03°—0°040</td>
<td></td>
</tr>
</tbody>
</table>

La différence de taille, entre les spécimens des îles Andaman et de France, devient encore plus sensible lorsqu'on confronte individuellement, comme je l'ai fait, les 21 échantillons ci-dessus, avec le Tableau des dimensions des Sternes de Dougall françaises.

Indo-Ohine.—La Sterne de Dougall habite le Tenasserim, au N.O. de la presqu'île de Malacca (Hume et Davison). Le British Museum possède les spécimens suivants, indiqués ainsi sur le Catalogue: "q' r' s' c ad. sk [en nces]. Laynah Creek, Tenasserim, May 20 (W. Davison). Hume Coll."


1 Walden, Lord, Ibis, 1874, p. 149.
3 Saunders, H., P.Z.S., 1876, p. 652.
La Sterne de Dougall.

Ce dernier spécimen, dont j’ai déjà parlé, est un jeune prenant le premier plumage d’hiver.

Comme je viens de le faire remarquer, pour Ceylan et les îles Andaman, les trois mâles en noces ci-dessus sont de petite taille : aile pliée 0m.218—0m.224. Bec, du front à la pointe, 0m.035—0m.036. Ces dimensions, en effet, sont celles des femelles de France, et non des mâles.

D’autre part, il est intéressant de remarquer que les trois mâles désignés par les lettres q’, r’, s’, sont adultes et en plumage de noces, tandis que le mâle t’, tué le même jour, est un jeune sur le point d’achever sa première mue, en plumage presque complet d’hiver. Cet oiseau me paraît âgé de cinq à six mois environ, ce qui reporte sa naissance en novembre ou décembre. Dans ces conditions il ne peut pas être originaire du Tenasserim ; ce doit être un spécimen d’Australie, émigré, pendant l’hiver de ce pays, sur les côtes de l’Indo-Chine.

Archipel asiatique.—On a rencontré la Sterne de Dougall dans les Moluques, suivant M. Howard Saunders.1

Côte orientale d’Asie.—Enfin, elle remonte dans les mers de Chine jusqu’aux îles Koo-Choo 2 et même jusqu’à Hitachi, dans le sud du Japon.3

Deux mâles et une femelle, en plumage de noces, provenant de Foochow, dans le sud de la Chine, juillet 1897, par C. B. Rickett, au British Museum, m’ont donné les dimensions suivantes :

<table>
<thead>
<tr>
<th></th>
<th>Aile pliée (m.)</th>
<th>Long. du bec (m.)</th>
<th>Aile pliée (m.)</th>
<th>Long. du bec (m.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foochow, 2 Mâles</td>
<td>0.221—0.227</td>
<td>0.039</td>
<td>1 Femelle</td>
<td>0.222</td>
</tr>
<tr>
<td>France ...22</td>
<td>0.220—0.235</td>
<td>0.038—0.041</td>
<td>11</td>
<td>0.220—0.235</td>
</tr>
</tbody>
</table>

Remarquons encore ici que les deux mâles sont un peu plus petits qu’aucun des 22 spécimens français de même sexe, auxquels je les compare. La différence est peu sensible ; mais, il n’en est pas moins intéressant de constater, une fois de plus, une légère diminution dans la taille chez les spécimens d’Asie.

Sur l’une des étiquettes, M. C. B. Rickett fait remarquer que l’espèce niche sur une île, dans le voisinage de Foochow.

1 Saunders, Howard, Ibis, 1896, p. 248.
2 Saunders, Howard, loc. cit.
Les observations que je viens d'exposer sont parfaitement concordantes. Les Sternes de Dougall d'Asie sont plus petites que celles d'Europe, et leur bec se colore entièrement en rouge vers la fin de la saison des nids, pour devenir noir en hiver. Elles se rattachent, par ces caractères, à l'individu de Madagascar dont j'ai parlé, et constituent un groupe spécial, distinct du groupe européen, qui hiverne sur les côtes sud de l'Afrique.

D.—Océanie.

Australie.—En Australie, on connaît la Sterne de Dougall dans deux régions éloignées l'une de l'autre : au Nord, le détroit de Torres, à l'Ouest les îles Houtman's Habrolhos.

Dans le détroit de Torres elle se reproduit à Cap York (2 œufs, Gould, Coll. Brit. Mus.). Une femelle, tuée en mars à l'île Campbell, est en plumage de nes assez usé, aile 0m.219, bec noir 0m.033 (w'. Brit. Mus.). L'espèce a été rencontrée sur Channel Rocks.

Le type de Sterna gracilis Gould sans date ni sexe, conservé au British Museum, provient de la côte occidentale de l'Australie. Il est en nes, avec le bec entièrement rouge. L'aile, un peu usée à la pointe, mesure 0m.229, le bec à partir du front, 0m.045.

Des colonies nombreuses sont établies sur les îles Houtman's Habrolhos, où elles contribuent à la formation du guano activement exploité dans ces îles. Elles s'y reproduisent en octobre-novembre. Gilbert y trouva des jeunes dans ce dernier mois.

Nouvelle Calédonie.—Cette espèce a d'abord été citée par Gray, puis par E. L. et E. L. C. Layard à la Nouvelle Calédonie, où elle niche en janvier.

Le British Museum possède 5 adultes en nes, 1 adulte en plumage d'hiver, 1 jeune en premier plumage et 10 œufs.

La Sterne de Dougall.

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e” ♂ ad. sk. Noumea, New Caledonia [21 sept. 1878] (E. L. Layard). Seebohm Coll. En noces, bec noir, aile 0m.234, bec 0m.037.

f” ♀ ad. sk. Noumea, New Caledonia [21 sept. 1878] (E. L. Layard). Seebohm Coll. En noces, bec noir, aile 0m.235, bec 0m.035.

g” ♂ ad. Noumea [14 dec. 1879] (E. L. Layard). Seebohm Coll. En noces, bec rouge dans les deux tiers postérieurs, aile 0m.222, bec 0m.037.

Non catalogué : ♀ ad. Noumea, 21 sept. 1878 (E. L. Layard). En noces, bec noir, aile 0m.224, bec 0m.036.

h” ♂ ad. sk. Ansevata, New Caledonia, 10 oct. 1878. Spécimen adulte en plumage d’hiver, achevant sa mue.


Les dimensions relevées sur les adultes montrent que les spécimens de cette région, un peu plus forts que ceux de l’Inde et de l’Indo-Chine, sont semblables à ceux de France.


Nouvelle Calédonie 2 Mâles 0'222—0'234 0'037 3 Femelles 0'224—0'239 0'039—0'040

France ..........22 " 0'226—0'249 0'038—0'041 11 " 0'229—0'239 0'039—0'040

iles de la Loyauté.—E. L. et E. L. C. Layard1 ont rencontré la Sterne de Dougall nichant, aux îles de la Loyauté. Elle se reproduit par milliers sur les bancs de sable au voisinage de l’île Amédée. “Les œufs” suivant Layard “sont brun pâle de différentes nuances, mélangé habituellement d’une teinte grise, et généralement couverts de nombreuses taches de forme et de grandeur variables de couleur allant du brun pourpre pâle au pourpre foncé ou presque brun. Grand diamètre 1’’8’’ (45mm.), petit diamètre 1’’3’’ (32mm.5).”

Nouvelle Guinée.—Gray2 a cité la Sterne de Dougall de la Nouvelle Guinée; Rosenberg3 l’a trouvée dans l’île d’Aru qui en est voisine, et, le British Museum possède une femelle de Mysol au N.O. de la Nouvelle Guinée (A. R. Wallace), Tweeddale Coll.: aile 0m.219, bec du front à la pointe 0m.033.

1 Layard, E. L. et E. L. C., Ibis, 1880, p. 223.
**Iles Salomon.**—Ramsay et Tristram l'ont fait connaître des Iles Salomon.

Une ? en noces du British Museum, Isabel Isl. 10 juill. 1901, par A. S. Meek, mesure : aile 0m.229, bec du front à la pointe 0m.036.

Nous trouvons donc ici, comme dans la Nouvelle Caledonie, à en juger par cette femelle, des individus, semblables, pour la taille, à ceux des côtes de France.

**E.—Amérique.**

La Sterne de Dougall des côtes orientales de l'Amérique du Nord et de l'Amérique centrale est de tous points semblable à celle qui visite l'Europe. Le bec noir, au moment où l'oiseau vient s'établir sur les places à nids, devient rouge dans la moitié postérieure vers la fin de la reproduction. Les dimensions relevées sur des échantillons du British Museum m'ont donné les résultats suivants :

- 6♂. Aile 0.225—0.240m.; bec 0.035—0.040m.
- 3♀. ,, 0.230—0.236m.; ,, 0.037—0.040m.

Ces dimensions sont semblables à celle des spécimens européens.

Cette espèce, très répandue sur les côtes orientales de l'Amérique du Nord et de l'Amérique centrale, se reproduit sur nombre d'îlots, depuis le Massachusetts jusqu'à l'île d'Aruba, sur les côtes du Venezuela.

Elle niche aussi sur différentes îles de la mer des Antilles.

L'une des plus importantes colonies des États-Unis, se trouve sur Faulkner Island, dans le détroit de Long Island, à quelques milles de New York.

Brewer a donné d'intéressants détails sur les habitudes de cette espèce dans cette localité :

L'arrivée a lieu vers le milieu de mai ; le commencement de la ponte le 1er juin ; les jeunes sont aptes à prendre le vol le 20 août, et, quand le poisson est abondant, ils restent jusqu'au 1er octobre. Si on compare ces dates à celles que j'ai relevées sur les côtes de Bretagne, on constate, dans la

1 Ramsay, Pr. Lin. Soc., N.S.W., 1880, IV., p. 84; d°, 1883, VII., p. 41.
3 Hartert, Ibis, 1893, p. 310.
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colonie des environs de New York, un retard d'environ quinze jours dans le commencement de la ponte, et, pour les jeunes, un prolongement de séjour de plus d'un mois, au voisinage des places à nids.

Suivant Brewer, quelques individus seulement font un petit trou dans le sable, d'autres déposent leurs œufs sur la pierre tandis que un petit nombre amasse quelques herbes et des algues sèches.

L'époque de la ponte est à peu près la même que dans le sud de la mer des Antilles, car M. Hartert indique le mois de juin, pour l'île d'Aruba.

Les places à nids de l'Amérique du Nord dont j'ai trouvé mention sont :

- Cato Bank (Brit. Mus.) 1 œuf ; Uskegett Island (Brit. Mus.) 3 œufs ; Goose Island, Connecticut, 18 juin (Brit. Mus.) 1 œuf ; Côtes de Virginie, coll. Dalgleish ; Florida Cays (Brit. Mus.) 3 œufs ; Grenada1, coll. Dalgleish ; île d'Aruba, Venezuela, M. Hartert.

Les migrations de la Sterne de Dougall sur les côtes de l'Amérique du Sud, au delà de la mer des Antilles, sont peu connues ; cependant Lichtenstein2 a cité, cette espèce de Bahia, Brésil, par 13° de latitude Sud, sous le nom de Sterna bicuspis Licht. Le type, du Muséum de Berlin, a été examiné par M. H. Saunders.

L'espèce fait à peu près défaut sur la côte occidentale de l'Amérique ; cependant Lawrence3 l'a citée de Tehuantepec, dans l'Amérique centrale.

V.—CONCLUSIONS.

L'étude que je viens de faire me conduit à admettre que les Sternes de Dougall, répandues sur de nombreux points du globe, appartiennent à une même espèce, dans laquelle il est possible de reconnaître des groupes géographiques ayant une individualité et une biologie distinctes. Ces groupes sont basés sur les lieux et l'époque de reproduction, le pays d'émigration dans la saison d'hiver, la taille des individus,

la coloration rouge, plus ou moins étendue, que le bec prend vers la fin de la saison des nids.

On peut établir ainsi quatre groupes :

1°. Le groupe de l'Europe et de l'Afrique occidentales. Les spécimens sont de forte taille ; le bec rougit à la base sur les deux tiers seulement de son étendue et la ponte a lieu en mai-juin. La migration d'hiver se fait vers l'Afrique du sud.

2°. Le groupe des côtes orientales de l'Amérique du Nord et de la mer des Antilles ne diffère pas du précédent. La reproduction a lieu à la même époque. La migration d'hiver se fait vers l'Amérique du sud.

Il est probable qu'il n'y a pas échange d'individus entre l'Ancien et le Nouveau Monde, et que les colonies des deux continents restent distinctes, quoique rien ne permette de l'établir.

3°. Le groupe de Madagascar, des îles Mascareignes, des mers de l'Inde et de la Chine, se distingue par une taille plus faible, et un bec entièrement rouge à la fin de la saison des nids. L'époque de la reproduction est la même qu'en Europe.

4°. Enfin, le groupe d'Australie et de la Nouvelle Calédonie comprend des spécimens de même taille que les individus d'Europe ; mais dont le bec devient entièrement rouge à la fin des noces. La reproduction se fait d'octobre (Australie) à janvier (Nouvelle Calédonie).

L'époque à laquelle ont lieu les éclosions dans les colonies de Sternes de Dougall de l'Océanie, entraîne, chez les individus de cette région, une évolution de plumage qui permet, en tenant compte de la date de capture, de la taille, du plumage et de la coloration du bec, de les reconnaître, à tout âge, partout où on les rencontre au cours de leurs migrations.
Distribution géographique de la Sterne de Dougall : *Sterna dougalli*.

- Lieux de reproduction
- Habitat
La Sterne de Dougall.

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1. *Heleodytes harterti* sp. n.

*H. H. albibrunneo* (Lawr.) ex Panama similis sed major, alis caudaque imprimis longioribus, dorso alis caudaque nigro-brunneis, fere nigris, nec pallide brunneis, tectricibus sub-caudalibus nigro-brunneo maculatis nec vittatis.

Al. 89-88, caud. 86-84, culm. 24½, tars. 26½ mm.

*Habitat*: St. Jose, Rio Dagua (Colombia occ.).


This well-characterized new form is dedicated to Dr. Ernst Hartert, of Tring. It is the southern representative of *H. albibrunneus* Lawr., of Panama, from which it differs in being larger, with longer wings and tail, and by the back and the upper surface of the wings and tail being much blacker, not so brownish, also by the pattern of the under tail-coverts, which are spotted instead of being banded with black.

There are three specimens in the Mus. Berlepsch (two adults and one young bird), which were collected by the late Gustav Hopke.

2. *Basileuterus bivittatus chlorophrys* subsp. n.

*B. B. bivittatus chrysogaster* (Tsch.) dicto ex Peruvia maxime affinis sed coloribus multo obscurioribus: dorso obscurius olivaceo, regione superciliari obscure viridi nec flavescenti-viridi, corpore subtus obscure olivaceo-viridi nec flavo-viridi distinguendus.

Al. 60-56, caud. 49-41, culm. 10½, tars. 19½-18½ mm.

*Habitat*: Quito (Ecuadoria occ.).


The form of *Basileuterus bivittatus* inhabiting the environs of Quito comes nearest to the Peruvian form, viz. *B. bivittatus chrysogaster* (Tsch.), but is easily distinguishable by its much
darker or more sombre coloration, the back being of a darker olive-green, with a more brownish cast, the superciliaries dark olive-green instead of bright yellowish-green, the under parts yellowish olive-green, instead of being greenish-yellow.

I got two skins through Mr. W. Schlüter, of Halle, which are of the common Quito make, and resemble each other, except that in one bird the middle of the crown is of a brighter greenish-yellow, while in the other it is yellowish olive-green, mixed with dull orange.

3. **Calospiza formosa sincipitalis** subsp. n.

*C. C. formosa* (Vieill.) dictae ex Mattogrosso simillima; differt regione frontal solummodo nec pileo toto rufescenti-brunneo lavato.

Al. 71\(\frac{1}{2}\), caud. 48\(\frac{1}{2}\), culm. 10\(\frac{1}{2}\), tars. 17\(\frac{1}{2}\) mm.

**Habitat**: Leopoldina, R. Araguay, Brazil centr.


The single specimen in the Museum Berlepsch collected on the river Araguay by Dr. v. d. Steinen differs from a large series of the so-called *C. margaritae* Allen from Mattogrosso, kindly forwarded to me by the authorities of the American Museum of Natural History of New York, by having the rufous of the head restricted to the frontal line, while in the Mattogrosso birds it is extended over the greater part of the pileum. In all other respects it agrees closely with the Mattogrosso skins, differing from *C. flava* in the same way as does *C. margaritae*.

Having seen a bird from Paraguay, which agrees in all essential points with my Mattogrosso skins, I have little doubt that *C. margaritae* Allen must become a synonym of *C. formosa* (Vieill.), which was based on Azara.

4. **Phoenicothraupis rubica amabilis** subsp. n.


*Ph. Ph. rubica* (Vieill.) dictae affinis, sed mas a mari hujus speciei differt regione gulari usque ad pectus carmineo-rosea, corpore inferiore reliquo roseo griseo mixto, cauda eisique
tectricibus superioribus alisque extus obscurius brunneo-rubris, capitis lateribus pallidoribus magis rubescentibus, mandibula pallidiore, tarsis quoque brevioribus.

Foemina foeminae Ph. rubicæ simillima.

♂ ♀ ad.: al. 98-92, caud. 88½-82, culm. 18½-17, tars. 23½-22½ mm.

Habitat: in regione Yungas dicta Boliviae septr. or. (San Mateo, Juntas).

Typus: ♂ ad. San Mateo, Bolivia, 4th August 1891. [G. Garlepp leg. No. 1276.]

Of this new form I have received altogether thirteen specimens, including adult males, young males, and two females, which were collected by Mr. Gustav Garlepp in the Yungas-region, opposite the Cochabamba-chain, namely near San Mateo and Juntas, in hot, low country.

The males are different from specimens of the same sex from South-east Brazil, in having the throat of a brighter, rosy-carmine colour, which extends over the jugulum to the beginning of the upper breast (just as in Ph. rhodinolaema Salv. and Godm., from Upper Amazonia), the breast itself and the abdomen being of a rosy greyish colour. The upper surface of the wings and tail and the upper tail-coverts are of a darker brownish-red, without the yellowish-red tint to be seen in Ph. rubica. The sides of the head and neck are of a clearer and more rosy shade. The under mandible is light brown, more or less whitish at the base, instead of being black. The tarsi are shorter and the digits more feeble.

From Ph. rhodinolaema Scl. et Salv., ex Upper Amazonia, the Bolivian birds differ by their much larger size and darker coloration of the breast, abdomen, and the tail, as well as the upper and under tail-coverts, and by the somewhat darker under mandible.

5. Chlorothraupis carmioli frenata subsp. n.,

Chl. Chl. carmioli dictae simillima, differt loris plumulisque frontalibus naribus proximis flavescentibus, nec pileo concoloribus (olivaceis), corpore supra subtusque purius viridi, nec olivaceo-brunneo perfuso, rectricibus clarius viridibus nec nigrescenti-viridibus.

♂ ad., al. 85, caud. 61½, culm. 20½, tars. 22½ mm.
300 Hans Graf von Berlepsch:

♀ ♂ jrs., al. 82-76 ½, caud. 61-55 ½, culm. 20-17 ½, tars. 22½-21 mm.

Habitat: Peruvia orientalis; prov. Marcapata.


It is a curious fact that the Chlorothraupis of South-eastern Peru has its nearest ally in a species which, as far as we know, is restricted to the forest-region of Costa Rica. In fact, the resemblance between Costa Rican and Peruvian examples of this Chlorothraupis is so great that Messrs. Sclater and Salvin have not attempted to separate them.

In the meantime, having (through the kindness of the Hon. W. Rothschild) had an opportunity of comparing five adult birds, collected by Mr. Underwood in Costa Rica, with my specimens from Marcapata, South-east Peru, collected by Mr. O. Garlepp, I have detected some small though apparently constant characters, by which the Peruvian birds may well be distinguished.

In the latter the lores and the small feathers of the frontal line near the nostrils are yellowish (purer and brighter yellow in the younger and more greenish-yellow in the adult specimens), while in the Costa Rican birds these parts are of the same dark olive-green as the upper part of the head.

Further, the general coloration of the upper and under parts of the body of the Peruvian birds is of a clearer and purer green, while the Costa Rican birds show a rather more oily or brownish tint in the plumage. The alar margin and the under wing-coverts in the Peruvian specimens are of a clearer or more a yellowish-green colour. The tail is of a rather brighter green or less blackish.

As a rule the wings and the tail in the Peruvian birds appear to be a little shorter.

In the Tring Museum there is a young bird of this new form collected by Mr. W. Hoffmanns at Pozuzo, East-central Peru.


S. S. columbianae (Cab.) maxime affinis sed major, colore frontis aurantiaco-rubro intesiore usque ad occiput ducto,
On New Neotropical Birds.

colore dorsi flavescentiorem minus virescentem, corporis inferioris aurantiaco-flavo nec viridi-flavo. Remigibus intus ut in S. columbiana anguste flavescenti-albo marginatis.

♂ ♂ ad., al. 62-62½, caud. 45-45½, culm. 12½-11½, tars. 16½ mm.

Habitat: Santarem, Amazon inf.


This fine new species, which I have dedicated to the distinguished Director of the “Museu Goeldi” of Pará, is easily distinguishable from its nearest ally, S. columbiana Cab., of Venezuela and Leopoldina on the Rio Araguaí (from where I got specimens, collected by Dr. v. d. Steinen), by being much larger, and by the extension of the fiery orange colour of the forehead over the whole pileum to the nape. The back is of a brighter, more yellowish, less greenish tint, and the under parts are of a fine orange-yellow, instead of being greenish-yellow.

There are two adult males in the Mus. Berlepsch, collected by Mr. Albert Schulz, at Paricatuba near Santarem on the Lower Amazon.

7. Phrygilus alaudinus excelsus subsp. n.

Ph. Ph. alaudinus (Kittl.) dicto simillimus sed alis caudaque multo longioribus, colore pectoris schistaceo magis ad ventrem producto, ventre imo solummodo sordide nec pure albo distinguendus.

♂ ♂ al. 86-84, caud. 72, culm. 12½-12½, tars. 21½ mm.

Habitat: Vacas (Bolivia alta or.), Puno (Peruvia alta merid. or.).


This is a large form of Phrygilus alaudinus Kittl. (of Chile, Argentina, Western Bolivia, Peru and Ecuador), replacing it in Eastern High Bolivia and South-eastern High Peru. It was first discovered by M. G. Garlepp near Vacas, in the Andes east of Cochabamba, and afterwards found by M. J. Kalinowski near Puno, in the province of Marcapata, South-east Peru.
The two adult males from Vacas and the one from Puno have much longer wings and tail than the Chilian birds, the difference in the length of the tail being about 10 mm. The legs are also a little longer in the new form. The schistaceous colour of the breast is more extended over the upper part of the belly. The white on the lower belly is much more restricted and rather more greyish-white than pure white.


P. P. hypochondriaca (Lafr. et D'Orb.) dictae valde affinis sed rectricum externarum apicibus albis brevioribus, uropygio in adultis, ut videtur, pure griseo nee brunneo lavato, capitis lateribus lorisque purius griseis nec nigrescentibus.

♂ ♂ al. 80-72, caud. 68½-67, culm. 12½, tars. 21½-20½ mm.
♀ al. 67, caud. 65½, culm. 12½, tars. 20 mm.

_Habitat_: Tucuman.

_Typus_: in Mus. v. B. ad. Tucuman, 4000 metres, 2nd February, 1903. [G. Baer leg. No. 1407.]

As mentioned already by the late Burmeister, the specimens of _P. hypochondriaca_ from Tucuman show invariably shorter white ends to the outer tail-feathers than typical birds from Bolivia. The extent of white on the outer tail-feathers in adults seems to be rather less than in immature birds. As far as I can judge from the material at my command, the adult bird from Tucuman may also be distinguished from that of Bolivia by having the rump of a purer grey less suffused with brownish, and by the lores and the sides of the head being paler greyish, less blackish.

9. Agriornis livida fortes subsp. n.

_A. A. lividae_ (Kittl.) ex Chile simillima sed major, rostro imprimis multo crassiore latiore, corpore supra subtusque pallidiore nee nion mandibula apice plus minusve nigrescente distinguenda.

♂ ♂ al. 148, 147½, 143, 136½, caud. 125, 124½, 124½, 136½, culm. 31½, 31, 30½, tars. 40½, 40½, 40½, 39½, 39½ mm.

_Habitat_: Patagonia or. (Chubut.)

_Typus_: in Mus. Tring: ♂ Chubut, Valle del Lago, 27th July, 1900. [J. Koslowsky leg.]
On New Neotropical Birds.

The Hon. Walter Rothschild kindly allowed me to describe this form, of which three specimens are in his museum, while I have seen a fourth with broken bill in Mr. W. F. H. Rosenberg’s possession.

These specimens clearly represent a larger form of *A. livida* of Chile, the bill being much stronger and thicker than in all Chilian examples I have examined. The wings and the tarsi are a little shorter and the tail is rather longer. The upper and under parts of the body are of a clearer and more greyish shade, and the tip of the under mandible in all these birds is more or less blackish, this being apparently never the case in Chilian birds.


*M. M. striaticollis* Scl. dictae valde affinis sed abdomine rufescente pallidiore, gulae striis obscurioribus et minus distinctis, necnon rostro breviore et angustiore distinguendus. 
♂ ♀ al. 31½-29, caud. 97-96, culm. 21¾-21½, tars. 23½-22½ mm.

*Habitat*: Tucuman.


Having compared the pair of birds from Tucuman with a good series of specimens from Bogotá, Ecuador, Peru and Bolivia, I find that the Tucuman birds differ at a glance in having the abdomen of a rather lighter rufous with a more greyish tint; also in having the dark stripes on the throat and lower neck rather browner and less blackish. They also possess much smaller, shorter and narrower bills.


*O. O. leucophrys* (Lafr. et D'Orb.) dictae ex La Paz (Bolivia) valde affinis sed coloribus laetioribus: uropygio rufescenti-brunneo lavato nec dorso concolore, dorso etiam rufescentiore, tectricibus alarum superioribus mediis et maximis latius rufo-castaneo terminatis, secundariis late rufescente nec anguste fulvescenti-albo extus marginatis distinguenda.

♂ ♀ al. 78-77, caud. 73½-72½, culm. 12¾-12¼, tars. 21-20½ mm.
Hans Graf von Berlepsch:

♀ al. 71½, caud. 64½, culm. 12, tars. 20½ mm.

_Habitat:_ Tucuman.

_Typus:_ in Mus. H. v. B. 3 Norco, Tucuman, 7th August, 1904. [L. Dinelli leg. No. 3250.]

Of this form I have seen three males and one female, all collected by Mr. L. Dinelli at Norco, Tucuman. They differ from a specimen collected by Mr. G. Garlepp near La Paz, Bolivia (which should be true _O. leucophrys_ Lafr. et D'Orb.), in having the rump conspicuously washed with rufous and the middle back also slightly rufescent, while in the La Paz bird the upper parts are of an uniform dark raw brown. In the Tucuman birds the rufous-brown tips to the upper wing-coverts are broader and of a brighter tint. The outer margins of the tertiaries are also bright rufous instead of whitish-fulvous, and much broader than in the La Paz specimen.

12. _OCHTHOECA POLIONOTA PACIFICA_ subsp. n.

_O. O. polionota_ Scl. et Salv. dictae valde affinis sed minor et coloribus clarioribus: abdomine pallidius rufescente, ventre medio fere albescente, gula albo-grisea (nec fusca), necnon corpore supra pallidiore rufescente lavato, tectricibus plus minusve rufescente limbatis distinguenda.

Al. 84½-78½, caud. 72-68½, culm. 12½, tars. 21½-20½ mm.

_Habitat:_ La Paz, Bolivia occ.

_Typus:_ in Mus. H. v. B. 3 La Paz, 30th June, 1895. [G. Garlepp leg. No. 223.]

This southern representative of _O. polionota_ Scl. et Salv., from Peru, is distinguishable by its smaller size and paler coloration, the abdomen being pale fulvous instead of deep rufous, the middle of the abdomen nearly white, the throat more whitish, and the upper parts of a paler, more rufescent, and less smoky brown.

13. _TODIROSTRUM HYPOSPODIUM_ sp. n.

_T. T. schistaceiceps_ Scl. dicto affinis, sed corpore subtus obscure schistaceo fere unicolore, hypochondriis solummodo olivaceo perfusis, pileo obscuroire fere schistaceo-nigro, dorso obscurius olivaceo, necnon tectricibus alarum obscurius flavescenti-olivaceo bifasciatis, subalaribus olivaceis nec flavis distinguendum.
On New Neotropical Birds.

Al. 51½, caud. 35½, culm. 12½, tars. 18 mm.
Habitat: Colombia (found in Bogotá collections).
Typus: in Mus. H. v. B.

The unique type, in the museum Berlepsch, evidently represents quite a distinct new species. It is of the known make of Bogotá skins, and was picked out by me from a large lot of Bogotá skins forwarded by a plumassier of Berlin. It is easily to be distinguished from specimens of *T. schistaceiceps* by the uniform dark schistaceous colour of the lower parts of the body, without any white on the lower belly. The upper part of the head is also darker, nearly black; the green of the back and the yellowish-green of the wing-bands show darker tints, and the under wing-coverts are olivaceous instead of yellow.

14. *Todirostrum schulzi* sp. n.

*T. T. schistaceiceps* Scl. dicto affinis sed dorso obscurius olivaceo, pectore lateribusque obscurius et purius schistaceis, hypochondriis obscuri olivaceo perfusis, pileo obscurius schistaceo-nigro, neenon tectricibus alarum superioribus in fundo purius nigris, purius olivaceo-flavo terminatis, nec parte nigra extus olivaceo marginatis.

Al. 47½, caud. 34½, culm. 12½, tars. 18 mm.
Habitat: Ourém (Rio Guamá), Prov. Brasiliae Pará.

*T. schistaceiceps* Scl., a common bird in Central America, East Columbia, and Venezuela has not yet been recorded from Brazil. The bird collected by Mr. Schulz near Ourém on the Rio Guamá, in the province of Pará, is evidently a near ally of that species, but is easily to be distinguished by its much darker colours, and by the larger and middle wing-coverts being pure black, without a greenish border to the outer webs, the greenish-yellow tips being clearer and more sharply separated from the black bases, the upper part of the head is blacker, the back a darker olive-green, while the breast and the sides of the body are of a darker and purer ashy-grey.

Mr. O. Reiser has lately found the same bird in Piauhy.
This new species is named after Mr. Albert Schulz, who in the same place rediscovered the famous *Pipra opalizans*.

15. **Idioptilon rothschildi** gen. et sp. n.

*Idioptilon*¹ genus novum *Tyrannidarum* generi *Lophotricco* affine sed pileo plano, minime cristato, remigum forma insolita: remigibus secundaris 14, 15, 16 elongatis remigibus primaris fere aequalibus, remigibus 9, 10 et 11 abbreviatis inter se aequalibus, rectricibus fere aequalibus nec valde gradatis, necnon alis caudaque multo longioribus, rostroque magis elongato distinguendum.

*I. rothschildi* sp. n.

*I. quoad picturam* *Lophotriccum spiciferum* (Lafr.) aemulat, sed pileo absque crista fere unicolore viridi, plumis medio solummodo obscure fusco maculatis, pectore magis olivaceo tincto, abdomen magis flavo tincto, necnon rostro, ut videtur, nigrescoentiore.

Al. 51, caud. 45, culm. 11½, tars. 15½ mm.

*Habitat*: Cayenne (Rio Approuague).

*Typus*: in Mus. Rothschild, at Tring: "Ipousin, River Approuague, January 8th, 1903. Iris pale yellowish."

[Geo. K. Cherrie leg. No. 8057.]

I have named this curious bird in honour of the Hon. Walter Rothschild, who kindly allowed me to describe it. The Cherrie collection contained only a single specimen which is the type of the above description, and this, unfortunately, has the bill somewhat injured and rather compressed laterally. I have thought it necessary to make it the type of a new genus, because, although allied to *Lophotriceus spicifer* (Lafr.), it differs so much from it by its wing formula, by its more even tail and by the want of a crest, that it cannot, in my mind, be placed in the same genus.

The wing formula is a rather curious one, some of the secondaries, viz., the 14th, 15th, and 16th, being as long as the longest primaries, while the 9th, 10th, and 11th are much abbreviated and of nearly equal length. The 3rd, 4th, and 5th primaries are the longest of all and of about

¹ δῖος = singularis. πταλόν = ala.
equal length, the 2nd is about 2½ mm. shorter and equal to the 6th; the 1st about 9 mm. shorter than the longest and about midway between the last and the penultimate tertiary feather; the 7th about 1½-2 mm. shorter than the 6th; the 8th 1 mm. shorter than the 7th; the 9th and 10th of equal length and about 1 mm. shorter than the 8th; the 11th 1 mm. longer than the 8th; the 12th 2 mm. longer; the 13th 2½ mm. longer than the 8th; the 14th, 15th, and 16th equal in length to the 2nd and 6th; the 17th 1 mm. shorter; the 18th about equal to the 8th; the 19th shorter than the 1st.

The wings and the tail are much longer than in L. spicifer, the bill is also a little longer. The tail is much more even, the outer tail-feathers being only about 1½ mm. shorter than the longest (in L. spicifer they are 5½-6 mm. shorter). The coloration is nearly the same as in L. spicifer, but the breast is a little more washed with olive-green, and the belly more yellowish, less mixed with white. There is not the slightest trace of elongated crest-feathers and the pileum is green with indistinct dark spots in the middle of the feathers. The wing-bands, etc., are just the same as in L. spicifer. The bill is apparently blacker, not so whitish at the base of the under mandible.

16. Pogonotriccus venezuelanus sp. n.  


Hans Graf von Berlepsch:


Al. 52½, caud. 43½, culm. 9½, tars. 15½ mm.

Habitat: Pto. Cabello (Venezuela).


Observatio: P. a P. eximio (Temm.) pileo grisescente, tectricibus alarum bifasciatis, etc., a P. ophthalmico (Taez.) gula flava, pileo viridescenti-griseo nec ardesiacico, etc. distinguendus.

This new species seems to have its nearest ally in P. ophthalmicus Tacz. of Peru, Ecuador and Colombia, but is much smaller in all its dimensions, and has the pileum of a much lighter greyish colour, suffused with olivaceous (not blackish-cinereous as in that species). The back is of a much greyer olive-green, the white of the lores and the eye region is replaced by yellowish-white, the throat is yellow (not white), the yellow of the under parts is paler and not suffused with olive-green on the breast. The yellow spots on the tips of the upper wing-coverts are larger and clearer and better defined. The bill is still a little longer than in P. ophthalmicus, but generally of the same shape, only a little broader before the tip. The bristles are not quite as long as in P. ophthalmicus.

In general style of plumage this species shows some resemblance to the species of Tyranniscus, and T. cinereiceps Sel. agrees with it in the black lunar mark on the ear-coverts, but it has the long slender bill and the long bristles of the genus Pogonotricus.

A careful study shows that the bird placed by Mr. Sclater (Cat. Birds XIV., p. 118) as specimen (a) under the head of Leptopogon tristis belongs to the species just described, and that L. tristis Sel. & Salv. from Bolivia, is quite distinct, being only a large form of Phylloscartes ventralis (Temm.).

17. Mecocerculus hellmayri sp. n.

M. corpore supra brunnescenti-olivaceo, uropygio pallidiore, sordide fulvo-brunneo, pileo griseo, superciliis usque ad occipitis latera ductis albescentibus, auricularibus olivaceis. Corpore subtus pallide flavescente, albo mixto, gula purius

Al. 56\(\frac{1}{2}\)-54, caud. 46-42\(\frac{1}{2}\), culm. 8\(\frac{1}{4}\)-7\(\frac{1}{2}\), tars. 16\(\frac{1}{2}\)-15\(\frac{3}{4}\) mm.

Observatio: M. a M. poecilocerco Sel. et Salv. dicto, cui forma maxime affinis rectricibus externis concoloribus, nec intus albis, uropygio fulvo-brunneo, nec sulphureo et colore corporis inferioris flavescentiore distinguendus.

Habitat: Boliviae orientalis Andes (Cocapata, Yungas).


This new Mecocerculus, of which Mr. Gustav Garlepp sent me two specimens, both marked males (one adult, the other evidently a young bird), from Cocapata, in the Yungas of Bolivia, opposite to the chain of Cochabamba, is quite distinct from the other known species of that genus. In form it comes nearest to M. poecilocerco Sel. et Salv. of Colombia, Ecuador and Northern Peru, but the inner webs of the outer rectrices, in the new species, are uniform blackish, the white being entirely lacking and it has quite a different coloration of the under parts of the body, which appear yellowish mixed with white and greenish on the upper breast, instead of being greyish-white on the throat and upper breast and white mixed with yellowish on the abdomen. Further, the rump is of a pale fulvous-brown, somewhat as in Tyranniscus uropygialis, instead of being pale yellow. I have dedicated this species to my friend Mr. Carl Hellmayr, who has so extensive a knowledge of South American birds, and who agrees with me that it is a new and well-marked form of Mecocerculus.

18. TYRANNISCUS PETERSEN Sp. n.

T. T. vilissimo (Sel. et Salv.) forsan maxime affinis sed stria superciliari angustiore flavescente alba (nec pure alba,) capitis lateribus fusco-nigris (nec olivaceis), pectore olivaceo-
griseo (nec pure griseo, flavescente flammulato), abdomen medio flavescente-albo (nec griseo-albo), pileo olivaceo-fusco (nec griseo-fusco), dorso obscuriore olivaceo, hypochondriis pallide flavescentibus (nec olivaceo-flavo perfusis), necnon alis longioribus distinguendus.

Al. 61\(\frac{1}{2}\), caud. 55\(\frac{1}{3}\), culm. 9\(\frac{1}{3}\), tars. 17\(\frac{1}{3}\) mm.

Obs.: T. a T. improbo Scl. et Salv. abdomen flavescente-albo nec flavo, pileo fusco-olivaceo nec brumascence, superciliis albescentibus nec flavo, tectricibus alarum minus distincte flavo marginatis etc. distinguendus.

Habitat: Venezuela circum Caracas.


The single specimen of this species, collected near Caracas by Mr. Carl Peters, and which I have named after him, is evidently quite distinct from all the other species of Tyran-ennisus which are known to us. It seems to have its nearest ally in T. viliissimus (Scl. et Salv.) of Guatemala, but is quite distinct in having the cap olivaceous-brown instead of greyish-brown; in the form and coloration of the superciliary stripe which is narrower and more yellowish-white, not pure white; in the sides of the head being blackish instead of olivaceous-green, and also in the back being of darker green. The breast is more greenish-grey, not pure grey, and not so flammulated with yellowish. The sides of the vent are more yellowish, less greenish, and the wings are longer.

It need hardly be compared with T. improbus Scl. et Salv., from Merida, which has yellow underparts, a rather more brownish cap, more yellowish superciliaries, and much more distinct yellow margins to the upper wing-coverts.

19. C. C. Javesolae (Licht.) affinis, differt superciliis, plumis nasalibus et oculorum ambitu albis nec flavis, nec non gula superiore albescente nec flav.

Al. 59-54, caud. 57-50, culm. 11\(\frac{1}{4}\)-10\(\frac{1}{4}\), tars. 17-16 mm.

Habitat: Colombia, circum Sta. Fé de Bogotá.

Of the species described above I have before me no less than twenty-six skins of the well-known Bogotá make, picked out from time to time from trade collections sent from Colombia for millinery purposes. It is, therefore, apparently not at all a rare species in the countries visited by the Bogotá collectors, but curiously enough has escaped notice by naturalists, or else has been taken for C. flaveola, from which it is distinguishable at a glance. In C. leucophrys the superciliary stripe enlarges above the lores, and the nasal feathers, and the region about the eye, are white, while in C. flaveola these parts are of a clear yellow. The upper part of the throat in C. leucophrys is more or less whitish, being of the same yellow as the breast and abdomen in C. flaveola. The bill is as large as in C. flaveola magnirostris (Hart.) from West Ecuador, while typical birds of C. flaveola from Bahía have much smaller bills, and shorter wings and tails. I have also a Bogotá skin of true C. flaveola magnirostris in my collection.

20. **Cotinga simoni** sp. n.

*C. C. ridgwayi* Ridgw. dictae proxima sed colore gulae abdominisque medii obscuriore violaceo, fere violaceo-ignro, colore corporis superioris coeruleo quoque obscuriore, pileo obscurc violaceo tincto, colore coeruleo in pectore superiore magis extenso, mento extremo coeruleo nec gulae concolori, alis longioribus, rostro longiore et crassiore necnon remige tertia angustiore distinguenda.

Foemina foeminae *C. cayanae* simillima a foemina *C. amabilis* Gld., dictae valde diversa.

♂ ♂ ad., al. 109-110½, caud. 67-64½, culm. 16¾-16½, tars. 19½ mm.

*Habitat*: Colombia occidentalis meridionalis (S. José Rio Dagua et Buenaventura).


The bird described above, and named in honour of the excellent entomologist and trochilidist, M. Eugène Simon, of Paris, is evidently the southern representative of the *Cotinga ridgwayi* of Costa Rica. The male of *C. simoni* differs from the male of *C. ridgwayi* in the following particulars:
The violaceous colour of the throat and the middle belly is rather darker, nearly black; the blue of the upper parts is also darker, and the top of the head is shaded with darker violaceous. The blue band on the upper breast is broader. There is a bright blue spot on the upper chin wanting in the other species. The wings are longer, and the bill much longer and broader. The third primary is rather narrower.

In all other points, especially in the length of the upper and under tail-coverts, it agrees perfectly with *C. ridgwayi*.

The female is quite differently coloured from that of *C. amabilis*, but agrees very well with the female of *C. cayana*.

In the Rothschild Museum at Tring I found a pair of this species, collected by M. André at El Pailon, near Buenaventura, and there is a male from unknown locality in the British Museum.

21. *Synallaxis fusicipennis* sp. n.

*S. S. frontali* Pelz. affinis, differt remigibus extus fuscis nee cinnamomeo-rufis, primariis solummodo plus minusve rufescente marginatis, rectricibus obscurius rufobrunneis, mediis pogonio interno fere toto, externis apice plus minusve nigro-brunneis, dorso etiam obscurius olivaceo-brunneo, minus rufescente lavato.

Al. 65-56, caud. 86-77, culm. 121-114, tars. 213-20 mm.

*Habitat*: Bolivia orientalis (Samaipata, Valle Grande, Olgin).


Mr. Gustav Garlepp sent me five specimens of this new form, all collected in different parts of Eastern Bolivia, viz., at Samaipata, Valle Grande, and Olgin.

They differ invariably from specimens from Brazil (Bahia skins) in having the wing feathers externally bordered by olive-brown instead of cinnamon-rufous, only the borders of the primaries showing a slight rufescent shade, while those of the secondaries are concolorous with the back. The back has a darker shade, being more olivaceous, less rufescent. The cinnamon-rufous of the tail is somewhat darker, and the inner webs of the middle tail-feathers are more generally fuscous, while they are only bordered with blackish on the
apical half of the inner web in true *S. frontalis*. The greyish-brown frontal band is broader and more greyish. Also the wings and the tail are longer.

Mr. C. Hellmayr has compared the type of *S. azarae* D’Orb. in the Paris Museum, and finds that it is not the same as my *S. fuscipennis*, but agrees with *S. griseiventris* Allen, of which I have received a large series from the Western Yungas of Bolivia and the Marcapata district of South-east Peru. The latter agrees with *S. frontalis* in having all the wing-feathers bordered externally with cinnamon-rufous, but it is very dark cinereous beneath, and has a very long tail of a darker brown shade and a brighter cinnamon cap.


*S. S. sordidae* (Less.) *dictae ex Chile affinis sed sane diversa, superciliis latis ad capitis latera ductis necon colli lateribus griseis, nec brunnescentibus, corpore superiore magis griseo-brunneo, nec fulvo-terreneo-brunneo, corpore subtus albescentiore, nec griseo tincto, primariis in adultis pure griseo nec brunneo marginatis, cauda multo breviore, rectricibus mediis apice semper rotundatis nec acuminatis, rostro, crassiore, breviore magis curvato, minus recto, mandibula albescentiore.

♂ ♂ al. 64-60^\frac{1}{2}, caud. 69\frac{1}{2}-64\frac{1}{2}, culm. 11\frac{3}{4}-11\frac{1}{4} mm.

♀ ♂ al. 63\frac{1}{2}-59, caud. 66\frac{1}{2}-61\frac{1}{2}, culm. 11\frac{3}{4}-11\frac{1}{4} mm.

♂ ♂ tars. 20-19 mm.

♀ ♂ tars. 21\frac{1}{4}-19 mm.

*Habitat*: Argentina occ. (Cordova, La Soledad, Tucuman).


I have had the above bird from Cordova in my collection since 1888, and have always regarded it as belonging to an undescribed species, but in default of material for comparison, I have refrained from describing it. It was only lately that I found a good series of this species in the Rothschild Museum at Tring, containing three specimens also from Cosquin, Cordova (coll. White), two specimens from La Soledad (coll. C. B. Britton), and three from Tucuman, two of them collected by M. G. A. Baer and one by L. Dinelli.
All these agree among themselves in the characters indicated above, and there can no longer be any doubt that it is quite a distinct species, differing as it does from *S. sordida* (Less.) in having a distinct greyish superciliary stripe and greyish sides to the neck, and also in having a more greyish-brown instead of fulvous-brown upper surface, and much whiter, instead of greyish, underparts. The primaries have pure grey outer margins, the middle rectrices are always rounded, not acuminated, and last, but not least, the tail is much shorter. The bill is also shorter and more curved, not so straight and pointed. I have named this species in honour of the successful explorer of Tucuman and Peru, M. G. A. Baer, of Paris.


*S. sordida flavogularis* (Gld.) dictae ex Patagonia orientali valde affinis sed corpore supra obscuriore magis fumosobrunneo nec fulvescente tincto, corpore subtus clare cinereoalbo nec brunescenti cinereo, humeris dorso fere concoloribus nec rufobrunneis, macula gulari fufocastanea nec fulva, necnon alis longioribus distinguenda.

Al. 67, caud. 86, culm. 12½, tars. 21 mm.

*Habitat*: Tucuman.


This is the true representative of *S. sordida* of Chile in Tucuman, agreeing with it in form (shape of bill etc.) and in general style of coloration. In its dark coloration it comes nearest to *S. s. flavogularis* (Gld.) from Eastern Patagonia, but has a still darker shade on the upper parts without any fulvous tinge. The under parts are of a clearer greyish-white, not so brownish as in the Patagonian representative, and the gular spot is of an intense rufous-chestnut instead of being clear fulvous. The wings are also a little longer than in the allied forms, and the rufous-brown shade on the shoulders is altogether wanting.

24. *Thripadectes bricenoi* sp. n.

*Th. Th. flammulato* (Eytton) forma rostri et coloribus similis sed sane diversus: corpore subtus ochraceo plumis
omnibus lateralibus olivaceo-brunneo, nec nigro, marginatis, gula fere concolore marginibus fuscis fere evanescentibus, dorso medio in fundo magis olivaceo minus nigrescente, uropygio rufo, nec castaneo-brunneo, nee castaneo-brunneo, neenon remigibus et rectricibus supra pallidioribus.

Al. 96-94¼, caud. 119¼-114, culm. 25¼-23¾, tars. 30¼-29½ mm. 

_Habitat_: Merida, Venezuela.

_Typus_: Mus. H. v. B. Culata, Merida, 22nd July 1886. [S. Briceño leg.]

This is quite a new species of _Thripadectes_, agreeing with _Th. flammulatus_ in the form of the bill etc. In coloration it differs from _Th. flammulatus_, at first sight, in having the feathers of the underparts of the body margined laterally with olive-brown instead of black, giving these parts a much lighter appearance. The throat is nearly uniform fulvous instead of being heavily striped with black. The feathers of the upper breast are slightly margined laterally with blackish, but those of the lower breast and the belly are bordered with pale olive-brown instead of black. The middle back is also more olive-brown, less blackish. The lower back and the upper tail-coverts are light rufous-brown instead of being dark chestnut. The chestnut of the upper surface of the wings and tail is also of a lighter shade. In the coloration of the underparts it somewhat resembles _Automolus holostictus_ Sel. et Salv., but the cinnamon spots are much larger on the breast and the belly, leaving but a narrow lateral border of darker colour, while in _A. holostictus_ there are only very narrow fulvous stripes on the otherwise olivaceous-brown feathers.

I have had for a long time two skins of this distinct species, one of which is now in the British Museum and was spoken of by Mr. Sclater, Cat. Birds Brit. Mus. XV. p. 102. I have named it in compliment of its discoverer, the successful collector, Mr. Salomon Briceño, of Merida.

25. _Thripadectes sclateri_ sp. n.

_Thr. forma Thr. flammulato_ (Eyton) dicto affinis, coloribus corporis superioris _Automolus rufobrunneo_ (Lawr.) inferioris _A. melanorhynchum_ (Tsch.) aemulat. Capite supra fere ut in _A. rufobrunneo_ nigro-olivaceo, sed pluminis singulis stria
Hans Graf von Berlepsch:

Tenuissima pallidiore signatis, dorso obscurobrunneo, uropygio rectricibusque obscureus castaneo-brunneis, alis supra obscure brunneis nec olivaceis; gula ut in A. melanorhyncho cinnamomeo-brunneo, plumis laterliter stricte nigro marginatis; pectore abdomeque ut in eodem fere unicoloribus fulvo-brunneis; tectricibus subcaudalibus etiam Rufobrunneis. Rostro quam in Thr. flammmulato paulo longiore.

Al. 100, caud. 94, culm. 28, tars. 23½ mm.

Habitat: St. Pablo, Colombiae occ. merid. 4500 ped.


This well-marked species, which I have named in honour of my respected friend and first instructor in South American ornithology, Dr. P. L. Sclater, in the shape of the bill and in other structural characters is a typical Thripadectes, while in coloration it combines the characters of that genus with those of several species of Automolus. The coloration of the throat is that of Thripadectes agreeing also with that of A. melanorhynchos (Tsch.), the feathers being pale cinnamon-brown with well-marked lateral margins of black. The coloration of the breast, belly, and under tail-coverts is also nearly the same as that of A. melanorhynchos. On the other hand, the upperparts show nearly the same coloration as A. rufobrunneus (Lawr.) ex Costa Rica, the feathers of the pileum being but very slightly striated with hairlike pale shaftlines, while they are otherwise olive-brown margined broadly with black, just as in that species. The back is only a little darker, the outside of the wings much darker, more brownish, less olivaceous. The rump and the tail are much darker, more chestnut than rufous-brown. The bill is strong as in Thripadectes and a little longer than in Thr. flammmulatus.

In its nearly uniform coloration Thr. virgaticeps Lawr. from Ecuador, seems to agree with Thr. sclateri, but the former is said to have the "front crown, cheeks and hind-neck blackish-brown, the feathers of all these parts with broad shaft-stripes, those of the crown and hind neck greyish-white, the others of a pale rufous."

26. Philydor columbianus bolivianus subsp. n.

Ph. Ph. columbianus simillimus sed minor, pileo ut in Ph.
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**columbianus olivaceo-fusco**, gula pectore abdomineque ut in *Ph. rufus* ochraceo-fulvis unicoloribus (nec abdomine ut in *Ph. columbianus* pallidiore vel minus ochraceo). Rostro quam in *Ph. columbianus* breviore, quam in *Ph. rufus* vix longiore.

Al. 93-89½, caud. 83½, culm. 19½-18¾, tars. 22⅓ mm.

*Habitat*: Bolivia orientalis: Sta. Cruz de la Sierra et in Bolivia occidentalis: Songo.


This *Philydor*, of which Mr. Garlepp sent four specimens, two from Sta. Cruz de la Sierra in the east, and two from Songo in the western Yungas of Bolivia, is somewhat intermediate between *Ph. columbianus* and *Ph. rufus*. With the former it agrees in the olivaceous-brown coloration of the pileum, with the latter in the more uniform shade of the underparts, the breast and the abdomen being of the same deep fulvous as the throat, not greyish or olivaceous-fulvous as in *Ph. columbianus*.

The bill is shorter than in *Ph. columbianus*, and longer than in *Ph. rufus*. At all events it is nearer to *Ph. columbianus*, and should stand as a subspecies of it.

27. **THAMNOPHILUS HETEROCERCUS** Sp. n.

**Mas mari** *Th. ambiguus* (Sws.) simillimus, differt rectricibus sex vel octo externis in vexillo externo (nec in interno) macula alba signatis, rectricibus duobus vel quatuor intermediis unicoloribus nisi macula alba terminatis, corpore subtus clariore griseo, abdomine medio pure albo, necnon rostro breviore graciliore.

Foemina a foemina *Th. ambiguus* differt abdomine medio albicante, pectore lateribusque corporis clarioribus fulvescentibus. ♂ ♂ ad., al. 71½-68, caud. 59½-53½, culm. 17-15¾, tars. 22⅔-22⅓ mm.

♀ ♀ ad., al. 66½-65½, caud. 56-53½, culm. 16½, tars. 22 mm.

*Habitat*: Sta. Cruz de la Sierra, Boliviae orientalis.


This Bolivian representative of *Th. ambiguus* (Sws.) of Brazil is easily to be distinguished, the two or four middle
tail-feathers of the male wanting the white marginal spots, and the six or eight outer tail-feathers of the same sex presenting only the white marginal spots on the outer webs, while the spots on the inner webs to be seen in *Th. ambiguus* are altogether wanting. The ashy-grey of the underparts is lighter, and the middle of the abdomen is of a purer white. The bill, too, is smaller and shorter.

The female is also different from the female of *Th. ambiguus* in showing some white in the middle part of the belly, and in having the sides of the body of a clearer fulvous.

Mr. G. Garlepp sent me four males and two females, all collected in the neighbourhood of Santa Cruz de la Sierra.


*Th.* 3 fronte et regione superciliari cinerascentibus, pileo reliquo nigro, capitis lateribus griseis albo mixtis, cervice, colli lateribus dorsoque toto cinereis, dorsi superioris plumis vix nigro maculatis, basibus niveis, tetricibus caudae superioribus dorso concoloribus maculis albis terminatis, corpore inferiore tetricibusque subalaribus pallide fulvis, subcaudalibus laetius fulvescentibus, gula abdomineque medio albicantibus, rectricibus medii colore dorsi lavatis, remigibus extus magis olivaceo-griseo marginatis, rectricibus quatuor externis apice anguste albo maculatis, duobus externis in parte tertio apicali vexilli externi macula parva alba ante apicem signatis, scapularibus vexillo externo albo marginatis, tetricibus alarum superioribus nigrescentibus apice late albo marginatis.

♀ differt pileo rufescenti-olivaceo nec nigro, pectore abdomineque laetius fulvescentibus, abdomine medio minime albicante, necnon corpore superiore alisque extus magis rufescence-olivaceis.

♂ al. 68, caud. 66, culm. 1541, tars. 231 mm.
♀ al. 69, caud. 69, culm. 1541, tars. 22 mm.

*Observatio*: *Th. Th. gilvigaster* Pelz. dicto (= *Th. maculatus* Lafr. et D'Orb., nec *Th. maculatus* Such), affinis, differt pectore pallide fulvo minime cinereo, corporis lateribus pallidius fulvescentibus, fronte cinerascente, nigredine pilei magis restricto minime ad nucham producto, dorso pallidiori griseo vix nigro maculato, maculis albis in rectricibus externis magis
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restrictis. § eodem modo pectore pallide fulvo, nec ciner-
rасенте, gula fulvescenti-alba nec cinerea diversa.

Habitat: Tucuman (Sierra de Santiago, Sta. Ana).


This perfectly distinct new species of Thamnophilus is named after its discoverer, Mr. L. Dinelli, who has lately sent to several European Museums a large number of beautifully prepared bird-skins collected by him in different parts of Tucuman.

Th. dinellii is apparently allied to Th. gilvigaster Pelzeln, otherwise called Th. maculatus Lafr. et D'Orb. (which name cannot stand, as there is already a Th. maculatus Such, identical with Th. guttatus Vieill.), but differs from it in having a pale fulvous upper breast and a fulvous-white throat, these parts being of a dark ashy-grey in Th. gilvigaster. The sides of the body are of a pale fulvous tint in Th. dinellii, while they are of a deep orange-rufous in Th. gilvigaster. The black of the pileum in Th. dinellii is more restricted, not descending to the nape as in Th. gilvigaster, and the front is greyish-ash, instead of being black. The grey of the back and the sides of the neck are much lighter, and the black spots on the upper back are only just indicated. The white markings on the outer tail-feathers are also more restricted.

Th. Th. dinellii Berl., dicto maxime affinis sed mas adultus a mari adulto hujus speciei differt gula pectoreque griseo-albis, pectore superiore irregulariter nigro transfasciato, ventre imo solomodo subcaudalibusque pallide rufescente tinctis, pileo cum fronte, nucha dorsoque maxima ex parte nigris, tectricibus caudae superioribus basi griseis medio late nigris apicibus late albo maculatis, macula alba in vexillo externo rectricum externarum multo magis extensa et his latius albo terminatis,
Hans Graf von Berlepsch:

necon remigibus griseo-albo (nec olivaceo-griseo) extus marginatis, rostro quoque graciliore.

Observatio. Mares juniores quoad picturam corporis inferioris maribus Th. dinellii Berl. simillimi sed pectore obsolete transfasciato vel maculato, necon pictura rectricum externarum etc., differunt.

♂ ♀ al. 73-68½, caud. 71-65½, culm. 16½-15, tars. 24½-22½ mm.

Habitat: Bolivia orientalis (Samaipata, Holguin).


The species described above is of considerable interest, as by its coloration it forms a link between the group with a plain undersurface, including Th. caerulescens, Th. gilvigaster, Th. dinellii, etc., and the Th. aspersiventris Lafr. et D’Orb. group with heavily banded underparts.

In fact, the adult male of Th. connectens has the region of the lower neck and upper breast irregularly banded with black, while it otherwise resembles Th. dinellii from Tucuman, differing from it in the breast and upper belly being greyish-white instead of fulvous, and in the lower belly and under tail-coverts being but slightly suffused with fulvous. It further differs by the black cap descending to the nape and involving the forehead; by the back being mostly black, only slightly mixed with greyish (the bases being snowy-white to a large extent); by the upper tail-coverts being mostly black with greyish bases and much larger white apical spots; by the wing-feathers being bordered with greyish-white externally; by the white spots on the outer webs of the outer rectrices being of much larger extent; and the white apical spots also larger, and lastly by the bill being rather narrower.

Young males come very close in coloration to the adult male of Th. dinellii, especially in the coloration of the underparts; but they show more or less indications of blackish bands and spots on the lower neck and upper breast. No. 756 from Samaipata (coll. Garlepp) in the coloration of the lower neck and breast is truly intermediate between the old male described above and the young males from the same locality.
On New Neotropical Birds.

30. Notoprocra ornata rostrata subsp. n.

N. N. ornatae (Gray) ex Bolivia simillima, sed rostro multo longiore et crassiore, dorso, ut videtur, obscuriore minus fulvo mixto.

Al. 202, caud. 100, culm. 39 (34½), tars. 41½ mm.

Habitat: Tucuman (Cumbre de Malamala).


I have compared my specimen from Tucuman with four specimens collected by Mr. G. Garlepp in High Western Bolivia (two marked "♀♀" and one "♂"), and find it differs from them in having a much longer and somewhat bigger bill, also in the coloration of the back, which has a much blacker appearance, being less mixed and shaded with fulvous.
ON THE GENUS *ELAENIA* Sundev.

BY

HANS GRAF VON BERLEPSCH.

Although the genus *Elaenia* has already often received the special attention of ornithologists interested in Neotropical ornithology, there is apparently still so much confusion or uncertainty about some species belonging to it that a thorough and critical revision of the whole group should not be out of place. I have therefore made these birds the object of a more special study, and now propose to publish the result of my investigations. I feel sure that my essay is still far from being exhaustive and satisfactory in every way, nevertheless I hope that it will contribute to a better understanding of the more obscure species of this genus.

My studies have been supported chiefly by the large series of *Elaenia*-skins in my own collection, numbering now about 380 specimens.

Unfortunately I have not been able to examine some species which are not yet represented in my collection, and regarding specimens of the *martinica* group from the West Indies, and the *viridicata* group as represented by forms from Mexico and Central America, the material at my disposal was a rather scanty one. I must leave it to a future worker to fill up the gaps which may be observed in my treatment of the last-named groups.

My best thanks are due to the Hon. Walter Rothschild, Dr. E. Hartert, and Mr. C. Hellmayr for the loan of specimens and books, and for other useful information about the subject.

In the following pages 49 different forms of *Elaenia* are admitted, of which 18 are considered to be subspecies, and have received a trinomial appellation, so that there remain at least 31 well-marked species of this genus. Nine subspecies are described as forms new to science.
On the Genus *Elaenia*.

**Natural affinities of *Elaenia***.

The genus *Elaenia* is evidently most nearly related on one sideto the genus *Suiriri* D'Orb. (*Empidagra* Cab. et Heine), one species of the latter, viz., *S. affinis* (Burm.) having been hither to placed in the genus *Elaenia*, and on the other side to the small birds composing the genera *Phacomyias* Berl., *Phyllomyias* Cab. et Heine, and others. The position of the *Elaeninae* in the system is a rather difficult one. On one side they show affinities to *Myiozetetes*, *Myiarchus* and *Empidonax*, but cannot be placed in this vicinity, because *Myiozetetes* comes nearest to *Tyrannus*, and because *Empidonax* is most nearly related to *Horizopus* (*Contopus*), the latter with its flat bill leading to *Myiobius* and the *Platyrhynchinae*. On the other side they are certainly nearly related to the *Serpophaginae*. I have therefore placed them nearest to the latter and at the end of the *Tyrannidae*.

**Geographical Distribution**.

Species of *Elaenia* are found throughout the continent of South America, one species (*E. albiceps*) occurring as far south as Southern Patagonia. Some species are also inhabitants of Central America and Mexico, extending easterwards as far north as the city of Mexico (*E. f. subpagana*), and on the Pacific side as far north as Southern Sinaloa (*E. v. jaliscensis*), and the Tres Marias Islands (*E. v. minima*). Several species of *Elaenia* are denizens of the West Indian Islands, with the exception of Cuba, Porto Rico and the Bahamas. One species inhabits the island of Fernando Noronha off the coast of Northern Brazil. No species of *Elaenia* is recorded from the Juan Fernandez group off the coast of Chile. They are to be found in the lowlands as well as in the mountains, some species ascending to over 10,000 feet. Such are *E. frantzii* and *E. f. pudica* (ascending in the Sta. Marta region to 12,000 feet; W. W. Brown), also *E. pallatangae* and *E. a. modesta* (3500 metres—O. Garlepp). In Argentina, Chile and Western Peru they have migratory habits: *E. a. modesta* leaves Lima in June and arrives in December (Nation). *E. albiceps* and *E. parvirostris* migrate
northward in winter time (Lane, Burmeister, and others). *E. albiceps* “is to be found in Chiloe in the summer season, migrating north in winter” (Lane).

**Habits.**

Species of *Elaeaena* are said to be very active and restless birds, resembling our Warblers (as in the case of *E. viridicata* Nelson), and also our Flycatchers, taking insects in the air. Richmond observed that *E. f. subpagana* resembled the species of *Myiarchus* in its habits. They are very tame and easy of approach. The song is rather pleasant and Warbler-like (*E. flavogaster*—Forbes). In the island of Carriacou the song of *E. flavogaster* is to be heard very early in the morning, and is transcribed by the words “Ladies-Ladies-Ladies-your-lazy” (Wells).

About the song of *E. albiceps* in Chile, Mr. Lane says that it consists of a series of whistles and squeaking sounds “uttered promiscuously, though with energy.” In Chile the bird after its call-note is named “Vio” (Lane), in Mendoza “Fio” (Burmeister). *E. strepera* is said to have a very loud and harsh note (like “tscherrp”), resembling that of *Phytotoma rutila* (fide Schulz). *E. flavogaster* has also a harsh call-note (Salmon). Other local names are “Chiflador” for *E. albiceps* in Chile (Lane), “Alfreschero” for *E. parvirostris* in Argentina (Burmeister), “Pavita” for *E. flavogaster*, *E. albivertex* and *E. f. pudica* near Merida (Briceño), “Rillayna” for *E. flavogaster* at Chirimoto, N. Peru (Stolzmann). The food evidently consists partly of insects and partly of berries or seeds. In the stomach of *E. obscura* and *E. pallatangae* Mr. Stolzmann found always black berries. The same is reported about *E. a. modesta* by Nation and about *E. strepera* by F. Schulz, also about *E. martinica* by Colardeau. Mr. Layard found large green seeds in the stomach of *E. flavogaster*.

**Nesting and Eggs.**

The nesting habits we know of the following species, viz.: *E. flavogaster*, *E. f. subpagana*, *E. cristata*, *E. albiceps*, *E. a. modesta*, *E. parvirostris*, *E. mesoleuca*, *E. frantzii*, *E. f. pudica*, *E. obscura* and *E. viridicata*. 
On the Genus Elaenia.

The nests of some species of *Elaenia* are said to be true masterpieces of the art of texture as exercised by birds, being ornamented on the outside by pieces of bark and white lichen, interwoven with cobwebs and cotton wool, etc.

They are generally placed on forks of twigs or saddled on a large limb, situated either high up or very low down [four feet over the water in the case of *E. f. subpagana* (Cherrie), two to four feet from the ground in the case of *E. albiceps* (Lane)] and have often such a striking resemblance to the surroundings that they are difficult to discover.

They are either cup-shaped, the cup being fastened with thighs surrounding the twig (as in the case of *E. flavogaster*—Euler), or have the form of an inverted short-necked retort with the entrance at the bottom on one side, produced to form the neck of the retort and suspended against a small upright branch, to which they are strongly fastened (as in the case of *E. f. subpagana*—fide Allen). Mr. Cherrie says the nest of *E. f. subpagana* resembles that of *Horizopus virens*. The eggs, generally two in number (Euler says that *E. flavogaster* lays three eggs) are white, creamy-white, or salmon-coloured with a zone of spots of different shades of brown round the larger end. They are said to resemble somewhat those of *Lanius collurio* (in the case of *E. martinica*—fide Sundevall), or those of *Seiurus aurocapillus* (in the case of *E. f. subpagana*—fide Allen).

Special cases.

*E. flavogaster*: Eggs white with violet or reddish-brown round spots and dots on the larger half (Euler); of a beautiful rich cream-colour, marked with reddish-brown patches and spots forming an irregular zone near the thick end (Cherrie, Berlepsch and Hartert); pale buff with a pink tinge and a circle of brown and purple spots round the blunt end (as observed in Carriacou by Mr. Wells).

17 — 19 × 15 mm. (Nehrkorn).

24 × 16.6 — 24 × 17.1 mm. (Berl. et Hart.).

*E. flavogaster subpagana*: Eggs creamy-white speckled chiefly about the larger end with spots varying in colour from a dark chestnut or liver-brown to orange-rufous.
Hans Graf von Berlepsch:

82 × 64, 82 × 62 inch, 87 × 63 inch, 87 × 65, 88 × 66 inch, 84 × 65, 85 × 66 inch (Cherrie).

_E. cristata._ Eggs rather short and roundish, creamy-white with minute brownish-red dots, forming a somewhat indistinct zone near the larger end.

19·1 × 15·1 mm. (Berl. et Hart.).

_E. albiceps modesta._ Egg yellowish-white, with about 15 very dark reddish-brown spots, forming a zone round the larger end; also with smaller spots, or rather dots of a paler tint.

21·5 × 16·3 (Tacz.).

_E. parvirostris._ Eggs cream-coloured, with pale reddish-brown markings, and under-lying pale purplish-grey spots, forming an irregular zone above the middle.

19 × 5 and 19 × 14·8 mm. (Berl. et Hart.).

_E. obscura._ Eggs creamy-white, with pale violet and brown spots, which form a ring round the larger end.

22 × 15·5 mm. (Nehrkorn).

_E. f. pudica._ Eggs white, with a few small red spots near the larger end (Salmon), etc., etc.

The nesting time in northern South America appears to be from March to June; in South Brazil from September to December. In Costa Rica Mr. Cherrie found nests of _E. f. subpugana_ on May 1st, with two eggs slightly incubated; others on June 2nd and 14th, with fresh eggs and fully fledged young on June 2nd.

According to Euler, _E. flavogaster_ raises two broods in the year.

**Literature.**

1766. Linnaeus bestows the systematical denomination of _Muscicapa martinica_ on Brisson’s _Muscicapa martinica cristata_, this being our _E. martinica_ (L.).—Syst. Nat. Ed. XII., p. 325.

1807. Vieillot describes _Muscicapa albicapilla_, which he says was collected by him in “Saint Domingue,” but which is probably our _E. martinica_ (L.), a species not recorded from that island.—Ois. d’Am. Sept., I., p. 66.

1817. Vieillot establishes the name _Sylvia viridicata_ on Azara’s
On the Genus Elaenia.

"Contramaestre pardo verdoso corona amarilla" (= E. viridicata).—Nouv. Dict., XI., p. 171.


1825. Spix describes Platyrhynchus paganus (= E. flavogaster) from Rio. The name P. paganus seems to have been derived from M. pagana of Lichtenstein.—Av. Bras., II., p. 13, Pl. 16, f. 1.


1837. Lafresnaye and D'Orbigny in their Synopsis Avium (etc.) I., describe: Muscipeta albiceps (= E. albiceps), M. obscura (= E. obscura), Muscicapa elegans (= E. viridicata), M. albicilla nec Vieill. (= E. gaimardi).—Mag. Zool. 1837, pp. 47, 48, 52.

1840. D'Orbigny gives an account of the species collected on his voyage through Bolivia, etc., which had been already described by Lafresnaye and himself in 1837. He alters the name M. elegans to M. viridicata, and that of M. albicilla to M. gaimardi D'Orb., also that of M. obscura to M. guilleminii, but in the latter case the new appellation was unnecessary.—Voy. Am. mérid. Ois., pp. 319, 325, 326.

1841. Swainson in his "Selection of Birds of Brazil and Mexico," gives an illustration of his Tyrannula caniceps (= E. caniceps).


1845-46. Tschudi gives an account of the species of Elaenia, from Peru [E. cayanensis is Myiozetetes cayanensis (L.), E. brevirostris Tsch. is Sublegatus fasciatus (Thunb.), E. viridiflava Tsch. is Tyrranniscus viridiflavus (Tsch.)].—Fauna Peruana Aves, pp. 24, 157-160.

1847. G. R. Gray, in his "Genera of Birds," Vol. I., gives a long list of species of his genus Elania, of which but very few are really pertaining to it.
1850. Bonaparte, in his *Consp. Av. I.*, pp. 185, 186, gives a list of 10 species of *Elaenia*, of which only *E. pagana* and *E. cotta* are true members of this genus.
1856. Burmeister deals with the Brazilian species of *Elaenia*. *E. miles*, *E. albicollias*, *E. coronata*, *E. affinis* (= *Empidagra affinis*), *E. spadicea*, *E. modesta*, *E. brevirostris*, *E. brevipes*, *E. obsolete*, and *E. murina* belong to other genera, leaving *E. pagana* as the only Brazilian species of *Elaenia* which was known to him.—Syst. Uebers. Thier. Brasil. II. b, pp. 473-481.
1858. Sclater describes *E. griseigularis* from Riobamba, Ecuador.—P.Z.S. 1858, pp. 554, Pl. 146, f. 1.
1859. Cabanis and Heine give a list of the species of the genus as contained in the “Museum Heineanum.” The spelling of the name *Elaenia* is altered in *Elainea*. *E. mesoleuca* is described as a new species. *E. incomta* described in a footnote is = *Phaeomyias m. incomta* (Cab. et Heine).—Mus. Hein., II., pp. 59, 60.
1859. Sclater describes *E. placens* from Cordoba, Mexico (In the *Ibis*, 1859, Pl. 4, f. 2, it is figured). He also gives a list of eight other species of *Elaenia*, of which only five are pertaining to it.—P.Z.S., 1859, p. 46.
1860. Sclater and Salvin describe *E. subpagana* from Dueñas, Guatemala.—*Ibis*, 1860, p. 36.
1861. Index generis *Elaineae* ex familia *Tyrannidarum* additis novarum specierum diagnosibus. Auctore Philippo Lutley Sclater.—P.Z.S., 1861, pp. 406-408, Pl. XLI. Here we have the first article devoted exclusively to the genus *Elaenia*. Seventeen species are admitted. *E. semipagana*, *E. pallatangae*, *E. subplacens*, *E. implacens* (= *E. viridicata*) are described as new.
1861. *E. fallax* is described by Sclater in a footnote to his article on Jamaican birds.—P.Z.S., 1861, p. 76, nota.
1862. Sclater gives a list of the species of *Elaenia* in his collection. The species there named *E. caniceps* is not that
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species, but = E. gaimardi (D'Orb.) and No. 1325 "E. albiceps" = E. gigas. Nos. 1336 (olivacea) and 1337 (rustica) belong to one and the same species, viz., E. obscura (Lafr. et D'Orb.).—Cat. Coll. Am. B., pp. 216-218.

1865. Geo. N. Lawrence describes E. frantszi and E. chiriquensis, the latter being perhaps the same as E. albivertex Pelz.—Ann. Lyc., N. H. New York, VIII., pp. 172, 177.

1868. A. v. Pelzeln gives us a very good account of the Brazilian species of Elaenia, as collected by J. Natterer.

As new species he describes E. spectabilis (== E. flavogaster spectabilis), E. cristata, E. albivertex, E. parvirostris, E. elegans (= E. gaimardi), E. cinerea, E. ruficeps and E. littoralis, the latter not being an Elaenia, but now placed among the Fluvicolinae as Ochthornis littoralis (Pelz.).

The bird named by him E. modesta Tsch. is not at all that species, but is considered to belong to a new species which will be described in this article. The specimens from Rio Paraná, classified by him as E. caniceps, proved to belong to E. c. taczanowskii Berl.

To A. v. Pelzeln we owe the first knowledge of some of the more difficult species of Elaenia, such as E. spectabilis, E. cristata, E. albivertex and E. parvirostris, of which he gave us good descriptions. Nevertheless they were not recognised by some subsequent authors.—Zur Orn. Bras. II. (1868), pp. 106-108, 176-180.


This is another article devoted exclusively to the genus Elaenia. The following species are described as new: E. gigas, E. fallax (redescribed from 1861), E. pudica. Sixteen species are admitted.

1870. Reinhardt describes E. lundii from Lagoa Santa, which proves to be a young of E. albivertex, Pelz., of which Reinhardt had also the adult birds, named by him "E. griseigularis Scl." (cf. Berl. et Hellm., 1905).—Vid. Meddel. nath. Foren. Kjöbenhavn, 1870, pp. 343, 344.

1873. Sclater and Salvin in their 'Nomenclator Av. Neotr.' give a list of eighteen species of the genus *Elaenia* known to them. (*E. arenarum* and *E. affinis* should be removed from this list). Their *E. caniceps* is not Swainson’s bird, but partly belongs to *E. gaimardi* and partly to *E. macilvaini*.

1877. L. Taczanowski describes *E. leucospodia* from Tumbez.—P.Z.S., 1877, p. 325.

1879. Salmon gives interesting notes on the nesting habits and the eggs of *E. flavogaster* and *E. f. pudica*.—P.Z.S., 1879, p. 513.

1880. Sclater and Salvin describe *Serophaga albogrisea* from Sarayacu, E. Ecuador, which = *E. cinerea* Pelz.—P.Z.S., 1880, p. 156.

1883. Cabanis describes *E. strepera* and *E. grata*, both from Tucuman, the latter being the same as *E. viridicata*.—J. f. Orn., 1883, pp. 215, 216.

1883. Berlepsch describes *E. taczanowskii* (= *E. cinerea taczanowskii*) from Bahia.—Ibis, 1883, p. 137.

1884. L. Taczanowski treats of the species of *Elaenia* from Peru, giving full descriptions as well as the biological observations of Jelski and Stolzmann relating to the species of that country. The species described there as *E. caniceps Sws.* from Pebas is evidently = *E. flavivertex* Sel. *E. gracilis* Tacz. is perhaps *E. albivertex* Pelz. *E. albiceps* is *E. a. modesta* Tsch. *E. elegans* Pelz. = *E. gaimardi* D’Orb. *E. subplacens* comprises that species and *E. viridicata*. *E. obscura* comprises also *E. o. tumbillana* described in this article. *E. brevirostris* (Tsch.) = *Sublegatus fasciatus* (Thunb.).


1884. Salvin and Godman describe *E. olivina* from Roraima.—Ibis, 1884, p. 446.

1885. Berlepsch and Ihering give an account of the species of *Elaenia* from Rio Grande do Sul. *E. mesoleuca* is believed
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1887. Sclater describes *E. hypospodia* from Valencia, Venezuela; and *E. flavivertex* from the Ucayali.—P.Z.S., 1887, p. 49.

1888. In the Catalogue of the birds of the British Museum, Vol. XIV., pp. 136-154, Sclater gives us a monographical account of this genus, which on the whole is a very satisfactory one, but unfortunately he does not recognise such good species as *E. albivertex* and *E. cristata*. Geographical forms, such as *E. subpagana*, *E. semipagana*, *E. viisi*, *E. griseogularis*, *E. pudica*, etc., are not admitted. *E. incompta* and *E. semijava* recorded in a footnote as species unknown to the author belong to other genera, while three others named in the footnote prove to be valid forms of *Elaenia*. Sclater admits twenty-four species, of which *E. arenarum* and *E. affinis* belong to other genera.


1888. In their Biologia Centrali-Americana, Aves, II., pp. 26-28, 34-37, Salvin and Godman treat of the Central-American species of *Elaenia*. *Myiopagis* is a new genus created for *E. placens* and allies, but this genus is apparently untenable.


In this important article Allen endeavours to point out that many species of *Elaínea* recognised by authors are untenable, being founded on individual characters (seasonal or otherwise).

His conclusions are not shared by the author of this article. Although Allen had a large material before him, collected chiefly at Chapada, Mattogrosso, by H. H. Smith, he evidently did not understand it correctly, and his series from other localities were rather insufficient,
and should not have induced him to suppress so many good species which he had never examined.

*E. spectabilis* and *E. ridleyana* are placed among the synonyms of *E. pagana*, while *E. cinereescens* and *E. riisi* are united with *E. martinica*, which is made a subspecies of *E. pagana*. *E. albiceps* is also considered to be a subspecies of *E. pagana*, and the following are believed to be synonymous with it: *E. modesta* Tsch., *E. griseogularis* Scl., *E. mesoleuca* Cab. et Heine, *E. cristata* Pelz., *E. albiventer* Pelz. (sic! = *albivertex*), *E. parvirostris* Pelz., *E. strepera* Cab.!, and *E. gracilis* Tacz.

Nevertheless Allen’s article may be consulted with advantage, as it contains a good deal of fresh information about the subject.

1888. Sclater and Hudson in their “Argentine Ornithology,” I., pp. 145, 146, treat of the species of *Elaenia* of that region.

1889. C. B. Cory, in his “Birds of the West Indies,” gives full information about and descriptions of the species of *Elaenia* inhabiting the West Indian Islands. *E. riisi* is not recognized.

1889. Cory describes *E. barbadensis*, which is perhaps not to be distinguished from *E. martinica*. Auk, V., p. 47.

1890. Cherrie gives an interesting account of the nesting habits and the eggs of *E. f. subpagara*. Auk, 1890, p. 235.

1890. Berlepsch and Leverkühn give notes on *E. cristata* and *E. spectabilis* as collected by Behn in Goyaz. Specimens of *E. cristata* from Brit. Guiana are provisionally named *E. lophotes* Berl. Ornis, 1900, pp. 12-14.


1895. Cory describes *E. cherriei* from S. Domingo, which is doubtfully distinct from *E. fallax* of Jamaica. Auk, XII., p. 279.


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1900. Nelson describes M. placens jaliscensis from Jalisco which is probably a subspecies of E. viridicata. Auk, XVII., p. 264.


1901. O. Bangs describes E. sordidata from San Miguel Island, which is apparently inseparable from E. albivertex. Auk, 1901, p. 122.

1901. R. Bowdler Sharpe in his “Handlist of Birds,” III., p. 116-117, 122-125, gives a list of the species of Myiopagis (11 species) and Elainea (26 species). “E. incompta” and “E. affinis” do not belong to Elaenia.


1902. Berlepsch and Hartert discuss the species of Elaenia found on the Orinoco River. The nesting and the eggs of several species are described. Novit. Zool., IX., pp. 43-45.

1905. Berlepsch and Hellmayr publish the result of their investigations concerning some typical specimens of Elaenia, viz., of E. lundii, E. modesta, etc. J. f. Orn., 1905, pp. 1, 2, 12.

Genus ELAENIA Sundev.


The name was first written Elaenia by Sundevall when he created the genus in 1835, but in 1872, in his “Tentamen,” he accepted the spelling Elainea, proposed by Cabanis and Heine in 1859. Perhaps we might ultimately think it proper to alter our terms of the law of priority in such a way, that an author who first proposed a name should be entitled to alter it afterwards for the sake of correct spelling, or that a correction proposed by another author should be accepted if the first author has consented to it.
Handl., 1835, p. 89 ("sp. Musc. pagana Licht.—brevirostris—modesta—aurifrons Pr. Max."—typ. select.: Musc. pagana Licht.).

 Afterwards corrected into:

 Elania Gray, 1840; Elaenea Cab., 1847; Elainia Reichb., 1850; Elainea Cab. et Heine, 1859 (also of Sundevall, 1872); Elanee Bangs, 1900.


 Muscicapora D'Orb., 1840 (part).


 The genus Myiopagis Salv. et Godm. I do not recognise. I find that in all species of true Elaenia, as well as in those for which the genus Myiopagis was instituted, the nostrils are surrounded by a membrane which nevertheless in some individuals becomes more or less obsolete on the anterior and lower parts, this being, perhaps, sometimes caused by the drying of the skin. In fact, in some specimens of E. placens, the membrane is quite recognisable on the anterior and lower edges of the nostril. Dr. Allen has already expressed his belief that the genus Myiopagis is untenable.

 1. Elaenia flavogaster? (Thunb.).


? It is not without much hesitation that I am accepting Thunberg's name flavogaster for this species, so long known to us as E. pagana (Licht.), but I see no possibility to avoid it. At all events a re-examination of Thunberg's type in the Upsala Museum seems to be advisable.—H. v. B.
On the Genus Elaenia.


Elaenia pagana Cab. et Heine, Mus. Hein., II. (1859), p. 59 (Brazil, Guiana, Cayenne); Scl., P.Z.S., 1861, p. 406; Scl., Cat. Coll. Am. B. (1862), p. 216 (Cayenne, S. Marta, Tobago); Taylor, Ibis, 1864, p. 86 (Trinidad); Scl. et Salv., P.Z.S., 1866, p. 188 (Nauta); id., ibid., 1867, p. 975 (Pebas), 1868, p. 628 (S. Esteban); Pelz., Orn. Bras., II. (1868), pp. 106, 424 (Rio, Xpanema, Ytararé); Scl. et Salv., P.Z.S., 1869, p. 598 (Cosnipata); Scl., P.Z.S., 1870, p. 834; Reinh., Vid. Meddel. nathist. Foren. Kjøbenhavn, 1870, p. 342 (Minas Geraes); Scl. et Salv., P.Z.S., 1873, p. 279 (E. Peru); id., Nomencl. Av. Neot. (1873), p. 48, part.; Layard, Ibis, 1873, p. 382 (Pará); Cab., J. f. O., 1874, p. 88 (Cantagallo); ?Scl. et Salv., P.Z.S., 1876, p. 16 (Huiro); id., P.Z.S., 1879, p. 513 (Medellín, Antioquia; nest and eggs); Salv. et Godm., Ibis, 1880, p. 124 (Sta. Marta); Forbes, Ibis, 1881, p. 342 (Garanhuns, Pernambuco); Salv., Cat. Coll. Strickland (1882), p. 308, no. 1501 (Brazil); Tacz., P.Z.S., 1882, p. 20 (Chirimoto); id., Orn. du Pérou II. (1884), p. 262 (Peru); Berl., J. f. O., 1884, p. 301 (Bucaramanga); id., Zeitschr. Ges. Orn., 1885, p. 134, nota 1 (S. Paulo, Bahia);

**Elania fallax** Léot. (nee Scl.), Ois. Trinidad (1866), p. 236 (Trinidad).


E. corpore supra obscure olivaceo (brunneo aut griseo adumbrato), pilei mediis plumis elongatis (cristatis) plus minusve sagittaeformibus, basi plus minusve albis, corpore
On the Genus Elaenia.

- Inferiore griseo-flavescente, pectore olivaceo-griseo perfuso, abdomen pallide flavescente (in speciminibus nonnullis laetius flavis) tectricum alarum flavescente albescentem marginatam, itaque alis bifasciatis, remigibus tertiaris extus albo margi- natis.

- Al. 85-76, caud. 78-66 mm.


- Specimens from St. Vincent collected by Mrs. H. H. Smith and Dr. Percy Rendall, belonging to the Tring Museum, which were kindly submitted for my inspection by Dr. E. Hartert, proved to be absolutely identical with specimens from the Continent, agreeing with those from Guiana, Bogotá, Bahia, etc.

- Specimens from these localities have not yet been examined by me.
Some specimens from Bogotá, Merida, Trinidad, N. Peru, and S. Paulo have the abdomen of a much deeper and clearer yellow, approaching in this respect very nearly to E. f. subpagana. Others from the same localities are pale coloured, as are especially those from Cayenne and Bahia. The latter are also among the smallest, while specimens from S. Paulo and N. Peru are remarkably large.


On the Genus Elaenia.


**Elaenia pagana** Cherrie (nec aut.), Auk, 1890, p. 235 (Costa Rica, nest and eggs).


**Elaenia pagana subpagana** Bangs, Auk, 1901, p. 28 (San Miguel Isl.); id., ibid., p. 363 (Divala and David, Chiriqui); id., Proc. New England Zool. Club, III. (1902), p. 36 (Boquete, Chiriqui).


**E. E. flavogaster** dictae valde affinis, sed corpore superiore obscuriore, brunnescentiore, abdomine semper laete flavo distinguenda.

Al. 81-72, caud. 78-70 mm.


Specimens from Chiapas (Mus. H. v. B.) are absolutely identical with others from Panama, etc.

3. **Elaenia flavogaster spectabilis** Pelz.

**Elainea spectabilis** Pelz., Orn. Bras. Abth., II. (1868),
Hans Graf von Berlepsch:


*E. E. flavogaster* dictae maxime affinis, sed multo major. Al. 92-88, caud. 85-78, culm. 13²/₃, tars. 21²/₃-19²/₃ mm.

**Habitat**: Goiaz (Natterer leg., August 16th), Goiaz, Araguay, Jaragua, Maria Rosa (Behn leg.) Rio Negro: Barcellos, (August 31st, Natterer leg., Mus. Vindob.).

*E. f. spectabilis* is apparently a larger form of true *E. flavogaster*, representing it in Western Goiaz and on the Lower Rio Negro. In coloration it agrees with specimens from Eastern Brazil, but has the crest-feathers either uniform or but slightly mixed with white at their extreme bases. In measurements it far exceeds *E. flavogaster*, agreeing in this way rather with *E. gigas*.

4. *ELAENIA FLAVOGASTER SEMIPAGANA* Scl.


*E. E. flavogaster* dictae valde affinis, differt gula puriore alba, cristae plumis valde elongatis potius griseo-(nec olivaceo-) bruneis, concoloribus, vel basi vix albo variegatis, necnon corpore superiore cinerascentiore.
On the Genus Elaenia.

Al. 80, caud. 79, culm. 11½, tars. 19¼ mm.

Habitat: Ecuador occ.: Babahoyo (Fraser), Guayaquil, Yaguachi (Stolzm. and Siem.), Santa Rita (Buckley), La Concepcion (valle de Chota), and Balzar (Festa), Paramba (Mus. Tring).

N.B.—I cannot say if the specimen from Pasto (Lehmann) in the British Museum belongs to this form or to true E. havogaster.

5. ELAENIA MARTINICA (Linn.).


Elaenea martinica Taylor, Ibis, 1864, p. 169 (Dominica); Sel., P.Z.S., 1871, p. 271 (Sta. Lucia); Semper, P.Z.S., 1872, p. 650 (Sta. Lucia); Sel. et Salv., Nomencl. Av. Neotr. (1873), p. 48; Pelz., Ibis, 1873, p. 113; Sel., P.Z.S., 1874, p. 175 (Barbadoes); Lawr., Proc. U.S. Nat. Mus., I. (1878), p. 59 (Dominica); id., ibid. (1879), p. 357 (Mar-
E. E. *flavogaster* dictae persimilis, sed corpore subtus fere omnino griseo-albo, abdomen medio plus minusve pure albo (nec flavo), ventris lateribus flavescenti-olivaceo indutis, plumis cristae minus angustatis, necnon rostro plerumque longiore distinguenda.

Al. 82-74, caud. 76-63 mm.


Specimens from Dominica as a rule seem to be somewhat paler on the upper parts with the dark centres of the feathers contrasting more with the paler edges than in specimens from Guadeloupe, Sta. Lucia and Martinique (?); but there is no constancy in this respect.

Not having examined specimens from Barbadoes, I follow Mr. Nicoll, as the latest authority on the subject, in placing E. barbadensis among the synonyms of E. martinica, though with a query. I have not been able to examine specimens from St. Kitts, Antigua and Montserrat.

6. ELAENIA MARTINICA RIISEI Sel.


Elainea martinica Berl. (nec aut.), J. f. O., 1892, pp. 68, 70, 85 (Curaçao); Peters, ibid., p. 118 (Curaçao).


? Elainea martinica Cory (nec aut.), Auk, 1890, p. 375 (Virgin Gorda); id. Auk, 1891, p. 46 (Anegada).

? Elainea martinica Cory (nec aut.), Auk, 1890, p. 374 (Anegada).

Elainea martinica riiisi Hartert, Ibis, 1893, pp. 318, 331 (Curaçao).
394 Hans Graf von Berlepsch:

E. E. martinica dictae valde affinis sed minor, necnon colore corporis superioris pallidiore magis griseo-olivaceo distinguenda.

Al. 78-72\frac{1}{2}, caud. 72-63 mm.

Habitat in insulis Antillensibus: St. Thomas (Swift, Salvin). ? Virgin Gorda (Cory), ? Anegada (Cory), ? Anguilla (Cory), Barthélemy (Sundevall), ? St. Eustatius (Allen), ? Saba (Allen), Curacao (Peters, Hartert).

Specimens from Curacao are apparently in no way different from those inhabiting the island of St. Thomas (viz., typical E. riisei, Scl.)

7. ELAENIA MARTINICA CAYMANENSIS, subsp. nov.

Elainea martinica Cory (nec aut.), Auk, 1886, p. 502 (Grand Cayman); id., ibid., 1887, p. 7 (Grand Cayman); Ridg., Proc. U.S. Nat. Mus., 1887, p. 574 (Grand Cayman); Cory, Auk, 1889, p. 31 (Little Cayman); Nicoll, Ibis, 1904, p. 582 (Grand Cayman); id., ibid., p. 587 (Little Cayman). Elainea martinica (part.) Scl., Cat. B. Brit. Mus., XIV. (1888), p. 141 (specim. i. Grand Cayman); Salv. et Godm., Biol. Central. Am. Aves, II. (1888), p. 36 (Grand Cayman); Sharpe, Handlist, III. (1901), p. 123 (Grand Cayman).


E. E. m. riisei dictae quoad coloribus simillima sed major. Al. 86-80, caud. 80-70 mm.


Habitat in insulis "Grand Cayman," et "Little Cayman" dictis: Grand Cayman (Ridgway, Cory, Sweeting leg., Streator leg., Taylor leg.). Little Cayman (Cory, Nicoll).

Specimens from Grand Cayman, of which I have examined a sufficiently large series belonging to my own collection and to the Tring Museum, differ from true E. martinica of the
Windward Islands in being much paler and more uniform greyish-brown (less mottled) on the upperparts. In coloration they agree with *E. riisei* from S. Thomas and Curacao, but have the large measurements of *E. martinica*.

I have not yet seen specimens from Little Cayman, but have little doubt about their identity with the Grand Cayman birds.


*E. E. martinica* dictae valde affinis sed major, rostro, alis caudaque longioribus, jugulo pectoreque magis griseo-olivaceo et flavo flammulatis distinguenda.

Al. 90, caud. 85 mm.

Habitat: Island of Old Providence, in the Caribbean Sea, 250 miles north of Aspinwall (Townsend and R. Henderson leg.); Island of St. Andrews (R. Henderson).

9. *Elaenia martinica complexa* subsp. nov. =

*Elainea martina* Cory (nec aut.), Auk, 1889, p. 31 (Cayman Brac).

*E. E. martina* dictae affinis, sed abdomine tectricibusque subcaudalis pallide sulphureis unicoloribus, ventre medio minime albo, corpore superiore terreno-brunneo, pectore etiam brunescenti lavato (an decoloratis?).

♀ ♀ Al. 80-75, caud. 70-66, culm. 13¼-12¾, tars. 19¾ mm.

Hans Graf von Berlepsch:

Habitat in insula: Cayman Brac [C. J. Maynard leg.].

Three skins of this apparently distinct new form from Cayman Brac were kindly presented to me by Mr. C. B. Cory. They are easily to be distinguished from specimens of Grand Cayman in having the abdomen and the under tail-coverts of a uniform pale sulphur-yellow, the mesial line being not white as it is the rule in *E. martinica* and allies. The Cayman Brac specimens also differ in having the upper parts and the breast of a pale earthy-brown, but perhaps this colour has changed somewhat by influence of moisture.

10. *Elaeenia martinica remotia* subsp. nov.


(Half Moon Cay, off Brit. Honduras.)

"*Elaenia martinica* (L.)?" Ridgw. (nee aut.), *Proc. U.S. Nat. Mus.*, VIII. (1885), p. 571 (Cozumel Isld.).


E. *E. martinica* dictae valde affinis, differt uropygio conspicuo brunneo perfuso, jugulo pectoreque superiore obscure griseis, itaque gula alba magis circumscripta, necnon rostro latiore distinguenda.

Al. 74, caud. 71, culm. 10\frac{3}{4}, tars. 18\frac{1}{2} mm.


Mugeres Island (Salvin). Cozumel Isl. (Benedict, Gaumer).

? Half Moon Cay off British Honduras (Salvin).?  

? Mr. O. Salvin makes the following remarks: "The Cozumel birds agree closely with specimens from the West Indies, typical of *E. martinica*, but some of those from the islands further to the north (Mugeres, etc.) have the under surface tinged with yellow and in this respect conform to *E. pagana*, and in fact are intermediate between these closely allied birds. With these however we find examples not separable from the more typical *E. martinica*, and it seems probable, considering the short distance these islands lie from the mainland, that an occasional individual crosses over and pairs with the island form."
On the Genus Elaenia.

11. Elaenia gigas Scl.


Elaenia albiceps Scl. (nec aut.), P.Z.S., 1858, p. 71 (Rio Napo).

Elaenia albiceps Scl. (nec aut.), P.Z.S., 1859, p. 46.


E. E. flavogaster subpaganæ quoad coloribus similis, sed multo major, occipite fere omnino albo, dorso magis fusco maculato, nec unicolore, nec non pectore magis olivaceo-virido lavato distinguenda.

Al. 97-85, caud. 86-72 mm.


12. Elaenia pelzelni, sp. nov.

E. corpore supra terreno-brunneo, gula pectore lateribusque corporis inferioris pallidius griseo-brunneis, flavescente mixtis, abdomine medio tectricibusque subcaudalibus albis, his pallide flavo mixtis, pileo cristato unicolor albo variegato, tectricibus alarum majoribus mediisque apicibus rufescente olivaceo marginatis, itaque bifasciatis, tectricibus alarum inferioribus fulvescentibus, remigibus extus rufescenti-brunneo, rectricibus colore dorsi marginatis, rostro pallide brunneo, mandibule dimidio basali albo-brunnescente, pedibus nigris, rostro valido.

Al. 84, caud. 56½, culm. 12, tars. 20½ mm.
Typus in Mus. Vindob.: ♀ Lamalonga (J. Natterer leg.).

Habitat: Rio Negro, Brazil: Lamalonga, 7th December 1830 (J. Natterer leg.).

Although the type of the above description is evidently a bird of the year, and not quite mature, I have no doubt that it belongs to an undescribed species, which I have named after the late Mr. August von Pelzeln, to whom we owe our first knowledge of the more obscure species of Elaenia. *E. pelzelni* differs from all other species of this genus by its brownish coloration, without any green tints. There is no white in the crest, the mesial line of the belly is white, the under tail-coverts are white and mixed with yellowish. The under wing-coverts are fulvous, and there are two well-marked rufescent wing-bands formed by the margins of the larger and middle wing-coverts. The bill is rather stout, still more so than in *E. flavogaster*.


*Elainea albiceps* (part.) Salv. (nec aut.), Ibis, 1885, p. 294 (Merumé Mts.); Scl. (nec aut.), Cat. B. Brit. Mus., XIV.
On the Genus Elaenia.


_E. cristata_ (Brit. Guiana).

_E. E. flavogaster_ dictae coloribus persimilis sed cristae plumis valde elongatis, cristam densam in pileo medio formantibus, obscure brunneis concoloribus, nec albo variis, nec non alis caudaque brevioribus facile distinguenda.

Al. 70-66, caud. 63-52 mm.


This species is easily known by its long uniform dark brown crest, and its short wings and tail. The bill, as a rule, is stronger and longer, and less curved. I have not seen additional specimens from British Guiana, which are perhaps to be separated (cf. Ornis. Lc.).

14. _Elaenia ruficeps_ Pelz.


_E. corpore supra obscure olivaceo-brunneo, pilei valde cristati plumis elongatis brunneo fuscis, occipitis sericeo-rufis, corpore subitus pallide griseo-sulphureo, pectore magis olivaceo-griseo, pallide sulphureo flavmulato, tectricibus alarum superioribus apice olivaceo-griseo maculatis, itaque bifasciatis. Tertiariis extus late flavescenti-albo marginatis, rostro valde elongato._
Al. 69-63½, caud. 60-55, culm. 14-11½, tars. 18½-17½ mm.


In the form and coloration of the crest-feathers this species resembles somewhat E. cristata, but it differs from this and all the other species by the long concealed feathers of the occiput being of a clear rufous, and of a silky structure.

15. ELAENIA RIDLEYANA Sharpe.


E. E. flavogaster dictae coloribus similis ut videtur, sed capite subcristato (plumis modice elongatis nec lanceolatis?) coloribus obscurioribus, necnon rostro angustiore vallde elongato distinguenda.

"Wing 3·25, tail 2·9" (Sharpe).

Habitat: Island of Fernando Noronha, off the coast of Northern Brazil (collected by Ridley, Burnett and Fitzroy, and M. J. Nicoll).

16. ELAENIA ALBIVERTEX Pelz.


On the Genus Elaenia.


Elaenia albiceps (part.) Scl. (nec aut.), Cat. B. Brit. Mus., XIV. (1888), p. 141 (specim. ex Goyaz, etc.).


Elaenia sordidata Bangs, Auk, 1901, p. 28 (descr. specim. ex San Miguel Isl., typ. no. 4864 in Mus. E. A. et O. Bangs, Boston).

Elaenia sordidata Sharpe, Handlist, III. (1901), p. 122.

Elaenia sordidata Sharpe, Handlist, III. (1901), p. 122.


E. E. flavogaster dictae quoad coloribus persimilis sed plerumque minor, pilei plumis vix elongatis nec angustatis, apice triangularibus, rostro basi angustiore rectiore, magis producto, necnon colore corporis superioris magis variegato, plumis fuscis plerumque marginibus pallidioribus distinguendae.

Al. 77-67, caud. 67-56 mm.


Colombia :

Although I think it very probable that *E. chiriquensis* Lawr., is the same as *E. albivertex* Pelz., I am unwilling to alter the name of this species (*chiriquensis* being the older name) before having examined the type in the United States National Museum, Washington.

Specimens from Costa Rica differ somewhat from the birds inhabiting Chiriqui, Panama (railway-line), and South America, in being much more greenish on the upperparts and the breast, and in having the belly of a rather purer and deeper yellow. They are, perhaps, entitled to receive a new name, but some of the Costa Rica specimens are hardly to be distinguished from the ordinary type of *E. albivertex* from S. America.

Topotypical specimens of *E. sororia* Bangs, from Santa Marta, and *E. sordidata* Bangs, from San Miguel Island, kindly presented to me by Mr. Outram Bangs, I cannot distinguish from others from Bogotá, Minas Geraes, and Ypanema, S. Paulo (Pelzeln’s type specimen). As a rule the San Miguel birds have the bills a little stronger, but some Bogotá specimens are not different in this respect. There is no difference whatever in coloration.

* An Orinoco specimen not sent for my inspection when working out the birds of that region, proves to belong to *E. albivertex*, not mentioned in the Orinoco article.

* Mr. Hellmayr tells me that duplicate specimens from Chapada, sent to the British Museum by the American Museum of Natural History of New York, partly belong to *E. flavogaster* and partly to *E. albivertex*.

* A specimen in very worn plumage.
This species while closely resembling *E. flavogaster* in its coloration is nevertheless quite distinct, differing in the form of the crest-feathers which are but slightly elongated and never lanceolate or linear, but of an ordinary shape, being only slightly acuminated at the tip. The bill as a rule is much narrower at the base, also more elongated, straighter and less curved than in *E. flavogaster*. The wings and tail as a rule are shorter. The feathers of the back have generally lighter margins, this producing a somewhat spotted appearance. The underparts as a rule are lighter, the yellow mesial line of the belly more mixed with whitish.

17. *Elaenia albiceps* (Lafr. et D'Orb.).


*Elaenia cryptoleuca* Burm., *J. f. O.*, 1858, p. 158 (Mendoza).


*Elaenia modesta* Burm. (nec Tsch.), *J. f. O.*, 1860, p. 246 (Mendoza).


*Elaenia albiceps* Sel., *P.Z.S.*, 1867, p. 327 (Chile); ?Sel. et Salv., *P.Z.S.*, 1878, p. 433 (Port Currucha); Sel. et...
Salv., P.Z.S., 1879, p. 614 (Bolivia ex D’Orb.); ? Oustalet, Exped. sc. Cap Horn, Ois. (1891), p. 60; Scl., New List Chil. birds (1892), p. 3 (Chile); Reed, Ibis, 1893, p. 595 (Santiago, Chile); Salvad., Boll. Mus. Zool. Univ. Torino, X. (1895), p. 10 (Tucuman et Salta); Lane, Ibis, 1897, p. 33 (Chile, habits and eggs); Schalow, Jahrb. Suppl., IV., 3 (1898), p. 712 (Chile); Lillo, Annales Mus. Nac., Buenos Aires, VIII. (1902), p. 185 (Tucuman); Nicoll, Ibis, 1904, p. 43 (Punta Arenas; Gray’s Harbour).


*E. supra obscure olivacea*, cristae plumis modice elongatis nee angustatis, basibus sericeo-albis, plagam magnam albam in pileo medio formantibus, corpore subtus viridescenti-griseo, abdomen medio pure albo, ventris lateribus tectricibusque subcaudalibus plus minusve flavescenti-olivaceo lavatis, tectricibus alarum superioribus apicibus late grisescente, vel brunnescente-albo marginatis, itaque bifasciatis.

Al. 79-72, caud. 70-60 mm.


Specimens from Chile, as a rule, have the upper parts of a somewhat lighter shade, with a more yellowish-brown hue, the pileum especially being rather light coloured; while specimens from Bolivia and Catamarca have generally darker upper parts, the pileum having a more blackish appearance, but some skins from Chile and Bolivia are hardly different in this respect.

Specimens from Chile as a rule have the crest somewhat
fuller and the white in the middle of the crown more extended. Others from Chile and Catamarca usually have the breast more suffused with brownish; but one Chilian bird in this respect does not differ from a Bolivian skin.

As a rule it seems that Bolivian birds have the bill a little broader than those of Chile and Catamarca.

I have not been able to compare specimens from Patagonia.

18. **Elaisenia albiceps modesta** (Tschudi).


*Elaisenia modesta* Sel., P.Z.S., 1859, p. 46.

*Elaisenia modesta* Sel., Cat. coll. Am. B. (1862), p. 217 (Peru, excl. specim. ex Bogotá); id., P.Z.S., 1867, p. 338; Tacz., P.Z.S., 1874, p. 536 (Lima and Monterico; nest and eggs described).

*Elaisenia pagana* Sel. (nec aut.), P.Z.S., 1866, p. 99 (Lima).

*Elaisenia albiceps* Sel. et Salv. (nec aut.), P.Z.S., 1868, p. 174 (Tambo Valley, S.W. Peru); idd., ibid., pp. 568, 569; (Arequipa); idd., ibid., p. 185 (Cosnipata); Tacz., P.Z.S., 1874, p. 536 (C. Peru); Sel. et Salv., P.Z.S., 1876, p. 16 (Huaro, Maranura, Potrero); Tacz., P.Z.S., 1879, p. 234 (Tambillo, Chota; egg described); id., P.Z.S., 1882, p. 19 (Tamiapampa, juv.); Salv., P.Z.S., 1883, p. 423 (Callao); Tacz., Orn. du Pérou, II. (1884), p. 263; Salv., Novit. Zool., II. (1895), p. 12 (Cajabamba, Huamachuco); Berl. et Stolzm., P.Z.S., 1896, p. 364 (Garita, Chanchamayo).


E. E. albiceps dictae simillima, sed alis caudaque pro usu multo longioribus, corpore supra obscuriore terreno-brunneo, fere unicolore, necnon cristae plumis lateralibus plerumque magis elongatis distinguenda.

Marcapata: ♂ ♂ al. 83-80, caud. 77-74 mm.
Cajabamba: ♂ ♂ al. 82-81, caud. 77-75 mm.


I am not yet in a position to say positively if there is but one form of the albiceps-group inhabiting Peru, or if there are, perhaps, two or three.

Specimens from Marcapata, Cuzco, Santa Ana, and Cajabamba are very large, very dark on the upperparts and rather greyish on the underparts, with little or no greenish and yellowish tints, and having the crest feathers very much developed. One specimen from Garita (Chan chamayo) is very small and resembles the Chilian bird. One male from Cajabamba and a female from Chepen, both in worn plumage, are small and have the underparts very light coloured, nearly greyish-white. They also show rather more white in the crown, the crest feathers being exceedingly developed. Birds from Lima are medium-sized and have the whitish wing-bands either obsolete, or but slightly indicated by greyish-olive tips to the wing-coverts. They apparently have the throat and breast of a lighter grey than in eastern specimens.
19. **Elaenia griseigularis** Scl.

*Elaenia griseigularis* Scl., P.Z.S., 1858, p. 554, Pl. 146, fig. 1 (descr. specim. ex Riobamba; typ. in Mus. Brit.); id., P.Z.S., 1859, p. 46.


*Elaenia albiceps* (part.) Scl., Cat. B. Brit. Mus., XIV. (1888), p. 141 (Riobamba, etc.).


*E. E. albiceps* dictae affinis, sed corpore supra multo obscuriore, magis brunneo-olivaceo, gula grisescentiore, cristae plumis lateralis minus elongatis.

Al. 78-75, caud. 73-64 mm.

**Habitat**: Ecuador occ.: Riobamba (Fraser), Jima (Buckley), Bugnae, 5500', May (J. Stolzmann), Cechce (Stolzmann), Pichincha (Goodfellow), Pun, Gualea, Lloa (Festa). Ecuador or.: Mapoto, Palichtagua, 7800', San Rafael (Stolzmann), Papallacta (Goodfellow), Sarayacu (Buckley).

20. **Elaenia brachyptera**, sp. nov.


*E. E. griseiguralis* Scl. dictae forsan maxime affinis sed minor, abdomine medio albescenti-flavo, nec pure albo, corpore superiore pallidiore et viridescentiore, necnon pectore olivaceo, ab *E. albivertex* dicta dorso obscuriore magis olivaceo-viridi,
pectore olivaceo, pileo medio magis albo variegato, necnon alis caudaque brevioribus distinguenda.

♀ ♂ al. 69½-56½, caud. 64½-48½, culm. 10-8, tars. 16½-14½ mm.

♀ ♂ al. 69-66½, caud. 63-61½, culm. 10½-9½, tars. 17½ mm.

Typus in Mus. H. v. B. 9 St. Pablo, S.W. Colombia, 8th March, 1897. [G. Hopke leg., no. 62.]

Habitat: In Colombia occ. merid.: St. Pablo, 4500' [G. Hopke leg.,] et in Ecuadoria occ. septr.: Ibarra, Cayambe, Paramba, 3500'. [Mus. Tring, fide Hartert.]

This form, inhabiting S.W. Colombia and N.W. Ecuador, seems to be sufficiently distinct from all the known species to be entitled to a new specific name.

It is perhaps nearest to *E. griseigularis* Scl., from Eastern Ecuador, and has the white in the crown of equal extension, but is easily to be distinguished in having the mesial line of the belly pale yellow mixed with whitish (instead of being pure white). The breast is olive-green (instead of being greyish-white), the colour of the upperparts is also lighter and more greenish-olive, and the wings and the tail are shorter.


*E. E. pallatangae* dictae maxime affinis, sed rostro molto longiore, corpore subtus sordidiore olivaceo-flavo; gula pectorque imprimis magis olivaceo perfusis, capite dorsoque molto obscurioribus, fascii alarum angustioribus, necnon pagonio externo rectricum duarum externarum fusco nec albescente distinguenda.

Al. 76-72, caud. 70-67 mm.
On the Genus Elaenia.

Habitat: Brit. Guiana: Roraima (3500-6000') and Cama-
cusa (6000', H. Whitely leg.).

22. Elaenia pallatangae Scl.


Elaenia albiceps Tacz. (nec Scl.), P.Z.S., 1874, p. 536 (C. Peru); id., P.Z.S., 1879, p. 234 (Tambillo and Chota); id., P.Z.S., 1882, p. 19 (Tamiapampa).

E. corpore supra olivaceo, pilei medii plumis modice elongatis basi albis, corpore subtus pallide flavo, gula pectorque obscurioribus vix olivaceo-griseo lavatis, tectricibus alarum superioribus late flavescenti-albo bifasciatis, remigibus tertiariiis extus late albo marginatis, pogonio externo rectricum duarum externarum flavescenti-albo.

Al. 78-70, caud. 71-60 mm.


23. Elaenia fallax Scl.


Elaenia fallax Scl., P.Z.S., 1861, p. 76 (descr. orig. in nota, ex Jamaica, typ. in Mus. Brit.) et p. 407; Albrecht,
Hans Graf von Berlepsch:


E. E. pallatangae dictae forsan maxime affinis, sed rostro breviore, jugulo pectoreque griseo-olivaceo flammulatis, abdome sordidius flavescente, pogonio externo rectricum duarum externarum fusco nec albescente et fascis alarum albis angustioribus distinguenda.

Al. 71, caud. 70 mm.

Habitat: In ins. Jamaica (Osburn, Newton, Ward, March, Taylor): St. Andrew, 3500' above the sea level, April (Taylor).

24. ELaENIA FALLAX CHERRIEI Cory.


"Male: Base of crown-feathers white, similar to E. fallax of Jamaica, which it approaches somewhat in size and coloration. Upper parts greenish-olive, tail-feathers dark brown, showing edging of pale olive at base; the quills are brown, and (except the first) are narrowly edged with pale olive; secondaries edged with greenish-yellow on outer webs; the tertiaries are edged with dull white; under surface of wing pale brown, the feathers showing pale yellowish-white edging on inner webs; throat gray, becoming olive on the breast, and shading into pale yellow on the belly, sides, and under tail-coverts; tail brown, the feathers narrowly edged.
with olive-green; wing-coverts tipped with whitish, forming two well-marked bands; upper mandible dark brown, under mandible horn color, dark at tip, feet black. Length 5·10, wing 2·80, tail 2·75, tarsus 0·75, bill 3 inches."

Hab.: Ins. S. Domingo: Calare, January 31st. [G. K. Cherrie leg.]

I am unable to perceive from Mr. Cory's description in what way E. cherriei differs from E. fallax Scl. It seems to me that it is very doubtfully distinct from that species. Perhaps it might be distinguished by its more greyish throat.

25. ELAENIA HYPOSPODIA Scl.


E. E. streperae maxime affinis, ut videtur, et eodem modo colore olivaceo-viridi destituta, sed tectricibus alarum superioribus late albo bifasciatis, necnon remigibus tertiariis albo marginatis distinguenda.

Habitat: Venezuela, Valencia (A. Goering leg.).

26. ELAENIA STREPERA Cab.


Hans Graf von Berlepsch:

E. ardesiaco-grisea, abdomen medio albescente, pilei mediī plumis modīce elongatīs basi albo maculatīs, tectricibus alarum superioribus apīce griseo marginatīs, fascias vix conspicuas formantibus, rostro brevī. Junioribus alis rufescente bifasciatis, corpore superīre et inferīre plus minusve olivaceo lavato diversīs.

Al. 82-76, caud. 71-66 mm.

Habitat: Tacuman: Deep woods of the lower mountains, feeds on berries (Schulz), Taφ Viejo (800 metres), La Hoyada (1300 to 1500 metres) (Lillo leg.), Criolla, 800 to 1500 metres (A. Baer leg.).

I have in my collection an adult specimen of this species which was found in a lot of trade-skins composed of skins from Sta. Lucía, Trinidad, Orinoco, etc. It is of the same make as a Dendroica delicata known only from the island of Santa Lucía, W.I. I am quite at a loss to explain this curious fact.

27. Elaenia parvirostris Pelz.


? Elainea modesta (part.) Burm., Reise La Plata-Staaten, II. (1861), p. 454 (specim. ex Paraná?).


Elainea parvirostris Pelz., Orn. Bras., II. (1868), pp. 107, 178 (desc. specim. ex Curytiba, Borba, Barcellos, typ. select. ♂ Curytiba, in Mus. Vindob.).

Elainea albiceps Pelz. (nec aut.), Orn. Bras., II. (1868), p. 107 (Ypanema, Curytiba); ? Scl. et Salv., P.Z.S., 1873, p. 279 (Xeveros et Chayvetas); ? Durnford, Ibis, 1878, p. 60 (Buenos Aires); ? White, P.Z.S., 1882, p. 606 (Buenos
On the Genus Elaenia.


*Elainea albiceps parvirostris* Berl. et Hart., Novit. Zool., IX. (1902), p. 44 (Caicara and Quirobana de Caicara; nest and eggs described).


E. corpore supra viridi-olivaceo (in speciminibus nonnullis brunneo-olivaceo), pilei medii plumis vix elongatis nec crista basi plus minusve albis, corpore subtus griseo-albo, abdomen medio pure albo, hypochondriis olivascentibus, tectricum alarum apieibus stricte albo maculatis, itaque bifasciatis vel trifasciatis.

Partim ad *E. cristata* Pelz.
Obs. *E. E. albiceps* dictae affinis sed multo minor, rostro breviore, pilei plumin minime cristatis, basi solummodo albis, corpore supra viridescentiore, necnon gula juguloque pure albo-griseis distinguenda.


Specimens from Paraguay and Cordova differ somewhat in having a more brownish cast on the upperparts, in having the feathers of the pileum more developed, so as to form a little crest, and in showing more white at the bases of these feathers. They nevertheless agree with typical specimens from S. Paulo in the small bill and the short wings and tail, etc. A larger series is necessary to prove the constancy of these characters. I have never seen specimens from Buenos Aires, and am unable to state if they belong to *E. parvirostris* or perhaps to true *E. albiceps*, which I have from Catamarca. Northern specimens (such as those coming from Bogotá, Guiana, R. Negro) differ somewhat in having the throat a little paler, more whitish-grey, and the upperparts more greenish as a rule. Should a distinction be possible they are, perhaps, entitled to bear the name of *E. albiventris* Chapm.

A wretched Bahia trade-skin in my Museum seems to belong to *E. parvirostris*, but it has longer wings and a
narrower bill than all the specimens now before me. Perhaps it is an abnormal specimen of *E. albivertex* with the mesial line of the belly of a nearly pure white.

28. **ELAENIA MESOLEUCA** Cab. et Heine.


*E. E. albiceps parvirostris* dictae quoad coloribus simillima, sed major, pilei medii plumis unicoloribus, vel basi extremo vix albo variegatis, pectore semper viridi perfuso, dorso viridescentiore, necnon fasciis alarum plerumque angustioribus et magis griseo-olivaceis, nec albescentibus.

Al. 84-77, caud. 73-67 mm.


3 *Muscipeta modesta* Wied, placed by Mr. Sclater, with a query, among the synonyms of *E. mesoleuca*, seems to me to belong to *Sublegatus fasciatus* (Thunb.).
In Rio Grande do Sul this species seems to interbreed with the otherwise quite different *E. parvirostris* Pelz. As yet I have not seen specimens from Bahia with traces of white in the crown.

29. **Elaenia frantzii** Lawr.


*E. media*, supra obscure olivacea, pilei medii plumis interdum basi albo variis; subtus flavido-olivacea, abdomine medio flavicanti-albo, tectricibus alarum superioribus late albescente terminatis (itaque bifasciatis), tertiariis late albo marginatis.

Al. 82-76, caud. 72-68 mm.


30. **Elaenia frantzii pudica** Sel.


E. E. frantzii, dictae simillima sed minor, corpore supra obscuriore, magis brunneo-olivaceo, abdomine medio purius albo.

Al. 75-70, caud. 68-62 mm.


Two authentic specimens of E. browni, kindly given to me by Mr. Outram Bangs, I cannot distinguish from my Bogotá skins.

31. Elaenia obscura (Lafr. et D'Orb.).

Hans Graf von Berlepsch:


**Elavia olivacea** Sel. (nec Muscicapa olivacea Lafr. et D’Orb.), P.Z.S., 1859, p. 46.


E. maxima, supra obscure brunneo-olivacea, subtus olivaceo-flavescens; tectricum alarum apicibus fuso albis (itaque alis bifasciatis), pileo dorso concoldore (in speciminiibus nonnullis ex S. Paulo basi ipso pilei medii albo vario).
On the Genus *Elaenia*.

Al. 94-86, caud. 90-82 mm.


The Tucuman bird in the Tring Mus. agrees perfectly with others from Bolivia, etc.

I have examined the two males collected by Natterer at Ypanema (Septbr. 17th, and August), which have some concealed white in the middle of the crown. They otherwise agree perfectly with nine other specimens from Ypanema and two from Curytiba in the Vienna Museum, which show no traces of white in the crown.

### 32. *Elaenia obscura* tambillana subsp. nov.

*Elainea obscura* Tacz. (nec aut.), P.Z.S., 1879, p. 235 (Tambillo); id., P.Z.S., 1880, p. 203 (Callacate).

*E. E. obscurae* simillima sed minor, corpore supra brunescentiore, infra imprimis in regione gulari flavescentiore.

Al. 82-69, caud. 79-82, culm. 12-10, tars. 18-20 mm.

**Typus** in Mus. H. v. B. ♀ ad. Tambillo, N. Peru, October 1st 1877 (J. Stolzmann leg.).

**Habitat**: N. Peru: Tambillo and Callacate (Stolzmann).

This new form is but very slightly different from *E. obscura*. It differs by being smaller and presenting a somewhat brighter coloration.

### 33. *Elaenia gaimardi* (D’Orb.)

Hans Graf von Berlepsch:

in Mag. Zool., 1837, p. 52 (descr. specim. ex Yuracarés, Bolivia, in Mus. Paris?).


E. supra obscure olivacea, pileo cinereo-nigrescente, medio stramineo-albo, gula albescente, pectore griseo-olivaceo flavescente mixto, abdomen pallide flavo, tectricibus alarum majoribus mediisque apicibus late flavescente-olivaceo marginatis, itaque bifasciatis, tertiarii extus late flavescenti-albo marginatis.

Al. 64-54, caud. 60-50½ mm.

On the Genus Elaenia.

34. Elaenia gaimardi guianensis Berl., subsp. nov.


E. E. gaimardi dictae simillima sed dorso obscuiore, magis brunnescenti-olivaceo, pileo nigrescentiore minus grisescente distinguenda.

Al. 62-54, caud. 62-46½ mm.


35. Elaenia gaimardi bogotensis subsp. nov.


E. E. gaimardi dictae simillima sed pileo medio albo interdum sulphureo mixto, dorso ut solet viridescentiore, necnon alis caudaque pro usu longioribus.

Al. 65-55, caud. 62-49 mm.

Typus in Mus. H. v. B. (ad. ex Bogotá collections).


36. ELAENIA CANICEPS (SWs.).

Tyranannula caniceps Swainson, Selection of Birds, Brazil and Mexico (1841), Pl. 49 (Brazil), descr. nulla; Bp., Consip., I. (1850) p. 191.


Elainea caniceps (part.) Pelz., Orn. Bras. (1863), p. 107 (specim. ex Ypanema, nec specim. ex Paraná!)


E. supra griseo-olivacea, capite supra grisescentiore, plumis pilei medi basi flavescentibus, corpore subtus griseo-albo, pectore magis griseo lavato, ventris lateribus tectricibus subcaudalibus et subalaribus flavescente lavatis, tectricibus alarum superioribus nigris flavescenti-albo
On the Genus Elaenia.

trifasciatis, remigibus tertiaris extus late flavescenti-albo-marginatis.
Al. 61-54, caud. 54-50 mm.


37. Elaenia macilvaini Lawr.

Elaenia caniceps Scl. et Salv. (nec aut.), P.Z.S., 1864, p. 359 (Panama); Salv., Ibis, 1874, p. 315, sub E. macilvaini.
Elaenia macilvaini Salv., Ibis, 1874, p. 315.

E. E. caniceps dictae affinis, sed corpore subtus pallide flavo (nec albescente), corpore supra laetius viridi, ne non remigibus eorumque tectricibus superioribus nigrescentioribus, latius flavo-albo marginatis differt.
Al. 56½, caud. 48 mm.

Habitat: "Venezuela?" (coll. by Mr. Christopher Wood, Lawr.), Orinoco: Suapure (Klages leg.), Panama (McLeannan and Festa).

38. Elaenia flavivertex Scl.

Elaenia caniceps Tacz. (nec aut.), Orn. du Pérou, II. (1884), p. 269 (descr. specim. ex Ucayali).

* The Bogota specimen alluded to as being in Mus. H. v. B. does not belong to E. macilvaini, but to E. gaimardi bogotensis Berl.


E. E. gaimardi dictae forsan maxime affinis sed crista intense aurea vel flammae, necnon corpore subtus praecipue in pectore obscuriore distinguenda, ab E. viridicata crista interna intense aurea, corpore supra obscuriore brunneo-olivaceo, tectricibus alarum flavescente bifasciatis necnon alis caudaque brevioribus distinguenda.

♀ ♀ al. 62±-60, caud. 60-52 mm.


Elaenæa cottae Cory, Auk, 1886, p. 231; id., Birds of West Indies (1889), p. 118.


E. E. flavivertex et E. viridicata dictis affinis sed gula juguloque pure albis, abdomen pallidiore sulphureo indistincte
albo striato, colore dorsi brunnescentiore, necnon mandibula unicolore nigra distinguendae.

N.B. Ad *E. flavivertex* dictam alarum fasciis et crista flavissima proxime accedit.

Al. 67, caud. 60 mm.

*Habitat* in ins. Jamaica (Gosse, Osburn, Newton, Chitty, Scott, Taylor): St. Andrew, elev. 3500 ft., April 17th (C. B. Taylor in Mus. Tring), abundant in the south midland districts in the winter months, apparently breeding in the hills (March), Port Henderson, rare (Field).

40. *ELAENIA VIRIDICATA* (Vieill.)

[Contramaestre pardo verdoso corona amarilla Azara Apunt., II. (1805), p. 57, no. 156 (Paraguay) ; Sonnnini Trad. Azara, III. (1809), p. 338].


Elainea grata Cab., J. f. O., 1883, p. 216 (descr. specim. ex Tucuman, typ. in Mus. Berol.).

Elainea subplacens (part.) Tacz., Orn. du Pérou, II. (1884), p. 268 (Ucayali, Maranura).


Al. 66-60, caud. 64-53 mm.


I have not yet been able to examine specimens from Western Ecuador and Upper Amazonia. Specimens from Ypanema,
On the Genus Elaenia.

S. Paulo, in the Vienna Museum agree very well with my bird from Sta. Cruz de la Sierra, E. Bolivia.


41. **Elaenia viridicata placens** Scl.


*Myiopagis yucatanensis* Nelson, Proc. Biol. Soc., Wash-

A specimen from Cozumel in Mus. H. v. B. agrees very well with another from Guatemala. Therefore, I should think that *M. yucatanensis* is not well founded.
Hans Graf von Berlepsch:

Elaenia placens Bangs, Auk, 1901, p. 30 (San Miguel isl.).

E. E. viridicata dictae simillima sed dorso ut solet viridescentiore, pileo magis grisescenti-fusco, pectore magis olivaceo-griseo adumbrato, necnon abdomine laetius flavo vix distinguishda.

Al. 70-60, caud. 66-56 mm.


Specimens from Guatemala and Cozumel have the sides of the pileum more greyish-black and the front more greyish-white than those from Costa Rica, which in these respects agree with Bogotá examples. Bogotá specimens are truly intermediate between E. v. placens from C. America, and E. vi-


On the Genus Elaenia. 429

*Eliaena* from Bolivia, some specimens inclining to the former, others to the latter. As a rule Bogotá birds have the abdomen very pale yellowish, agreeing in this respect with true *E. viridicata*, but a specimen from Cozumel, and another from Costa Rica, are hardly different in this respect. Bogotá specimens are probably referable to *E. v. pallens* of Bangs.

42. *Elaenia viridicata jaliscensis* (Nelson).


*E. E. viridieata placens* dictae valde affinis sed major, cauda imprimis longiore, pileo pallidiore et grisescentiore, corpore reliquo superiore pallidiori viridi, nee non abdomen pallidiore flavo distinguenda (Nelson, translated).

Al. 70, caud. 70-5, culm. 11, tars. 19 mm. (Nelson).


I have not yet seen specimens from Western Mexico, and therefore am unable to form an opinion about the validity of *E. v. jaliscensis*.


E. E. viridicata placens dictae valde affinis sed corpore supra grisescentiore viridi diversa ut videtur.


I have never seen specimens from the Tres Marias, and therefore cannot give an opinion about the validity of this form.

44. ELAENIA VIRIDICATA DELICATA subsp. nov.


E. E. viridicatae valde affinis, sed corpore supra brunnescentiore olivaceo-viridi, pilei lateribus olivaceo-brunneis nec grisescentibus vel nigriscantibus, gula grisescentiore, eenon rostro multo breviore et debiliore distinguenda.

Al. 63-61, caud. 61-52, culm. 93-94, tars. 155-151 mm.

Typ. in Mus. H. v. B. (Bahia trade-skin).


This form differs from E. viridicata (from Bolivia) by having the upperparts of a rather darker or more brownish

The Orinoco specimens should be re-examined.
olive-green. The sides of the pileum are brownish-green instead of greyish-olive or blackish. The throat as a rule is more greyish. The bill is much shorter and more feeble. Specimens from Pto. Cabello agree with those from Bahia; they have only a little longer wings.

45. **Elaenia subplacens** Scl.


*Elaenia placens* Tacz. (nec Scl.), *P.Z.S.*, 1877, p. 325 (Lechugal).


*E. E. viridicata* dictae affinis sed multo major, cauda imprimis longiore, pectore distincte griseo flammulato, vel maculato, abdomen pallidiore albescenti-sulphureo, necnon tetricibus alarum superioribus apicibus albo griseo vel brunnescenti-albo marginatis (itaque bifasciatis) distinguenda.

Al. 74-68, caud. 74-68 mm.

Ecuador occ.: Pallatanga (Fraser), Guayaquil (Stolzmann, Siemiradzki), Chumbo (Stolzmann, Siemiradzki). Peru septr. occ.: Lechugal (Stolzmann), Paucal (Raimondi).

Some Bogotá skins in my collection are hardly distinguishable from typical specimens from Western Ecuador. They may have come from the Antioquia valley.
46. Elaenia leucospodia Tacz.


E. supra grisea, pilei plumis elongatis et angustatis fuscis, mediis basi albis, corpore subtus albido, pectore obsolete fusco-griseo flammulato, lateribus griseo-fuscis, ventris lateribus, tectricibus subcaudalibus et subalaribus flavescente lavatis, tectricibus alarum superioribus griseo-albo bifasciatis, remigibus tertiariis late albescente marginatis, rectricum duarum externarum vexillo externo omnino albo.

Al. 62, caud. 52 mm.

Habitat: N.W. Peru: Tumbez, Guadalupa, Chepen (Jelski and Stolzmann), Paucal (Raimondi).

This species has the crest feathers more elongated and narrower than is the case in other species which are more closely related to it. In fact, E. leucospodia in this respect comes nearer to E. flavogaster and allies, or perhaps still more so to some species of Serpophaga.

47. Elaenia cinereifrons Salvad. et Festa.


E. E. leucospodiae proxima, ut videtur, sed major et corpore inferiore albo unicoloore, nec pectore griseo-brunneo flammulato, nec ventris lateribus subcaudalibusque flavescente lavatis.
48. **Elaenia cinerea** Pelz.


E. corpore supra cinereo, pileo nigrescentiore, crista parva interna alba, corpore subtus albo, remigibus tectricibusque alarum nigris albo marginatis, subalaribus sulphureo lavatis.

Al. 64-62½, caud. 57-54½ mm.


In my collection there is a trade-skin from Bogotá which might be the young of *E. cinerea*. It is evidently a bird in transition plumage, and has the back of a bright olive-green.

*Serpophaga parambae* Hellm. (Bull. B.O.C. XIV., 54), resembles very much *E. cinerea*, but has a much shorter tail, and the bill is that of *Serpophaga*.

49. **Elaenia cinerea taczanowskii** Berl.

*Elaenia taczanowskii* Berl., *Ibis*, 1883, p. 137 (descr. specim. ex Bahia, typ. in Mus. H. v. B.); Scl., *Cat. B.*
Hans Graf von Berlepsch:


_E. E. cinereae_ Pelz. valde affinis, sed dorso superiore olivaceo perfuso, pilei medii plumis basi flavescenti-albo nec pure albo variegatis, remigibus extus flavescente nec albo marginatis, necnon rostro angustiore distinguenda.

Al. 62½-61½, caud. 57½-54 mm.


I have examined the specimen collected by Natterer on the Rio Paraná, which proves to belong to my _E. c. taczanowskii_. It does not differ from the type of Bahia, but by the upper-parts being somewhat paler, and by the tail being a little longer.

_A new and undescribed species of Erainea?_

About twenty years ago, through the kindness of Prof. Ridgway, of Washington, I had the good fortune to examine a large _Erainea_ of the _obscera_ group, which at that time I regarded as belonging to a new species. It had been collected somewhere in Southern Brazil by Dr. G. R. Horner (cruise of the "Delaware"), on Nov. 8th, and is numbered 23,951. It has been spoken of by Dr. Allen in his "Remarks on Individual and Seasonal Var. of Erainea" (Bull. Am. Mus. N. H., vol. II., no. 3). A re-examination of this bird is to be recommended.
On the Genus Elaenia.

I. Cristatae; plumis cristae valde elongatis plus minusve angustatis.

A. maxima (al. 97-85), occipite fere omnino albo, pectore olivaceo-viridi perfuso ...................... E. gigas

B. mediae (al. 92-72), cristae plumis basi plus minusve albis (in majoribus quorum long. al. 92-80 mm. interdum concoloribus) pectore olivaceo-griseo perfuso.

a. abdomen medio flavo, rostro pro mole breviore et latiore.

a'. gula griseo-alba, cristae plumis olivaceo-brunneis.

a. major (al. 92-89) cristae plumis concoloribus vel basi ipso vix albo variegatis .............. E. f. spectabilis

β. minores (al. 85-72) cristae plumis basi semper albis.

β'. abdomen semper laete flavo, corpore supra obscuroire,.......................... E. f. subpagana

b. abdomen medio albescente, rostro pro mole longiore et angustiore.

β. pectore olivaceo-grisco, flavido mixto, uropygio dorso concolor.

β'. minor (al. 86-72).

β'. dorso obscuroire ...................... E. m. cinerescens

b'. gula pure alba, cristae plumis (valde elongatis) griseo-brunneis ................................. E. f. semipagana

b. abdomen medio albescente, rostro pro mole longiore et angustiore.

β. pectore pure grisco, uropygio brunnescente ...

γ. abdomen medio pallide sulphureo, rostro pro mole longiore et angustiore,...................... E. m. complexa

C. minores, cristae plumis semper concoloribus, nec basi albis, pectore griseo-olivaceo perfuso.

α. major (al. 84) abdomen medio albescente ........ E. pelzelni

β. minor (al. 70-63) abdomen medio flavescente ...

D. minima (al. 69-63) occipitis plumis (partim obtectis) sericeo-rufis, pectore olivaceo flammulato .......... E. ruficeps

II. Subcristatae, plumis cristae modice elongatis nec angustatis, basi albis.
436 **Hans Graf von Berlepsch**:

A. corpora supra olivaceo, vel brunneo-olivaceo.

a. abdomine medio flavescenti-albo, vel flavo, albo mixto.

a'. major (al. ca. 80) ................................. E. ridleyana

b'. media (al. 77-67)

c. corpore supra brunneo, vel griseo-olivaceo ...

b'. minimus (al. 69-78).

c. corpore supra viridescentiore ..................... E. brachyptera

b. abdomine medio pure albo.

a'. crista plumis lateralis magis elongatis, pileo medio fere toto sericeo-albo.

a. major (al. 83-80) corpore supra brunescente

β. minor (al. 79-72) corpore supra magis olivaceo

b'. crista plumis lateralis minus elongatis, pilei medi plumin basi solummodo albis; minor, corpore supra obscure brunneo-olivaceo .... E. griseogularis

b. abdomine omnino flavo.

a'. pogonio externo rectricum externarum albescente E. palliataenos

b'. pogonio externo rectricum externarum fusco.

a. rostro brevi, jugulo pectoreque olivaceo-griseo flavescente.

α. gula flavescente................................. E. albidus

β. gula griseescente................................. F. f. cherriei

β. rostro longissimo, jugulo pectoreque sordide olivaceo-flavus unicoloribus . E. olivina

B. corpora supra ardesiacio-griseo, pectore quoque griseo. Majores.

a. tectricibus alarum apicibus albis .................. E. hypospodia

b. tectricibus alarum apicibus olivaceo-griseis (in adultis) vel rufescentibus (in junioribus) .... E. strepera

C: corpora supra pallide griseo, inferiore fere omnino albo. Minores.

a. pogonio externo rectricum durium externarum omnino albo.

a'. major, corpore inferiore omnino albo ............ E. cinereifrons

b'. minor, pectore obsolete fusco-griseo flavumulato, ventris lateribus crisseaque flavescentibus .... E. leucopodia

b. pogonio externo rectricum durium externarum fusco.

a'. dorso medio pure cinereo ...................... E. cinerea

b'. dorso medio olivaceo perfuso .............. E. e. taczanowski

III. species pileo plano nec cristato, pilei plumis basi concoloribus aut albo maculatis.

1 Although the species of this division, comprising E. leucopodia, E. cinereifrons, E. cinerea, and E. e. taczanowski, are perhaps more nearly related to those of Section IV., in the key it seems best to place them near the grey-backed E. strepera and E. hypospodia.
On the Genus Elaenia.

A. Majores (al. 94-79), pilei plumis ut solet concoloribus (in speciminebus nonnullis ex Prov. S. Paulo, Brasiliae merid. basi ipso inconspicue albo maculatis), abdomine medio laete flaco.

a. major (al. 94-86) corpore supra magis olivaceo, gula griseocele
b. minor (al. 82-79) corpore supra brunnescentiore, gula flavescentiore

B. Minores (al. 84-66), pilei medii plumis basi albo variis aut concoloribus: abdomine medio albo aut flavescenti-albo.

a. abdomine medio pure albo.

a. major (al. 84-77) pectore olivaceo perfuso, pileo concolor aut plumis basi ipso (interdum albo maculatis)

β. minor (al. 74-66) gula pectoreque albo-griseis, pilei cum basi semper late albo maculatis

b. abdomine medio flavescenti-albo, pilei medii plumis concoloribus aut basi ipso interdum albo maculatis.

a. major (al. 82-76) or supra magis olivaceo

β. minor (al. 74-66) a albo-griseis, pilei medii plumis concoloribus aut basi ipso interdum albo maculatis.

B. Minores (al. 82-76) or supra magis olivaceo

β. minor (al. 74-66) a albo-griseis, pilei medii plumis concoloribus aut basi ipso interdum albo maculatis.

IV. Suberistatae, pileo medio omnino flavo aut stramineo-albo.

A. pileo medio stramineo-albo aut pallide flavo.

a. tectricibus alarum flavescenti-olivaceo terminatis itaque bifasciatis, crista interna stramineo-alba, interdum pallide flavo mixta.

a'. corpore supra pallidiore vel flavescentiore olivaceo.

a. major, crista interna interdum pallide flavo mixta.

β. minor, crista interna stramineo-alba

b. tectricibus alarum stricte flavescenti-albo terminatis, itaque bifasciatis, crista interna pallide flava.

a. corpore subtus griseo-albo, lateribus flavescenti-olivaceo lavatis

β. abdomine pallide flavo

B. pileo medio omnino aureo-flavo.

a. tectricibus alarum apicibus flavescenti-olivaceo maculatis, itaque bifasciatis, crista interna intense aurea.

a'. gula flava

E. obscura
E. o. tambillana
E. mesoleuca
E. paricrostris
F. frantzii
E. f. pudica
E. g. bogotensis
E. gaimardi
E. g. guianensis
E. caniceps
E. macilvaini
E. flavivertea
Table showing the geographical distribution of the species of *Elaenia*.

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16. *E. albivertex* 9, 10, 11, 12, 30, 31, 36, 39, 40, 44, 46, 50, 51, 54, 56, 57, 59, 64.
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32. *E. o. tambillana* 60.
34. *E. g. guianensis* 44, 46, 52.
35. *E. g. bogotensis* 30, 931.
36. *E. caniceps* 54, 55, 57, 66.
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D D
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List of species erroneously placed in the genus Elaenia by different authors, which must be transferred to other genera.

- *Elaenia affinis* Burm., 1856 = *Suiriri affinis* (Burm.).
- *Elaenia agilis* (Gmel.) Scl., 1859 = *Empidonax lawrencei* Allen?
- *Elaenia albescens* (Gould) Bp., 1850 = *Suiriri siriviri albescens* (Gld.).
- *Elaenia albicilla* (Vieill.) Gray, 1847—Quid?
- *Elaenia albicolor* (Vieill.) Cab., 1848 = *Legatus albicolor* (Vieill.).
- *Elaenia amurocephala* (Cab.) Gray, 1849 = *Leptopogon amurocephalus*.  
- *Elaenia angustirostris* (Lafr. et D’Orb.) Gray, 1847 = *Phylloscartes ventralis angustirostris* (Lafr. et D’Orb.).
- *Elaenia arenarum* Salvador, 1863 = *Sublegatus fasciatus arenarum* (Salv.).
- *Elaenia asilus* (Bp.) Giebel, 1875—Quid? an = *Phyllomyias brevirostris* (Spix)?
- *Elaenia assimilis* (Scl.) Giebel, 1875 = *Mionectes assimilis* Scl.
- *Elaenia aurifrons* (Wied) Gray, 1847 = *Neopelma aurifrons* (Wied).
- *Elaenia aurifrons* Cab. Schomb., 1848 = *Heteropogon igniceps* Scl.
- *Elaenia bicittata* (Lafr. et D’Orb.) Gray, 1847 = *Basileuterus bicittatus* (Lafr. et D’Orb.).
- *Elaenia brevipes* (Wied) Burm., 1856—Quid?
- *Elaenia brevirostris* Tsch., 1844 = *Sublegatus fasciatus* (Thumb.).
- *Elaenia brevirostris* (Spix) Burm., 1856 = *Phylloscartes brevirostris* (Spix).
- *Elaenia brunneicapillus* (Laxr.) Giebel, 1875 = *Ornithion brunneicapillus* (Laxr.).
- *Elaenia burmeisteri* (Cab. et Heine) Giebel, 1875 = *Xanthomyias virescens* (Tem.).
- *Elaenia cayanensis* (L.) Cab., 1848 = *Myiozetetes cayanensis* (L.).
- *Elaenia chrysops* (Scl.) Giebel, 1875 = *Tyranniscus chrysops* (Scl.).
- *Elaenia cinereiceps* (Scl.) Giebel, 1875 = *Tyranniscus cinereiceps* (Scl.).
- *Elaenia cinerea* (Tsch.) Gray, 1847 = *Serpophaga cinerea* (Vieill.).
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Elaenia colombiana (Cab.) Giebel, 1875 = Myiozetetes similis colombianus (Cab. et Heine).

Elaenia coronata (Gmel.) Burm. = Pyrocephalus rubinus (Bodd.).

Elaenia elata (Lath.) Gray, 1849 = Tyrannutus elatus (Vieill.)

Elaenia erythroura (Scl.) Giebel, 1875 = Leptopogon erythroura (Scl.).

Elaenia flava (Vieill.) Giebel, 1875 = Myiozetetes cayanensis (L.)

Elaenia flavescens (Licht.) Giebel, 1875 = Copniemyi a flavescens (Licht.).

Elaenia flavifrons (Cab. et Heine) Giebel, 1875 = Tyrannus cayanensis (Scl.).

Elaenia flaviventris (Scl.) Giebel, 1875 = Ornithion pusillum (Cab. et Heine).

Elaenia favoicrensis (Lawr.) Giebel, 1875 = Leptopogon favoicrensis Lawr.

Elaenia fuscata (Burm.), 1854 = Empidochanes fuscatus (Wied).

Elaenia galeata (Less.) Gray, 1849 = Phainopepla nitens (Swa.)

Elaenia globosa (Scl.) Giebel, 1875 = Sublegatus fasciatus globos (Scl. et Salv.).

Elaenia gracilipes (Scl. et Salv.) Giebel, 1875 = Tyrannus gracilipes (Scl. et Salv.).

Elaenia graminea (Lawr.) Giebel, 1875 = Myiozetetes graminea (Lawr.)

Elaenia griseicapilla (Scl.) Giebel, 1875 = Phyllomyias griseicapilla (Scl.).

Elaenia guianensis (Cab.) Giebel, 1875 = Myiozetetes cayanensis (L.)

Elaenia guilivis Madarasz, 1902 = Meocerculus leucopus (Lafr. et D'Orb.).

Elaenia helviventris (Cab.) Gray, 1849 = Hapalocercus, sp. ?

Elaenia holmbergiana Bertoni, 1901 = Xanthomyias virens salvadorii (Dubois).

Elaenia icterus (Vieill.) Gray, 1847 = Sisyphus icterus (Vieill.)

Elaenia icterus (Heine) Giebel, 1875 = Myiozetetes icterus similis colombianus (Cab. et Heine).

Elaenia incanae (Wied) Giebel, 1875 = Phyllomyias incanae (Wied).

Elaenia inornata (Cab. et Heine, 1859 = Phaeomyias murina inornata (Cab. et Heine).

Elaenia inornata (Hartl.) Giebel, 1875 = Ornithion inornata (Hartl.).

Elaenia inornata (Lawr.) Giebel, 1875 = Myiozetetes inornata (Lawr.).

Elaenia leucopus (Lafr. et D'Orb.) Gray, 1847 = Meocerculus leucopus (Cab. et Heine).

Elaenia leucopus Cab., 1848 — Quid ? (an Ornithion ?)

Elaenia limicola Strickl., 1850 = Heterocercus limicola (Strickl.).

Elaenia lituratus Pelz., 1868 = Ochthornis lituratus (Pelz.).

Elaenia livida (Polz.) Giebel, 1875 = Phyllomyias incanae (Wied).

Elaenia liturata (Scl.) Giebel, 1858 = Myiozetetes lituratus (Scl.).

Elaenia littecevrentis (Less.) Gray, 1847 = Heterocercus littecevrentis (Less.).

Elaenia marginata (Lawr.) Giebel, 1875 = Myiozetetes cayanensis (L.).

Elaenia mexicana (Kaup) Gray, 1847 = Myiozetetes similis superciliosus (Bp.)

Elaenia miles Burm., 1856 = Myiozetetes similis (Spix).

Elaenia modesta (Wied) Gray, 1847 = Sublegatus fasciatus (Thunb.) ?

Elaenia murina (Spix) Burm., 1856 = Phaeomyias murina (Spix).
Hans Graf von Berlepsch:

Elania nigricans (Vieill.) Gray, 1847 = Lichenops perspicillatus (Vieill.)

Elania nigricapilla (Lafr.) Giebel, 1875 = Tyranniscus nigricapillus (Lafr.).

Elania obscura (Vieill.) Gray, 1847 = Quid? (an = Lipanag us?)

Elania oboleta (Temm.) Gray, 1847 = Ornithion obsolatum (Temm.).

Elania oleaginea (Licht.) Gray, 1847 = Mionectes oleagineus (Licht.).

Elania olivacea (Lafr. et D'Orb.) Gray, 1847 = Tyranniscus bolivianus (D'Orb.).

Elania parva (Lawr.) Giebel, 1875 = Tyranniscus parvus (Lawr.).

Elania pectoralis (Vieill.) Gray, 1849 = Habruva pectoralis (Vieill.).

Elania peruviana (Scl.) Giebel, 1875 = Leptopogon ananocephalus peruviana (Scl.).

Elania phaenoleuca (Vieill.) Gray, 1847 = Muscicapa tyrrannus (L.) juv.

Elania pileata (Cab.) Giebel, 1875 = Leptopogon pileatus (Cab.).

Elania poecilotis (Scl.) Giebel, 1875 = Leptopogon poecilotis (Scl.).

Elania polycephala (Tsch.) Gray, 1847 = Mionectes striaticollis (Lafr. et D'Orb.).

Elania punctata (Vieill.) Gray, 1847—Quid?

Elania pusilla (Cab. et Heine) Giebel, 1875 = Ornithion pusillum (Cab. et Heine).

Elania rubra (Vieill.) Gray, 1847 = Casioidea rubra (Vieill.).

Elania rufocapilla (Vieill.) Gray, 1847 = Kuipolegus cyanipennis (Vieill.)

Elania ruficeps (Spws.) Gray, 1849 = Hapalogenes meloprasus (Wied).

Elania rufopennis (Lawr.) Giebel, 1875 = Miozetetes rufopennis (Lawr.)

Elania rufiventris (Cab.) Giebel, 1875 = Mionectes rufiventris (Cab.).

Elania rufolivacea (Lafr.) Gray, 1847 = Heteropelsa turdiana (Wied).

Elania semilatia (Lafr.) Giebel, 1875 = Ornithion semilatia (Lafr. et Salv.).

Elania semistriata Lawr. = Cay siemipis flaviceps semistriata (Lawr.).

Elania semistriata (Scl.) Giebel, 1875 = Pachyrias semistriata (Scl.).

Elania similis Burm., 1854 = Miozetetes similis (Spix).

Elania spadicea Cab., 1818 = Ramphidrygon ruficollis (Spix).

Elania stictoptera Scl., 1858 = Mecocereulus stictopterus (Scl.).

Elania straminovestra (Lafr. et D'Orb.) Gray, 1847 = Hapalogenes op.?}

Elania striaticeps (Lafr. et D'Orb.) Gray, 1847 = Mionectes striaticollis (Lafr. et D'Orb.).

Elania subviridis (Pelz.) Giebel, 1875 = Arcocephalopus subviridis (Pelz.).

Elania suiriri (Vieill.) Gray, 1847 = Suiriri suiriri (Vieill.).

Elania sulphurea (Spix) Giebel, 1875 = Miozetetes sulphures (Spix).

Elania superciliosa (Tsch.) Gray, 1847 = Leptopogon superciliosas (Tsch.).

Elania tachodii Giebel, 1875 = Sublegatus fasciatus (Thunb.).

Elania variegata Sol., 1856 = Legatus albocollis variegatus (Scl.).

Elania ventralis (Tem.) Gray, 1847 = Phylloscartes ventralis (Tem.).

Elania vermiculosa (Gmbl.) Burm., 1854 = Basilenterus anricapillus (Svz.).
On the Genus Elaenia.

Elaenia verticalis (Vieill.) Burm., 1854—Quid?
Elaenia viliissima Sel. et Salvador, 1859 = Tyranniscus viliissimus (Sel. et Salv.).
Elaenia viridissima (Tem.) Gray, 1847 = Xanthomysis viridissima (Tem.).
Elaenia virgata (Gmel.) Burm., 1854 = Myiobius fasciatus (Bodd.).
Elaenia viridis (Tem) Burm., 1854 = Myiobius fasciatus (Bodd.).
Elaenia viridiflava Tsch., 1844 = Tyranniscus viridiflavus (Tsch.).
Elaenia viridis Gray (ex Lafr.), 1847 = Heteropelma viridiblava (Wied.)
Elaenia viridula (Vieill.) Giebel, 1875. Quid? (error?)
Elaenia wiedii Pelz., 1871 (ex Musc. modesta Wied) = Sublegatus fasciatus (Thunb.)?

List of species of Elaenia as represented by specimens in the Museum Hans von Berlepsch.

1. Elaenia flavogaster (Thunb.).
1, ad., Bucaramanga, April 12th; 2-5, Bogotá trade-skins; 6-9, Trinidad or Orinoco, trade-skins; 10-21, Merida, Venez. (S. Bricoñcho leg.); 22, ad., Pto. Cabello (Starke leg.); 23, Ins. Grenada, 9, March 15th (J. G. Wells leg.); 24-26, Tobago, 9, April 15th, 25th (Cory Coll.); 27, Altacagia, 9, Jun. 10th (Cherrie leg.);
28, Caicara, 9, Febr. 25th (Cherrie leg.); 29, Barta Grove, Brit. Guiana, 9, Dec. 17th (Whitely leg.); 30, ad., Cayenne (Cabanis); 31, Pará, 9, Dec. 28th (Schulz leg.); 32-52, Bahia trade-skins; 53-55, Victoria, Esp. Santo, Sept. 9th, Nov. 17th (Müller leg.); 56, S. Paulo 9 (Duschanek leg.); 57, 9, Carambola, S.P., Aug. (Garlepp leg.); 58, Buenos Aires, Paraguay, 9 (Ternetz leg.); 59, Huayabamba, N. Peru, ad. (G. Garlepp leg.); 60, Santa Ana, C. Peru, July 6th (Kalinowski leg.).

2. E. flavogaster subpagauna Sel. et Salvador.
1, 2, Chiapas, 9, May, June (Trujillo leg.); 3-23, Costa Rica, 9, May, June (Rogers, San Sebastian ad.); San José, 9, 9, 9, 9, Febr. 17th, 29nd, April 26th, June 1st, Sept. 9nd, 22nd, 9, 9, 9, 9, Jan., 26th, May 29rd, June 2nd, 9, 7th, 14th, July 18th, 9, juv. Aug. 10th, Buenos Aires, 9, March 5th, Teribba, 9, March 21st, ad., March 12th (all collected by G. K. Cherrie); 24, Panamá, 9, Nov. 9th (G. Hopkins leg.).

3. E. flavogaster spectabilis Pelz.
1 9, Aragay, Sept. 14th (Behn leg.).

4. E. f. semipagauna Sel.
1, ad., Guayaquil, Aug. (Siemiradzki leg.).

5. E. martinica (L.).
1, ad., Guadeloupe (Colardeau leg.); 2-5, Dominicas, 9, 9, 9, May 29nd, April 12th, Dec. 9th, 10th (Verrill leg.).

6. E. martinica riisei Sel.
1-4, 9, 9, 9, St. Christoffel, Curaçao, Aug. 30th, June 12th (Peters and Hartert leg.).

7. E. martinica caymanensis Berl.
1-4, 9, 9, 9, Grand Cayman, March 14th, 24th, April 7th, July 6th (Sweeting, Streator and Taylor leg.).
8. *E. martina* *cinereascens* Ridgw.

1. ♂, Old Providence, March 15th (Henderson); 2, ♀, St. Andrews, Feb. 8th (Henderson).

9. *E. martina* *complexa* Berl.

1-3, ♀♀♀♀, Cayman Brac, March 29th, Aug. 4th (C. J. Maynard leg.).

10. *E. martina* *romata* Berl.

1, ad., Cozumel Isl. (G. F. Gaumer leg.).

11. *E. gigas* Sc.

1, ad., Bogotá trade-skin; 2, ad., Guayabamba, N. Peru, Dec. (G. Garlepp leg.).


1-32, Bahia trade-skins; 33-35, ♀♀♀♀, Roraima, May 7th, Nov. 2nd (H. Whitely leg.); 36, 37, ♀♀♀♀, Meruné Mts., June 27th, July 26th (H. Whitely leg.); 38, 39, ♂♀♀♀, Altagracia, Orinoco, Nov. 26th, Dec. 24th (Cherrie leg.).


1-6, Bolivia: Omeja, ♂♀♀♀, July 22nd, Chaco, ♀♀♀♀, June 13th, July 17th, ♂♀♀♀, jur., June 20th, Supai, ♀♀♀♀, August 25th, ♀♀♀♀, Sept. 1st (G. Garlepp leg.); 7, Fuerte de Andalgala, Catamarca, ♂♀♀♀, July 29th; 8-14, Lucre, Cuzco, 3500 metres, ♂♂♂♂, July 11th, 12th, 13th, 14th, ♂♀♀♀, Sept. 1st, 13th; 15, Marcapata ♀ August 30th (O. Garlepp leg.).

14. *E. albiceps* (Lafr. et D'Orb.).

1-8, Bolivia: Omeja, ♂♀♀♀, July 22nd, Chaco, ♀♀♀♀, June 13th, July 27th, ♂♀♀♀, jur., June 20th, Supai, ♀♀♀♀, August 25th, ♀♀♀♀, Sept. 1st (G. Garlepp leg.); 9, Chepen, ♂♀♀♀, Jan. 3rd (Kalinowski leg.); 10-12, Chile: ad., ♂♀♀♀, Valdivia jur. (Lossberg).

15. *E. albiceps* modesta (Tsch.).

1-5, Cieabamba, 9500', ♂♀♀♀, Feb. 1st, 3rd, April 27th, Succha, 9000', ad., Feb. 20th, Leimaabamba, ♂♀♀♀, jur., July 20th; 6, Chepen, ♀♀♀♀, June 2nd (O. T. Benton leg.); 7, Ycue, ♂♀♀♀, Jan. 3rd (Kalinowski leg.); 8-14, Lucre, Cuzco, 3500 metres, ♂♂♂♂, ♂♀♀♀♀♀♀♀, July 11th, 12th, 13th, 14th, ♂♀♀♀♀♀♀♀, jur. Sept. 1st, 13th; 15, Marcapata ♀ August 30th (O. Garlepp leg.).

17. *E. griseigularis* Sc.

1, Bugnac, ♂♀♀♀, 5500', May 20th (Stolzm. leg.); 2, Mapita, ♂♀♀♀, Jan. 10th (Stolzm. leg.).

18. *E. brechyiptera* Berl.

1-3, S. Pablo, S.W. Colombia, ♀♀♀♀♀♀, ad., Jan. 25th, March 3rd; ♂♀♀♀♀♀♀♀, jur., July 7th (G. Hopke leg.).
On the Genus *Elaemia*.

1, 2. Roraima, ♀♂ ad., ♀♀ ad., Aug. 10th, 15th (H. Whitely leg.).

20. *E. pallataungae* Sel.
1. Tambillo, N. Peru, Sept. 2nd (J. Stolzm. leg.); 2-8. Marcapata, 2000 metres, ♀♂ ♀♀, ♀♀ ad., Aug. 31st, Sept. 7th, 8th, 9th, 13th, 14th, 15th (O. Garlepp leg.).

21. *E. strepera* Cab.
1. semi-ad., Tucuman (Schulz); 2, ad., trade-skin (West Indies?).

22. *E. parvirostris* Pelz.

23. *E. mesoleuca* Cab. et Heine.

1-4. Costa Rica: Barba, ♀♀, ♀♀, Feb. 23rd, 24th; Boruca, ♀♀, Novbr. 2nd; Irazu ♀♀, juv., July 8th (Cherrie leg.); 5, Veragua ad. (Arcé leg.).

25. *E. frantzii pudica* Sel.
1-2. San Sebastián, Sta. Marta, ♀♀, June 27th, July 2nd (W. W. Brown leg.); co-types of *E. browni* Bangs; 3-12. Bogotá trade-skins (four with some white in the pileum); 13-18, Merida, Venes., ♀♂ ♀♂ ♀♂, April 30th, June 12th, ♀♀ ♀♀, Jan. 8th, Septbr. 20th, ad., June 25th, ♀♀, juv., July 28th (S. Briceño leg.); 19. Valencia ♀♀ (A. Goering leg.).

26. *E. obscura* (Lafr. et D'Orb.).
1-4. Bolivia: Chaco, ♀♂ ♀♂, May 30th, July 9th; Omeja, ♀♀, July 27th; Tanampaya, ♀♂, Sept. 23rd ♀♀ ♀♀ ♀♀, 5. La Garita, Vito, C. Peru, ♀♀, July 20th (J. Kalinowski leg.).
7-9, Taquara and S. Lourenço, R. Grande do Sul, May 8th, June 30th, Aug. 13th (H. v. Ihering leg.); 10, S. Paulo (Duschaneck leg.); 11, Ytararé, S. Paulo, Sept. (E. Garbe Jeg.).

27. *E. obscura tambillana* Berl.
1. Peru: Tambillo, ♀♀, Oct. 1st (Stolzm. leg.).

28. *E. gaimardi* (D'Orb.).
1. ad., S. Esteban, Pto. Cabello (Starko leg.); 2. Trinidad or Orinoco trade-skin; 3. Munduapo, Orinoco, ♀♂, Feb. 22nd (Cherrie leg.).

29. *E. gaimardi guianensis* Berl.
1, 2. Bartica Grove, ♀♀, Jan. 9th; 3, 4. Carimang, ♀♀, Jan. 13th, May 14th; 4. Camacusa, ♀♀, March 20th (H. Whitely leg.).

30. *E. gaimardi bogotensis* Berl.
31. *E. caniceps* (Sws.).
1, Bahia trade-skin.

32. *E. flavivertex* Scl.
1-2, Mundusapo.  ♂ ♀, Feb. 9th, 22nd (Cherrie leg.).

33. *E. viridicata* (Vieill.).
1, ad., Sta. Cruz, Bolivia, 27th Sept. (G. Garlepp leg.).

34. *E. viridicata placens* Scl.
1, ad., Vera Paz, Guatemala (Sarg. leg.); 2, ad., Cozumel Isl. (G. F. Gaumer leg.); 3, Buenos Aires, Costa Rica, ♂, March 12th; 4, ad., Terriba, C. R., March 21st (Cherrie leg.); 5, Miravelles, C. R., ♀, Oct. 29th (Underwood leg.); 6-21, Bogotá trade-skins.

35. *E. viridicata delicata* Berl.
1-7, Bahia trade-skins; 8, ad., S. Esteban, Pto Cabello (Starke leg.).

36. *E. subplacens* Scl.

37. *E. leucospodia* Tacz.
1, Chepen, ♀, Sept. 27th (J. Stolzrn. leg.).

38. *E. cinerea* Pelz.
1-2, ad., juv., Bogotá trade-skins.

1, ad., Bahia trade-skin (type).
ON THE BIRDS OF MADEIRA.

By Padre Ernesto Schmitz.

You will easily perceive by my accent and style that I am a foreigner, German by birth, naturalized Portuguese, and little accustomed to public speaking or writing in English. However, invited by friends to speak in English rather than in German, in order to make myself understood by a larger number of the members of this Congress, I will endeavour to do so.

The small group of the Madeira islands has a superficial area of only 240 square miles, and is situated some 500 miles from the coast of Portugal and about 400 from the African continent. In the Atlantic the nearest land is the Canaries, 200 miles away, and the Azores, 500 miles distant.

In spite of their small area and great distance from other lands, more than 185 different species of birds have been found in the Madeira group, of which 36 are breeding birds. In the Azores, three times the size of Madeira, only 120 species of birds are known; and from the Canaries, with an area five times as great as that of Madeira, and quite near the African continent, little more than 170 species have been recorded.

If you ask me for the character of the ornithological fauna of Madeira as compared with the European, I may state that it is very similar to that of Portugal and the Mediterranean. The last published list of Portuguese birds gives 280 species, of which just half, viz., 140, are identical with those found in Madeira, the remaining 45 species from Madeira, however, never having been noticed in Portugal. But the best manner of describing the ornithological character of a country is by an examination of its breeding birds. Only half of the Madeiran breeding birds — i.e., 18 species—nest on the European continent; a few more, 21 species, are common to Madeira and the Canaries, and a few less, 14 species, to Madeira and the Azores.

Some of the Madeiran breeding birds are found nowhere else in the world—namely, the Madeiran Gold-crested Wren,
the Madeiran Chaffinch, the Madeiran Long-toed Pigeon, and perhaps also the Madeiran Petrel (*Estrelata feae*). Certain forms of species are also peculiar to Madeira, and are rarely to be found elsewhere, as, for example, Grant's Sparrow Hawk, Schmitz's Barn Owl, the Madeiran Ring-Dove, the Madeiran Red-legged Partridge, the Madeiran form of Berthelot's Pipit, and perhaps the Madeiran Wagtail and Linnet.

I would like to tell you some details about these species peculiar to Madeira, because they deserve it, not only on account of their extremely restricted range, but also for many other reasons. Our Gold-crest is a true jewel of our wooded mountains, and not at all rare. His wonderful nest with six eggs, exceptionally seven, is chiefly found in laurel, erica, vaccinium, and faya trees. Also on the mountains, but further from all human habitation, chiefly in the laurel and chestnut forests is found the Long-toed Pigeon, *C. trocaz*. It is really a splendid and majestic bird, from its large size, its silver collar and elongated middle toe, 5 cm. in length. The nests are rarely found, and are, as a rule, inaccessible. The first egg was discovered twelve years ago, differing from other Pigeons' eggs by its enormous size, which is never less than 45 mm. in length; but two eggs have never been found in the same nest. Our peculiar Chaffinch is also a lovely, lively bird, and may be distinguished from his nearest relatives in other countries by his green back, slightly roseate breast, and generally darker colours. It is always to be found in the wooded regions of the island.

Only a few months ago I learnt for certain that *Estrelata feae* ad. Salv., the peculiar Madeiran Petrel, breeds not only on a little islet near Madeira, as stated before, but also in Madeira itself, under conditions similar to those of the Manx Shearwater in England, but later on in the year, in July, August, or September. Eggs of this species are scarcely to be found in the most complete collections; and, unfortunately, last year six of them were broken against the rocks by the boys who found them, and did not know their value.

A great many Red-legged Madeira Partridges, together with Woodcock and Quail, are found throughout the entire
year in the grassy highlands and wooded mountains, notwithstanding the carelessness of the Madeirans in observing a close season.

After having mentioned the breeding birds peculiar to Madeira, let us now see what kind of birds are common to Madeira and the two sister groups, the Canaries and the Azores. In all the three groups you find these European species—The great Mediterranean Shearwater (*Puffinus kuhlii*), the Mediterranean Gull (*Larus cachinnans*), the Common Tern; and of land birds—the common Robin, Woodcock, Quail, and Rock-Pigeon. Every year seven thousand Great Shearwaters are killed on our Desertas Islands, and from twenty to twenty-two thousand on our Salvages Islands, their salted flesh, oil, and feathers being the chief revenue of these places; the number of these birds, however, remains always the same.

All the other birds common to the three groups are not found on the European continent, and may be called, therefore, Atlantic birds. They are the wild Canary, Berthelot’s Pipit, the anomalous Blackcap (*Sylvia heinekeni*), a melanistic aberration of the ordinary Blackcap, and that most interesting Dark Shearwater (*Puffinus obscurus bailloni*). Some other Atlantic species or varieties are common to only two of the groups—for instance, the dark Kestrel (*Falco tinnunculus canariensis*), the Dusky Swift (*Apus unicolor*), Cabreras Blackbird, Schmitz’s Wagtail, the Atlantic Rock-Sparrow, and also the sea-birds, Bulwer’s Petrel and Harcourt’s elegant Storm-Petrel (*Oceanodroma castro*).

Finally, I must mention the influence of the African continent and of the Tropics on the Madeiran bird-fauna. You may find a few species among our breeding birds: such as Fea’s Petrel, the white-faced Petrel of the Salvages, the Barbary Partridge, and African Quail, but chiefly in numerous African and Tropical visitors, such as the Egyptian Vulture, the Red-necked Nightjar, the Sahara Warbler (*Sylvia deserti*), the Marbled Duck (*Anas angustirostris*), the Courser (*Cursorius gallicus*), and last, but not least, the wonderful Tropic Bird (*Phaethon aetherus*), with his bright silky plumage, elegant tail, and coral beak.
If you ask me about migration and stragglers, so far as they have been observed in Madeira, let me only say, firstly, that several of our breeding birds, which are migratory birds in Europe, remain in Madeira the whole year; secondly, that some European migratory birds pass their winter in Madeira, e.g., the Kittiwake; thirdly, that stragglers appear in Madeira as a rule only for a few days on their way to and from Africa; fourthly, that they do not come to Madeira while following their regular route, but when forced by storms or other extraordinary meteorological changes. It is nearly always under such circumstances that stragglers appear. During 20 or 30 years certain species have only appeared once or twice after heavy storms, but in no other years. Thus we had one year after a storm a regular inundation of Cuckoos, in another an influx of Night-Herons, on another occasion a migration of Scops Owls, of Lesser Egrets, etc. There are, however, other stragglers which appear in smaller bands every year from time to time.

As many of you might be interested in knowing which are the new stragglers noticed and obtained in Madeira since the last publication two years ago, I may state the following in chronological order:—

Ortygometra parva, Scop....... 30.1.03 Little Crake.
Caprimulgus ruficollis, Temm. 10.11.03 Red-necked Nightjar.
Anas ferina (L.) ............... 28.11.03 Pochard.
Rallus aquaticus (L.).......... 4.12.03 Water Rail.
Glareola pratincola ............ 18.5.04 Common Pratincole.
Muscinopa atricapilla ........... 7.10.04 Pied Flycatcher.
Spatula clypeata ................ 27.10.04 Shoveler.
Pratincola rubicola (L.) ....... 10.11.04 Stonechat.
Hypolais polyglotta (Vieill.) ... 10.11.04 Melodious Warbler.
Acrcephalus phragmitis, Bchst. 10.11.04 Sedge Warbler.
Acrcephalus streperus (Vieill). 10.11.04 Reed Warbler.
Plectrophenax nivalis (L.) ...... 10.11.04 Snow Bunting.
Anthus trivialis (L.) .......... 10.11.04 Tree Pipit.
Larus glaucus ................... 3.1.05 Glaucous Gull.
Larus leucopterus .............. 27.1.05 Iceland Gull.
Sturnus vulg. intermedius ...... 26.2.05 Purple-headed Starling.
To find seventeen new birds in less than two years and a half on an island so small and distant as Madeira may be considered as a real record.

The Barbary Partridge is a new breeding bird introduced five years ago in the small island of Porto Santo with considerable success.

As you see, I can give only a few outlines of the Madeira birds, but will be sufficient to show how interesting Madeira is for ornithologists. If a simple amateur of birds could increase the list of Madeira birds in sixteen years from 100 species to 189, what could not a real ornithologist effect in our island of continuous spring if he were to remain there a whole year? Therefore my conclusion is this: What I have just said is only a faint picture of reality! Come and see for yourselves, and taste a little of the real pleasure given by the birds of Madeira.

1 New for Madeira as a breeding bird.
ON THE ORIGIN OF THE DIFFERENCES BETWEEN NESTLING BIRDS.

BY

W. P. Pycaft, A.L.S., F.Z.S., etc.

The very striking differences which obtain between the young of different groups of birds at birth has long been a subject of speculation, though but little has resulted therefrom.

Some of the older naturalists seized upon the condition of the young at birth as a basis of classification, either separating those birds whose young were born helpless and naked, from those whose offspring emerged from the shell covered with down; or dividing those birds with blind and helpless young from those whose young emerged covered with down and able to run about.

These systems have, however, long since been discarded, and at the present day, when the condition of the young at birth is regarded at all, it is as an index of specialization; helpless and naked young being held to indicate a relatively more specialized condition than active or precocial young, the precocial condition being regarded as primitive.

As to the correctness of the latter view there can be no doubt, but much more underlies this than is generally supposed, for if the early life-history of the several groups of birds be carefully surveyed, it is contended here, that convincing evidence is obtainable to show how the different conditions of the helpless or altricial young and the active or precocial young have been brought about.

The key to the whole position is probably to be found in the life-history of the young of the South American Hoatzin, *Opisthocomus cristatus*. This remarkable bird, throughout the whole of its life, is strictly arboreal. Indeed it is said never to have been seen upon the ground. The young are precocial, and differ from those of all other birds in the great size of the claws in the pollex and index digits. Armed with these claws, the newly-hatched young crawl out of the nest and wander about among the surrounding branches holding fast
with feet and wings, and using the beak as an auxiliary when greater security is needed.

The significance and importance of the claws at this juncture is attested by the quite peculiar method of development which obtains in the remiges or quill-feathers of the hand; inasmuch as the growth of the quills near the tip of the index digit is arrested until the inner quills have developed sufficiently to serve the purpose of flight. As soon as this takes place, the distal quills make their appearance, when the claws, being no longer needed, disappear. The reason for this peculiar succession of quill-feathers is obvious. If all the quills developed at the same rate the hand would speedily become useless either as an organ of prehension or an organ of flight.

The presence of claws, however, and the arrested development of the distal quill-feathers are not the only peculiarities of the manus of this bird during the early nestling period; for at this time the index finger is longer relatively than in the adult stage, whilst the palmar surface of the tip is bare and provided with a small cushion-like pad resembling that of the human finger. This pad doubtless serves to increase the grasping power of the digit. The great length of this digit makes the manus, at this period, actually longer than the fore-arm, whilst the reverse proportions obtain in the adult.

That the peculiarities of the wing of the young *Opisthocomus* represent an ancestral condition there can be but little doubt, inasmuch as the wings of many other birds pass, more or less completely, through similar phases during development. This is especially well seen in the wing of the nestling of the *Gallinae*, of which we may take the Common Fowl as an example. Breeding, however, no longer in trees, but upon the ground, certain curtailments have taken place in the development of the wings of these birds. Thus, the claw of the pollex is greatly reduced, whilst the claw of the index digit is present only during embryonic life. But the arrested development of the distal quills still persists to attest the original function of the wing during the nestling period. The development of the inner quills of the hand, however, has become greatly accelerated, apparently in order
to enable the young chicks to escape as soon as possible from the many enemies incidental to a terrestrial breeding ground.

Assuming that my contention that all birds were originally arboreal and were reared high up among the branches of trees, is proved, or at least shown to be extremely probable, I purpose to pass on to show that the several forms of precocial and altricial young are the result of adaptation, the end being to reduce the great infant mortality attendant on precocious development among the tree-tops.

The chances of death which would beset precocious nestlings whose nursery is in the tree-top are many and obvious. A large number would fall to the ground through losing their hold on the branches before the wing-quills had sufficiently developed to serve the purpose of flight; others would fall through weakness, the habit of dispersing themselves among the branches of the trees in which the nest was placed resulting in a loss of regular food-supply owing to the difficulty of being on the spot when the parents returned with food. Thus the more sedentary members of the family would stand the best chance of being regularly fed; but among these the danger of falling by accident would be an ever present one. Once on the ground it is probable that they would speedily perish, for it is certain that the earliest birds were entirely arboreal, and either would not or could not seek for lost offspring amid the thick undergrowth.

Now two courses were open whereby this infant mortality could be reduced. Either the eggs could be deposited on the ground, or the activity of the young curtailed. The Game-birds, Ducks, and Geese, Rails, Cranes, and Plovers may serve for examples of these species which have descended from the trees to the ground for nesting purposes, and although as a consequence, the young have undergone considerable modifications in adaptation to the new environment, these changes are not so striking as those which have taken place among the young of the tree-dwelling species. They are, however, just those which might have been predicted; embracing peculiar habits of concealment aided by protective coloration, and a reduction in the size of the wings and feet, now no longer required solely as grasping organs.
The Game-birds (Gallinae), appear to be the only group in which the young combine protective coloration with the power of precocious flight. This latter has been gained by forcing the growth of the inner quills of the hand—the quills which became functional at a slightly later date—during the earlier ancestral arboreal phase. That precocious flight has not been more generally adopted seems at first somewhat strange. A little reflection, however, will show that excessive activity on the ground would be as fatal as in the trees, since the young, in escaping from one danger would be liable to run into another, or to stray too far to render return possible. Evidence indeed is forthcoming to prove that such precocious flight is actually harmful. Thus Mr. Ogilvie-Grant, writing of the Common Pheasant, tells us that the mother, on any alarm, with warning note to the young, at once flies off and leaves them to take care of themselves. This they do by scattering in all directions, and then squatting down and trusting to their protective coloration. Quiet restored, the parent returns, often only to recover but three or four of her chicks, the others having strayed to such a distance that they are left to perish.

We may pass now to a consideration of those species which, retaining their arboreal nesting habits, have minimized the danger of the young falling to the ground by curtailing their activity until the power of flight has been fully attained.

This process of curtailment was accomplished by reducing the food-yolk within the egg, and thus inducing an earlier hatching period. We may approximately measure the extent to which this reduction has been carried by the degree of helplessness displayed by the newly-hatched bird, and by the nature and extent of its clothing.

The number of species which have adopted this expedient outnumber those which have not, and this speaks volumes for its success. As examples we may instance the Passerine or Song-birds, Parrots, Cuckoos, Birds of Prey, Cormorants, and their allies, and the Stork tribe. The young of these are all born extremely helpless, many perfectly naked, others enveloped in a thick coat of down, whilst, in some, the down is developed soon after hatching; and in others not at all. The fact that this expedient of curtailment has been inde-
pendently adopted by so many unrelated forms is an interesting and instructive one.

The amount of food-yolk, however, once having been reduced, return to the older fashion of nidifugous young became impossible; and this explains why nidifugous young are still born to those parents which have adopted the practice of depositing their eggs upon the ground. It proves that the arboreal habit has been forsaken since the specialization. Some, like the Cormorants, Herons, and certain of the Gull tribe, for example, build, as occasion demands, either on the ground or in trees. Now it is interesting to note that among these birds the young Cormorants and Herons are completely nidicolous, the Gulls only partially so, whilst the near and less specialized allies of the Gulls, the Plovers, have nidifugous young. The nidicolous condition of the Cormorants and Herons must undoubtedly be regarded as the result of adaptation to an arboreal breeding site, as in the case of the Song-birds for example, whilst the peculiar intermediate condition of the Gulls seems to show that these are really nidifugous forms whose activity is being restricted, as in the case of the arboreal types, but for other reasons to be discussed forthwith.

To species breeding in large colonies, or on ledges of precipitous cliffs, the reduction of the food-yolk and consequent helplessness of the young are obviously advantageous; for in the former case large numbers of young, if nidifugous, would go unfed and soon starve owing to the impossibility of the parents recognising them running about amongst their neighbours, whilst in the latter case, among the young of cliff-breeding species, great activity would be accompanied by an enormous mortality owing to falls from the cliff.

In conclusion we may say a few words about the young of the Megapodes. The eggs of the Megapode are, as is well known, hatched in decaying vegetable heaps, or in hot sand, instead of being incubated by the parent. To this end the amount of food-yolk has been enormously increased, thus enabling the normal nestling period to be passed within the egg, the young passing through the downy stage during embryonic life, and emerging from the shell fully fledged, and able to fly. Thus the means sought to secure the safety of the young is exactly opposite to that adopted by arboreal breeding birds.
That the ancestral Megapodes were originally hatched in trees, like the young Hoatzin, there can be no doubt, since, like the latter, the wing of the young bird shows a free fingertip and an arrested development of the outer quill-feathers, characters which, as we have seen already, are direct adaptations to the peculiar locomotion of tree-climbing nestlings. We may be almost certain that the increase in food-yolk, just referred to, did not take place until some time after the descent to the ground for breeding purposes, since the wing of the young Megapode forms an exact counterpart of that of the young Fowl and Turkey, and their allies, whilst, had the increase taken place earlier, the wing would have resembled that of the Hoatzin in the possession of large claws. The latter are present now only during embryonic life.

The increase in the food-yolk, allowing the earlier nestling stages to be passed within the shell, must be accounted for by supposing the adult Megapode to have been obliged to adopt this expedient to avoid perils attendant on normal incubation, perils which may since have passed away leaving no record of their nature. A return to the normal method of incubation is now impossible, the instinct therefore having been replaced by that which induces the birds to bury their eggs, and leave them to be hatched by artificial heat.

That too much stress has been laid by systematists on the condition of young birds at birth is admitted. I further maintain that its significance has been misunderstood, and that the facts here brought forward are strong enough on the one hand to refute the older views, and on the other to justify the theory, firstly that birds were originally arboreal, and their young nidifugous, secondly that nidicolous habits and helplessness of young birds are specialized adaptations to an arboreal or gregarious mode of life; and, thirdly, that the young of Gallinaceous birds form a link in the chain of the evolution of nidifugous habits, the free fingertip and arrested development of the outer quills pointing to a prior arboreal habit, and the accelerated development of the inner quills indicating an adaptation for the escape of enemies, which, proving disadvantageous, has either not been adopted or has been discarded by other nidifugous forms.
Schon lange hatte ich mich mit der Litteratur des Hausrothschwanzes befasst und nahm bei Beginn meiner ornithologischen Thätigkeit die zwei Formen, Erithacus titys und Er. cairii, letztere als sogenannte Gebirgsform, als sicher stehend an.


Im Frühjahr 1900 wollten ich und mein Vogelwart nun versuchen, ob wir vielleicht auch das Glück hätten, in meiner Heimath, im flachen Theile Thüringens ein graues Pärchen Rothschwänze entdecken zu können. Aber, welches Erstaunen! In meinem Heimathsorte Seebach fanden wir nicht weniger als 5 graue, ganz gleich gefärbte Brutpaare gegen nur 1 Paar mit schwarzem Männchen.

Beschämmt sah ich, mit welcher Oberflächlichkeit ich und andere also sonst beobachtet hatten, denn wie in jenem Jahre, ist's doch natürlich auch schon früher gewesen. Man hat sich angesichts eines grauen Rothschwänzes am Nest eben immer damit zufrieden gegeben, dass dies gerade das Weibchen sei.

Graue Eltern mit Jungen konnte ich also genügend bekommen, Schwierigkeit machte es mir nur, ein Brutpaar mit schwarzem Männchen zu finden, was in der Nähe Cassels dann aber auch noch geschah.

Ich nahm nun Mitte Mai 1900 sowohl eine Familie mit
Schlussteil zur Frage über Erithacus cairii.


Das Resultat war folgendes:

(1) Von dem grauen Elternpaar verfärbte sich im ersten Herbst, 1900, 1 Vogel, also das alte Männchen in einen schönen schwarzen E. titys um.

(2) Von allen andern Vögeln, alten wie jungen, bemerkte ich bis zum Herbst 1901 in keiner Weise eine Farbenveränderung; abgesehen von dem alt eingefangenen schwarzen Männchen blieben alle einfarbig grau.

(3) Im Herbst, September 1901, wurden von den jungen beider Familien, sowohl von den ursprünglich grauen Eltern, also der sogenannten cairii, wie auch von den Eltern mit schwarzem Männchen, der titys, 2 bezw. 3 Stück schöne schwarze Männchen.


Durch diese meine Versuche und Beobachtungen an den Rothschwänzen in der Gefangenschaft ist also, gleich wie schon durch Gengler erneut bewiesen, dass die Form R. cairii überhaupt nicht existirt. Sie ist, wie im Laufe der Zeit so manches auf dem Gebiete der Ornithologie, in das Fabelland zu verweisen.

Abgesehen von mitunter abnormen Färbungen, indem z. B. junge Männchen schon den Anflug einer schwarzen Kehle zeigen, sind alle Hausrothschwänze, ob Männchen oder Weibchen, die ersten 1½ Jahre ihres Lebens grau; die Männchen Männchen bleiben also 1½ Jahre im Jugendkleid und
brüten auch in diesem. Die Weibchen behalten die graue Färbung für immer bei, alle Männchen werden im Alter von 1½ Jahren, also nach der zweiten Herbstmauser, schwarz.

Von der voluminösen Litteratur über E. cairii, welche einzeln aufzuführen ich hier wohl unterlassen darf, wird diese meine Mittheilung nun hoffentlich der Schlussstein sein.
STUDIEN ÜBER TYRANNIDEN.

VON HANS GRAF VON BERLEPSCH.


Subfamilia TAENIOPTERINAE.


Man kann demnach wohl unbedenklich dem Namen Agriornis die Priorität zuerkennen.

Agriornis livida fortis Berl. cf. antea p. 352.

ist eine neue Subspecies, welche die chilenische Stammform in dem District Chubut von Ost-Patagonia vertritt.

Ein Vogel von Valdivia, S. Chile zeigt etwas grössere
Dimensionen und blassere Färbung (Oberseite mehr graubraun, Unterseite mehr weisslich) als Vögel von C. Chile, stimmt aber doch in Bezug auf die Schnabelform pp. besser zu *A. livida* als zu *A. l. fortis*.

**Agriornis andecola** (Lafr. et D’Orb.).

ist in meiner Sammlung durch drei Exemplare von La Paz und Sajama (W. Bolivia) vertreten.

Diese Vögel unterscheiden sich von *A. striata* Gld. von Patagonia durch viel schmälere und mattere braunschwarze Kehlstreifen und mehr braungelb überlaufene Unterseite. Da diese Unterschiede zu geringfügig erscheinen um beide Formen als Species zu bezeichnen, so möchte ich die bolivianische Form nur als Subspecies unter der ternären Bezeichnung

**Agriornis striata andecola** (Lafr. et D’Orb.)
aufführen.

*A. microptera* Gld., von derselben Localität wie *A. striata* beschrieben, dürfte sich auf den jungen Vogel derselben Art beziehen.

Nach Untersuchung der Originalexemplare im British Museum möchte ich die Vermuthung aussprechen, dass die Etiquetten von *A. striata* und *A. microptera* verwechselt worden sind.

Die Vögel von Tucuman, welche mit denen von Patagonia in der Färbung übereinstimmen, scheinen sich durch schmälern, schwächer Schnabel zu unterscheiden, worin sie mehr den Bolivia-Vögeln gleichen.

**Agriornis maritima** (Lafr. et D’Orb.).

*Pepoaza maritima* ist nur das alte *A* von *P. montana* Lafr. et D’Orb.


Mein Freund C. Hellmayr hat die Typen von *P. montana* und *P. maritima* im Pariser Museum mit Vögeln von Chile
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Agriornis leucura Gould.

Ob diese Art von Patagonia wirklich von A. maritima constant verschieden ist, wie Mr. Scott annimmt, vermag ich nicht zu entscheiden, weil mir Vogel von Patagonia nicht vorliegen; höchstens dürfte es sich wohl um eine Subspecies der A. maritima handeln.

Vögel von Tucuman kann ich nicht von solchen aus Chile und Bolivia unterscheiden.

Agriornis poliosoma Scott

von Arroyo Grande, Patagonia, scheint mir auch sehr zweifelhaft. Wahrscheinlich handelt es sich nur um einen frisch vermauserten Vogel der A. m. leucura.

Agriornis pollens Scl.


Einige dieser Exemplare zeigen schwärzliche Fleckung und Marmorierung auf den weissen Innensäumen der äusseren Schwanzfedern, ähnlich wie die Exemplare von A. s. insolens aus W. Bolívia (La Paz und Sajama).

Agriornis albicauda (Phil. et Landh.)

von S.W. Peru (oder N. Chile ?) beschrieben, scheint der A. pollens nahe zu stehn und bezieht sich vielleicht nur auf aberrante Exemplare mit mehr schwarzer Mischung auf den weissen Innenfahnen der äusseren Schwanzfedern. A. albicauda soll einen starken Schnabel besitzen wie A. livida.
Hans Graf von Bernelpsch:

**Agriornis solitaria** Sel. und **A. insolens** Sel. et Salv.

fasse ich als schwach unterschiedene geographische Formen einer und derselben Art auf. **A. solitaria** von Ecuador unterscheidet sich nur durch etwas dunklere, mehr schwärzlich schiefergraue Rückenfärbung und dunklere Brustfärbung.

**Agriornis solitaria insolens** Sel. et Salv.

Zwischen Exemplaren dieser Form aus Cajamarca, N. Peru, C. Peru, S.O. Peru und Bolivia kann ich keinerlei Unterschiede herausfinden.

Einige Vögel von La Paz und Sajama, W. Bolivia, zeigen die Eigenthümlichkeit, dass die weissen Innenfahnen der äusseren Schwanzfedern mehr oder weniger schwarz gesäumt und gefleckt (gewölkt) sind. Ob es sich hier um Verbas tardirungsprodukte zwischen **A. s. insolens** und **A. maritima** oder um eine Annäherung an den Färbungscharakter der letzteren Art handelt, vermag ich nicht zu entscheiden.

Die Agriornis-Arten sind also nach meiner Auffassung folgendermassen zu classificieren:

**Habitat:**

|---------------|-----------------------------------------------------------------------------------------------------------------------------|

1 = Terra typica.  2 = Typus.
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Peru occ. m. 6. A. Albicauda (Phil. et Landb.), 1863 (tt. S.W. Peru) t. Mus. Santiago ?

Chile


Bolivia


Taenioptera cinerea (Vieill.)

T. nengeta aut. (nec Linn. ?)

Ich bin nicht im Stande in dem Tyrannus nengeta L. (ex Marcgr.) diese Art zu erkennen.

Taenioptera holospodia Scl. = Muscisaxicola albifrons (Tsch.).


Mr. Sclater’s Irrthum beweist die nahe Verwandtschaft zwischen Taenioptera und Muscisaxicola. Ich lasse daher letzteres Genus hier folgen.


vermag ich nach der Beschreibung nicht zu deuten.

*Muscisaxicola albibrons* (Tsch.)

bekommt als synonym *Taenioptera holospodia* Sel. (cf. supra) und verbreitet sich von C. Peru bis Bolivia.

*Muscisaxicola grisea* Tacz.
habe ich von W. Bolivia (G. Garlepp).

*Muscisaxicola frontalis nigribrons* Phil. et Landb.
aus Chile ist keineswegs identisch mit *M. frontalis* Burm. aus Argentina, dessen Typus ich im Mus. Halle untersuchte.

Die beiden Exemplare des Mus. Halle aus Mendoza sind viel grösser als mein Chile-Vogel und zeigen lebhaft rostbraune oder kastanienbraune, etwas verdeckte Säume an den Federn der Scheitelmitte, welche dem Chile-Vogel vollständig fehlen.

Ad. Mendoza al. 121, caud. 80, culm. 20, tars. 34 mm.

*Muscisaxicola brunnea* Gld.
gründet sich auf einen jungen Vogel aus Patagonia. Wenn der Typus, wie es scheint, verloren gegangen ist, so wird es schwer sein die Species festzustellen.

*Muscisaxicola striaticeps* Lafr. et D’Orb.

bekommt als syn. *Knipolegus cinereus* Sel., cf. infra.

*Muscisaxicola juninensis* Tacz.
ist durchaus verschieden von *M. rubricapilla* Phil. et Landb. und kommt in gleichen Localitäten neben dieser Art vor.


*Muscisaxicola capistrata* (Burm.)


*Muscisaxicola rufipennis* Tacz.

besitze ich in mehreren Exemplaren aus Bolivia (coll. G.
Garlepp). Ich bin zweifelhaft ob diese Art nicht besser zu Taenioptera zu stellen sei.

Gen. Lessonia Sws.
syn. Centrites Cab.
Vielleicht muss dies Genus aus der Nähe von Muscisaxicola entfernt und bei Knipolegus und Lichenops eingefügt werden. L. oreas (Scl. et. Salv.), steht besser als Lessonia nigro oreas (Scl. et Salv.).

Gen. Myiotheretes Reichb.
2. Myiotheretes erythropygis (Scl.).

Gen. Ochthodiaeta Cab. et Heine.
Ochthodiaeta lugubris Berl. steht besser als Ochthodiaeta fumigatus lugubris Berl.
Ochthodiaeta signatus Tacz.
scheint eine seltene Species zu sein, welche von Kalinowski nicht wiedergefunden wurde.
Ochthodiaeta pernix Bangs

Gen. Ochthoea Cab.
Diese Formen sind also in folgender Reihenfolge aufzuführen:—

Ochthoeeca oenan-thoides (Lafr. et D’Orb.) Bolivia, S. Peru.

Ochthoeeca oe. fumicolor (Sch.) Colombia (Bogotá Coll.)

Ochthoeeca oe. brunneifrons Berl. et Stolzm. Ecuador, C. Peru, Antioquia?

Ochthoeeca superciliosa Sch. et Salv. Merida (Venez.)

Ochthoeeca polionota pacifica Berl. cf. antea p. 354.

Ochthoeeca leucophrys tucumana Berl. cf. antea p. 353.

Ochthoeeca spodionota Berl. et Stolzm.


Ochthoeeca pulchella Jelskii Tacz.

ist die vertretende Form in N. Peru (Cajamarca).

Ochthoeeca poliostra ist besser als

Ochthoeeca lessoni poliostra Sch. et Salv. aufzuführen.


Empidonax atriceps Salv. (Mitrephanes apud Sclater) von Veragua halte ich für eine Ochthoeeca:

Ochthoeeca atriceps (Salv.).

Serpophaga parvirostris Gould ex Chile stelle ich ebenfalls in das genus Ochthoeeca als:

Ochthoeeca parvirostris (Gould).


Das genus Mecocerculus hat wohl gewisse verwandtschaftliche Beziehungen zu Ochthoeeca, namentlich zu O. rufimargin-
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nata, doch scheinen diejenigen Charaktere, welche auf eine nähere Verwandtschaft zu Serpophaga und Anaeretes pp. hinweisen, zu überwiegen, weshalb ich vorziehe, es in die Nähe der letztgenannten genera zu stellen.

Gen. Sayornis Bonap.
	scheint mir am nächsten mit Ochthoëca verwandt.


Diese Form scheint von S. aquatica Sel. et Salv. von Guatemala hinreichend verschieden zu sein, um als besondere Species stehn zu können.

Gen. Copurus Strickl.

Copurus colonus fuscicapillus Sel.

halte ich wegen der dunkleren Scheitelfärbung und der längeren mittleren Schwanzfedern für gut unterscheidbar.

Gen. Muscipipra Less.

Gen. Gubernetes Such.

Gen. Alectrurus Vieill.


Knipolegus anthracinus Heine


Die Vögel von N.W. Peru müssen abgetrennt werden weil sie ganz abweichend gefärbte Weibchen besitzen:

Knipolegus aterrimum heterogynax subsp. nov.

♂ huic K. aterrimum simillimus.

♀ a foemina K. aterrimum differt uropygio rectricibusque basi interno albescentibus nec fulvo-rufescentibus, corpore
Hans Graf von Berlepsch:

inferiore quoque rufescence lavato, necnon corpore superiore nigrescentiore distinguenda.

_Hab._ Cajabamba, prov. Catamarca, Peruv. septr. 9000'

[O. T. Baron leg.].

_Typus_ in Mus. H. v. B. ♀ ad. Cajabamba (Baron).

Knipolegus _hudsoni_ Scl. wird besser als

Knipolegus _aterrimus hudsoni_ (Scl.), aufzuführen sein.

Knipolegus _unicolor_ Kaup ex D’Orbigny [__Fluvicola cyanirostris__ Corrientes] ist =

Knipolegus _cyanirostris_ (Vieill.)

Ich habe stets vermutet, dass der D’Orbigny’sche Vogel mit _K. cyanirostris_ (Vieill.) identisch sei, und Freund Hellmayr hat nach Untersuchung des Typus im Pariser Museum meine Auffassung bestätigt.

Der _Knipolegus_ vom Rio Madeira und von Pebas, Peru, welchen Pelzeln und Sclater für den _K. unicolor_ Kaup angesehen hatten, ist allerdings eine ganz verschiedene Art, die seither von Hellmayr _K. sclateri_ genannt worden ist.

Knipolegus _cinereus_ Scl.

muss heissen _K. striaticeps_ (Lafr. et D’Orb.).


Hellmayr hat kürzlich Gelegenheit gehabt den Typus von _M. striaticeps_ im Pariser Museum zu untersuchen und schreibt mir, dass meine Ansicht vollständig zutreffend sei.

Es folgen die genera:

Lichenops Sundev.

Fluvicola Sws.

Arundinicola D’Orb.

Pyrocephalus Gould.

Das letztere genus wird gewöhnlich in die Nähe von _Myiobius_ gestellt. Wenn auch zugegeben werden kann, dass
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einige Charaktere auf die Verwandtschaft mit Myiobius hinweisen, so lässt sich doch nicht leugnen, dass eine intimere Verwandtschaft zu Arundinicola besteht.

Ochthornis Sel.
Xenopsaris Cab.
Muscigralla Lafr. et D'Orb.

Diese drei genera sind sehr schwer zu plazieren und ich bin noch keineswegs sicher, ob sie zu den Fluvicolinae oder den Elaeniaeinae zu rechnen sind.

Sisopygis Cab. et Heine.
Machetornis Gray.

Subfamilia TYRANNINAE.

An die Taeiniopterinae schliesst sich meines Erachtens die Subfamilie Tyranninae am natürlichsten an. Muscivora erinnert an Gubernetes, Tyrannus an Machetornis.

Muscivora forficatus (Gml.) kommt nur von Texas bis Costa Rica vor. Die Angabe in Sharpe's Handlist III., p. 150: "S. America generally, from Colombia to Argentina" beruht auf einem Irrthum.

1. Tyrannus tyrannus (L.).
   Syn. Tyrannus vexator Bangs (Florida).
2. Tyrannus dominicensis (Gml.).
3. Tyrannus dominicensis rostratus Sel.
   Dominica, Sta. Lucia, S. Vincent, Grenada, Cayenne (Cherrie coll., in Mus. Tring).
4. Tyrannus cubensis Richm.
   Tyrannus magnirostris D'Orb. (nec Sws.).
5. Tyrannus crassirostris Sws.
6. Tyrannus verticalis (Say).
7. **Tyrannus vociferans** (Sws.).

8. **Tyrannus melancholicus** (Vieill.).
Paraguay und Brasil. merid. mit dunkler aschgrauer Kehle und olivengrüner überlaufener Brust.

? 9. **Tyrannus melancholicus satrapa** (Cab. et Heine) an = *Tyrannus m. couchi*?

10. **Tyrannus melancholicus couchi** (Bd.).

11. **Tyrannus chloronotus** Berl. sp. nov. (opt.!).
*T. T. m. couchi* affinis, sed dorso flavescente-olivaceo-viridi, nec obscure griseo-viridi, pilei medi plumin griseis olivaceo-iridis perfusis, abdomen pectoreque flavissimi, cauda minus furcata (furc. 5 mm.), necnon rostro crassiore, latiore, pro mole breviori distinguendus.

Al. 117, caud. 101, culm. 21 3/4, tars. 18 1/2 mm.
*Habitat*: Temax, Yucatan [G. F. Gaumer leg.].
*Typus* in Mus. Berlepsch.

12. **Tyrannus niveigularis** (Scl.).

13. **Tyrannus albigularis** (Burm.).

14. **Tyrannus apolites** (Cab. et Heine).
Rücken olivengraugrün mit rauchschwarzen Flecken auf der Mitte der Feder. Diese Zeichnung, welche in Sclater's Beschreibung (Cat. XIV., p. 276) nicht erwähnt ist, erinnert an *Empidonomas*.


1. *Empidonomas varius* (Vieill.)

2. *Empidonomas aurantioatrocristatus* (Lafr. et D’Orb.).


1. *Legatus albicollis* (Vieill.)

2. *Legatus albicollis variegatus* (Scl.)
Obgleich *Legatus* in der Schnabelform an *Elaenia* erinnert, so spricht doch der ganze Färbungsscharakter für die nähere Verwandtschaft mit *Empidonomas*.
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Die Arten M. chrysocephalus (Tsch.) und M. chrysocephalus hemichrysus (Cab.) sind wohl besser zu Megarhynchus zu stellen.


1. Megarhynchus pitangua mexicanus (Lafr.). ist eine schwache, aber unterscheidbare Subspecies.
2. Megarhynchus chrysocephalus (Tsch.).
3. Megarhynchus chrysocephalus hemichrysus (Cab.).

Pitangus parvus Pelz. und P. parvus albovittatus Lawr. sind augenscheinlich congenerisch mit Conopias cinchoneli (Tsch.), welche allerdings mit C. trivirgata (Wied) nicht ganz übereinstimmt.
Conopias inornata (Lawr.) steht besser bei Myiozetetes.

1. Pitangus sulphuratus (L.).
2. Pitangus sulphuratus maximiliani (Cab. et Heine).
3. Pitangus sulphuratus bolivianus (Lafr.).
4. Pitangus derbianus (Kaup).
5. Pitangus derbianus rufipennis (Lafr.).
6. Pitangus caudipasciatus (D’Orb.).
7. Pitangus caudipasciatus jamaicensis Chapm.
8. Pitangus bahamensis Bryant.
11. Pitangus lictor (Licht.).
Hans Graf von Berlepsch:

Pitangus parvus und Pitangus albivittatus stelle ich zu Conopias.

Hierher stelle ich Myiozetetes inornata (Lawr.).
Myiozetetes similis (Spix), hat zwei Subspecies (1) M. similis superciliosus (Bp.) = M. texensis Giraud, und (2) M. similis colombianus, Cab. et Heine.

Subfamilia (nova) MYIARCHINAE.

1. Gen. Myiarchus Cab.¹
1. Myiarchus crinitus (L.).
   Syn. Myiarchus crinitus residuus Howe.
2. Myiarchus cinerascens (Lawr.).
3. Myiarchus cinerascens pertinax (Baird).
5. Myiarchus nuttingi inquietus Salv. et Godm.
7. Myiarchus tyrannulus (P. L. S. Müll.).
8. Myiarchus tyrannulus brevipennis Hart.
   eine sehr schwache Subspecies.
11. Myiarchus tyrannulus cooperi Bd.
   Bis der Typus von Tyrannula mexicana Kaup im Darmstädter Museum untersucht ist, wird es vorzuziehen sein den sicheren Namen Myiarchus t. cooperi Bd. zu gebrauchen.
12. Myiarchus tyrannulus magister Ridgw.

17. **Myiarchus ferox** (Gml.)

18. **Myiarchus ferox** swainsoni Cab. et Heine

ist eine schwache Subspecies aus Brasilien.

19. **Myiarchus ferox** ferocior Cab. Argentina.

20. **Myiarchus ferox** venezuelensis Lawr. Venezuela.

21. **Myiarchus panamensis** Lawr.

Von dieser gut unterschiedenen Art besitze ich eine grössere Serie von Bogotá-Bälgen.

22. **Myiarchus pelzelni** Berl.

23. **Myiarchus phaeocephalus** Sel.

24. **Myiarchus phaeonotus** Salv. et Godm.

25. **Myiarchus cephalotes** Tacz.

26. **Myiarchus apicalis** Sel. et Salv.

27. **Myiarchus tuberculifer** Lafr. et D’Orb.

   Syn. **Myiarchus gracilirostris** Pelz.

28. **Myiarchus tuberculifer** tricolor Pelz.

   Syn. **Myiarchus coalei** Ridgw.

Schwach unterschiedene Subspecies.

29. **Myiarchus nigriceps** Sel.

   an = **Myiarchus tuberculifer nigriceps** Sel.

30. **Myiarchus atriceps** Cab.

31. **Myiarchus magnirostris** (Gray).

32. **Myiarchus ridgwayi** (Towhs.).

33. **Myiarchus stolidus** Gosse.

34. **Myiarchus dominicensis** (Bryant).

35. **Myiarchus sagrae** Gundl.

36. **Myiarchus sagrae lucaysiensis** Bryant.

37. **Myiarchus antillarum** Bryant.

38. **Myiarchus dominicensis** Bryant.

39. **Myiarchus yucatanensis** Lawr.

40. **Myiarchus barbirostris** (Swains.) incertae sedis, mihi ignotus!

41. **Myiarchus lawrencei** (Giraud).

42. **Myiarchus lawrencei nigricapillus** (Cab.).
43. Myiarchus lawrencei bangsi Nels.¹
44. Myiarchus lawrencei platyrhynchos Ridgw.
45. Myiarchus lawrencei querulus Nels.³
46. Myiarchus lawrencei olivascens Ridgw.²
47. Myiarchus lawrencei tresmariae Nels.⁴
48. Myiarchus validus Cab.
49. Myiarchus semirufus Sel.
Die letztere Species muss wohl generisch abgetrennt werden.


Deltarhynchus flammulatus (Law.).


Syn. Contopus Cab. (nee Marzeul).


Contopus plebeius Cab. et Heine (von Mexico!) ist wohl = H. richardsoni (Sws.) oder einer verwandten Form, was durch Untersuchung des Typus im Mus. Hein. festzustellen ist.

5. Gen. Blacicus Cab.

Dies Genus muss wahrscheinlich Planchesia Bp. heissen, denn Pl. fuliginosa Bp. (nee Gml.!) ex Cayenne scheint auf einen Blacicus gegründet zu sein, der dem H. pileatus (Ridg.) sehr nahe steht oder mit ihm identisch ist.

¹ Nos. 43, 45, 46 u. 47 sind mir aus Autopsie nicht bekannt.
² Wie mir Freund Hellmayr soeben aus Paris schreibt (de dato 18, XI. 05) hat er den Typus von Tyrannus fumigatus Lafr. et D'Orb. Synops. Ar. 1837, p. 43 (ex Yungas, Bolivia) untersucht und constatirt dass er mit H. brachyrhynchus (Cab.) identisch ist, also = Horizopus fumigatus (Lafr. et D'Orb.).
Das Original im Mus. Caen muss untersucht werden.


Ich stimme mit Mr. Oberholser überein, dass das Genus Myiochanes mit Blacicus vereinigt werden kann.


"Empidonax bimaculatus (Lafr. et D'Orb.)" apud Selater und apud Sharpe ist
Empidonax euleri Cab.

Muscipeta bimaculata Lafr. et D'Orb. ist ein Empidochanes. Siehe unter Empidochanes!. Empidochanes argentinus Cab. muss als:

Empidonax euleri argentinus (Cab.).

aufgeführt werden.

Empidonax olivus aut. (nec Bodd.) wird als
E. lawrencei Allen
aufzuführen sein.

Der "Gobe mouche olive de Cayenne" Pl. Enl. 574 fig. 2 (und M. oliva Bodd.) kann nicht mit Sicherheit auf einen Empidonax bezogen werden, auch ist eine solche Species aus Cayenne noch nicht nachgewiesen worden.

Empidonax griseus Brewst. ist =
E. canescens Salv. et Godm.
Cf. Auk, 1904, p. 413.

Von E. difficilis Bd.
besitze ich einen Bogotá—Balg.
Empidochanes fuscat us (Wied).

Empidochanes fuscat us bimacul at us (Lafr. et D’Orb.).
von Bolivia, Paraná, W. São Paulo, Mattogrosso ist
die westliche blassere Form von E. fuscat us. Cf. Berl. et
Hellm. l.c.

Empidochanes cabanisi Léot.
syn. E. altirostris Cab.
E. arenaceus Sel. et Salv.
E. viridinus Ridgw.
E. canescens Chapm.
Cf. Berl. et Hellm. (l.c.)

Empidochanes euleri Cab. ist =
Empidonax euleri (Cab.).

Empidochanes argentinus Cab. ist =
Empidonax euleri argentinus Cab.
Empidonax atriceps Salv. stelle ich zu Ochthoeca!

Hinzuzufügen:

1. Mitrephanes berlepschi Hart., Nov. Zool. IX. 1902,
p. 608 (Bulún, N.W. Ecuador).

2. Mitrephanes ochraceiventris Cab.
Syn. Myiobius subochraceus Sel., Cat. XIV., p. 208 sp. a.
(type of the species).
Ich habe das Original von M. subochraceus Sel. im Brit.
Mus. untersucht und festgestellt, dass es sich um einen jungen
Vogel von Mitrephanes ochraceiventris Cab. handelt. Ich
besitze einen alten Vogel aus Bolivia (coll. Garlepp).

Syn. Myiobius subochraceus Sel., (part.) Cat. XIV., p.
208, sp. b.
Durch Untersuchung des Exemplars im Brit. Mus. von mir
festgestellt.
Studien über Tyranniden.


Dies Genus muss wahrscheinlich in mehrere Genera aufgelöst werden.

_M. erythrus_ Cab. ist sehr abweichend. _M. xanthopygius_ (Spix) und _M. atricauda_ (Lawr.) sind Subspecies von _M. barbatus_ und unter ternärer Bezeichnung aufzuführen.

_M. ridgwayi_ Berl. kann als selbständige Species bestehen bleiben.

_M. villosus_ Scl. steht besser als _M. sulphureipygius villosus_ Scl.

_M. stellatus, M. phoenicurus, M. aureiventris_ möchte ich als Subspecies von _M. ornatus_ (Lafr.) betrachten und unter ternärer Bezeichnung aufführen.

_M. superciliosus_ Tacz. ist eine schwach unterschiedene Subspecies von _M. flavicans_ Scl.

_M. phoenicomitra_ Tacz. et Berl. ist eine ausgezeichnete Species.

_M. litae- Hart. sollte stehen als_ _M. phoenicomitra litae_ (Hart.).

_M. bellus_ Scl. geht besser als _M. pulcher bellus_ Scl.

Das synonym: _Elainea ferrugineiceps_ Pelz. gehört zu _M. pulcher_ (fide Hellmayr in litt.).

_M. subochraceus_ Scl., P.Z.S. 1887 p. 50, ist = _Mitrephanes ochraceiventris_ Cab. juv. und _M. subochraceus_ Scl., Cat. XIV. p. 208. Specimen b. ist = _Mitrephanes olivaceus_ Cab. et Stolzm. (Siehe unter _Mitrephanes_).

_M. naevius_ (Bodd.) muss _M. fasciatus_ (P. L. S. Müll.) heissen.

_M. capitalis_ Salv. ist “incertae sedis”!


incertae sedis, an generi _Platyrhyncho_ affinis?

*Muscivora* aut. (nec Lacép.).
Dieses genus zeigt auch einige Verwandtschaft mit den *Platyrhynchinae*.
Hinzuzufügen:

Subfamilia (nova) *RHYNCHOCYCLINAE*.
Dies genus erinnert sehr an *Hemitriccus* und muss vielleicht zu den *Platyrhynchinae* gestellt werden.
1. *Cnipodectes subbrunneus* (Scl.).
2. *C. subbrunneus minor* (Scl.).


Hinzuzufügen:
   *Syn. R. megacephalus* Scl. (nec Sws.).

*Rhynchocyclus scoticus* Oberh., *Proc. U.S. Nat. Mus.* 1902 p. 63 (Brazil) is evidently = *Rhynchocyclus sulphurescens assimilis* (Pelz.).

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Subfamilia PLATYRHYNCHINAE.


_Pl. albigularis, Pl. cancrominus_ Scl. et Salv. und _Pl. insularis_ Allen sind schwache Subspecies von _Platyrhynchus mystaceus_ (Vieill.) und daher ternär zu bezeichnen.

2. Gen. TODOIROSTRUM Less.

Hinzuzufügen:


Mihi ignotum.


3. TODOIROSTRUM HYPOSPodium Berl. (Bogotá)

_Cf. antea, p. 354.

4. TODOIROSTRUM SCHULZI Berl. (Pará)

_Cf. antea, p. 355.

5. TODOIROSTRUM ILLIGERI Cab. et Heine, Mus. Hein. II. p. 49. (Pará). Sp. opt.!

__Euscarthmus fumifrons_ (Hartl.), ist ein TODOirostrum!

__Euscarthmus latirostris_ Pelz. ist ein TODOirostrum: TODOirostrum LATIROSTRE (Pelz.).

_Syn. E. ochropterus_ Allen.

__Euscarthmus senex_ Pelz. ist wahrscheinlich ein TODOirostrum.

TODOirostrum selateri (Cab. et Heine) ist als TODOirostrum cINEREUM selateri (Cab. et Heine) aufzuführen. _T. poliocephalum_ (Wied) steht _T. cinereum_ am nächsten.

TODOirostrum CHRYSOCROTAPHUM Strickl.


TODOirostrum SIGNATUM Sel. et Salv. muss heissen:
TODIROSTRUM MACULATUM SIGNATUM (Sel. et Salv.).

T. ruficeps, T. rufigene, T. lenzi gehören in das genus Poecilotriccus Berl.


Von O. olivaceum (Lawr.) besitze ich zwei Bogotá-Bälge.

5. Gen. Euscarthmus Wied

Hinzuzufügen:


Euscarthmus impiger Scl. et Salv. ist zunächst verwandt mit E. margaritaceiventert.

E. rufigenes Tsch. =


E. limbatus Cab. et Heine ist =

Euscarthmus orbitatus Wied.

E. jamiferons, E. latirostris, E. ochropterus (= latirostris) gehören in das genus Todirostrum.

E. senex Pelz. ist wahrscheinlich ein Todirostrum.


1. Poecilotriccus ruficeps (Kaup).

2. Poecilotriccus rufigenis (Sel. et Salv.).


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1. Orchilus auricularis (Vieill.).

1. Perissotriccus ecaudatus (Lafr. et D’Orb.)


1. Caenotriccus ruficeps (Lafr.).
2. Caenotriccus ruficeps hapalopteryx Berl. et Stolzm.
3. Caenotriccus simplex Berl.

15. Gen. Hemitriccus Cab. et Heine

Hinzuzuflügen:
mahi ignotus!
2. Hemitriccus diops (Tem.).
Syn. E. vilis Burm. (typ. exam.).

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17. Gen. Pogonotriccus Cab. et Heine

Hinzuzufügen:


Pogonotriccus plumbeiceps Lawr.

ist aus diesem genus auszuscheiden als: Oreomyias plumbeiceps (Lawr.) cf. infra.


18. Gen. Phylloscartes Cab. et Heine.

Hinzuzufügen:

Ph. ousaleti (Sel.) = Leptopogon ousaleti Sel. Hab. Ignape, S. Paulo (Krone) Mus. Paulista (vidi H. v. B.) nec Colombia!

Die grössere Form von Ph. ventralis (Temm.), welche ich bisher Ph. v. tristis Sel. et Salv. nannte, wird Ph. ventralis angustirostris (Lafr. et D’Orb.) heissen müssen.


Wir kennen also:


2. Phylloscartes ventralis angustirostris (Lafr. et D’Orb.).


Leptopogon tristis Sel. et Salv. 1876 (typ. exam.).

3. Phylloscartes ousaleti (Sel.)


Das genus Capsiempis erinnert in seiner Schnabelform an die Elaeniinae, muss aber wegen der starken Bartborsten zu den Platyrhynchinae gestellt werden.

¹ Fide Hellmayr in litteris.
Hinzuzufügen:

C. Leucophrys Berl. cf. antea p. 360 (Bogotá).
Zu streichen: C. caudata Salv. ist Serpophaga caudata (Salv.) cf. infra.

C. orbitalis Cab. mir unbekannt, gehört wohl kaum hierher, vielleicht = Acrochordopus leucogenys (Scl. et Salv.)!

Es verbleiben:

1. Capsiempis flaveola (Licht.).
2. Capsiempis flaveola magnirostris Hart.
3. Capsiempis flaveola semiflava (Lawr.).


H. fulviceps (Scl.) muss H. meloryphus fulviceps (Scl.) heissen.


Hapalocerus acutipennis Scl. et Salv. erhielt ich ebenfalls von Tucuman (G. A. Baer leg.).

H. helviventris Cab. kann nicht näher festgestellt und muss daher von unseren Listen gestrichen werden. Wie mir Prof. Reichenow freundlichst mittheilt, war der Typus in Spiritus conservirt und ist verloren gegangen.

Subfamilia (nova) SERPOPHAGINAE.

Die Stellung der Serpophaginae im System ist sehr schwierig. Sie zeigen Verwandtschaft mit den Elaeniinae auf der einen Seite und den Fluvicolines (Taeniopterinae) auf der anderen Seite.


Dieses Genus müsste eigentlich Serpophaga Gld. heissen, denn Gould's Typus für letzteres Genus war augenscheinlich die an erster Stelle aufgeführte Species S. parulus (Kittl.).


Hinzuzufügen:

Serpophaga cinerea cana, Bangs, Proc. Biol. Soc. Wash. 1904, p. 113 (Santa Marta), eine sehr zweifelhafte Form.


S. albogrisea Scl. et Salv. (ex Sarayacu, Ecuador) ist = Elaenia cinerea Pelz.!

S. parvirostris (Gld.) stelle ich zu Ochthoëca (siehe dort!)


5. Gen. Mecocerculus Scl.

Genus incertae sedis!

Mecocerculus zeigt Verwandtschaft zu Serpophaga, zu
Ochthoëca und zu den Elaeniaeinae (Tyranniscus). Die Einstellung dieses genus im System ist daher eine äusserst schwierige.

Ochthoëca rufimarginata Lawr. ist vielleicht besser in das genus Mecocerculus zu stellen. Eine neue Art ist:

Mecocerculus hellmayri Berl. (ex Bolivia) cf. antea p. 358.

M. consobrinus Berl. ist = Leptotopogon minor Tacz.! Diese Art muss daher

Mecocerculus minor (Tacz.) heissen.

Mecocerculus leucophrys (Lafr. et D'Orb.).
Syn. Myiopatis montensis Bangs (Sta. Marta).
Mecocerculus nigriceps Chapm. (Venezuela).

Zwischen Exemplaren von Sta. Marta (Cotypen von Myiopatis montensis Bangs), Venezuela, Roraima, Bogotá, Bolivia und Tucuman kann ich keinerlei constante Unter-
schiede entdecken.

Es ist hinzuzufügen:

Mecocerculus stictopterus taeniopterus (Cab.) ex Peru.


M. urichi Chapm. ist = Phyllomyias urichi (Chapm.) siehe unter Phyllomyias!.

M. uropygialis Lawr. ist = Tyranniscus uropygialis (Lawr.).

Subfamilia ELAENIAEINAЕ.

Syn. Empidagra Cab. et Heine.
1. Suiriri suiriri (Vieill.).
2. Suiriri suiriri albescens (Gld.).¹

3. **Suiriri affinis** (Burm.).
*Elainea affinis* Burm.

4. **Suiriri affinis bahiae** Berl.


2. Gen. **Elaenia** Sundev.

Das gen. *Elaenia* ist in einem besonderen Artikel behandelt worden.


_Syn. Myiopatis_ aut. nec Cab. et Heine.


2. **Phaeomylas murina incomta** (Cab. et Heine), 0, 1905 p. 3. *Phaeomylas waga* Tacz.

3. **Phaeomylas tumbezana** (Tacz.).

5. Gen. **Xanthomyias** gen. nov.

*Xanthomyias* gen. nov., generi _Phyllomyias_ dicto affine, differt rostro angustiore nec dilatato, tectricibus alarum superioribus apicibus favo maculatis. Typus generis: _Muscicapra virescens_ Temm.

1. **Xanthomyias virescens** (Temml.).

_Syn. Ph. burmeisteri_ Cab. et Heine nec Sel.
_T. bolivianus paulistus_ Th.

2. **Xanthomyias virescens salvadorii** Dubois.

_Syn. Ph. berlepschi_, Salvad. nec Sel.
Hab.: Argentina und Paraguay.
Eine schwach unterschiedene Subspecies.

3. Xanthomyias urichi (Chapm.).
Syn. Ph. venezuelensis Hart.


5. Xanthomyias sclateri (Berl.).

6. Phyllomyias Cab. et Heine.

1. Phyllomyias brevirostris (Spix).
N.B.—Der Spix’sche Name ist sehr unsicher.

2. Phyllomyias incanescens (Wied).
Syn. Ph. lividus Pelz.
Ph. berlepschi Scl.

3. Phyllomyias griseicapilla Scl.

4. Phyllomyias griseiceps (Scl. et Salv.).
Syn. Ph. cristatus Berl.

5. Phyllomyias cinereocapilla Cab. (C. Peru) mihi ignota!


Oreomyias gen. nov. generi Tyranniscus dicto affine sed aperturis nasalibus magis oblongis minus rotundatis, necnon cauda longiore distinguendum.

Typus generis: Pogonotriceus plumbeiceps Lawr. = Oreomyias plumbeiceps (Lawr.).

8. Gen. Tyranniscus Cab. et Heine

Hinzuzufügen:

Tyranniscus Petersi Berl. cf. antea p. 359 (Caracas).


Tyranniscus leucogonyx Scl. et Salv. ist Acrochordopus leucogonyx (Scl. et Salv.) vide infra!

Tyranniscus griseiceps Scl. et Salv. ist = Phyllomyias griseiceps (Scl. et Salv.) vide supra!

*Tyrannulus reguloides* Ridgew. ist augenscheinlich = *T. elatus* (Lath.) q.

*Tyrannulus brunneicapillus* Lawr. = *Ornithion brunneicapillum* (Lawr.).

*Tyrannulus semiflavus* Sel. et Salv. = *Ornithion semiflavum* (Sel. et Salv.).

10. Gen. **Ornithion**.


Hinzuzufügen:

1. **Ornithion brunneicapillum** (Lawr.).

2. **Ornithion semiflavum** (Sel. et Salv.).

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*Tyranniscus acer* Salv. et Godm., welchen Sharpe in das genus *Ornithion* stellt, ist ein typischer *Tyranniscus*.


1. **Acrochordopus subviridis** (Pelz.).

2. **Acrochordopus leucogonys** (Sel. et Salv.).

12. Gen. **Leptopogon** Cab.


Hinzuzufügen sind:


2. **Leptopogon superciliaris foliocephalus** Cab. et Heine.

*Hab.*: Colombia (Bogotá) und Pto. Cabello, Venezuela?
Leptopogon minor Tacz. ist Mecocerculus minor (Tacz.). Cf. supra.
Leptopogon godmani Scl. scheint = Pogonotriccus opthalmicus (Tacz.).
Leptopogon pileatus Cab. und Leptopogon peruvianus Scl. et Salv. sind als Subspecies von Leptopogon amaurocephalus Cab. zu betrachten und müssen ternär benannt werden.
Das ebendort als “specimen a” aufgeführte Exemplar ist = Pogonotriccus venezuelanus Berl. (cf. supra).
Leptopogon oustaleti Scl. ist Phylloscartes oustaleti (Scl.) cf. supra.

Hinzuzufügen:
1. Mionectes assimilis Dyscolus Bangs, Auk 1901 p. 362. (Chiriqui)
Beide Subspecies scheinen sehr wenig von ihren Stammformen abzuweichen.

Nachschrift.
In den vorstehenden Blättern ist der Versuch gemacht worden, die genera der Tyrannidae mehr als es bisher der Fall war nach ihren natürlichen Verwandtschaften zu ordnen. Selbstverständlich ist auch mein System noch sehr verbesserungsfähig, und ich hoffe, dass meine Arbeit zu weiteren Forschungen auf diesem Gebiete anregen wird.
Der Artikel meines Freundes Dr. H. von Ihering “The Biology of the Tyrannidae with Respect to their Systematic Arrangement” (Auk 1904 pp. 313-322) hat mir wertvolle Fingerzeige gegeben.
Für die Mittheilung vieler wichtiger Notizen fühle ich mich meinem Freunde Carl Hellmayr zu besonderem Danke verpflichtet.
LA PERDRIX GRISÉE DES PYRÉNÉES.

PERDIX PERDIX CHARREL, Lopez Seoane.

par le Dr. Louis Bureau,

*Directeur du Muséum d'histoire naturelle de Nantes; Professeur à l'École de Médecine.*

La *Perdix grisée* des montagnes de la Galice, dans le nord de l'Espagne, a reçu de Don Victor Lopez Seoane, en 1870, le nom de *Perdix cinerea charrela*. Mais, ce ne fut que dans une notice, datée de 1891, qu'il en donna la description.1

Cette race locale habite aussi, comme on pouvait le prévoir, les hauts plateaux des Pyrénées françaises.

Grâce au concours de mon ami M. Maurice Gourdon qui, depuis trente ans, explore les Pyrénées, où il a fait de nombreuses et intéressantes découvertes dans diverses branches des sciences naturelles, j'ai pu me procurer, en chair, trois mâles et cinq femelles, de différents âges, dont un mâle et trois femelles, après première mue complète, dans un parfait état de conservation.

De son côté M. van Kempen, de Saint-Omer, a confié à mon examen quatre spécimens de sa collection, provenant des Eaux-Bonnes et du Cirque de Gavarnie, dans les Hautes Pyrénées (1 mâle après 1re mue, 1 mâle après 2e mue, une femelle après 1e mue, 1 jeune de 16 jours environ).

Ayant pu comparer les femelles à deux spécimens de même sexe, provenant de la Galice, offerts, par Lopez Seoane, l'un au Muséum de Paris, l'autre au British Museum, je me suis assuré que leur similitude est complète.

Il n'y a donc aucun doute sur l'identité de forme de la *Perdix grisée* des Pyrénées françaises et espagnoles.

La *Perdix rouge*, *Caccabis rufa* (Linn.), espèce plus méridionale, habite tout le midi de la France et remonte, sur le versant français des Pyrénées, aux environs de Bagnères-de-Luchon, par exemple, jusqu'à l'altitude de 900m. qu'elle ne dépasse pas. La *Perdix grisée* des Pyrénées, loin d'habiter la plaine, les contreforts ou les régions basses des montagnes, 2 Voyez l'Historique.
La Perdix grise des Pyrénées.

est cantonnée au-dessus des forêts, dans les hauts pâturages compris entre 1500m. et 2500m. environ, zone dépourvue de toute culture, où croissent le Rhododendron, le Juniperus, et le Vaccinium uliginosum ou Raisin d’Ours, dont les baies, pendant l’été, font la base de sa nourriture.

Dans ces régions, le froid se fait vivement sentir en hiver, et, la neige persiste, en été, jusqu’à la fin de juin. L’espèce y est sédentaire et recherche seulement, dans la mauvaise saison, les endroits abrités où la neige ne s’est pas amoncelée; mais, elle ne descend même pas dans la région forestière.

La carte hypsométrique, ci-jointe, sur laquelle la zone de 1500m. à 2000m. est indiquée en teinte foncée, donne une idée de la répartition de cette Perdrix dans la chaîne des Pyrénées.

En outre, M. Maurice Gourdon a eu l’obligeance de me communiquer une photographie de la Frèche, Haute-Garonne, prise à la fin de juin, qui donne bien l’aspect de la zone habitée par la charrela.

PAYSAGE DE LA FRÈCHE.

a.—Zone de 1500 à 2000m. habitée par la Perdix perdix charrela. Au-dessus habite le Tetras Ptarmigan.
L’isolement de cette Perdrix, dans une région aussi élevée, paraîtra plus complet encore en faisant remarquer que la Perdrix grise fait complètement défaut au pied des Pyrénées, aussi bien du côté de l’Espagne que de celui de la France.

L’espèce manque, en effet, comme oiseau sédentaire, et se trouve remplacée par la Perdrix rouge, dans toutes les parties des Basses et Hautes-Pyrénées, de la Haute-Garonne, de l’Ariège, des Pyrénées-Orientales, qui ne dépassent pas environ 900m. d’altitude, dans le département des Landes, dans celui du Gers et dans tout le sud du département de la Gironde. Très accidentellement seulement on voit apparaître, en plaine, dans ces dernières régions, une bande voyageuse.

Dans ces conditions d’habitat, il n’est pas surprenant de constater, chez la Perdrix grise des Pyrénées, un facies particulier et certains caractères qui permettent de la différencier de ses congénères non seulement des autres régions de la France, mais aussi de l’Europe.

Les contrées les plus rapprochées des Pyrénées où l’on rencontre la Perdrix grise, à l’état sédentaire, sont les Cévennes.

Les hauts sommets des Cévennes sont: l’Aigual (1567m.), la Lozère (1702m.), le Gerbier des Joncs (1562m.), le Mézenc (1734m.).

Dans la Montagne Noire, sur les confins de l’Hérault, du Tarn et de l’Aveyron, comme me l’a écrit M. Jean Miquel, connu par ses intéressants travaux sur les Terrains primaires de cette région, la Perdrix grise ne quitte pas les hauts plateaux granitiques du Caroux, du Saumail et de l’Espinouse, dont le point culminant, le Pont-des-Brus, est de 1122m.

Je n’ai pas encore pu me procurer des spécimens de ces régions montagneuses, dont l’altitude générale est inférieure à celle des hauts pâturages pyrénéens fréquentés par la charrela.

La Perdrix grise, comme certains oiseaux sédentaires, est sujette à présenter des races locales, plus ou moins caractérisées.

C’est ainsi qu’on a décrit: Perdix robusta Homeyer, des environs de Moscou et de Sibérie, P. sphagnetorum Altum, de la Frise orientale, P. scanica Altum, du sud de la
La Perdrix grise des Pyrénées.

Scandinavie, *P. lucida* Alt. de, la Prusse orientale, *P. damascena* Brisson, dont le lieu d’origine n’est pas bien connu.

Toutes ces races locales n’ont pas la même valeur. Se mélangenant dans les régions limitrophes, elles n’ont pas toujours une individualité distincte.

*Perdix robusta* de Russie et de Sibérie est remarquable par sa forte taille (4 ♂ : aile pliée 0'164m. à 0'170m.)—
8 ♀ : aile pliée 0'160m. à 0'165m.) : le plumage clair, d’une teinte grise sur le dos; les scapulaires largement tachées de noir avec un peu de roux ; tout le bas de la poitrine et de l’abdomen d’un blanc pur sur lequel se détache un très large fer à cheval brun roux, plus ou moins maculé de noir (British Museum).

*Perdix scanica* de la Scandinavie, si j’en juge par un ♀ de Suède, de la Coll. Gould (Brit. Mus.) est identique-ment semblable à la race de Bretagne : parties supérieures à teinte roussie dominante ; plumes scapulaires rousses avec du noir à la base ; fer à cheval brun marron ; aile pliée 0'160m. tarse 0'037m., doigt médian avec l’ongle 0'040m. Ce spécimen peut être pris comme type du *Tetrao perdix*, Lin.

*Perdix sphagnetorum* de la Frise orientale et *P. lucida* de la Prusse orientale, à en jAGER par les spécimens de Hollande et du nord de l’Allemagne du British Museum, rappelle assez bien les Perdrix des grandes plaines calcaires du centre et du nord de la France.

*Perdix damascena* Brisson, remarquable par sa taille petite, mais assez variable, ne se montre qu’accidentellement sur différents points de la France. Son pays d’origine n’est pas bien connu.

En France, sans qu’il y ait lieu de désigner les races de Perdrix grises autrement qu’en indiquant leur provenance, on constate, entre les individus de certaines régions naturelles, des différences constantes, assez sensibles.

C’est ainsi que les Perdrix grises, non seulement des cinq départements qui constituent la Bretagne (Loire-Inférieure, Morbihan, Ille-et-Vilaine, Finistère, Côtes-du-Nord), mais du Massif armoricain tout entier, région formée de terrains cristallins et primaires, de nature siliceuse, constituent un type constant. Elles ont les parties supérieures d’une teinte générale roussie, le cou et la poitrine d’un bleu, plus ou moins
lavé de roussâtre, un fer à cheval, de moyenne dimension, marron foncé, ce qui les fait aisément distinguer des spécimens des plaines calcaires de la Champagne et du Nord-est de la France, qui ont les parties supérieures plus ou moins lavées de gris cendré, le con et la poitrine d’un bleu clair, une large plaque d’un blanc pur, occupant le bas de la poitrine et l’abdomen, sur laquelle se détache un fer à cheval, assez large, d’un roux plus ou moins pâle.

Ces caractères distinctifs sont suffisants pour permettre, à un œil exercé, de ne pas confondre les Perdrix grises des régions que je viens d’indiquer.

Mais, ici, pas de frontière naturelle, pas de lacune dans la distribution géographique de l’espèce, en un mot pas d’isolement, et, comme conséquence, fusion des races donnant des spécimens intermédiaires dans les zones limitrophes.

Un moment viendra où ces études de races locales ne seront plus possibles. Dès aujourd’hui, dans les environs de Paris, par suite des importations faites, de pays divers, pour le repeuplement des chasses, on obtient des Perdrix de sang mélangé.

Les nombreuses Perdrix grises, de différentes régions des Îles Britanniques, conservées au British Museum, obligéamment mises à ma disposition, n’offrent pas de caractères constants. Mon impression est qu’elles sont le produit d’élevages provenant d’importations diverses.

Dans ces conditions il y aurait grand intérêt à rechercher la race primitive des Îles Britanniques dans les anciennes collections locales formées antérieurement aux élevages et à conserver ces dépouilles d’une race aujourd’hui à peu près disparue.

Je ne serais pas surpris qu’on y trouva, comme en France, deux types assez distincts, celui des terrains calcaires et celui des terrains anciens de nature siliceuse (Cornouaille, Pays de Galles, Ecosse, Irlande).

La Perdrix grise des Pyrénées, en raison de son isolement, se présente dans des conditions particulièrement favorables pour une étude de race locale, aussi quelque faibles que soient ses caractères distinctifs, il m’a paru intéressant de les analyser.

Dans les pages qui vont suivre, après avoir retracé brièvement l’histoire de la P. charrela, je ferai connaître ses
La Perdrix grise des Pyrénées. 499

caractères et sa répartition dans la chaîne des Pyrénées et la péninsule ibérique.

HISTORIQUE.

1870.—Dans une petite brochure, non extraite d’un recueil périodique, et, par cela même, peu répandue, le Dr. Victor Lopez Seoane exposer que ses recherches, sur les oiseaux de l'Espagne, l'ont conduit, afin d'avoir des termes de comparaison, à visiter différents Musées de l'Europe, entre autres ceux de Paris et de Berlin.

Le passage qui concerne les Perdrix d'Espagne est réduit à ceci:

"De cet examen il résulte qu'il existe deux sous-espèces de Perdrix, en Galice, que nous nommerons provisoirement Caccabis rufa hispanica et Perdix cinerea charrela."

L'auteur se borne donc à faire connaître le résultat de son examen sans donner aucune description de ces sous-espèces.

1870.—La même année, dans une autre brochure, le même auteur annonce que la Perdix cinerea (L.) habite la Sierra Morena d'où il l'a reçue du professeur Amor. Mais il ne dit pas si ce specimen se rapproche du type ou de la charrela.

1873.—Trois ans plus tard, le comte R. de Bouillé attira l'attention sur la Perdrix grise des Pyrénées, qu'il désigna sous le nom de "Perdix grise de montagne."

Le nom de Perdrix de montagne, Perdix montana, avait été déjà donné par Brisson, en 1760, à une curieuse variété, aujourd'hui bien connue, de couleur générale brun marron, avec la tête et le haut du cou jaune dont il n'indiqua pas la provenance. La P. montana Brisson n'est pas une race locale, mais une variété hépatique, accidentelle, rencontrée, depuis, sur différents points de la France et de l'Angleterre.

Le comte de Bouillé indique l'habitat de cette Perdrix au-dessus de la région des forêts, les localités où il l'a


2 Seoane, V. L., "Revision del Catalogo de las Aves de Andalucía." La Coruna, impronta y estereotipia di Vicente Abad, 1870, in-8, p. 11.

observée et donne, sur deux colonnes, les caractères différen-
tiels de sa Perdrix grise de montagne et de la Perdrix grise
ordinaire.

Mais, il est évident, surtout par la description du fer à
cheval,\(^1\) que l'auteur compare une femelle de sa Perdrix grise
de montagne avec un mâle de la Perdrix grise ordinaire.

Ceci ne doit nullement surprendre, certaines femelles
de *P. charrela* portant, sur le bas de la poitrine, un petit fer à
cheval brun noirâtre assez complet pour qu'une hésitation
soit permise (♀, la Coruña, par L. Seoane, Brit. Mus.).

L'observateur n'a même plus ici, pour se guider, dans la
détermination du sexe, le caractère tiré de la coloration des
moyennes couvertures des ailes (après 1\(^{\text{er}}\) mue achevée), bien
mis en relief par M. Ogilvie-Grant; *ces plumes, chez le mâle
*P. charrela*, portant souvent des raies transverses d'un jaune clair,
analogues à celles, qu'on observe chez les femelles non
seulement de l'Angleterre et de la France, mais aussi des
autres régions de l'Europe. C'est ce qu'on peut voir sur un
mâle *P. charrela*, dont j'ai constaté le sexe et sur les deux mâles
de la coll. de M. van Kempen.

1891.—Dans un mémoire sur les Perdrix d'Europe, daté de
1891, Dr. Seoane\(^2\) décrit la *Perdix cinerea charrela*, d'après des
échantillons provenant des montagnes des environs de la
Coruña, en Galice, et fait connaître ses moeurs et son habitat
dans le nord-ouest de l'Espagne.

Le nom de *charra* ou *charrela* que lui donnent les montag-
nards est dû au chant qu'elle fait entendre, au départ, en le
répétant quatre ou cinq fois, *charra, charraá, charraáá*.

1892.—L'année suivante, M. Reichenow\(^3\) à qui Seoane
n'avait pas envoyé le mémoire qui précède\(^4\) décrivit cet
oiseau sous le nom de *Perdix hispaniensis*, d'après un ex-

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1 "Une plaque blanchâtre rayée d'écaillies allongées descendant en
s'effaçant sur l'abdomen qui est gris sale avec des raies transversales."—
Cte. R. de Bouillé.

2 Seoane, L., "Examen critico de las Perdices de Europa particular-
mente de las de España y descripción de dos nuevas formas de Galicia."
La Coruña, impronta y estereotipia de Vicente Abad, 1891, in-8, 33 p.

3 Reichenow, "Bericht der allgemeinen deutschen ornithologischen
Gesellschaft." Berlin 17 Mars 1892.

Hist.," 1894, XIV., p. 754.
La Perdrix grise des Pyrénées.

emplaire que ce dernier lui avait adressé, en communication, au Musée de Berlin.

1893.—M. Ogilvie-Grant ¹ donne, dans le Catalogue du British Museum, *Perdix hispaniensis*, Reichenow, comme synonyme de *Perdix cinerea* et fait connaître, au Supplément, que le British Museum possède une "♀ imm." de la Coruña, par le Dr. V. L. Seoane ².

1894.—Dr. Lopez Seoane ³ publie un article intitulé : "Sur deux nouvelles formes de Perdrix d'Espagne."

1894.—Enfin, dans une lettre adressée au Secrétaire de l'Ibis et datée du 1er août 1894, M. Howard Saunders ⁴ dit avoir eu en main, grâce à Lord Lilford, trois exemplaires de Perdrix d'Espagne : un mâle de Lugo, Galice (Dr. Seoane) et deux femelles de Ponferrada, dans le Léon, au sud de la chaîne Cantabriane. Il en donne ainsi les caractères :

"La couleur châtain du front, des joues, du sourcil et de la gorge est très brillante, dans ces exemplaires d'Espagne, mais parfois semblable dans les spécimens du sud de l'Europe, notamment dans un oiseau que je possède et qui vient du marché de Naples. Le fer à cheval de la poitrine est assurément petit et très foncé, mais est semblable dans les spécimens de Hongrie. Beaucoup de Perdrix, de différentes localités, présentent une faible raie brun foncé, près l'extrémité de la tige des rectrices, mais dans une des femelles de Ponferrada, elle est développée en une tache foncée d'une extension sans égale. Le mâle de la même localité ne présente pas trace de cette raie, de sorte que je ne puis considérer ce caractère comme constant. La question de savoir si la forme espagnole doit être considérée comme spécifiquement distincte ainsi qu'on l'a proposé, ou non est affaire d'opinion."


² Cette femelle, que j'ai examinée, est un spécimen de l'année, ayant terminé sa première mue ; comme le montrent la 1ᵉ rémige pointue et le développement complet de la 3ᵉ. Ses caractères sont bien accusés : nombreuses gouttelettes jaunâtres sur les côtés, le bas du cou et le haut de la poitrine ; petit fer à cheval marron foncé maculé de noir.


⁴ Saunders, H., "Letters on Spanish examples of *Perdix cinerea*," 1894, p. 575.
Les descriptions qui suivent sont faites comparativement avec des spécimens des différentes régions de la France et plus spécialement avec les deux races françaises dont j'ai parlé : 1° la race de Bretagne, à parties supérieures rousses et à fer à cheval, de moyenne dimension, marron foncé, semblable, comme je l'ai fait remarquer, à un individu de Suède du British Museum, pouvant être considéré comme le type Linnéen ; 2° la race des grandes plaines du centre et du nord, à parties supérieures lavées de gris cendré et large fer à cheval roux pâle.

Mâle.—Front, sourcils, gorge et joues d'un jaune roux pur, comme chez tous les spécimens de France.

A première vue, le mâle *charrela* est reconnaissable aux parties supérieures d'un brun noirâtre, avec absence de gris cendré (Champagne et N. de la France) et de roux (Bretagne).

Sur le haut du dos et les côtés du cou, chaque plume porte sur la tige, près de l'extrémité, une ou deux taches d'un jaune clair en forme de losange ou de gouttelette (par tous ces caractères, le mâle *P. charrela* s'éloigne notablement des mâles des autres régions de la France et se rapproche plutôt des femelles).

Croupion et sus-caudales rayés transversalement, sur chaque plume, d'une bande brun noirâtre (au lieu de brun roux) et de stries vermiculaires noirâtres.

Les plumes scapulaires, de couleur sombre, sont presque dépouvrues de roux et rappellent celles des femelles des autres parties de la France.

Devant du cou et poitrine d'un gris cendré bleuâtre, assez pur, avec de nombreuses stries vermiculées noirâtres bien distinctes ; l'ensemble ne présentant rien de particulier.

Plumes des flancs avec une ligne jaunâtre plus large que dans les autres spécimens français, se prolongeant jusqu'à l'extrémité de la tige où elle s'élargit en forme de larme. Elles sont traversées par une large bande rousse et des stries vermiculées noirâtres.

Sur l'abdomen, un fer à cheval de moyenne dimension, noir au centre, devenant roussâtre sur les bords.

Les ailes, envisagées dans leur ensemble, sont presque complètement dépouvrues de roux. Elles diffèrent notable-
PERDIX PERDIX CHARRELA. L. SEOANE. PYRÉNÉES FRANÇAISES.

Mâle après 1ère mue.
ment de celles des mâles des autres parties de la France, et rappellent assez bien, au contraire, comme on va le voir, celles de la femelle.

Chez le mâle de la Perdrix grise ordinaire, les moyennes couvertures des ailes sont largement tachées de roux vif et portent, le long de la tige, une tache longitudinale jaune clair. Comme l’a fait remarquer M. Ogilvie-Grant, elles manquent des raies transverses jaunes qui caractérisent la femelle. Chez la P. charrela, au contraire, les moyennes couvertures des ailes d’un brun noirâtre sont privées de taches rousses où n’en offrent que des traces presque effacées. Elles présentent, le long de la tige, une tache longitudinale jaune clair, et, le plus souvent, des raies jaunâtres transverses assez semblables à celles qui caractérisent la femelle de la Perdrix grise ordinaire.

Grandes couvertures des ailes d’un brun noirâtre dépourvues de taches rousses sur les barbes externes, rayées transversalement de jaune clair.

Parfois, une petite tache noire arrondie à l’extrémité d’un nombre variable des plumes rousses de la queue. Ce caractère existe sur un mâle, manque sur un autre, et s’observe plus ou moins sur cinq femelles.

Bec et pattes bleuâtres.

Femelle.—La femelle de la P. charrela, comme celle de la Perdrix grise ordinaire, est susceptible à varier davantage que le mâle. Cependant elle diffuse toujours suffisamment de celle du type pour être reconnaissable.

Les parties supérieures ressemblent à celles du mâle pour la coloration générale ; mais elles sont couvertes de taches losangiques ou ovalaires, d’un blanc jaunâtre, caractère qu’on n’observe pas, aussi développé, chez les autres Perdrix grises de France.

Sur le bas de la poitrine, un fer à cheval, ordinairement petit, mais variable, dans sa coloration, comme il l’est chez la femelle de la Perdrix grise : tantôt blanc (une vieille après 2e mue) ; tantôt composé de taches distinctes, noires ou noir-roussâtre, en forme d’écaillles (deux après 1re mue) ; tantôt de taches confluentes (une après 1re mue).

Fer à cheval des femelles.—M. Ogilvie-Grant a fait observer, dans le “Field,” qu’en Angleterre, la présence d’un fer à
cheval marron, sur la partie inférieure de la poitrine, chez le mâle, n’est pas un caractère de sexe parfaitement distinctif.

Les femelles après la première mue, portent, pour la plupart un fer à cheval marron bien développé, parfois même, comme chez les oiseaux du Leicestershire, aussi développé que chez les mâles adultes, tandis que chez les femelles devenues vieilles, c’est-à-dire après la seconde mue, le fer à cheval est faiblement indiqué, ou même absent.

Il ajoute, toutefois, que les jeunes femelles du Norfolk et du Suffolk font généralement exception à cette règle. Comme la majorité des vieilles femelles, elles portent simplement quelques taches marron au bas de la poitrine, et, dans cette partie de l’Angleterre, il est rare d’observer un fer à cheval complet chez les oiseaux de ce sexe, tandis qu’on trouve des spécimens sans trace de taches marron habituellement désignés sous le nom d’oiseaux à fer à cheval blanc.

En Bretagne, et particulièrement dans la Loire-Inférieure, où j’ai fait des observations suivies sur la Perdrix grise, les variations que l’on observe dans le fer à cheval des femelles sont individuelles ; —elles ne sont pas en rapport avec l’âge.

Le fer à cheval composé de taches marron peu nombreuses est la règle ; son absence complète est commune ; un fer à cheval assez développé pour rappeler celui du mâle est chose plus rare.

Ces différences s’observent aussi bien chez les femelles après première mue que chez celles qui, après s’être reproduites, ont effectué leur seconde mue.

La *P. charrela* est dans les mêmes conditions. Sur sept femelles, je trouve 5 individus, après première mue, à petit fer à cheval plus ou moins accusé et 2 individus à fer à cheval blanc, l’un après 1re mue (coll. Van Kempen), l’autre achevant sa seconde mue (2e primaire en développement, longue de 0,010m, Mus. de Nantes).

*Pouce.* — Suivant L. Seoane le pouce, bien développé, toucherait à terre chez la *P. charrela*, tandis qu’il atteindrait à peine le sol, avec l’extrémité de l’ongle chez le type.

Ce caractère est sans valeur. Sur 8 *charrela*, le bout de l’ongle touche le sol chez 2 ♂ et 4 ♀, et ne le touche pas chez 2 ♀.
La Perdrix grise des Pyrénées.

Longueur relative des rémiges primaires.—Dans son mémoire de 1891, L. Seoane donne les formules suivantes pour les rémiges primaires :

**Charadera** 4.3.5.2.6.1.7.

Perdrix grise (type) 3.4.5.2.6.1.7.

Ce caractère n’est qu’apparent. Parmi mes *P. charadera*, deux femelles seulement tuées le 31 décembre 1903, peuvent être utilisées pour la constatation de ce caractère. Leurs ailes, semblables, donnent la formule : 4.3 = 5.2 .6 .1.7 et ne diffèrent en rien des nombreuses ailes de Perdrix grises, après 1re et 2e mue, que j’ai sous les yeux.

**Tableau des Dimensions de la Perdrix Grise des Pyrénées.**

<table>
<thead>
<tr>
<th>Sexes</th>
<th>Longueur sur le dos (en cm)</th>
<th>Déniv.</th>
<th>Longueur de l’aile prise (en cm)</th>
<th>La queue dépassant les ailes de</th>
<th>Longueur du doigt médian avec l’omoplate</th>
<th>Poids</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Male</td>
<td>...</td>
<td>0,157</td>
<td>...</td>
<td>0,039</td>
<td>0,039</td>
<td>...</td>
</tr>
<tr>
<td>2.</td>
<td>0,325</td>
<td>0,510</td>
<td>0,156</td>
<td>0,066</td>
<td>0,039</td>
<td>0,316k.</td>
</tr>
<tr>
<td>3.</td>
<td>0,310</td>
<td>0,500</td>
<td>0,155</td>
<td>0,046</td>
<td>0,037</td>
<td>0,289k.</td>
</tr>
<tr>
<td>4.</td>
<td>0,320</td>
<td>0,500</td>
<td>0,155</td>
<td>0,046</td>
<td>0,037</td>
<td>0,283k.</td>
</tr>
<tr>
<td>5.</td>
<td>...</td>
<td>0,156</td>
<td>...</td>
<td>0,040</td>
<td>0,039</td>
<td>...</td>
</tr>
<tr>
<td>1. Fem.</td>
<td>...</td>
<td>0,153</td>
<td>...</td>
<td>0,038</td>
<td>0,039</td>
<td>...</td>
</tr>
<tr>
<td>2.</td>
<td>0,325</td>
<td>0,510</td>
<td>0,156</td>
<td>0,066</td>
<td>0,039</td>
<td>0,316k.</td>
</tr>
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<td>3.</td>
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<td>0,037</td>
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</tr>
<tr>
<td>5.</td>
<td>...</td>
<td>0,156</td>
<td>...</td>
<td>0,040</td>
<td>0,039</td>
<td>...</td>
</tr>
<tr>
<td>6.</td>
<td>...</td>
<td>0,155</td>
<td>...</td>
<td>0,035</td>
<td>0,037</td>
<td>...</td>
</tr>
</tbody>
</table>
Récapitulation.

Je n’utilise, pour ces mesures, que les mâles No. 1, 2, 4, 5, et les femelles No. 1, 2, 3, 4, 6, ayant atteint toute leur taille.

<table>
<thead>
<tr>
<th>Mesures</th>
<th>P. perdix</th>
<th>P. perdix</th>
<th>P. perdix</th>
<th>P. perdix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>charrela.</td>
<td>(Loire-Inf.</td>
<td>(Loire-Inf.</td>
<td>(Loire-Inf.</td>
</tr>
<tr>
<td></td>
<td>(14 après 2e mue.)</td>
<td>(17 après 2e mue.)</td>
<td>(17 après 2e mue.)</td>
<td>(17 après 2e mue.)</td>
</tr>
<tr>
<td>Longueur sur l’oiseau en chair</td>
<td>0,323m.</td>
<td>0,310 à 0,340m.</td>
<td>0,310 à 0,325m.</td>
<td>0,302 à 0,343m.</td>
</tr>
<tr>
<td>Envergure</td>
<td>0,516m.</td>
<td>0,480 à 0,520m.</td>
<td>0,500 à 0,510m.</td>
<td>0,480 à 0,515m.</td>
</tr>
<tr>
<td>Aile pliée</td>
<td>0,156 à 0,160m.</td>
<td>0,154 à 0,165m.</td>
<td>0,153 à 0,165m.</td>
<td>0,155 à 0,165m.</td>
</tr>
<tr>
<td>Queue dépasse les ailes de</td>
<td>0,047m.</td>
<td>0,045 à 0,072m.</td>
<td>0,040 à 0,050m.</td>
<td>0,040 à 0,050m.</td>
</tr>
<tr>
<td>Doigt médian avec l’ongle</td>
<td>0,037 à 0,040m.</td>
<td>0,032 à 0,045m.</td>
<td>0,028 à 0,032m.</td>
<td>0,028 à 0,032m.</td>
</tr>
<tr>
<td>Poids</td>
<td>0,300k.</td>
<td>0,290 à 0,315k.</td>
<td>0,280 à 0,310k.</td>
<td>0,280 à 0,310k.</td>
</tr>
</tbody>
</table>

D’après ce tableau, on voit que la P. charrela n’est ni plus petite ni plus grande que la Perdrix grise de la Loire-Inférieure, et, j’ai constaté, sur des oiseaux en chair, que cette dernière est de même taille que les spécimens de la Champagne et du Nord de la France.

La coloration du plumage reste donc le seul caractère distinctif de la P. charrela.

HABITAT.


“En Galice nous l’avons trouvée dans les plus hautes chaînes de nos montagnes, au Cebrero, à Becerreá, Sárria, Piedrafita, Courel et notamment à Louradela, Incio et

1 Il n’y aurait eu, cependant, aucun inconvénient,—et cela n’aurait pas modifié les résultats,—à faire entrer en ligne de compte le jeune mâle No. 3 et la jeune femelle No. 5. Mes recherches sur le développement des Perdrix grises, à l’état sauvage, en Loire-Inférieure, m’ont montré en effet, que quelques Perdrix atteignent leur taille et leur poids définitifs avant la chute de la 4e rémige (en comptant de dehors en dedans), beaucoup au moment de la chute de cette rémige et tous avant la chute de la 5e.


3 Guirao, “Catalogo metodico de las Aves observadas en una gran parte de la prov. de Murcia ” “Me.m. de la R. Acad. de Cien c.” Madrid, 1859, IV., p. 544.
La Perdrix grise des Pyrénées.

Cervantes, dans la province de Lugre, et, à Casoyo, à la limite des provinces d’Orenze, de Zamora et Léon.

“On connaît cette Perdrix sous les noms vulgaires de Perdiz pardilla, charrela et chárro ou charva, en Castille et Galice ; perdía scérra à Lerida et à Gérone.”

Selon M. Howard Saunders, dans les montagnes de Santander, sur la frontière des Asturies, on la nomme Perdiz parda ; dans la Navare Perdiz gris et dans l’Aragon Fresana.

Pyrénées françaises.—La race locale qui nous occupe est répandue sur toute l’étendue des Pyrénées Françaises à une altitude variant environ de 1.400 m. à 2.500 m.

1° Basses-Pyrénées.—Le comte de Bouillé, qui a parcouru les montagnes de cette région, dit l’avoir rencontrée sur les crêtes de Lesteré, à droite de la vallée d’Aspe ; dans toute la chaîne de la vallée d’Ossau ; au plateau de Gourzy [lisez Goury, 1.839 m.] dans le quartier de Cambiel ; à Boury [inconnu dans les Pyrénées comme nom de village ou de sommet].

2° Hautes-Pyrénées.—M. Frossard 1 dans un article sur la Chasse à Cauterets, parle des principales localités habitées par la Perdrix grise. Ce sont, dans les environs de cette ville : les contreforts du Monné [2,742 m.] ; les crêtes [2,600 m.] dominant les cabanes de la montagne de Lis ; les pentes gazomées [1,600 m. en moyenne] qui entourent les rochers de Peyrenère ; le pic de Cabaliros [Cabaliroch, carte de l’Etat Major, 2,333 m.] ; la longue crête [12 à 15 kilom.] qui relie le pic de Viscos aux montagnes du pic d’Ariden et par conséquent au col d’Arrien [lisez Riou, 1,943 m.] ; qui recoupe cette crête, à l’Ouest de Cauterets, sur les pentes de ce col, tant sur le versant de Cauterets que sur celui de Luz.

“En somme,” dit M. Frossard, “si on prend le col d’Arrieu [Riou] comme élévation moyenne, on peut chercher la Perdrix grise dans tous les endroits où abonde le raisin d’ours, qui se trouve à cette même altitude.”

Dans un article intitulé “L’hiver et la vie organique dans les hautes latitudes,” Alphonse Cazes, 2 a rendu compte des

2 Bull. de la Soc. Ramond, Bagnères-de-Bigorre, 1876, 11e ann. p. 52.
observations ornithologique faites, au Pic du Midi de Bigorre, par le général de Nanzouty, directeur de l’Observatoire du Pic du Midi.

L’article qu’il consacre à la Perdrix grise du Pyrénées, en patois “Perdits griso,” mérite d’être reproduit :—

“On peut dire que la Perdrix grise niche tout autour du Pic du Midi, et que l’espèce y reste sédentaire, même en hiver. Cette Perdrix se livre à des excursions pédestres, à de longues promenades, dont le Pic du Midi est souvent le but, soit à l’automne, soit en temps de neige. Vient-on à surprendre ces caravanes, on les voit immédiatement plonger, et il est facile de s’apercevoir combien la neige qui s’est congelée sur leur queue et sur les grandes plumes de leurs ailes rend leur vol lourd et difficile. La Perdrix grise s’empresse, dans ces circonstances, de regagner ses quartiers, c’est-à-dire les pentes assez inclinées pour ne pas garder la neige, et assez méridionales pour être réchauffées, une partie de la journée, par les rayons du soleil. Couchée au milieu des éboulis et des pierrailles qui lui renvoient la chaleur du jour, la Grise, ainsi qu’il l’appellent nos chasseurs montagnards, se trouve chez elle ; elle s’étend, s’étire, expose au soleil ses plumes glacées, et finit par secouer sur elle, à la façon des poules, la poussière d’un sol calciné. Il arrive que toutes les Perdrix grises du même canton se réunissent ainsi toutes ensemble, et que quelquefois ces réunions extraordinaires sont augmentées des compagnies de la Perdrix rouge, qui, de leur rez-de-chaussée, montent au premier étage pour se chauffer.

“La Perdrix rouge habite et niche sur nos Pyrénées, au-dessous de la Perdrix grise, de même que cette dernière s’établit au-dessous de la région du Lagopède ou Tetras Ptarmigan.

“L’abondance des neiges oblige la Perdrix grise à rendre, à son tour, visite à la Perdrix rouge, mais elle n’abuse pas de l’hospitalité de cette dernière. Sa nourriture d’hiver consiste principalement en herbages : Renoculacées (Renoncules), Alsineées (Spergularia rubra) Pers, Légumineuses (Trèfles, luzernes), Paronychées (Paronichia serpillifolia), G. G. Graminées (Festuca eskia) Ramond, et en Lichens. De petites pierres polies par l’usure viennent l’aider à broyer et à digérer ces aliments.”
Ajoutons qu’Alphonse Cazes a publié "l’Ornithologie Pyrénéenne" de Philippe et en a écrit la préface, sans se faire connaître.

3° Haute-Garonne.—J’ai tué une vieille femelle, fin d’août, sur les hauteurs de Céciré, près Bagnères-de-Luchon.

M. Maurice Gourdon a eu l’obligeance de me donner les renseignements très précis, qui suivent, sur l’habitat de cette Perdrix dans les montagnes de la Haute-Garonne :

"Les croupes gazonnées (1500 à 2400 m.) séparant à l’ouest la vallée de Louron, Hautes. Pyrénées, des hautes vallées d’Oueil, de Larboust et de Gouaux, les vallons d’Esquerry et de Médassoles. Les pâturages élevés des contreforts du pic de Céciré (2400 m.), le pic lui-même, le Cap de Bassiéret (2364 m.) Les crêtes herbeuses de la Serre d’Es Cabales, les Graoués de Castillon. La longue croupe gazonnée (10 kilom. environ), reliant le Pic de Pales de Burat (2150 m.) au Mail du Cric (1824 m.), qui à l’Est de Luchon sépare la vallée de la Pique du pays d’Aran (Catalogne), sur les deux versants de cette chaîne. Les prairies élevées de Couradilles (1985 m.), de Campsaur, de Roumingaou près le pic de l’Antécade (2224 m.), confrontant à l’Est la Catalogne. La région de la Frèche et du port de la Picade (2494 m.) limitrophe de l’Aragon au Sud.

"En résumé, les régions de la Haute-Garonne, qu’affectionne la Perdrix grise sont comprises entre 1500 et 2400 mètres environ, et, toujours, au-dessus de la limite de la végétation forestière. En plein hiver nous l’avons rencontrée sur les neiges du plateau de l’Esponne au-dessus de la vallée du Lys, entre 1400 et 1500 mètres.

"Dans ces mêmes régions, pas de Perdrix rouge ; le Lago-pède s’y montre quelquefois, mais rarement (la Frèche, la Picade). Depuis quelques années, la Perdrix grise diminue de nombre et tend à disparaître de certaines localités citées ci-dessus."

4° Ariège.—Les renseignements sur l’Ariège font à peu près défaut. Cependant, M. Henri Journu, dans un article


intitulé "Une chasse de montagne," dit que, dans cette région, la Perdrix grise se tient dans les bruyères de 1400m. à 2'200m., particulièrement aux environs du lac Lanoux.

5° Pyrénées orientales.—M. Dépéret classe la Perdrix grise dans les Oiseaux qui habitent la 4° zone ou zone alpine (1500m. à 3000m.).

"Les hautes montagnes du massif de Canigou, du Capsir, de la Cerdagne, et les sommets qui bordent les hautes vallées du Tech et de la Sègre sont comprise dans cette zone, dont l'altitude maximum est de près de 3000m. et atteint presque le niveau des neiges perpetuelles."

Il est à remarquer que la culture remonte beaucoup plus haut dans ce département, que dans le reste de la chaîne Pyrénéenne, en raison du voisinage de la Méditerranée. C'est ainsi qu'il y a des champs d'orge à 1800m. d'altitude, au village de Sulden, en Andorre, et à 1872m. au col de Beret (source de la Garonne). Ceci explique pourquoi Companyo dit que dans les Pyrénées-Orientales, la Perdrix grise se tient dans les champs de blé et de sarrazin des régions élevées que je viens de citer.

Espagne Centrale et Portugal. 1° Espagne.—La Perdrix grise ne s'observe ni dans les plaines ni dans les parties basses et moyennes des montagnes du centre et du midi de l'Espagne. Elle paraît cantonnée dans les régions élevées où elle est rare. On ne sait du reste pas à quelle forme se rattachent les spécimens signalés par différents auteurs. Mais, il est probable, en raison de leur habitat sur les hautes montagnes, que toutes les Perdrix de la péninsule ibérique appartiennent à la forme charrela.

Don Angel Guirao, dans son "Catalogue des Oiseaux de la province de Murcie," la dit:— "Très rare et de passage

1 Dépéret, Charles, "Caractères de la faune ornithologique des Pyrénées-Orientales et des particularités qu'elle présente." "Soc. Agricole, Scient., etc., de Perpignan," 1882, XXV., p. 84.


3 Guirao, don Angel, "Catalogo metodico de las Aves observadas en una gran parte de la provincia de Murcia." "Memorias de la Real Academia de ciencias." Madrid, 1859, in-4, IV., p. 544.
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accidentel probablement, car nous n’en avons vu qu’un seul individu, conservé dans le Musée de l’Institut.”

Lopez Seoane1 dit avoir reçu une Perdrix grise de la Sierra Morena, par l’intermédiaire de son ami le professeur Amor.

Au sud de la Sierra Guadarrama, selon M. Saunders2 l’apparition de la Perdrix grise doit être tout à fait accidentelle.

2° Portugal.—La Perdrix grise habite les montagnes du Portugal ; mais on ne sait rien de son plumage.

“En Portugal”, dit M. W. C. Tait3, “la Perdrix grise atteint sa limite sud de distribution. Comme beaucoup d’autres oiseaux du Nord, on la rencontre en Portugal, seulement à une élévation qui correspond à une hauteur plus faible pour une latitude plus élevée. J’ai appris que cette Perdrix est commune et bien connue à Pitoes, dans la Sierra de Gorez, et qu’elle se trouve aussi dans les régions élevées près de Pinheiro, dans les environs de Braga ; je sais qu’elle se trouve aussi dans la Sierra de Marao, et dans la sierra de Rebordaos, district de Bragance. Le Muséum de Lisbonne possède un spécimen de Benaventes.”

REPRODUCTION.

Suivant L. Seoane “Vers le mois de mars ou avril,4 elle creuse largement le terrain pour établir son nid, qu’elle construit avec des herbes, à l’abri des arbrisseaux. Elle pond 10 à 18 œufs, d’un gris très foncé, rarement avec quelques taches. Ceux des autres contrées de l’Europe que nous avons reçus, sont d’une couleur sensiblement plus claire.”

CONCLUSIONS.

Comme beaucoup d’oiseaux sédentaires, répandus sur une vaste surface, dans des conditions différentes de nature du

1 Seoane, L., “Revision del Catalogo de las Aves de Andalucía-La Coruña,” 1870, p. 11.
4 En France, dans la Loire-Inférieure, les Perdrix grises commencent leur ponte dans les premiers jours de mai, rarement dans les derniers jours d’avril.
sol, de culture et de climat, la Perdrix grise, soumise à des influences diverses présente des races locales, plus ou moins caractérisées qui se fusionnent dans les zones de contact.

La *P. charrela* est particulièrement bien individualisée. Isolée de ses congénères, non seulement par l’altitude élevée à laquelle elle habite, mais encore par l’absence de l’espèce dans toute la région méridionale de la France comprise entre les Pyrénées et la Plateau central, il n’est pas surprenant que, ne contractant pas d’alliances d’étrangères, elle présente des caractères différentiels suffisants pour qu’il ne soit pas possible de la confondre avec les Perdrix grises des autres régions de la France.

Dr. Lopez Seoane dit avoir comparé la *P. charrela* avec des spécimens de Suisse, d’Allemagne, d’Autriche, d’Angleterre, de Russie, de Belgique, de Hollande, de Suède, et l’avoir reconnue distincte. La belle série du British Museum m’a permis de faire la même constatation.

Non seulement son facies général la fait reconnaître au premier coup d’œil; mais, chez le mâle, une plume choisie du haut du dos, des côtés du cou, des flancs, des moyennes couvertures des ailes suffit généralement pour la distinguer. La femelle, quelle que soit la variation de son plumage, est également reconnaissable.

À ce titre, la Perdrix grise des Pyrénées, malgré la faiblesse de ses caractères distinctifs, mérite d’être distinguée comme race locale, et, comme L. Seoane, dès 1870, a ajouté au nom du type celui de *charrela*, je ne vois pas inconvénient à le conserver.
SEQUENCE IN MOUTLS AND PLUMAGES, WITH
AN EXPLANATION OF PLUMAGE-CYCLES.

By Jonathan Dwight, Jr., M.D.

Sequence is a principle so basic in the workings of Nature
that its importance is apt to be overlooked in explaining that
which seems to be obscure and complicated, and certainly
in plumages and moults, unless their natural sequence is
thoroughly understood, there is much that seems hopelessly
obscure. Sequence is basic in the growth of a feather where
the barbules are differentiated before the barbs, and the
barbs in their turn before the shaft; so, too, the apex is
formed before the proximal quill portion has even taken
shape. This much the histologist with the microscope and
methods of a modern laboratory vouches for, while the
ornithologist concerns himself more particularly with the
successive generations of feathers or plumages that clothe
the bird in regular sequence. The first generation is known
as neossoptiles, which are down-like in character; the second as
mesoptiles, which lack the characters of fully adult feathers;
and the third and later generations are known as teleoptiles,
or mature feathers of various types.

It is not, however, to the feathers themselves that I wish
to draw especial attention, but to the plumages or aggrega-
tions of feathers which grow and are cast off at definite
periods in a bird's life, namely, at times of moult. The
sequence of plumages and moults is as regular as is the order
of cell-proliferation in the feather-germ, but the order of the
plumages is not the same for every species. A complete
moult, which rarely occurs more than once in a twelvemonth,
results in a simple plumage, while partial moults result in
compound plumages, made up of the feathers of several
generations. Each species has a definite series of plumages
that constitute a cycle to which the individuals of that
species conform, the cycles differing in different species.
Neither moults nor plumages have been thoroughly under-
stood, and I may well be pardoned my repetition, before an
Jonathan Dwight, Jr.: International Ornithological Congress, of salient facts that have gradually come to light in the years that have elapsed since the study of birds has passed beyond the realm of conjecture. These are matters that concern ornithologists the world over, and it is to be hoped the day will come when some degree of uniformity in the terminology of plumages and moults may be attained. My efforts have been only a step in this direction, and I have now prepared a table which shows, at least, the relation in which plumages and moults stand, the terms applied being those that I have found to be appropriate and worthy substitutes for the lax expressions that pass current.

It will be seen on reference to my table that there are two stages of plumage peculiar to all young birds, the natal and the juvenile, which are always simple. Later plumages may be either simple or compound, those of the first year being more complicated than those of the second owing chiefly to the incompleteness of the post-juvenile moult in many species. The third and later years duplicate the second.

In earlier papers I have discussed at some length the various plumages and moults, but a brief review here, even at the risk of repetition, may not be amiss in order that we may better get at the facts. I shall therefore sketch the successive stages of plumage, and show how they are affected by moults.

The first is the natal plumage or down (ptilosis natalis), a rudimentary plumage of rudimentary feathers, the neoosoptiles, which are the modified tips of the feathers of the succeeding generation. As the neoosoptiles are constricted into a rudimentary calamus, and as they break off at this point when the natal plumage is shed, it is proper, I think, to consider the process of loss as a rudimentary moult. This plumage may also develop in two stages, for Mr. F. M. ¹ "The Sequence of Plumages and Moults of the Passerine Birds of New York." Annals N.Y. Acad. Sci., XIII., 1900, pp., 73-260, pl. i-vii; "The Moult of the North American Tetraonidae" (Quails, Partridges and Grouse). Auk, XVII., 1900, pp. 34-51, 143-166, pl. iv., v; "The Moult of the North American Shore Birds" (Limicole). Auk, XVII., 1900, pp. 568-385; "Plumage-cycles, and the Relation between Plumages and Moults." Auk, XIX., 1902, pp. 248-255, illust. in text.
Chapman has recently described a white, followed by a brown down, in the American Flamingo (*Phoenicopterus ruber*), and Mr. Witmer Stone has called attention to two downs in the Snowy Owl (*Nyctea nyctea*). Mr. Chapman finds a double constriction in the neossoptiles, and on investigation I find a similar condition prevails in the Australian Black Swan and in some of the Owls.

The second plumage is the juvenal plumage (*ptilosis juvenalis*), commonly known as the "first," although it is obviously a second. Its feathers have been called mesoptiles, and it is a simple plumage, although sometimes varying greatly in texture and in colour from later plumages of the species. It is worn for a few days or for several months, varying with the species, and it is interesting from many points of view. The one that interests us most at present is the fact that the post-juvenal moult may be either complete or partial, in the latter case compounding the subsequent plumage.

The third plumage, or stage of plumage, is best called the first winter, and the fourth is the first nuptial plumage. Then follows the fifth, or second winter, and the sixth, or second nuptial plumage, and so the series continues. Every species of bird will fit into a scheme of plumages such as this, but owing to the occurrence or absence of mouls and their complete or partial character, the plumage-cycles of species differ.

The plumage of the first winter, often called the "autumnal," is properly either a simple annual plumage (*ptilosis annualis*), or a non-nuptial plumage (*ptilosis non-nuptialis*), which is either simple or compound, according as the post-juvenal moult is complete or partial. There are, therefore, just two plumages for birds during the first winter, with the exception of a few of the Grouse family, like the Ptarmigans, which assume a special protective or tutelar plumage (*ptilosis tutelaris*).

The table shows no less than nine plumage cycles. In cycle A, a simple plumage is worn throughout the year, as exemplified by the Woodpeckers, Swallows, and others—the House Sparrow (*Passer domesticus*), for instance. In cycle B, typified by the Thrushes, the flight-feathers and the tail are
## PLUMAGES.

<table>
<thead>
<tr>
<th>PLUMAGE CYCLES</th>
<th>1ST YEAR</th>
<th>2ND YEAR</th>
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<tbody>
<tr>
<td></td>
<td>POST-POST</td>
<td>POST-JUVENAL</td>
</tr>
<tr>
<td></td>
<td>POST-JUVENAL</td>
<td>POST-PROTECTIVE</td>
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<tr>
<td>NUPITAL</td>
<td>1ST NUPIAL</td>
<td>2ND NUPIAL</td>
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<td>simple</td>
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<tr>
<td>simple</td>
<td>A. simple</td>
<td>1st Annual</td>
</tr>
<tr>
<td>simple</td>
<td>B. compd.</td>
<td>1st Annual (or juveno-annual)</td>
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<tr>
<td>simple</td>
<td>C. simple</td>
<td>1st Non-nuptial</td>
</tr>
<tr>
<td>simple</td>
<td>D. compd.</td>
<td>1st Non-nuptial</td>
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<tr>
<td>simple</td>
<td>E. compd.</td>
<td>1st Non-nuptial</td>
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<tr>
<td>simple</td>
<td>F. compd.</td>
<td>1st Non-nuptial</td>
</tr>
<tr>
<td>simple</td>
<td>G. compd.</td>
<td>1st Non-nuptial</td>
</tr>
<tr>
<td>simple</td>
<td>H. compd. [1st Protective, abortive]</td>
<td>1st Annual (or juveno-annual)</td>
</tr>
<tr>
<td>simple</td>
<td>I. compd. 1st Protective</td>
<td>compd. 1st Non-nuptial</td>
</tr>
</tbody>
</table>

A black line signifies a complete moult.
A double line signifies a partial moult.
not lost at the post-juvenal moult, but are worn throughout the year. Cycle H differs from B only in the second year. In the remaining cycles the plumages, already compound (except in C), are further complicated by the pre-nuptial moult, which produces in each case a distinct nuptial plumage (*ptilosis nuptialis*). A complete pre-nuptial moult produces a simple plumage, as in F and G; while a partial moult in C, D and E compounds the nuptial dress. As for C, there is room for doubt, for there are some species with a complete post-juvenal moult that seem to have a pre-nuptial moult only the first year; but it is very possible these birds will prove to belong rather to cycles D or E, to which a large number of species belong. Under I, falls the highly specialized plumages of the Ptarmigan, which are, after all, only a modification of D. These, then, are the plumages of the first year, and owing to the complete post-nuptial moult, those of the second are simpler. We have a simple second annual plumage, or this is split by a pre-nuptial moult into a simple non-nuptial, or a nuptial which is simple or compound according as the moult is complete or only partial. The exceptional plumage-cycles are E, where, like some of the Orioles, a first pre-nuptial moult is not repeated the second year, and H, exemplified by many of the Ducks, which do not develop a protective or "eclipse" plumage until the second year. Adult Ducks and most diving birds lose their flight-feathers all at once, but the Ducks assume a protective plumage prior to their winter dress, while the Guillemots, without a special protective plumage, assume a winter dress that is also protective, falling under the cycle D.

In order to make clearer this somewhat involved matter of cycles, I will take a couple of specific cases for illustration. The Starling (*Sturnus vulgaris*) has a very simple plumage-cycle: the post-juvenal moult being complete, and adults moulting but once in the twelvemonth. This species belongs to cycle A, the plumages being the natal, the juvenal, and a simple annual. The plumage-cycle of the Wheatear (*Saxicola oenanthe*) is more complicated, because the post-juvenal moult is partial and a partial pre-nuptial moult occurs every year. This species falls under cycle D, the plumages being
the natal, the juvenal, a compound first non-nuptial, a compound first nuptial, a simple second non-nuptial, a compound second nuptial, and the third year is a repetition of the second.

My endeavour has been to classify plumages and moults in a system applicable to all species, and I hope that my contributions to this end will prove to be of some practical use.
REMARQUES AU SUJET DE CERTAINS OISEAUX MéCONNUS.

Par le Dr. Alph. Dubois.

Qu'il me soit permis d'attirer l'attention de mes savants confrères, sur quelques espèces d'oiseaux dont les types se trouvent au Musée Royal d'Histoire Naturelle de Belgique, et que certains auteurs ont rapporté à d'autres espèces très voisines mais distinctes.

1. *Bycanistes leucopygius* Dubois.

Le *B. leucopygius*, que j'ai décrit en 1884, a été contesté d'abord par Dr. R. Bowdler Sharpe, puis par le Prof. Reichenow, qui tous deux considèrent mon oiseau comme étant le mâle du *B. sharpei*, Ell. En vérité, les deux oiseaux rapportés du Niam-Niam par M. Bohndorff et figurés dans le Bulletin du Musée, sont, d'après ce que j'ai pu constater depuis, des jeunes mâles, mais qui n'ont rien de commun avec le *B. sharpei*.

Si mes honorables contradicteurs avaient soigneusement comparé les descriptions des deux espèces, ils auraient reconnu la différence. En effet, M. Elliot écrit:1 "Bill without casque. . . . . Secondaries, with the exception of the three innermost ones, white for three-fourths their entire length, greenish black at base. . . . . Tail—the two median feathers black for their entire length; the ones next to the median on either side white for half their length from the tip, remaining portion like the central ones; the lateral feathers pure white for their entire length, with the exception of the outermost ones, which have the basal half of the outer webs black."—Nous voyons donc que chez le type du *B. sharpei*, de l'Angola, il y a du noir à la base de certaines rémiges secondaires et rectrices latérales.

Chez mon *B. leucopygius*, au contraire, toutes les rémiges secondaires et toutes les rectrices latérales sont d'un blanc uniforme, sans noir verdâtre à la base. On pourrait peut-être objecter que l'absence ou la présence de noir à la base des

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1 *Ibis*, 1873, p. 177
rémiges secondaires et de certaines rectrices latérales est sans importance spécifique; mais alors comment se fait-il que tous les sujets de l'Afrique centrale ont ces pennes d'un blanc uniforme, alors que ceux de l'Afrique occidentale ont plus ou moins de noir à la base de ces mêmes pennes?—J'ai eu devant moi une vingtaine de Calaos des deux sexes de la forme B. leucopygius, provenant du Congo oriental et central ainsi que du Niam-Niam, et pas un n'a du noir à la base des rémiges secondaires et des rectrices latérales!—Cette différence constante entre les sujets de l'Afrique centrale et ceux de l'Afrique occidentale, démontre bien que nous avons affaire à deux espèces parfaitement distinctes. Je dirai encore que le B. leucopygius est toujours plus grand que le B. sharpei, et qu'il existe aussi une différence sensible dans le bec, aussi bien chez les mâles que chez les femelles.

Comparé au B. fistulator (Cass.), nous remarquons que le B. sharpei de Elliot ne diffère réellement de ce dernier que par la structure du bec: chez tous deux l’étendue du blanc des ailes et de la queue varie à l’infini et n’est pas toujours symétrique; aussi le vrai B. sharpei d’Elliot n’est-il autre chose qu’un jeune mâle du B. fistulator, comme j’ai pu m’en assurer au British Museum.

N’oublions pas que plusieurs femelles du genre Bycanistes ont été considérées comme espèces distinctes, et que M. Elliot a même créé pour elles le genre Pholidophalus; mais on a reconnu depuis que le B. casuarinus est la femelle du B. cylindricus, le B. kethullei la femelle du B. albotibialis, et l’on doit admettre aussi que le B. sharpei n’est que la femelle ou le jeune mâle sans casque apparent du B. fistulator.

Il est certain que plusieurs ornithologistes ont reconnu l’existence des deux espèces, ce qui leur a fait supposer que le B. leucopygius était le vrai B. sharpei.

Le Dr. Reichenow dit que Giebel a décrit en 1876 sous le nom de Buceros leucopigus un Calao du Gabon, qui n’est rien d’autre que le B. sharpei (c’est-à-dire le B. fistulator); c’est possible.—Si j’ai par hasard donné le même nom à l’espèce de l’Afrique centrale, c’est qu’à cette époque la dénomination de Giebel, perdue dans une revue peu lue des ornithologistes, était inconnue de tous ceux qui s’occupèrent de Calaos; ce n’est que 18 ans après (1894) le Dr. Reichenow en fit la remarque.
La synonymie des deux espèces en question est donc la suivante :


Buceros sharpii Ell., Ibis, 1873, p. 177, et auct. plur.
Bycanistes sharpei Bouv., Cat., 1875, p. 28.
Pholidophalus fistulator et Ph. sharpii Ell., Mon. Bucer., pls. 32 et 33 (1878).
Buceros vivi (nec Dub.) Grant, Cat. B. Br. Mus., XVII., p. 423 (1892, in synon.).
Bycanistes fistulator Shell., B. Afr., I., p. 113 (1896).

2. Tiga borneonensis Dub.¹

Dans une note publiée en 1901, Dr. Hartert dit que le Tiga borneonensis n’est qu’une variation individuelle assez fréquente du T. javanensis.² Il est évident que mon savant confrère n’avait pas vu mes types quand il a écrit ces lignes, et j’ai lieu de croire qu’il a changé d’avis depuis sa visite au Musée de Bruxelles.

Ce qui frappe à première vue chez ces oiseaux, c’est que chez le T. javanensis les taches des parties inférieures sont verticales, tandis que chez le T. borneonensis elles sont transversales. Cette disposition des taches est très caractéristique, et rapproche ce dernier du T. everetti, Tweed. Mais la

femelle de celui-ci a du rouge à la nuque, tandis que celle du T. borneonensis n’en a pas.

Quant à la forme que M. Hartert désigne sous le nom de T. javanensis exsul, elle paraît se rapporter au T. everetti, Tweed.

3. Lampribis olivacea (Du Bus).

Dans ces dernières années, cet oiseau a été l’objet de contestations, alors qu’il avait été admis jusque là par tous les auteurs.

En 1897, MM. Rothschild, Hartert et Kleinschmidt ont émis l’avis que l’I. olivacea de Du Bus n’est qu’un vieux H. hagedash, tandis que l’oiseau figuré sous le même nom par Elliot, est une espèce particulière à laquelle ils donnent le nom de Lampribis rara. Cette manière de voir a été adoptée par MM. Sharpe et Reichenow.

En 1902, dans une courte note insérée dans mon Synopsis j’ai démontré que les Lampribis olivacea et L. rara représentent deux espèces parfaitement distinctes, et que le premier n’a rien à voir avec l’H. hagedash.

Un an plus tard, M. le Cte. Salvadori reprend la question, et dans une longue et intéressante dissertation, confirme ma manière de voir en ce qui concerne le L. olivacea, seulement il n’admet pas le L. rara comme espèce distincte, mais simplement comme un jeune de L. olivacea.

Or, il parait que j’étais logique en admettant les deux espèces, et il suffit de comparer les figures des deux pour voir qu’elles diffèrent d’une façon sensible, surtout dans la disposition de la huppe. M. O. Neumann, en examinant le type de L. olivacea au Musée de Bruxelles, m’a confirmé que ce dernier n’a rien de commun avec le L. rara.

Enfin, en dernier lieu, le Prof. Reichenow reconnaît son

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3 Hand-list, I., p. 187.
5 Synopsis Avium, II., p. 903 (en note).
6 Ibis, 1908, p. 178.
erreur. Il admet les deux espèces, \textit{L. olivacea} et \textit{L. rara}, et en décrit une troisième très voisine, sous le nom de \textit{L. splendidus}; l’auteur réunit ces trois espèces aux formes américaines du genre \textit{Theristicus}.$^1$

ON VARIATIONS IN THE COLOURING OF
COLOMBUS CRISTATUS, C. GRISEIGENA, AND
C. NIGRICOLLIS, OBSERVED AT THE LAKE OF
VELENCZE, IN HUNGARY.

By Steven Chernel de Chernelháza.

One of the most interesting parts of Hungary for ornithologists is, without doubt, the (2-4 klm.) broad lake of Velencze, in the Comitat Feher, which is the third largest lake of the land.

Since the year 1884 I have devoted weeks, and even months, to the investigation of the bird-life of this lake, and have taken part in all the shootings. These were arranged in such fashion that the little fishing boats, about 50 or 60 in number, were from 100 to 150 paces from each other, covering the whole south breadth of the lake. In every second boat the hunter takes his place with the fisherman, who pushes the boat along with a long pole; in the boat between is a fisherman, who picks up the birds. The master of the whole hunt has his seat in a motor-boat, and at his signal the whole row of boats pushes on, in this wise forcing the game to the north shore of the lake. The greater part gathers there, while the others fly back over the boats, and fall a prey to the hunters. The shooting begins at ten o'clock in the morning, and the boats reach the north shore of the lake about three in the afternoon. Then the greater part of birds gathered there through the whole day fly up, being more and more pressed towards the shore, and this finish is about the most interesting moment of the whole hunt. The lake is not an entirely open water, but we find broad open spaces alternating with those covered with reed, rushes, or sea-weed. The Coot (Fulica atra) and the Brown-headed Gull (Larus ridibundus), are found there in great quantities at the time of migration, as well as in the breeding season, so that this lake is decidedly unique in our country. Species especially characteristic of the lake-fauna are: Locustella luscinioides, Luscinia melanonogon, Panurus biarmicus, Fuligula nyroca, Fuligula ferina, Chaulelasmus streperus, and lately Erismatura
leucocephala. *Colymbus griseigena* breeds more especially at the south end of the lake, but in much smaller numbers than *C. cristatus* and *C. nigricollis*. *Colymbus fluviatilis* is more frequent at the time of migration, especially in autumn. *Colymbus auritus* I have observed only once, namely, three specimens on the 11th of May, 1890.

*Colymbus cristatus* breeds scattered all over the lake in loose colonies of from five to ten pairs. *Colymbus nigricollis*, on the contrary, breeds in large colonies, thousands of nests being built on those loose heaps of reeds, which are either cut low at the time of reed gathering, or consist of half withered and dead stalks.

The shooting season lasts generally from seven to eight days, and the best results attained were in the year 1903, when the following number of birds was killed:

<table>
<thead>
<tr>
<th>Month</th>
<th>Date</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>March</td>
<td>21</td>
<td>889 head</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>1292 &quot;</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>1442 &quot;</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>1274 &quot;</td>
</tr>
<tr>
<td>April</td>
<td>2</td>
<td>1044 &quot;</td>
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<tr>
<td></td>
<td>4</td>
<td>1639 &quot;</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1611 &quot;</td>
</tr>
</tbody>
</table>

9191 head

The greater part of the booty consisted of *Fulica atra*, *Colymbus cristatus* and *C. nigricollis*, and only about 10 per cent. were Duck. The largest number of *Colymbus cristatus* which was shot in one day was 499, and in one year between 2000 and 6000, as I noted. At first, seeing these great numbers, we might indeed think that it is a real massacre of birds, but in reality this is not the case; the shooting proceeds in a very economical and reasonable way. In the breeding season the birds are protected to the very utmost, and even after that time only very little shooting goes on. One can see the result in the fact that the birds increase in number every year; besides, as far as my positive observation goes, *Colymbus cristatus* and *C. griseigena* are decidedly very harmful to the fishing, and not even deserving
of such exaggerated protection. *Fulica atra* and *Colymbus nigricollis* are less harmful, but sometimes also disadvantageous to the fry. The use of these last-mentioned birds is notable, as poor people can have cheap meat during the fast, and the skins of the Grebes are bought up by the furriers, who work them up into beautiful collars, muffs, etc. After the shooting season, we can hardly find any difference in the numbers of birds, and the observer can enjoy just as much as before the Grebes and Water-hens; they enliven the lake, and are a pleasure to see, and not even those bird-protectors who, quite rightly, wish to protect the birds on economical grounds, as well as from the aesthetic point of view, can have anything to say against these shootings. All these years I have examined the series of Grebes which were shot, and found only three cases of albinism and one of melanism, which I describe as follows:—

**Complete albinism** occurred in a specimen of *Colymbus griseigena*, shot on the 19th of August, 1898, by my cousin B. de Meszleny. The whole plumage was white; the bill, legs and feet were orange-coloured, the iris was lead-grey.

A very pretty example of **partial albinism** was observed in a *Colymbus nigricollis* ♂, which was shot on the 4th of April, 1902. The black parts of the head and neck are speckled with white feathers, especially at the back of the head, around the face, and more so on the under part of the neck; the upper surface is almost quite white; the other parts are of normal colouring.

I shot a *Colymbus cristatus* ♂ on the 29th of March, 1892, where partial albinism as well as erythrism were to be observed. The general colour of the wings is white, the quills only being dark brownish-grey; the innermost secondaries partially brownish-grey, some of the middle wing-coverts light rusty, brownish-grey about the end; the general colour of the crown of head, forehead, and the crest or tuft on each side of the nape are chestnut somewhat tipped with brownish-grey. The feathers of the back are also lighter than usual, more especially the sides of the back and lower neck, which are more rusty and white.

The most interesting specimen of *Colymbus cristatus* ♂ was one shot by myself on April 14th, 1905, which is a **total**
Variations in the Colouring of Colymbus.

melanism; except, and this is most remarkable, the crest or tuft on each side of the nape, which is albinistic. This extraordinary Grebe stayed about a week in the company of eight normal Colymbus cristatus, and I saw it three times before I could shoot it, and at first took it for Phalacrocorax pygmaeus. I describe the colouring of this specimen as follows:—

General colour quite black, partially brownish-black, the head and the back being the darkest; the frill round the throat and neck slightly metallic green and glossy; the under surface has a silvery shine through the dark general colour; almost all the feathers on the crest or tuft on each side of the nape are white, except a few black ones; the bill, legs, and feet are horn-black, the iris is dark brown.

All these specimens are in the collection of my cousin, B. de Meszleny, except the albinistic and erythristic Colymbus cristatus, which adorns my own collection.

Köszeg, 1905. VI. 7.
Section II.

MIGRATION.

THE UNUSUAL MIGRATION OF BRÜNNICH'S MURRE (URIA LOMVIA) IN EASTERN NORTH AMERICA.

By J. H. Fleming (Toronto, Canada).

Brünnich's Murre or Guillemot has usually been regarded as a strictly northern maritime species. The accompanying maps show how widely the species has diverged from its regular winter range during the period dealt with in this paper.

In preparing this paper I have been greatly assisted with records supplied by the following gentlemen, to whom my best thanks are due, and without whose assistance the tracing of the various migrations would have been difficult, if not impossible.

To Dr. A. K. Fisher, who examined the stomachs of Uria lomvia in connection with the Biological Survey at Washington; to Dr. L. B. Bishop, for Connecticut records; to Dr. W. C. Braslin, for Long Island records; to Mr. Norman A. Wood, for Michigan records; to Mr. C. E. Dionne, for Quebec records; to Mr. W. H. Moore, for New Brunswick records; to Mr. Geo. R. White, Mr. W. E. Saunders, Mr. J. Hughes Samuel, and Dr. G. A. McCallum, for Ontario records. Mr. P. A. Taverner has redrawn the maps, and put them in their present form.
In December of 1890 a flight of Brünnich’s Murre occurred on the New England coast of sufficient size to be recorded as unusual. A specimen taken at Swampscott, Massachusetts, on the 20th, when examined, contained a few fragments of fish. Mr. C. K. Averill, Jr., says: “The occurrence of Brünnich’s Murre (Uria lomvia) along the Connecticut coast during the past winter (1890-91), in large numbers, seems worthy of notice, since the species was not recorded in Linsley’s or Merriam’s list, nor have I seen any Connecticut record” (3); and he quotes Mr. Wm. H. Hoyt, of Stamford: “The Murres were plentiful here, from December 20th to about February 10th and a large number were shot. Fourteen specimens fell under my own observation. They all seemed to be in the last stages of starvation. One was found by the roadside at some distance from the shore, where it had evidently fallen from exhaustion. The stomachs of those which I examined contained nothing but sand.” Another paragraph in the same article says: “Mr. W. F. Davies, of Stony Creek, writes me that hundreds could be seen there from the 1st to the 10th of January so tame they could be taken in the hand; they could fly, but seemed hungry and fatigued, some being found five miles from the salt water; he thought many died of starvation.” And quoting Mr. D. C. Sanford, he says, from Penfield Reef Lighthouse, off Black Rock, to the mouth of the Sagatuck River: “There were thousands of them, and hundreds were shot off Sagatuck.” These records are typical of many that were to follow in after years, when Brünnich’s Murre, though starving and exhausted, was able to push beyond any previous recorded migration, passing down the Atlantic coast, and appearing far up the tributary rivers, ascending the St. Lawrence into the fresh waters of the Great Lakes only to perish in the great quest for food.

1891-2.

There seem to be no records.
1892-3.

For this season I can find only the following records, the forerunners of a route to be followed in after years:—In Quebec, at St. John's, on the Richelieu River, one was shot out of a small flock, about in the middle of December (12), and one found dead the following March, at St. Andrew's P. Q., on the Ottawa (12).

1893-4.

This migration was a notable one, and the first to enter the Great Lakes; it has been very fully dealt with by Mr. Hubert Brown (2), and Mr. Geo. E. Atkinson (1). Mr. C. E. Dionne says:—“Since the 15th of November last, numerous flocks of Murres have been seen flying over the river before Quebec; hundreds have been shot by sportsmen, and some have been killed with sticks near the wharves. . . . The presence of these birds is a novelty here, as they are never met with in the environs of the city. Several have even strayed away into the mountains, about ten miles from the river; they were exhausted and starving. After the 20th December their numbers considerably decreased, till the 8th of January, when the last was seen” (4). Following up the St. Lawrence, at Lake St. Peter, some seem to have struck south, following the St. Francis River to Sherbrook (1), where they were recorded between November 20th and December 8th. Others passed up the Richelieu River to Lake Champlain (1), where they were numerous during December. Large numbers passed Montreal (1), where many were killed; the flight divided here, part following the Ottawa River, where they were recorded at St. Andrew's, on the Lake of Two Mountains (12), on November 28th. Mr. Geo. R. White observed them in the vicinity of Ottawa (1) on the 19th; here they seem to have turned from the Ottawa, surmounting the Rideau Falis, and passing up the Rideau River, were, according to Mr. White, reported at Wellington, Burritt's Rapids, and in the Rideau Lakes, finally reaching Kingston at the eastern end of Lake Ontario, where they probably joined the main flight that passed
Unusual Migration of Brünnich’s Murre.  

Kingston late in November. At Hamilton, at the western end of Lake Ontario, they were first seen on November 20th, and the last on December 7th and 8th. At Toronto, forty miles east, on the north shore of the lake, they were not seen till November 29th, and were common from December 7th to 13th; none were seen alive after this, except one on January 14th, that was feeding in the vicinity of a sewer at Toronto. Mr. Geo. E. Atkinson says of the Toronto birds:—

"The condition of the birds was good in most cases, but the last birds taken were poor. An examination of some twenty-eight stomachs revealed no traces of food, though they had evidently not been empty long. Three only of the stomachs contained a few pieces of slate or gravel. The sexual organs were unrecognizable in about four to one of the specimens, and of the others the number of males and females were about equal. The plumage of the birds varied considerably, some being pure white all up the neck and throat, and jet black on the back of the neck and head, while others were duller on the back of the neck, and mixed with black on the throat, and a few were black all round the throat and neck" (1).

In Connecticut there is a record of one taken November 18th at Rocky Hill (6) in Hartford County on the Connecticut River, and another at Hanover (35) considerably further up the river in New Hampshire in the following February or March. These New England records are of considerable interest in view of the absence of records anywhere on the coast.

1894-5.

Connecticut furnishes the only eastern records for this migration. At Stamford, on Long Island Sound and close to the mouth of the Housatonic River, December 15th, at Portland, on the Connecticut River, about the middle of the State on the 23rd, at Lake Saltonstall about the 25th, and Stony Creek January 1st.

In New York the records are principally in the northeastern part of the State. At Boonville (7) about December 5th, at Utica (7) on the 24th, and Johnstown (8). At Ottawa,
Ontario, on the 19th, Mr. White says "They appeared in large numbers and continued to pass until the 21st of December; one was found in a field above Manotick on the Rideau River." On December 8th the first birds appeared at Toronto, on Lake Ontario, and the flight continued till the 11th. Ascending the Niagara River, the flight was reported at Buffalo, New York (9), above the Falls; and entering Lake Erie was at Blenheim near Rondeau on the north shore, and at London some distance inland on the 10th; and in Michigan one was taken at Greenville (10) on the 13th. On Lake Ontario, birds were taken in the following February at Toronto, some on the 1st, and on the 23rd, Mr. Samuel reported a specimen that "contained remains of fish." This latter record would indicate that some at least of the birds were able to suit themselves to the changed conditions.

1895-6.

This migration does not appear to have been general. In northern New York they were reported at White Lake, Onida County (11), December 13th; at Senica Lake (17) on the 25th, where one was reported as late as the following May (17).

On the Great Lakes the first report was December 9th, at Toronto, when they were common till the 14th.

1896-7.

The migration this season is the most extensive recorded, reaching far down the Atlantic coast and into the interior of Eastern North America. (See Map. II.)

In Connecticut, birds were taken at New Haven and Lake Saltonstall in December, and in Massachusetts at Springfield (13), on the Connecticut River, on the 19th.

In New Jersey they were reported at various points on the Delaware River, at Beverley (19), on the 15th of December, at Palmyra (19) and Burlington (19) on the 16th. In Virginia, at Cape Charles (16), on the 17th; ascending the
MAP II. MIGRATION OF 1896.
Unusual Migration of Brünnich's Murre.

Potomac, they were reported at Occoquan Creek (21) on the 20th, and between Washington and Alexandria (21) on the 22nd, though birds were exposed for sale in Washington (21) as early as the 14th, and in the following January were again reported between Washington and Alexandria (21).

In North Carolina, at Newbern (20), on the 22nd or the 23rd of December.

In South Carolina, at Anderson, December 19th. “Anderson is the seat of the county of the same name, in the extreme north-western portion of the State, lat. about 34° 36' N., long. 5° 38' W. from Washington, not far below the Blue Ridge, and about 196 miles from the nearest point on the sea-coast” (18).

On the St. Lawrence the birds were noticed first at Rockport (28), near Kingston, in December, just before the river was frozen over; and, entering Lake Ontario, some turned south, and passing into New York State were taken at Seneca Lake (17) on the 23rd, at Pen Yan (31) on the 20th, and the following March were found alive “in a famished condition on the ice of Sandy Creek” (26) at Murray, in Orleans County.

On the north shore of Lake Ontario they appeared at Toronto on December 18th, and were numerous on the 21st. On the 23rd they were recorded at Niagara Falls, Ontario. In Lake Erie, on the north shore at Dunnville on the 19th, and the same day much further west at Blenheim, near Rondeau. On the south shore of the lake they appeared at Erie, Pennsylvania (37), on the 18th, and following the shore west, were at Ashtabula (34) and Fairport (34) on the 18th, at Loraine (34) and Sandusky (14), all in Ohio, on the 19th.

The Lake Erie records are interesting as showing how quickly the birds were able to reach all points on a lake nearly 200 miles long and 30 across. On reaching the end of Lake Erie the flight seems to have divided, part making a very remarkable overland flight straight through Ohio to Indiana, and were reported at Zanesville (14), in Wells County, on the 18th, further south near Indianapolis (14) on the 13th, at Hazelrigg (14), in Boone County, on the 15th, at Fowler (14), Benton County, about the 20th, at Iroquois
Township (14), Newton County, on the 31st, and at Pickard (14) as early as the 10th (?) All these Indiana records are of birds found in open fields or on the roadside alive and far from water; they mark the extreme western limit of the migration, and the furthest point reached during any recorded flight—fully 225 miles from Lake Erie; the most northern point in Indiana reached is quite 50 miles south of Lake Michigan, from which lake no birds were recorded. Of the flight that struck north from Lake Erie, one bird was reported at Menton, Michigan (23), and on the Detroit River were reported below Detroit (23); on the 19th they were at Gibraltar, 15 miles below Detroit (22); as late as the 26th part of the birds were able to pass Detroit, and, entering Lake St. Clair, were reported at the St. Clair Flats.

A very interesting record is from Port Sydney (23), near Muskoka, in Ontario, where Mr. A. Kay found a bird alive on December 18th. Lake Muskoka is about 120 miles north of Lake Ontario, and 30 miles east of the Georgian Bay, and in view of the birds being reported at Mattawa on the Ottawa, it seems likely that the Port Sydney bird reached there by way of the French River, Lake Nipissing, and the Georgian Bay.

1897-8.

This migration was a much more restricted one, both in numbers and range, and seems to have been confined to the waters tributary to the St. Lawrence.

The first report is from Ottawa. Mr. White says, December 11th: "Large flocks were seen flying up the Ottawa River and over the city, flocks of from 10 to 100; the flight continued until the 13th; it was nice weather, with easterly winds." The next record is of a bird taken at the town of Parry Sound (29) on the Georgian Bay about the 12th, and there is a record of uncertain date from Beaumauris on Lake Muskoka. On Lake Ontario they appeared in small numbers at Toronto, and on December 14th Mr. Samuel says, "One was taken in quite good condition; stomach empty." On the 20th they were reported
Unusual Migration of Brünnich's Murre.

at Canandaigua (31), in New York State; and on Lake Erie, at Dunnville on the 21st.

1898-9.

I find no records; they were absent from Lake Ontario, so probably no migration occurred.

1899-1900.

The migration this season was wide-spread.

In Vermont: "In 1899 this species was common about Lake Champlain and inland. One sportsman (!) disgracefully reported that he killed eighty in a single afternoon at Shoreham-in-the-Lake. The specimens taken were very lean, as if half starved" (32). They were also reported at Lake Cayuga, New York (31). North of Lake Ontario they were reported at Belmont and Moira Lakes near Hamlock, Ontario. At Toronto they were not common, one being taken on December 31st; and on Lake Erie, at Erie, Pennsylvania (37), on the 20th.

On the Atlantic the flight was important, beginning on the Gulf of St. Lawrence; they were reported at Chatham, New Brunswick, in a starved condition.

In New Hampshire "an interesting and apparently unusual incursion of these birds into the southern part of the State took place during the last week of November" (35), and is recorded by Mr. Allen as follows: — Antrim, November 25th; Charlestown, November 30th (on the Connecticut River); Francistown, November 27th; Franklin Falls, one captured in a brush heap about the last of November; Lake Winnisquam, several specimens were taken, reports from Laconia, Winnisquam and Tilton probably referred to the same birds; Meredith Neck on Lake Winnipesaukee, Nashua, November 27th, Northfield, and Seabrook. There is also a record for the 26th at Oyster River (27), and Dr. Dearborn says "the stomach of one of the Oyster River specimens examined by me contained four fish, each about four inches long."
In Massachusetts they were recorded from Springfield (30) and Onota Lake on the 30th (27). Mr. Glover M. Allen says of this flight:—"Evidently there was a large migration of Brünnich's Murres about the last of November, 1899, extending so far southward as Virginia, and in the course of this migration a number of the birds on an overland flight seem to have become exhausted and constrained to seek the ground, alighting whenever they might, at various points over Southern New Hampshire and Western Massachusetts. Apparently there was no meteorological disturbance at this time of sufficient severity to have forced the birds inland, and we are obliged to look for another explanation of this phenomenal flight. May it not be that a general migration of the Murres along the Nova Scotia shores had taken place at this time, and in their southward flight the birds had followed the trend of the coast of Maine, and on reaching Southern Maine, a number of them, instead of turning to skirt about the out-jutting coast of Cape Ann and Eastern Massachusetts, had continued straight on their south-westerly course, and so have crossed Southern New Hampshire and reached the Connecticut Valley, down which some may have continued, and so reached the ocean waters off New York?" (35). While this route is possible, it seems not improbable that some at least of the birds from Lake Champlain found their way south by way of the Hudson River, joining the coastwise migrations in the vicinity of Long Island, from where they were recorded at Amityville, November 22nd, at Rockaway Beach, December 14th, and at Point Judith (33), November 26th. The migration found its southern limit in Virginia, at Broadwater Bay (35).

1900-1.

The migration was not extensive, and the records are few. On Lake Ontario the first record is from Toronto, November 30th; at Rochester (31), on the south shore, from November 27th to December 2nd. On Lake Erie, at Erie (37), on the same dates.

On the sea coast at Rockaway Beach, December 2nd, and at Saybrook.
This flight does not seem to have extended past Lake Ontario, the birds were reported at St. Eugene, Ontario, and at Ottawa. Mr. White says:—"November 13th. The flight commenced and continued until the 15th, large flocks passing all day, and I presume during the night; a number were killed, others were caught alive." At Toronto the birds were noticed in the usual starved condition.

On the sea coast the migration was not extensive. In New Brunswick, at Scotch Lake, Mr. W. H. Moore says, "Late in the autumn or early winter of 1901, one of these birds was found by cruising lumbermen, in deep woods far from any lake; another was found along the line of the C.P.R., between Fredricton and Woodstock."

In Connecticut they were recorded on the Still River, in the Housatonic Valley, and on December 6th on the Quinnipiac River. In Massachusetts at Newfoundland Lake (35), November 30th. In New York, at Sag Harbour, December 6th, and at Rockaway Beach on the 26th. Some of the birds at least survived on the Atlantic coast, for a specimen taken January 7th at Amagansett, and on March 2nd another at Montauk Point, the stomachs of which were examined by Dr. A. K. Fisher, and were found to contain no food. The Sag Harbour specimen, however, was, according to Dr. Fisher, "full of small fishes, twenty-five specimens of Goliosoma boscii, and 2 Menidia sp. (?)"

1902-3.

The records for this season are few.

On the St. Lawrence a large number visited Quebec, but only a very small number reached Lake Ontario.

In New Brunswick one was found dead at Lake Maququis-daic.
On Long Island a specimen taken at Rockaway Beach, December 14th, and examined by Dr. A. K. Fisher, contained scanty remains of unidentified fish, another from Amagansett on the 26th contained no food, and on March 2nd another was reported from there.

1903-4.

I have only one record for this season, from Ottawa, from Mr. White: "November 15th the flight occurred, and continued until the 21st, large flocks passing during that time."

Observers had become so accustomed to these flights that they probably failed to record what had become a regular occurrence; no birds were reported at Toronto.

1904-5.

The season of 1904-5 furnishes no records, and none of my numerous correspondents reported the Murres.

SUMMER RECORDS.

In addition to the winter migrations already recorded, there are indications of the migration of Brünnich's Murre in summer. In 1897 a specimen was taken at Kingston, Ontario (28), on July 8th, and early in August two were taken at Toronto (29); and another was noted on July 10th, 1903, at Kingston, Ontario, by Dr. C. K. Clarke.
RECORDS OF OTHER SPECIES.

The long series of records of Brünnich's Murre are accompanied by few records of allied species, so few indeed as to be of importance. I can find only the following:

Razor-billed Auk (*Alca torda*).

1893—November 10th, Montreal, Quebec (12).
1893—December 9th, Hamilton, Ontario.

Dovekie (*Alle alle*).

1899—December 13th, Chincoteaque Bay, Virginia (Auk, XVII., 1900, p. 293).
1901—November 18th, Toronto, Ontario.

Black Guillemot (*Cepphus grylle*).

1892—October 29th, Lake St. Peter, Quebec (12).
1895—December 19th, Toronto, Ontario.

It would have been of interest to ascertain if these Black Guillemots were not really *C. mandtii*. The Toronto bird was unfortunately destroyed. The record of October 29th does not coincide with the date of migration of Brünnich’s Murre for that year.

Of the Common Murre (*Uria trolle*) I have been unable to find a single record; and even the old records, previous to the period we are dealing with, from the New England coast, I am informed, refer really to *Uria lomvia*.

CONCLUSION.

The Common Murre breeds in company with Brünnich’s Murre on the Magdelen's, and probably elsewhere in the Gulf of St. Lawrence, and had the migrations originated in the Gulf it seems improbable that the records would have been confined to the one species; the Common Murre is the most southern of the two, its range being confined to the North Atlantic Ocean, while Brünnich’s Murre is a truly Arctic species, being found not only in the North Atlantic
and North Pacific, but its great centre of abundance is in the Arctic Seas.

To find a cause for the migrations we must look to where Brünnich's Murre is unaccompanied by the other species, and Hudson Bay would seem to be in the most likely place whence the migrations had their origin. Mr. A. P. Lowe, who has travelled so extensively in Hudson Bay in the interests of the Geological Survey of Canada, and lately as Administrator for the Canadian Government, writing to me, says: "The most southern breeding places in Hudson Bay are at Diggles Islands and Cape Wolstenholme, unless a few breed on the Arctic islands off the east coast, which is improbable. The birds remain throughout the year in the waters of Hudson Bay, between the moving and shore ice. We killed numbers of them during the winter 1903-4 at Cape Fullerton, in the north-west part of the bay.

"The Eskimos reported them as plentiful about the outer or western side of the Belcher Islands, on the east side of the bay, during the winter, and there is little doubt that they go south to the edge of the solid ice in James Bay, which extends almost to the northern end of that bay."

A series of migrations confined to one species, extending over territory much of which was unsuited to sustain the life of a bird whose food is marine, must have some definite cause, and in relation to cause, several facts connected with these migrations must be noted.

While a great proportion of the birds examined were young, some at least were adult.

It is extremely probable that none of the birds survived to return to their place of origin. Only in isolated cases were birds found with food. I have quoted all such records, some six in number, five of which are not beyond the supposed normal range of winter migration, the remaining one, of a Toronto bird, taken February 23rd, 1895, shows that it is not impossible to sustain life on the food obtainable in the Great Lakes, where the Long-tailed Duck (Harelda glacialis) winters in considerable numbers.

It seems likely that no food was obtained from the place where the necessity of migration arose to where it ended, or where the individual birds dropped exhausted. Even when
food might have been obtained, the exhausted condition of
the birds made it impossible to either capture or assimilate
it; birds I had alive refused to eat, and if forcibly fed were
unable to retain food, and in no case were captured birds
able to survive beyond a few days. It is impossible to say
for how long a period Murres can survive without food, but
it is certain that under the conditions we are dealing with
the period must be much less than if the birds were
stationary. Here and there a bird by reason of superior
staying powers, being less exhausted, was able to obtain
food, and these few survived for a period, but all eventually
succumbed before a return north became possible.

Very many thousands must have been numbered in each
migration; yet year by year they came at nearly the same
period, and over nearly the same territory, pressing forward
to the same fate.

The cause giving rise to so persistent a movement must
have been the same, as most unusual migrations are believed
to originate with, lack of food, and in this case sudden, not
gradual lack of food, or the birds would have been unable to
sustain the long flight they did.

I have published elsewhere an account of a parallel,
though isolated, case of migration among certain species of
ducks in Ontario (Auk, Vol. XXII., 1905, p. 206), in which I
was able to indicate a cause, and that cause was the sudden
covering over of the regular feeding grounds by ice; the
ducks, finding the usual open places over their feeding
grounds closed, and unable to find food in the deeper waters
of the Great Lakes, were eventually forced to migrate, but
not before they had become exhausted, and many were
picked up inland, unable to go further.

In view of this case it seems not impossible that the cause
of the migrations we are dealing with was the same, though
brought about in a slightly different way. Coming south, in
Hudson Bay, the Murres were caught between the moving
and shore ice, and, being cut off from their food supply,
had no alternative but to migrate. Mr. Lowe, writing to me,
says, "Those found at Toronto probably came from the bay,
where accidental freezing has cut them off from the open water,
and they have been driven south by a northerly gale. Not
infrequently they are driven ashore on the east side of the bay in this manner and quickly freeze."

It is unlikely that weather conditions that have never arisen before should continue regularly for a period of years, but it is quite possible that an increase in the severity of the usual conditions could arise and produce the cause giving rise to the migrations.

It is possible that what has usually been regarded as the normal migration of Brünnich's Murre previous to the years dealt with in this paper is really a migration arising in a less degree from the same cause, and that normally the Murres do not migrate far from their breeding limit.

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NEUERE BEOBACHTUNGEN ÜBER DEN HERBSTZUG DES STARES (*STURNUS VULGARIS*).

Von F. Helm.


3 Wege sind es, welche zum Ziele führen:

1. Die Beobachtungen an den Leuchttürmen,
2. Die Beobachtungen an den Schlafplätzen,

Dank der rührigen Tätigkeit des Herrn Professors Dr. R. Blasius stehen uns gegenwärtig 19 Jahresberichte über die Beobachtungen an den deutschen Leuchttürmen (von 1885 bis 1903) zur Verfügung. Gestatten Sie mir nun, meine Herren, Ihnen aus diesen Berichten einige kurze Mitteilungen zu machen. Stare verunglücken verhältnismässig häufig an den Leuchttürmen: so wurden von 1885 bis 1893 an den 40 deutschen Leuchttürmen 2728 Stück getötet, davon 1163 im Frühjahr und 1565 im Herbst. Wann erfolgte nun der Anflug im Herbst? Eine Zusammenstellung aus den deutschen Berichten ergibt für die 19 Beobachtungsjahre folgendes:


Im August zeigten sich während der 19 Jahre ebenfalls nur 2 mal Stare am Licht (28. August 1891 flogen am Roten Kliff bei Regen 9 Stare an, den 31. August 1902 verunglückte ein Einzelner bei Buk (Mecklenburg).
In der 1. Hälfte des September aber erfolgten 17, in der 2. Hälfte 45 Anflüge.


F. Helm:

vor dem Einschlafen noch eine Weile durch Schwatzen unterhält. Früher oder später am Morgen—je nach der Jahreszeit—entfernen sich die Stare entweder sofort wieder aus der Gegend oder verbringen daselbst erst einige Zeit mit Singen, Aufsuchen von Nahrung u. s. w.


Ferner verdanke ich Herrn Ludwig Schuster aus Oberhessen folgende Mitteilung: "Dass von den jungen Staren überhaupt kein einziger vor den Alten fortzieht, ergibt sich daraus, dass auf einem Teiche bei Lich, wo im Sommer nach unseren Feststellungen ca. 40,000 Stare übernachteten, noch
Ende November die gleiche Zahl, wenn nicht noch eine grössere dort nächtigte."


Auf die Meinung des Herrn Ludwig Schuster, dass in Oberhessen von den jungen Staren überhaupt kein einziger vor den alten fortziehe, weil die Zahl der in einem Teiche übernachtenden Individuen noch im Spätherbst nicht abgenommen habe, ist schon an einer andern Stelle von mir hingewiesen worden.

In der Ornithologischen Monatsschrift 1904 (S. 390), berichtet Lindner aus dem Fallsteingebiete folgendes: "Von allen Seiten ziehen meilenweit her im August die Stareenschwärme in das Schilf der Schauener Teiche. Vom ersten Drittel des August an ist die interessante Neumauerung aus dem Jugendkleid in das glänzende Alterskleid zu beobachten. Der Federwechsel beginnt zuerst an beiden Seiten der Brust, an den Schultern, dem Bürzel, der Unterschwanzdecke und den äusseren Schwanzfedern, schreitet dann nach der Mitte und nach oben zu fort und vollzieht sich zuletzt am Kopf, Hals und Nacken."


Aber, ist es denn auch in anderen Gegenden so? Hören wir! Aus Zwickau in Sachsen berichtete mir Herr Berge folgendes: "Ein hiesiger Präparator schoss im September wiederholt junge Stare neben alten (erstere waren noch in
der Mauser, sodass er sie nicht benutzen konnte). Dasselbe kam wiederholt auch bei einem anderen Präparator in Zwickau vor, und noch am 21. Oktober sah ich bei diesem einen Jungen, der noch nicht ganz ausgemauert hatte."

Aus dem an Sachsen angrenzenden Böhmen verdanke ich meinem Freunde, dem Herrn Forstmeister Loos, die nun folgenden Angaben.

1902.— Unter 5 Mitte Oktober erlegten Staren waren 2 alte, 3 junge Vögel.


1904.— War das Beobachtungsresultat ein gleiches.

Näher auf diese und eine Reihe andere Deutschland betreffende Beobachtungen einzugehen, ist jetzt nicht möglich; aber es sei gestattet, etwas ausführlicher die Tatsachen zu erörtern, welche die friesischen Inseln: Juist, Neuwerk, Helgoland, Sylt und Röm betreffen. Es gelang mir, dort Herren zu gewinnen, die mich aufs liebenswürdigste unterstützten; auch hatte Herr Professor Reichenow in Berlin die grosse Güte, die Altersbestimmung der in den letzten Jahren in bedeutender Anzahl geschossenen Stare zu übernehmen. Es ist mir ein aufrichtiges Bedürfnis, auch von dieser Stelle aus allen den Herren, die in so uneigenmütziger Weise meine Studien förderten, aufs verbindlichste zu danken.

Nun zu den Tatsachen!

Insel Juist.


1903 hatte Herr Lehrer Leege die Liebenswürdigkeit, zu verschiedenen Zeiten Stare für mich zu schießen. Hier nun das Resultat:


Von 10 den 6. Oktober geschossenen Staren waren 2 alte, 8 junge Vögel, 3 derselben hatten vollständig abgemauert.
Herbstzug des Stares. 551

Unter 7 am 18. Oktober erlegten befand sich 1 alter (wenigstens vorjähriger) Vogel und 6 ausgemauerte Junge.
9 Stare, anfangs Dezember aus einem Fluge von 30 Stück erlegt, setzten sich zusammen aus 2 alten (♂, ♀) und 7 jungen Vögeln.
Von 4 am 11. Dezember geschossenen Staren war nur 1 ein 2 jähriger Vogel, 2 dagegen vermauserte Junge; beim 4. Exemplar konnte das Alter nicht genau festgestellt werden.
Endlich 4 gegen Mitte Dezember auf Juist gesammelte Stare bestanden aus einem alten ♂, 3 Jungen (2 ♂ ♂, 1 ♀).
1903.—Im Oktober zeigten sich dort grosse Scharen auf dem Aussendeich, auf Feldern, in Gärten. 3 gegen den 27. Oktober erlegte Stare waren Junge, die vollständig die Mauser beendet hatten.
Nun gestatten Sie mir, meine hochgeehrten Herren, auch einige Angaben über die nordfriesischen Inseln Röm, Sylt und Helgoland zu bringen.
Röm.—1902.—Anfangs Oktober erhielt ich 10 dort erlegte, Stare, 5 davon waren alte, 5 junge Vögel, welche in der Mauser standen und am Kopfe Reste des Nestkleides erkennen liessen.
1903.—Anfangs Oktober unternahm ich einen Studienausflug nach der Insel Röm. Auf der Fahrt dahin am 3. und 4. Oktober bemerkte ich sowohl in Sachsen, als auch in den anderen durchreisten Teilen Deutschlands überall Scharen von Staren; so zählte ich am 4. Oktober auf der Fahrt von Hamburg nach Scherrebeck mindestens 8 grosse Flüge, trotz-
dem ich auf der Seite des Zuges sass, wohin der Rauch der Lokomotive ging. In der Stadt Scherrebeck hielten sich am 5. Oktober ebenfalls viele Stare auf den Telegraphendrähten, auf den Dächern etc. auf.


1904.—Unter 21 den 7. Oktober auf der Insel Röm geschossenen und vom Herrn Professor Dr. Reichenow untersuchten Staren waren 4 Alte, 17 Junge, und 62 Stück gegen Mitte Oktober dort gesammelte setzten sich zusammen aus 19 alten und 43 jungen Vögeln.

Sylt.—Die auf diese Insel sich beziehenden Angaben verdanke ich Herrn M. Hagendefeldt in Westerland. Er berichtet:

1902.—27. Oktober. „Junge Stare sieht man täglich an allen Orten.”


Wie verlief nun 1904 der Herbstzug des Stares auf Helgoland?

Ich erhielt von dort folgende Sendungen Stare, welche immer im Laufe einer Nacht am Leuchtturm angeflogen waren.

1. November, 20 Stück, darunter nach Herrn Prof. Reichnow 10 Junge, 4 vorjährige Vögel, Rest?
2. November, 47 Stück, darunter 33 Junge.
3. November, 9 Stück, darunter 6 Junge, 3 Alte.
4. November, 16 Stück, darunter 15 Junge, 1 Alter.

Ich bin damit am Schlusse angelangt; sollte es mir durch meine Ausführungen gelungen sein, den einen oder andern von Ihnen, meine hochgeehrten Herren, zu ähnlichen Studien zu veranlassen, so wäre damit der von mir beabsichtigte Zweck erreicht.
Die Pyrenäen, nächst den Alpen in Europa das imposanteste Hochgebirge, erstrecken sich vom Atlantischen Ocean bis zum Mittelmeere in einer Längenausdehnung von ungefähr 400 Kilometern. Die höchsten Erhebungen, bis zu 3400 m., zeigt der mittlere centrale Theil derselben (Maladetta mit dem Pic de Néthou südlich von Luchon 3404 m.) ; hier beträgt die durchschnittliche Kammhöhe 2800-2900 m. Nach Osten zum Mittelmeere hin vom Pic de Serrère (2911 m.) an, namentlich aber nach Westen zum Atlantischen Ocean hin, vom Pic du Midi d'Ossau an, der noch eine Höhe von 2885 m. erreicht, flächen die Berge allmählich ab. Die Form des Gebirges ist die eines langgestreckten Bergkammes, die Ausdehnung von Norden nach Süden zu ist verhältmissmassig gering, so dass die Bildung grösserer Hochflächen kaum vorkommt, dagegen eine grosse Anzahl steil ansteigender Bergspitzen mit zwischenliegenden schmalen Pässen (sogen. "Portes") sich finden.


Was die hydrographischen Verhältnisse anbetrifft, so ergiessen sich namentlich in nördlicher Richtung nach Frankreich zu eine grosse Anzahl von kleineren Flussläufen, die
Die Pyrenäen und ihre Vogelwelt.


Was die Vegetation anbetrifft, so haben die Pyrenäen auf der französischen Seite üppigen Waldwuchs. Man kann dort Wälder finden, so schön, wie sie in den Alpen jetzt kaum mehr beobachtet werden können, das heisst, schön für den Ornithologen, den Naturfreund, nicht für den Forstmann. Das Eindringen in die Wälder ist ziemlich schwierig, der Strassenbau ist noch nicht so weit fortgeschritten, als z.B. in unseren deutschen Mittelgebirgen, wie im Harz; die prachtvollen Edeltannen-Wälder können in Folge dessen weniger ausgenutzt werden; ich habe noch vollständige Urwälder gesehen, die noch von keiner Axt berührt waren. Ausserdem sind als Waldbäume hauptsächlich zu nennen Buchen, Eichen und Linden. Als sehr charakteristisch ist mir der Buchsbaum als Unterholz aufgefallen. Er wächst dort zu baumartigen Büschen aus und ich habe Buchsbaumbüsche bis zur Höhe von 4-5 m. gefunden. Durchschnittlich sind sie 3-4 m. hoch und stehen so dicht, dass man sich als Jagdfreund freuen muss. Die spanische, südliche Seite der Pyrenäen ist ziemlich kahl und waldlos, zum Schaden des Landes sind die Wälder dort meistens ausgerottet. Was die Pflanzen oberhalb der Wälder anbetrifft, so folgt zunächst unsere gewöhnliche Latsche, das Krummholz, wie wir sie z.B. am Riesengebirge und überall in den Alpen beobachten. Das Krummholz ist ziemlich verbreitet, namentlich auf der Nordseite. Dann kommt die Wiesenregion, die ähnliche Pflanzen bietet, wie in den Alpen, Gentiana, Orchideen, Nigritella, etc.

Hieran schliesst sich die höchste Region, die der Gletscher und Schneeefelder. Die Pyrenäen haben Schneeefelder, wenn
Rudolf Blasius:

auch nicht an Ausdehnung so gross, wie die Alpen, aber doch so gross, dass man bei manchen Touren 5 bis 6 Stunden über Eis und Schnee wandern kann.

Es ist begreiflich, dass ein Gebirge von dieser Form, von diesen hydrographischen Verhältnissen, mit dieser Vegetation, verhältnissmässig südlich unter dem 43° n.Br. gelegen, auf beiden Seiten an grosse Meere anstossend, eine mannigfaltige und interessante Vogelwelt beherbergen muss, teils als regelmässige Bewohner, teils als zufällig verschlagene Gäste.

So sind die Pyrenäen schon lange ein Lieblingsplatz für die Ornithologen gewesen. Ausser einigen wenigen Spaniern sind es namentlich Franzosen und Engländer, die die Pyrenäen wissenschaftlich ornithologisch erforscht haben.


1883 erschien die Fauna ornithologica de la Provincia Gerona von Dr. Estanislao Vayreda y Vila.

Anfang der 80er Jahre des vorigen Jahrhunderts hielt sich Howard Saunders mehrere Jahre in den Pyrenäen auf, namentlich in 2 Wintern und Vorfrühjahren in St. Jean-de-
Die Pyrenäen und ihre Vogelwelt. 557


1895 war Howard Saunders wieder in den Pyrenäen, um mit seinem Freunde Colonel H. W. Feilden den östlichen Theil zu durchstreifen. Von Toulouse (25 April) gingen sie über Foix und Tarascon nach Ax-les-Thermes, zurück nach Carcassonne, weiter nach Quillan, Vernet, Perpignan, Banyuls-sur-Mer, Figueras, Castellon-de-Ampurias, Gerona, Ripoll, über die

Sehr viele Notizen über Pyrenäen-Vogel finden sich in den beiden spanischen Werken:

1) Don Ventura de los Reyes y Prosper, Catalogo de las Aves de España, Portugal è islas Baleares, Madrid, 1886, und

2) Dr. José Arévalo y Baca, Aves de España, Madrid, 1887, und

vor allen Dingen in dem mit rastlosem Bienenfleisse zusammen-getragenen Werke von

3) Léon Olphe-Galliard, Contributions à la Faune ornithologique de l'Europe occidentale, Lyon, 1884-1892.

Die Pyrenäen und ihre Vogelwelt.


Dann interessirten mich 3 Exemplare vom Zitronenzeisig (Carduelis citrinella (L.) (a) 1 junges Exemplar aus dem Département des Vosges vom Juni 1883, mit Strichelchen auf der Unterseite; (b) Weibchen vom 13. Juli 1859 aus Molesson (Schweiz, Canton Freiburg) mit schmutzigen Farben, ähnlich den dunklen Exemplaren auf den Dresser'schen Tafeln; (c) Männchen vom 7. Mai 1885, erlegt bei Fuenterabbia bei Hendaye, also Nistvogel in den Pyrenäen und den Gebirgen Nordspaniens, mit dunklem Rücken und dunklen Federstreifen, ähnlich wie bei den dunklen Exemplaren der Dresser'schen Abbildungen.


Am folgenden Tage besuchte ich in St. Sebastian einen jugendlichen Ornithologen, Don Angel de la Rinua, der eine kleine interessante Local-Sammlung von Vögeln zusammengebraucht hatte.

Da der Sammler jetzt verstorben ist, seine Sammlung einem dortigen Collegio vermacht und nichts darüber veröffentlicht ist, will ich einige interessante Einzelheiten derselben hier mittheilen, verbunden mit mündlichen Mittheilungen, die mir gemacht wurden.

Erithacus luscinia (L.), unsere Nachtigall, nistet bei St. Sebastian; Turdus iliacus L., die Rotdrossel, kommt nur im Winter vor und dann nur in den Bergen; Regulus ignicapillus (Temm. ex Brehm), das feuerköpfige Goldhähnchen, nistet nicht dort, sondern zeigt sich nur im Winter; Accentor modu-
laris (Scop.), die Heckenbraunelle, wurde im Januar beobachtet, es ist aber fraglich, ob sie dort nistet; Tichodroma mauraria (L.), die Alpenmauerklette, wurde im Dezember bei Run erlegt; Motacilla lugubris Temm., die Trauer-Bachstelze, ist bei weitem die gemeinste von allen Bachstelzen, sowohl auf dem Zuge, als auch als Nistvogel; von Pyrrhula pyrrhula (L.), dem Rotgimpel, nistet die kleinere Form, P. p. europaea Vieill. in der Gegend, während die grössere Form, P. p. typica nicht vorkommt; Carduelis spinus (L.), der Erlenzeisig, kommt nur auf dem Durchzuge und zwar nur im Frühjahr vor; Carduelis carduelis (L.), ist häufig, die Basken nennen ihn "Carnaral;" der mit zwei rothen Flecken am Schwarz des Hinterkopfes singt, wie jeder dortige Vogelfänger weiss, besser; Sturnus vulgaris L., der gemeine Staar, nistet nicht, kommt aber in Massen auf dem Zuge vor, Sturnus unicolor Marmora, der einfarbige Staar, kommt nicht vor; Pyrrhocorax pyrrhocorax (L.) wurde im August, Corvus corone andayensis Olphe-Galliard, die kleine pyrenäische Rabenkrähe, im selben Monat beobachtet und ist wahrscheinlich Brutvogel; Lanius meridionalis, Tem., der südliche Würger, kam im Januar vor, Lanius senator L., der rothköpfige Würger, wurde im Sommer beobachtet; von Muscicapa atricapilla L., dem schwarzgrauen Fliegenfänger, wurden nur grauschwarze jüngere Exemplare, keine rein schwarzen alten Vögel gesehen; Pisorhina scops (L.), die Zwergohreule, wurde am 4 Januar 1885 erlegt; Circetus gallicus (Gm.), der Natternadler, wurde am 4 Januar 1885 bei St. Sebastian geschossen; Ardetta minuta (L.), die kleine Rohrdommel, kommt nur auf dem Durchzuge vor, ebenso Botaurus stellaris (L.), die grosse Rohrdommel, und Nycticorax nycticorax (L.), der Nachtreiher; Pterocles armenius (Pall.) das Sandflughuhn, ist selten, wurde im Februar geschossen; Otis tetra L., die Zwergtrappe, nistet nicht, kommt im Herbst sehr viel vor und ist im Frühjahr sehr selten; Fulica atra L., das gemeine Wasserhuhn, nistet nicht und wird nur auf dem Durchzuge beobachtet, Phalaropus lobatus (L.), und P. fulicarius (L.), sowie Recurvirostra avocetta L., der Avosettchnäbler, werden nur auf dem Zuge und dann selten beobachtet. Numenius arquatus (L.), der grosse Brachvogel, wurde während des ganzen
Die Pyrenäen und ihre Vogelwelt.

Jahres gesehen, nistet aber wohl schwerlich bei Irun, Scolopax rusticola L., kommt in der Ebene nur auf dem Zuge vor, nistet aber hoch im Gebirge; Mergus merganser L. wurde im Januar beobachtet, Phalacrocorax carbo (L.), die Kormoran-Scharbe, nistet an der Meeresküste, junge Vögel wurden im Sommer geschossen, von Sula bassana (L.), dem Basstölpel, wurde im Winter ein altes Exemplar erlegt, auch im Mai wurden Exemplare beobachtet. Colymbus fluviatilis, der kleine Lappentaucher, kommt während des ganzen Jahres vor, von Fratercula arctica L., dem arktischen Lund, kommen hauptsächlich junge, aber auch alte Exemplare vor; Procellaria pelagica L., der kleine Schwalbensturnvogel, wurde October 1885 bei Sturm lebendig gefangen.


In Bayonne (das Museum ist später abgebrannt, einiges zerstört; der Rest soll in einem neu errichteten Museum untergebracht sein) sagte mir 1885 der Conservator Hériart beim Besichtigen der schönen Exemplare von in den Pyrenäen geschossenen Bartgeiern, Gypaetus barbatus (L.), dass derselbe in den niedrigeren Bergen der Pyrenäen-Kette noch häufig nistet, vom grossen Schreiadler, Aquila maculata (Gm.), war ein schönes bei Bayonne erlegtes Exemplar vorhanden, von Geocichla mollissima (Blyth), der weichfedrigen Drossel, war ein prächtiges, 1879 bei Bayonne erlegtes Exemplar aufgestellt, der Citronenzeisig, Carduelis citrinella (L.), brütet angeblich auch in der Ebene in der Umgebung von Bayonne Pterocles alchata (L.), kommt vor, brütet aber nicht; vom gemeinen Wasserhuhn, Fulica atra L., war ein sehr schöner vollständiger Albino aufgestellt, ebenso von der gemeinen Waldschnepfe, Scolopax rusticola L. Stercorarius skua (Brünn.), die grosse Raubmöve, war durch ein im April 1884 bei Bayonne erlegtes Exemplar vertreten.


¹ Auf Wunsch der Redaktion sind die von Eigennamen abgeleiteten Species-Namen hier der Gleichmässigkeit halber kleinschreibung, obgleich ich es für richtiger halte, dieselben gross zu schreiben.—R. Blasius.
Aufstellung gefunden. Von in der Umgebung, vorzüglich in den Pyrenäen erlegten Exemplaren fielen mir folgende besonders auf:

- Pisorhina scops (L.), Zwergohreule, sehr schönes Exemplar;
- Bubo bubo (L.), Uhu, schönes ♂ und ♀;
- Falco peregrinus Tunst., Wanderfalke;
- Falco subbuteo L., Lerchenfalke;
- Tinnunculus tinnunculus (L.), Turnfalke;
- Falco aesalon Tunst., Merlinfalke;
- Milvus milvus L., Roter Milan;
- Pernis apivorus (L.), Wespenbussard;
- Pandion haliaetus (L.), Flussadler;
- Haliaetus albicilla (L.), Seeadler;
- Circus gallicus (Gm.), Natternadler;
- Buteo buteo (L.), Mäusebussard, zahlreiche Exemplare;
- Aquila chrysaetus (L.), Stein- oder Gold-adler, schöne Exemplare;
- Nisaetus pennatus (Gm.), Zwergadler, nach der Etikettierung 2 Exemplare; "Falco pennatus L., male adulte et femelle," in Wirklichkeit ein Pandion haliaetus (L.), und ein Nisaetus pennatus (Gm.).
- Accipiter nisus (L.), Finkenhabicht;
- Circus cyaneus (L.), Kornweihe;
- Gypaetus barbatus (L.), Bartgeier, schöne Exemplare;
- Neophron percnopterus (L.), Schmutziger Aasvogel, schöne Exemplare; und Gyps fulvus (Gm.), Prachtexemplare.

Der Garten selbst ist schön gehalten, auf kleinen Teichen mit fliessendem Wasser trieben sich Höckerschwäne und schwarze Schwäne umher, welche offenbar zahlreiche Bastarde, die die Teiche bevölkerten, hervorgebracht hatten. Ägyptische Entengänse, Chenalopex aegyptiacus (L.), waren zahlreich vertreten, darunter einige junge, ohne braune Flecke auf der Mitte der Brust.

Von Tarbes ging es weiter über den grossartig gelegenen berühmten Wallfahrtsort Lourdes, im schönen Gave-Thale, später durch welliges bewaldetes Hügelland nach dem berühmten Winter-Kurorte Pau. Hier befindet sich ein
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cosa (1639 m. hoch). Noch eine Stunde unterhalb Panticosa hörten wir zwei Wachtelmännchen (\emph{Coturnix coturnix (L.)}) ihr lustiges "Pick-per-wick" erschallen lassen. Charaktervogel des Ortes war unsere Hausschwalbe (\emph{Chelidonaria urbica (L.)}), die massenweise dort nistete.

Nach eintägigem Aufenthalt in Panticosa wanderten wir am 31 Juli über die Porte de Marcardou (2556 m.) wieder nach Norden nach dem französischen Bade Cauterets. Der Südabhang des Passes ist verhältnismässig kahl, nur einzelne Zirbelkiefern (\emph{Pinus cembra L.}) und Wachholder unterbrachen die einförmige Wiesenlandschaft. Ich beobachtete viele Wasserpieper (\emph{Anthus spinola workout (L.)}) und noch ganz dicht unter der Passhöhe (2556 m.) im Felsenterrain, nachdem wir schon viele kleine Schneefelder passirt hatten, in einer Höhe von c. 2500 m. eine Familie vom Hausröthling (\emph{Ruticilla titys (L.)}), die Alten, das Männchen mit leuchtendem Schwarz im Gefieder, und die flüggen Jungen. Mit Recht führen die Pyrenäenpässe den Namen Thür "Porte." So war die Porte de Marcardou der eigentliche Pass, zwischen 2 steil aufsteigenden schroffen Felsenrücken, höchstens 2 Meter breit, also wohl einer Thürschwelle zu vergleichen. Der Abstieg ist so steil, dass erst 1 Stunde unterhalb des Passes sich wieder Schnee sammeln konnte. Dicht unter dem Schneefelde folgten üppige Wiesen mit farbiger Blüthenpracht und bedeckt mit Millionen von Grashüpfern. Nicht weit oberhalb der Waldregion flog unmittelbar neben uns eine Blau-Merle (\emph{Monticola cyanus (L.)}) auf, setzte sich auf den nächsten Felsen und schmetterte ihr schönes, aber einfaches Liedchen. Ein mächtiger Adler, nach dem Blicke mit dem Feldstecher schien es mir der Kaiseradler (\emph{Aquila melanotus (L.)}) zu sein, sagte uns oben auf der Grenze sein Lebewohl, indem er wie ein Sturmwind in den Bergen verschwand. Bald hatten wir die Waldregion erreicht, mächtige Edeltannen, nie von einer menschlichen Axt berührt, boten köstliche Brutplätze den Schwarzspechten (\emph{Dryocopus martius (L.)}), deren Ruf wir rechts und links erschallen hörten. Gegen Nachmittag kehrten wir in dem kleinen Wirthshause an dem Pont d'Espagne ein und besuchten nach einfachem Nachtquartier am 1 August den Lac de Gaube nördlich von
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der Vignemale, ein Eldorado für Wasserstaare (*Cinclus cinclus pyrenaicus* Dress.), um am Abend in Cauterets einzutreffen.

Wie fast alle grösseren Pyrenäenbäder hat auch Cauterets eine Anzahl kleiner Verkaufsläden, in denen dort wohnende Preparateure ausgestopfte Vögel und Säugethiere, die in der Umgebung gesammelt sind, ausgestellt haben, ebenso wie Pflanzen und Mineralien der nächsten Umgebung. So sah ich in Cauterets schöne Exemplare vom Wespenbussard (*Pernis apivorus* (L.)), gewöhnlichem Mäusebussard (*Buteo buteo* (L.)), Alpenschneehuhn (*Lagopus mutus* (Montin.)), Rebhuhn (*Perdix perdix* (L.)), Schwarzspecht (*Dryocopus martius* (L.)), Alpenmauerklette (*Tichodroma muralia* (L.)), und Zipperammer (*Emberiza cia* (L.)).


Auf der Fahrt nach Gavarnie, oberhalb Cèdre, im sogenannten Chaos, einem wilden Wirrwarr vor Jahrtausenden abgestürzter Felsblöcke, war der Hausröthling (*Ruticilla titys* (L.)) wieder zu Hause, ebenso in dem Cirque de Gavarnie, dieser eigenartigen für die Pyrenäen charakteristischen Bildung steiler circusartiger Felsabstürze von der Centralkette sowohl nach Norden nach Frankreich, wie nach Süden nach Spanien zu, wo ausserdem grosse Schwärme gelbschnabiger Alpenkrähen (*Pyrrhocorax pyrrhocorax* (L.)) die imposante Alpenlandschaft belebten.

Um einen Ueberblick über die mächtige Centralkette der Pyrenäen zu haben, bestieg ich am 6 August den Pic de Pimené (2519 m.). Unten in der Waldregion beobachtete ich ein kräftiges Weibchen des Sperbers (*Accipiter nisus* (L.))
und oben auf dem Gipfel des Berges zog langsam kaum 30 Schritt entfernt ein mächtiger Gänsegeier (*Gyps fulvus* (Gm.)) an mir vorbei.

In Barèges konnte ich mir am 7 August bei einem GEMS-jäger einige schöne GEMSKrickeln zum Andenken mitnehmen. Ein mächtiges altes Exemplar vom Gänsegeier (*Gyps fulvus* (Gm.)) zierte den Hausflur.

Eins der schönsten und am opulentesten eingerichteten Observatorien der Welt besitzen die Franzosen auf dem Pic du Midi de Bigorre (2877 m.), den ich am 8 August bestieg. Der grossartige Blick in das Hochgebirge der Pyrenäen und das hügelige Vorland nach Toulouse wurde belebt durch einige Hausröthlinge (*Ruticilla titys* (L.)), Alpenflüevögel (*Accentor collaris* Scop.), gelbschnäblige Alpenkrähen (*Pyrrhocorax pyrrhocorax*) und Gänsegeier (*Gyps fulvus* (L.)).

Ein weiter Umweg führte mit der Eisenbahn über Luz, Pierrefitte, Lourdes, Tarbes nach Bagnères de Bigorre, das wir am Morgen schon oben von der Spitze des Pic du Midi de Bigorre zu unseren Füssen liegen sahen.


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Naturbeobachter ist, soll der Uhu (Bubo bubo (L.) ) in unmittelbarer Nähe von Luchon brüten.


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Von den meisten Arten waren prachtvolle Suiten vorhanden, darunter viele Exemplare aus den Pyrenäen, z.B. von Steinmerle (Monticola saxatilis (L.)), Blaumerle (Monticola cyanus (L.)), dann namentlich vom Wasserstaar (Cinclus cincclus pyrenaicus Dress.). Cetti’s Bruchsänger (Cettia cetti (Marmor,)) brütet in unmittelbarer Nähe seines Besitzthumes an der Garonne. Der Drosselrohrsänger (Acrocephalus arundinaceus (L.)) ist seltener, nur auf dem Durchzuge. Vom Alpenflißvögel (Accentor collaris (Scop.)), selbst in den Hochpyrenaen gesammelt, waren prachtvolle Suiten vorhanden. Meisen waren sehr schön vertreten, namentlich reizende Gruppen von der Beutelrohrmeise (Remizus pendulinus (L.)), selbst am Mittelmeer gesammelt und ausserordentlich lebenswahr an den Rohrstengeln sitzend aufgestellt. Sitta europaea L., der europäische Kleiber, war zahlreich vertreten, ebenso die Alpemauererklette (Tichodroma muraria (L.)) in grosser Menge, darunter interessante Exemplare mit Mauserung an der Kehle. Von vielen Arten waren schöne Albinismen gesammelt (im Ganzen 73 Stück!). Anthus spinolletta L., der Wasserpieper, war sehr schön, zum Theil mit rosig angeflogener Brust, aus den Pyrenäen vertreten. Vom Pirol (Oriolus oriolus (L.)) war eine prächtige Suite vorhanden, nach
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Rudolf Blasius:


In der Station des kleinen Städtchens Nizzan, wenige Stationen von Narbonne, unterbrachen wir am 16 August unsere Fahrt und besichtigten die naturhistorische Sammlung des 80-jährigen Herrn Rey, geführt von seinem Regisseur, da das Ehepaar in Vichy war. In einem grossen Saale des Landhauses war die Sammlung untergebracht an den Wänden, auf Gerüsten, unter der Decke, auf einem mittleren grossen Aufbau, in Gezweig u.s.w., in ähnlicher Weise, wie seiner Zeit die berühmte Sammlung von Pater Blasius Hanf in Mariahof. Die Vögel der Umgegend waren ziemlich vollständig vertreten, auch einige nordische Gäste, so 2 prachtvolle Singschwäne (Cygnus cygnus L.); besonders interessant war aber eine sehr reiche Sammlung, wohl an 100 Stück Albino’s. Noch in demselben Jahre ist Herr Rey gestorben und ich hoffe, dass für die Sammlung in passender Weise durch Conservierung gesorgt ist.


Zum Schlusse will ich kurz die einzelnen Arten aufführen, die ich theils selbst beobachtet, theils, als in den Pyrenäen gesammelt, in den verschiedenen Museen und Sammlungen der Pyrenäen-Gegend gefunden habe:

1. Erithacus luscinia (L.), St. Sebastian (Sammlung).
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3. *Accentor collaris* (Scop.), Pic du Midi de Bigorre, Sammlung Besaucèlle.
4. *Accentor modularis* (L.), St. Sebastian (Sammlung).
5. *Saxicola oenanthe* (L.), Gabas, Lacs d’Arious.
8. *Turdus iliacus* L., St. Sebastian (Sammlung).
10. *Acrocephalus arundinaceus* (L.), Sammlung Besaucèlle.
13. *Regulus ignicapillus* (Temm. ex Brehm), St. Sebastian (Sammlung).
14. *Remizus pendulinus* (L.), Sammlung Besaucèlle.
16. *Tichodroma muraria* (L.), St. Sebastian (Sammlung), Cauterets, Sammlung Besaucèlle.
17. *Anthus spinoletta* (L.), Gabas, Porte de Marcadou, Lac d’Estome. Sammlung Besaucèlle.
24. *Carduelis spinus* (L.), St. Sebastian (Sammlung).
25. *Carduelis citrinella* (L.), Sammlung Léon Olphe-Galliard in Hendaye.
26. *Carduelis carduelis* (L.), St. Sebastian (Sammlung).
27. *Acanthis flavirostris* (L.), Lac d’Estome.
29. *Fringilla coelebs* L., Gabas.
30. *Sturnus vulgaris* L., St. Sebastian (Sammlung), Sammlung Besaucèlle.
31. Oriolus oriolus (L.), Sammlung Besaucele.
32. Pyrrhocorax pyrrhocorax (L.), Lac d’Ajous, Col de Pourtalet, Gavarnie, Pic du Midi de Bigorre, Sammlung Besaucele.
33. Pyrrhocorax graculus (L.), Sammlung Besaucele.
34. Nucifraga caryocatactes (L.), Museum Bayonne, Sammlung Léon Olphe-Galliard, Museum Toulouse, Sammlung Besaucele.
35. Garrulus glandarius (L.), Luz.
38. Corvus corone L., Sammlung Besaucele.
39. Lanius meridionalis Temm., St. Sebastian (Sammlung), Sammlung Besaucele.
40. Lanius senator L., St. Sebastian (Sammlung).
41. Lanius collurio L., Sallent. Sammlung Besaucele.
42. Muscicapa grisola L., Sammlung Besaucele.
43. Muscicapa atricapilla L., St. Sebastian (Sammlung), Sammlung Besaucele.
44. Chelidonaria urbica (L.), Panticosa.
45. Apus melba (L.), Montserrat.
46. Picus viridis L., Luz.
47. Dendrocopos major (L.), Sammlung Besaucele.
48. Dendrocopos leuconotus (Bechst.), Luchon nach Sammlung Besaucele.
49. Dryocopus martius (L.), Gabas, Marcadou, Cauterets, Sammlung Besaucele.
50. Alcedo ispida L., Sammlung Besaucele.
51. Coccystes glandarius (L.), Sammlung Besaucele.
52. Pisorhina scops (L.), St. Sebastian (Sammlung), Museum Tarbes.
53. Bubo bubo (L.), Luchon, Museum Tarbes.
55. Falco subbuteo L., Museum Tarbes, Sammlung Besaucele.
56. Falco aesalon Tunst., Museum Tarbes.
57. Tinnunculus tinnunculus (L.), Montserrat, Museum Tarbes, Sammlung Besaucele.
58. Tinnunculus naumanni (Fleisch.), Montserrat.
59. Milvus milvus (L.), Col de Rioux, Museum Tarbes.
60. Milvus korschun (Gm.), Sammlung Besaucéle.
61. Pernis apicor us (L.), Museum Tarbes, Cauterets, Sammlung Besaucéle.
62. Pandion haliaet us (L.), Museum Tarbes.
63. Haliaetus albicilla (L.), Museum Tarbes, Museum Bigorre.
64. Circaet us gallicus (Gm.), St. Sebastian (Sammlung), Museum Tarbes, Sammlung Besaucéle.
65. Buteo buteo (L.), Museum Tarbes, Cauterets, Sammlung Besaucéle.
66. Aquila chrysaet us (L.), Lac d’Ajous, Museum Tarbes, Sammlung Besaucéle.
67. Aquila melanaet us (L.), Porte de Marcadou, Sammlung Besaucéle.
68. Aquila maculata (Gm.), Museum Bayonne.
69. Nisaet us fasciat us (Vieill.), Sammlung Besaucéle.
70. Nisaet us penet us (Gm.), Museum Tarbes, Sammlung Besaucéle.
71. Accipiter nis us (L.), Pic de Pimené, Museum Tarbes.
72. Circus cyaneus (L.), Museum Tarbes.
73. Gypaét us barbat us (L.), Museum in Bayonne, Pau, Tarbes.
74. Neophron pernopterus (L.), Museum Tarbes, Sammlung Besaucéle.
75. Gyps fulvus (Gm.), Pic de Pimené, Pic du Midi de Bigorre, Museum Tarbes, Barèges, Sammlung Besaucéle.
76. Vultur monach us L., Sammlung Besaucéle.
78. Tetrao urogall us L., Museum Bigorre, Sammlung Besaucéle.
79. Coturnix coturnix (L.), Panticosa.
80. Perdix perdix (L.), Cauterets.
81. Caccabis rufa (L.), Sammlung Besaucéle.
82. Ardea cinerea L., Sammlung Besaucéle.
83. Ardetta min et a (L.), St. Sebastian (Sammlung).
84. Botaurus stellaris (L.), St. Sebastian (Sammlung).
Nygæcorax nycticorax (L.), St. Sebastian (Sammlung).
86. *Syrrhaptes paradoxus* (Pall.), Museum Bayonne.
87. *Pterocles arenarius* (Pall.), St. Sebastian (Sammlung).
88. *Otis tetraax* L., St. Sebastian (Sammlung).
89. *Fulica atra* L., St. Sebastian (Sammlung).
90. *Charadrius morinellus* L., Sammlung Besaucèlle.
91. *Oedicnemus crepitans* (L.), Sammlung Besaucèlle.
92. *Recurvirostra avocetta* L., St. Sebastian (Sammlung).
93. *Phalaropus lobatus* (L.), St. Sebastian (Sammlung).
94. *Phalaropus fulicarius* (L.), St. Sebastian (Sammlung).
95. *Philomachus pugnax* (L.), Sammlung Besaucèlle.
96. *Numenius arceatus* (L.), St. Sebastian (Sammlung).
97. *Scolopax rusticola* L., St. Sebastian (Sammlung).
98. *Cygnus cygnus* (L.), Nizzan (Sammlung).

Ausserdem habe ich folgende Arten sicher auf meinen Pyrenäen-Reisen beobachtet, ohne genau den Fundort zu vermerken:

100. *Mergus merganser* L., St. Sebastian (Sammlung).
101. *Sula bassana* (L.), St. Sebastian (Sammlung).
102. *Phalacrocorax carbo* (L.), St. Sebastian (Sammlung).
103. *Stercorarius skua* (Brünn.), Museum Bayonne.
104. *Procellaria pelagica* L., St. Sebastian (Sammlung).
105. *Columbus fluvialis* Tunst., St. Sebastian (Sammlung).
106. *Fratercula arctica* L., St. Sebastian (Sammlung).

...
117. Parus cristatus L.
118. Certhia familiaris L. oder brachydactyla Brehm.
119. Alauda arvensis L.
120. Serinus serinus (L.).
121. Chloris chloris (L.).
122. Passer domesticus (L.).
123. Passer montanus (L.).
124. Pica pica (L.).
125. Apus apus (L.).


ON COLOUR VARIATION IN THE EGGS OF PALÆARCTIC BIRDS.

BY THE

Rev. F. C. R. Jourdain, M.A., M.B.O.U.

Until some thirty years ago very little attention was paid to the nature and composition of the pigments from which birds' eggs derive their varied and beautiful hues. Various suggestions, more or less probable, were made by Leuckart, Wilke, Leconte, Blasius, and others, some ascribing the red colour to secretions of the blood, while others held that both red and green were due to bile pigments. In 1875 Mr. H. C. Sorby published the results of his investigations by means of spectrum analysis in the "Proceedings of the Zoological Society," 1875, p. 351. Here, for the first time, the matter was placed upon a scientific basis, and though some of Mr. Sorby's conclusions have not been borne out by subsequent observations, he deserves all credit for being the first to open out a new field of research. Roughly speaking, his method of study was as follows: The earthy carbonates were first dissolved out by weak hydrochloric acid, the membranous matter was then removed by filtration, and the residue dissolved in absolute alcohol, or alcohol containing free acetic or hydrochloric acid. From the study of the spectra of these solutions, Sorby inferred that seven well-marked substances were present in the colouring matter of eggs. These he called Oorhodeine, Oocyain, Banded Oocyain, Yellow Ooxanthine, Rufous Ooxanthine—a sixth substance imperfectly distinguished—and Lichnoxanthine.

The later investigations of Liebermann and C. F. W. Krukenberg have, however, somewhat modified this list. Oocyain and Banded Oocyain have been identified with Biliverdin (C_{16}H_{18}N_{2}O_{4}); Yellow Ooxanthine of Sorby is


better known as Oochlorin; while no traces of Lichnoxanthine have been found by subsequent observers in any shell, and probably Sorby's results were due to the presence of minute fungi or mould upon the shells.

Oorrhodein appears to be present in greater or smaller quantities in almost all coloured eggs which show traces of red, brown, black or grey markings, or are of any shade of pink, olive or brown, sometimes alone, and frequently together with traces of Oochlorin and Biliverdin. (The Crypturi appear to form an exception to this rule, and here the red appears to be due to Ooxanthin preponderating largely over Biliverdin.) To Biliverdin in a pure state may be ascribed the blue tint which forms the ground colour of certain eggs, while in combination with Oochlorin it forms green, and various shades of olive in conjunction with Oorrhodein.

Having thus indicated the main constituents of colour in eggs we will now proceed to consider the principal variations which are to be found, more especially among birds whose eggs are normally more or less coloured.

It will be found that the chief variations from the normal type fall naturally into three main classes: Firstly, those in which there is either a deficiency or a total absence of the one or more pigments normally present; secondly, those in which a pigment is present, which is normally absent; and thirdly, those in which at least two pigments are normally present in varying proportions, and sometimes one and sometimes the other predominates.

(1) Under the first head we may place those cases in which eggs normally coloured by Biliverdin are found devoid of colouring matter. Thus pure white eggs of Sturnus vulgaris are occasionally met with. At other times eggs which are coloured chiefly, if not entirely, by Oorrhodein, are found colourless, e.g., Lagopus scoticus, Cerchneis tinnunculus, Erithacus rubecula, etc. A third case is that in which at least two pigments are normally present (such as Linota cannabina, Ligurinus chloris, Pyrrhula europaea, etc.), but eggs without markings or ground colour are sometimes found. To give a complete list of those species in which this variation occurs would take
up too much space, and it is sufficient to say that a
tendency towards albinism, or rather defect of colouring
matter, is occasionally found in most coloured eggs.

(2) In this division may be included those cases in which
birds, which, as a rule, lay eggs coloured solely by
Biliverdin, occasionally produce eggs showing distinct
markings of Oorhodein. Well known examples of this
are the red-spotted eggs of *Sturnus vulgaris*, *Saxicola*
*oenanthe* and *Raticilla phoenicurus*, and similar instances
may be found among exotic species, such as the South
African *Spreo bicolor*. Certain birds which normally
lay white or nearly white eggs also occasionally show a
tendency to red or brown markings, e.g., *Gyps fulvus*,
the various species of the genus *Circus*, *Fratercula arctica*,
etc. (Besides these cases there are also the melanistic
eggs of *Anas boschas* and possibly also of *Podiceps*
*cristatus* and *P. auritus*, but here further investigation
is required.

(3) This division forms the main subject of this paper and
is treated in greater detail. It will be seen that the range
of variation differs widely in different species. As an ex-
treme instance the case of *Cisticola cisticola* may be
mentioned, where the eggs are sometimes pure white,
at other times blue or with decided red markings on a
blue ground. The more ordinary range is from a ‘blue’
type, coloured chiefly by Biliverdin, to a ‘red’ or erythrific
type, coloured chiefly by Oorhodein, with numerous
intervening stages, and sometimes one or both of the
extreme types are wanting.

The following table will give some idea of the limits of
variation in the more important cases of variable eggs:—


2 Similar instances are to be found in the African *Cisticola textrix* and *C.
tinicus*, in the Indian *Cisticola* and *Prinia*, and also among several Weaver
Birds of the genus *Hyphantornis* (*H. velatus*, *H. migriceps*, etc.).
**CORVIDE.**

In this family the extreme types are rarely met with, but the range of variation is great.

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLUE TYPE. (Bluevirdin only.)</td>
<td>BLUE PREDOMINANT.</td>
<td>BOTH PIGMENTS PRESENT. Usually blue ground and brown or red markings; occasionally mixture with ochlorin.</td>
<td>RED OR BROWN MARKINGS PREDOMINANT.</td>
<td>RED TYPE. (Ochrolenin only.)</td>
</tr>
</tbody>
</table>

(No markings.)

Has been met with in Wales (J. H. Saltor).

Not uncommon; one egg in a clutch sometimes of this type.

Normal.

Ground colour almost concealed by markings.

One clutch from Unst, Shetlands, 1858 (Prof. A. Newton).

**C. corax canaliensis** Hart. & Kleinsch.

Normal.

Normal.

Normal.

Occasionally met with (E. G. B. Meade-Waldo).

**C. cornix** L.

Rare.

One egg in a clutch often of this type.

Normal.

Normal.

A set of five taken near Gothenburg, Sweden, by Mr. Ramberg (R. H. Read). One clutch from Mull in 1877 (R. H. Mitford).

**C. corone** L.

Devon (R. H. Read), Germany. Rare.

One egg in clutch often of this type.

Normal.

Normal.
### CORVIDÆ—continued.

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<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
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</thead>
<tbody>
<tr>
<td>Light bluish-green; no markings. Rare.</td>
<td>Normal.</td>
<td>C. frugilegus L.</td>
<td>Normal.</td>
<td>Has occurred several times in Germany, 1893, 1894, and 1896. (Baron von König Warthausen and von Wangelin.) Fig. Jourdain, Eggs Europ. Birds, pl. 41.</td>
</tr>
<tr>
<td>Pica pica (L.)</td>
<td>Normal.</td>
<td>One clutch taken in which 2 eggs were of the erythristic type and 4 were normal (F.C.R.Jourdain).</td>
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</tbody>
</table>

[A tendency to erythristism is sometimes shown in eggs of Garrulus glandarius (L.), and the normal ground colour in the genus Pyrrhocorax varies from very pale greenish to warm cream-colour, some eggs having distinct red-brown markings. The South African Coccus capensis Licht. always lays eggs of type (E).]

### FRINGILLIDÆ.

Here the range is not so great, but among the Emberizidae there is a distinct tendency to bluish and reddish types. A clutch of Cocothraustes cocothraustes in the British Museum has the ground colour creamy-brown (Stolp.).

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<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
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<tbody>
<tr>
<td>Bluish ground, no markings (R. H. Read).</td>
<td>Normal.</td>
<td>Ligurinus chloris (L.).</td>
<td>Red markings all over, like M. griseola on pale blue ground (R. H. Read).</td>
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As below.
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<tr>
<th>(A)</th>
<th>(B)</th>
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<tbody>
<tr>
<td><strong>FRINGILLID.E—continued.</strong></td>
<td><strong>LINOTA CANNABINA (L.).</strong></td>
<td><strong>P. H. Read.</strong></td>
<td><strong>PYRRHULA EUROPEA Vicieill.</strong></td>
<td><strong>White ground; reddish-brown markings (rare).</strong></td>
</tr>
<tr>
<td>Blue type without marks (scarce).</td>
<td>Normal.</td>
<td>Normal.</td>
<td>Large blotches reddish-brown.</td>
<td><strong>White ground; reddish-brown markings (rare).</strong></td>
</tr>
<tr>
<td><strong>FRINGILLA COELEBS L.</strong></td>
<td><strong>Bluish tints almost wanting.</strong></td>
<td><strong>Surrey (R. H. Read), etc.</strong></td>
<td><strong>PASSE DOMESTICUS (L.) AND P. MONTANUS (L.).</strong></td>
<td><strong>One egg in a clutch often has distinctly bluish ground.</strong></td>
</tr>
<tr>
<td>Blue; no markings.</td>
<td>Blue ground: black or brown markings.</td>
<td><strong>Normal.</strong></td>
<td><strong>White eggs, almost covered with warm red markings.</strong></td>
<td><strong>EMBERIZA SCHENICLUS (L.).</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
<td><strong>Bold reddish markings on cream ground.</strong></td>
<td><strong>Bluish ground; a few dark lines at big end.</strong></td>
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<td></td>
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<td></td>
<td><strong>Less Common.</strong></td>
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**Note:**
FRINGILLIDÆ—continued.

(C) CALCARIUS LAPPONICUS (L.).


(D) PASSERINA NIVALIS (L.).

Greenish ground.  Normal.  Reddish ground.

Many species of Emberizidæ vary from (C) to (E). The extreme red types of *E. calandra* L. and *E. citrinella* L. are warm red with a few black streaks, or white with red markings. Eggs of *E. cirtus* L. are rarely found with a pinkish ground colour; as also with *E. hortulana* L.; while *E. pusilla* Pall. appears to be a variable species.

[AFAUDIDÆ.

These birds do not show much range of variation. A rare variety of *Alauda arvensis* L. has a pale blue ground, with a few fine brown spots (B), but this type does not appear to occur in eggs of *A. arbores*, which shows a distinct erythristic tendency, and has been found with bold red spots on white ground, like the egg of *Hirundo rustica* (Wales, J. H. Salter). Dr. Rey has a remarkable red variety of the egg of *A. cristata*, like the red type of *A. tricolor*.

MOTACILLIDÆ.

With the exception of *Motacilla hoarula* L. there is far less variety among the Wagtails than the Pipits.

(M) **M. Hoarula L.**

Bluish ground; spotted with bluish grey.

Bluish ground, spotted rufous and grey; Ireland (R. J. Ussher).

Cream ground; rufous markings. Germany (Rey); Staffordshire, 1904 (E. W. Blagg). A bright pink variety of the Eastern form, *M. hoarula melanope* Pall. has been taken in Kashmir (Brit. Mus.).
### (A) MOTACILLIDÆ—continued.

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<th>(B)</th>
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<tbody>
<tr>
<td><strong>Bluish ground:</strong> grey spots (scarce).</td>
<td>Normal.</td>
<td>Normal.</td>
<td>Commonest type in some districts.</td>
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</table>

*A. cervinus* (Pall.), *A. camppestris* (L.), and *A. obscurus* (Lath.), all are found with a reddish as well as a greyish type. F. C. Selous has a very bright pink clutch of *A. obscurus* from the Orkneys.

### LANIIDÆ.

Here, again, we find the tendency to run into two types shown in the case of several species, such as *Lanius minor* Gm. and *L. pomeranus* Scop., but the best example is that of *L. collurio* L.

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### SYLVIIDÆ.

This family furnishes some excellent examples of strongly marked erythristic types but blue examples are wanting, except in *Cisticola*. A remarkable instance where the eggs normally belong to the red type is that of *Cettia cetti* (Marm.), and in a lesser degree some species of *Locustella* and *Drymoeca*.

<table>
<thead>
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<th>(B)</th>
<th>(C)</th>
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<tbody>
<tr>
<td>Pale type.</td>
<td>Normal.</td>
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<td>(A)</td>
<td>(B)</td>
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<tr>
<td>SYLVIIDÆ—continued.</td>
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<td>(A)</td>
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<tr>
<td><strong>TURIDIDÆ</strong></td>
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<tr>
<td>Considerable variation is shown in the eggs of some species in this family, and the normal type varies from (A), in <em>Ruticilla phoenicurus</em>, to (E), as in <em>Geocichla varia</em> (Pall.).</td>
<td></td>
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<tr>
<td>Some eggs almost without markings (R. H. Read).</td>
<td></td>
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<tr>
<td>Two types: greenish-blue ground and warm cream.</td>
<td></td>
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<tr>
<td><strong>Turdus viscivorus</strong> L.</td>
<td></td>
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<tr>
<td>No markings. (Not uncommon.)</td>
<td></td>
</tr>
<tr>
<td>Normal.</td>
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<tr>
<td>Large blotches of reddish-brown.</td>
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<tr>
<td>Wanting.</td>
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<tr>
<td><strong>T. musicus</strong> L.</td>
<td></td>
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<tr>
<td>No markings (occasional).</td>
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<tr>
<td>Cat. Eggs Br. Mus. IV., Pl. VIII., fig. 4.</td>
<td></td>
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<tr>
<td><strong>T. merula</strong> L.</td>
<td></td>
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<tr>
<td>Blue.</td>
<td></td>
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<tr>
<td>Faint markings.</td>
<td></td>
</tr>
<tr>
<td>Normal.</td>
<td></td>
</tr>
<tr>
<td>Normal.</td>
<td></td>
</tr>
<tr>
<td>Red type (rare). Figured in Frobish's Brit. Birds, Pl. I., fig. 17, and Cat. Eggs Brit. Mus. IV., Pl. VIII., fig. 1; also Scotland (R. H. Read).</td>
<td></td>
</tr>
<tr>
<td><strong>Dauria luscinia</strong> (L.).</td>
<td></td>
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<tr>
<td>Bluish type.</td>
<td></td>
</tr>
<tr>
<td>Olive (normal).</td>
<td></td>
</tr>
<tr>
<td>Brown blotches.</td>
<td></td>
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<tr>
<td>White ground; brown markings; rare. (Northampton, C. E. Wright.)</td>
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</tbody>
</table>
**Muscicapidæ.**

Here again there is a wide range between the normal eggs of *Muscicapa atricapilla* (A), and those of *M. grisola* (D) or (E).

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
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</table>

**Cuculidæ.**

One very remarkable instance.

<table>
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<tr>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue type. Common in Finland; occasional on Continent; very rarely if ever found in England. (R. H. Read reports one from Staffordshire.)</td>
<td>Faint markings on blue or green-blue ground.</td>
<td>Cuculus canorus L.</td>
<td>Normal.</td>
</tr>
</tbody>
</table>

**Charadriidæ.**

There is a good deal of variation in the normal eggs of this family, which range from (B) to (E).

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<tr>
<th>(B)</th>
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</table>
CHARADRIIDÆ—continued.

A very considerable number of species show two types: one with a greenish or bluish ground, and the other with a much warmer ground colour. Amongst these may be mentioned Squatarola helvetica L., Charadrius pluvialis L. (extreme type, almost red in colour), Endromas morinellus (L.), Chatusia gregaria Pall., Galitago gallinago (L.), G. gallinula (L.), Tringa alpina (L.) (ground colour sometimes very decided blue), T. minuta (Leisl.), T. maritima Gm., Micetes pusillus (L.) (a scarce variety with blue ground), Toloras glareola (L.), T. ochropus (L.), T. calidris (L.) (same range of colouring as T. caemulus), T. fuscus (L.), Limosa hyper-nivea (L.) and L. limosa (L.) (green and brown types), as also in Numenius arquata (L.) and N. phaeopus (L.). I have also seen eggs of Olis tarda L., from S. Spain, sparsely marked with brown on a bright blue ground.

LARIDÆ.

Some excellent examples of erythrum are to be found among the Laris. [Eggs of Hydrochelidon niger L. are sometimes marked with reddish spots. Normal eggs of some species (St. fuligineos Gm., Anous stolidus (L.), etc.) are very rufous.]

- **Sterna fluviatilis Naum. and S. maccura Naum.**
  - Bluish ground: faint traces only of markings (scarce).
  - Bright blue ground.
  - Normal. Chocolate ground; black markings.

- **Larus ridibundus L.**
  - Bluish: no markings.
  - Slightly marked.
  - Red type, very rare. (See Harvie-Brown & Buckley, Vertebr. Fauna, of Sutherland, Caithness, etc.) Also Germany.

- **L. marinus L.**
  - Bluish white, almost unmarked. S.W. Sweden (Seebolm).
  - Bluish ground, with a few markings. (Ireland, R. J. Ussher.)
  - Common. Normal. (Possibly the red type occurs also in this species. Some eggs from Norway certainly appear too large for L. argentatus.)
LARIDÆ—continued.

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Eggs of Megalæstris catarhactes (L.) show two very different types and blue eggs of both this species and Stercorarius crepidatus (Banks), almost unmarked, have been found in the Shetlands (E. W. Blagg, Brit. Mus. Coll., etc.).

ALCIDÆ.

[The eggs of Alca torda L. though variable, all tend to a rufous type of colouring, more or less definite; and the green and blue types found in U. troile (L.) do not occur.]

<table>
<thead>
<tr>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
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<tbody>
<tr>
<td>Bluish ground.</td>
<td>Every shade of ground colour, from deep blue-green to yellow or cream or white, with innumerable types of markings, are to be found.</td>
<td>URIA TROILE (L.). Warm ground with deep &quot;port wine&quot; markings, scarce. Yorkshire coast.</td>
</tr>
<tr>
<td>No markings.</td>
<td>Warmed ground with deep &quot;port wine&quot; markings, scarce. Yorkshire coast.</td>
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</tbody>
</table>

Uria breonichii Sab. appears to vary in the same way (H. J. Pearson).
COLYMBIDÆ.

Eggs of the Colymbi are found with two types: the ground colour being generally olive-brown or chocolate, but sometimes distinctly greenish in hue.

RALLIDÆ.

CREX CREX (L.).

One egg in a clutch sometimes bluish in ground-colour and sparsely marked. Normal. Normal. A very pretty type is boldly blotched with rufous on a creamy ground.

Eggs of Gallinula chloropus (L.) show the same tendency, but to a lesser degree. Porphyrio ceterum, which normally lays eggs with brown markings, occasionally produces a brilliant red variety, but does not vary towards type (A).

[GALLINÆ.

The olive coloured eggs of Perdix perdix (L.) and Phasianus appear to vary only towards a blue type, while, on the other hand, the eggs of Lagopus scoticus (Lath.) are sometimes of a splendid red colour; but variation appears to exist only in one direction.]
Section IV.

ECONOMIC ORNITHOLOGY AND BIRD PROTECTION.

THE WILD BIRDS PROTECTION ACTS AS ADMINISTERED BY ORDERS IN GREAT BRITAIN AND IRELAND.

By Sir Digby Pigott, C.B.

The protection of wild birds being one of the subjects to which the attention of the Congress is invited in the Agenda, a short account of the statute law as it now stands in Great Britain and Ireland, and the stages by which it has been reached, with a few remarks on its application by statutory Orders in different localities, may be of some interest, and possibly of assistance to the members in considering, as I hope they may be disposed to do, the possibility of some improvement in the present law and practice.

Since Professor Newton, to whom the gratitude of all lovers of British birds is due, in his paper on the "Zoological Aspects of the Game Laws," read before the British Association at its meeting at Norwich in 1868, awakened public interest in the subject, few matters have been more discussed, both in and outside Parliament, than the importance of doing something to protect our native wild birds.

To say nothing of magazine articles—many of much interest and value; of endless correspondence in the newspapers, and discussions by learned and other societies, the question has been a subject of enquiry by two Select Committees of the House of Commons. No less than eleven separate Acts have received the Royal Assent, and almost as many Bills introduced in one or other House, and after more or less debate withdrawn or dropped.

As a result of the discussion on Professor Newton's paper at the Norwich meeting, a Committee of the British Associa-
tion was appointed to consider the possibility of establishing a close time for indigenous animals. Canon Tristram was the first Chairman, and Mr. Dresser the Secretary, the other members being Mr. Tegetmeier and the late Mr. Frank Buckland.

About the same time a local association had been started in Yorkshire to protect the Gulls and rock-haunting birds which were being killed wholesale while breeding on the cliffs. One man boasted to Mr. Cordeaux, who wrote on the subject in the "Zoologist," that he had in one year killed with his own gun 4000 Kittiwakes at Flamborough. On the initiative of this Society a Bill, destined to become the first of a long series of protection Acts (32 and 33 Vic., cap. 17), "An Act for the Preservation of Sea Birds," was in 1869 introduced in the House of Commons by Mr. Christopher Sykes, the Member for the East Riding.

The Bill, which was considerably altered in its passage through the House of Lords, was, Professor Newton informs me, drafted by Mr. Barnes, Rector of Bridlington, and Commander Knocker, then serving in the Coastguard in the neighbourhood. The names of these pioneers, good men and true, should not be forgotten.

The Act gave a list of some 33 names, many of them synonymous, which, with the exception of "young birds unable to fly," were protected from the 1st April to the 1st August. The penalty attached to a breach of the law was £1 for each offence; and offenders, under a further penalty of £2 with costs, were required, when called upon to do so, to give correct names and addresses, a wise provision repeated in later Acts.

The exception of young birds was made to meet the objection that in many parts young Seafowl were still a valued and common article of food among the poorer classes. This provision was not renewed when the Act of 1869 was repealed in 1880.

The Act of 1869 proved a success, and in the opinion of those most competent to judge, was the means of saving from extinction more than one of the great breeding colonies.

The protection of sea birds had been advocated chiefly on the

1 In old days it is scarcely necessary to say that young Seafowl were highly esteemed delicacies. The rent paid to the Abbot of Tavistock for the Scilly Isles in the 14th Century was "CCC Vulcure vocat Puffins vol. VI s. VIII d."
ground that these birds are useful as scavengers in harbours and in warning vessels off rocks by their cries, and in hovering over and pointing out to fishermen the localities of the shoals of fish.

In the meantime, the Close-time Committee, which had been joined by Professor Newton and Mr. Harting, had not been idle. It was mainly owing to their efforts that the second Act of the series (35 and 36 Vic., cap. 78, "For the Protection of certain Wild Birds during the Nesting Season") was placed upon the Statute book.

The Act of 1872, with modification, extended the protection given to sea and cliff-haunting birds by the 1869 Act to some 80 other more inland species. For these a close-time was fixed from the 15th March to the 1st August. First offenders were let off with a reprimand and payment of costs, and later offences punished by a fine of 5s. for each offence.

The Bill, as first introduced, had made the penalty £1, as in the case of offences against the Sea Birds' Act, and had extended the protection to all birds, with power to Justices in Quarter Sessions at discretion to make exceptions.

But in this and other particulars it was altered by the Select Committee to which the Bill was referred, and not for the better. The penalty was reduced, and a scheduled list of the birds to which the Act should apply substituted for the more general protection, no power being allowed to magistrates or others, as in the original proposal, to make exceptions or alterations.

The divisions taken on the details of the schedule, as recorded in the report of the Committees, are rather curious and interesting reading. Motions were made to strike out of the list of protected birds first the Hedge Sparrow, then the Whinchat, both, it might have been supposed, very innocent birds. In both cases the "Ayes" and "Noes" were equal, and the birds saved only by the casting vote of the chairman, Mr. Andrew Johnston, who had brought in the Bill.

A member who had supported the Whinchat cast his vote against the Hedge Sparrow. "Give a dog a bad name, and hang him." Had the little Accentor appeared in the list under any of his many names other than "Sparrow," votes would, perhaps, have been recorded differently.
The Owls were strongly supported, a motion to strike them out having been defeated by a majority of 14 against 4. The Thrush was rejected by a vote of 9 against 6.

It is interesting, as an illustration of the difficulty in foreseeing what may be the practical effect of any legislation, and the need for caution in such matters, to read that in some parts at least the Act defeated its own object. Market gardeners and others who, so long as their hands were free, had been tolerant of bird depredations, when they found themselves no longer at liberty to shoot at will during the fruit season, paid boys to take every nest they could find.

"I believe," said Canon Tristram, in his evidence before the Select Committee of 1873, "that the birds have practically, in market garden neighbourhoods, suffered owing to this supposed protection, because it is in advance of the public opinion of the class affected by it."

In spite of the labour spent upon it, the House of Commons was not satisfied with the Act of 1872, and within a year of its passing another Select Committee was appointed, this time with power to take evidence "to enquire into the advisability of extending the protection of a close season to certain wild birds not included in the Wild Birds Preservation Act of 1872." Mr. Auberon Herbert was chairman.

The interesting but conflicting evidence given by naturalists, farmers, gardeners, and the much abused but interesting bird catchers, will repay study. But the length of papers being wisely limited, all that can be done here is to state the conclusions at which the Committee arrived. They recommended that all birds not already protected should be protected between the 15th March and the 1st August, but that power should be reserved to owners or occupiers, either themselves or by deputies, to destroy birds on the lands owned or occupied by them; that a Secretary of State should have power to make exceptions from the Act of 1872, as well as from the proposed new Act; that "for the sake of giving better protection to swimmers and waders," it should be illegal during the close season to sell any bird mentioned in "The Seafowl Preservation Act," or "The Wild Birds Protection Act of 1872," whether taken in the country or said to be imported "from any other country";
that violations of the Act of 1872 or the proposed new Act should be punished "by the payment of costs alone for the first offence and the payment of costs and a fine not exceeding 5s. for every offence after the first."

More than one witness had strongly urged that the penalty was insufficient to act as a deterrent.

The Committee further recommended that the protection of the wild birds named in the Schedule of the 1872 Act "should be continued."

No immediate action was taken to give effect to these recommendations. But in 1874 a Bill was introduced in the House of Lords by Lord de la Warr, which, leaving the "Seafowl Preservation Act" of 1869 untouched, proposed to repeal the Act of 1872, "with the object of making," as stated in the Preamble, "more effectual provision for promoting the objects and purposes" of the Act. It was a rather crude Bill and, as it was not to apply to birds dealt with by the Sea Birds Preservation Act, one of its effects would, had it become law, have been to place sea birds—which were thought to be more especially in need of protection—in a worse position than others, inasmuch as the eggs of the other birds would have been protected, while the sea birds' eggs remained unprotected. The Bill though not proceeded with, is of interest as being the first proposal made in Parliament for the protection of eggs of any wild bird other than game birds.

In 1876 and in 1880 a third and fourth Act were passed.

The first (39 and 40 Vic., cap. 29) began with a statement in the Preamble that Wildfowl "forming a staple article of food and commerce," had "of late years greatly decreased in numbers by reason of their being inconsiderately slaughtered during the time that they have eggs and young," and imposed a fine of £1 for each offence for killing any of a long list of Wildfowl and Waders between the 15th January and 10th July, or such other altered close times as might be fixed by the Home Secretary or Lord Lieutenant of Ireland on the application of Justices in Quarter Sessions.

The second Act (43 and 44 Vic., cap. 35) entitled "An Act to Amend the Laws Relating to the Protection of Wild
Birds," is the Magna Charta of British Birds, and, with modifications in minor particulars by later Acts, still stands as the basis on which the protection of wild birds during the nesting season, or throughout the year, rests.

It repealed the earlier Acts, those of 1867, 1872, and 1876, and, in accordance with the recommendations of the Select Committee of 1873, fixed a close time for all birds from the 1st March to the 1st August, with a fine for breaches of the law of One pound (£1) in the case of some 80 favoured birds, and lesser penalties (a reprimand with costs for a first offence, and a 5s. fine for a later offence) in the case of other unscheduled birds.

It was also made illegal to expose the birds for sale after the first fortnight of the close season unless it could be shown that they had not been illegally obtained.

The objections of market gardeners and farmers which, as already stated, had brought discredit on the Act of 1872, was to some extent met by a provision empowering owners or occupiers, either themselves or by deputies, to kill, on lands owned or occupied by them, birds not included in the Schedule.

A Secretary of State in Great Britain and the Lord Lieutenant in Ireland might on application from Justices in Quarter Session vary the close season in any locality; but, curiously enough, it was not until fourteen years later that power was granted (57 and 58 Vic., cap. 24) to make alterations of any kind in the Schedule list of birds protected.

The following year another short Act (44 and 45 Vic., cap. 51) was passed, explaining a point of detail in the Act of 1880, on which some doubts had arisen, and adding "Larks" in the somewhat confused Schedule.

It was not until ten years later that the general question of the protection of birds was again before Parliament. But in 1888—the year of the last great irruption of the Sand-grouse into Western Europe—Mr. Sydney Buxton introduced and succeeded in passing a Bill for the special protection of these strange Tartar invaders.

The original Act, 51 and 52 Vic., cap. 55, which, "in order," as the Preamble states, that the birds "might, if
possible, become acclimatized” in the United Kingdom, made it illegal for three years to kill or expose for sale any British-killed Sandgrouse, expired on the 1st January, 1892, but has been again and again renewed by Expiring Laws Continuance Acts, and is still in force.

Unhappily the Act for the protection of the Sandgrouse only locked the stable door after the horse was stolen. By the time it came into operation, on the 1st January, 1889, almost all the birds, some of which had bred in England and Scotland, had left the country.

The general question cropped up again in 1891, when a Bill was introduced by Mr. Alfred Pease, proposing to extend the close season, as fixed by the 1880 Act, from the 1st to the 12th August, and to give County Councils in Great Britain and Justices in Quarter Sessions in Ireland unlimited power to prohibit taking birds’ eggs in these countries, and to make the killing of the 36 favoured birds named in a Schedule illegal at any time and under any circumstances.

It is not very easy to understand on what principles the list of birds to be thus specially protected was drawn up. Crossbills, Goldfinches, and Woodpeckers, for instance, were to be sacred. Nightingales, Pied Flycatchers, Shorelarks, and such rare visitors as Bee-eaters, and Rose-coloured Pastors, might be shot at will. Well backed though it was—Mr. Asquith, Lord Granby, Sir Edward Grey, and Mr. Sydney Buxton, all of them authorities in such matters, were among the backers—the Bill dropped. Two years later another Bill was brought in, this time with Sir Herbert Maxwell’s name at the head of the list of backers. It repeated the Act of 1881, and gave unlimited power to County Councils in Great Britain, and to Justices in Quarter Sessions in Ireland, to protect eggs but did not repeat the provision of Mr. Pease’s Bill forbidding the killing of favoured birds at any time.

This Bill, after long discussion, was considerably altered in the House of Lords, and being finally dropped for the session, was re-introduced the next year (1894) as amended by the Lords. Its scope and objects were explained in a memorandum attached from which the following is an extract:—
“Under the Bill as now provided County Councils are empowered to apply for an Order—

“(1) For the prohibition of taking eggs within specified areas.

“(2) For the prohibition of taking eggs of named species of birds.

“(3) For the addition of any bird not included in the Schedule of the original Act to the Schedule.”

It received the Royal Assent with little or no alteration, and appears on the Statute Book as 57 and 58 Vic. cap. 24, “An Act to Amend the Wild Birds Protection Act, 1880.”

The penalty for taking birds’ eggs is fixed at £1 for every egg taken, just four times the amount of the fine for killing the parent birds, unless in the list scheduled in the Act of 1880.

The next Act appearing in the Statute Book was passed in 1896 (59 and 60 Vic. cap. 56) on the initiative of Lord Jersey.

It extended the powers of the Secretary of State under the Act of 1880, enabling him to make Orders establishing sanctuaries within which all birds should be safe; extended to Borough Councils the powers granted by the earlier Acts to County Councils; and added to the penalties for breaking the law the forfeiture of “any trap, net, snare, or decoy bird used by the offender.”

An attempt was made in 1898 to extend the last-mentioned Act to Ireland, and another in 1899 to consolidate the several protection Acts. Bills with these objects were brought in by Mr. Buxton and Mr. Bigwood respectively, but neither became law.

Lord Jersey’s Act of 1896 thus closes the general legislation for the protection of wild birds and their eggs, though three more short Acts, dealing with special subjects, have since been passed.

These are: 2 Edward VII., cap. 6, passed in 1902, empowering the convicting Court to order the forfeiture of any bird or egg illegally taken, an excellent provision—the credit

1 A Bill, substantially the same, had passed the Lords, but failed to pass the Commons the year before.
for which also rests with Lord Jersey; and 4 Edward VII., caps. 4 and 10, both passed in 1904.

Of the two last-named Acts, the first makes the use of pole-traps illegal. A Bill with the same object had been unsuccessfully brought in the previous Session.

The last repealed, with reservations, the clauses of the Act of 1890, which had exempted St. Kilda from the operation of the law, with the object of affording protection to the St. Kilda Wren and Fork-tailed Petrel. The godfathers for these two Acts were respectively Mr. Sydney Buxton and Sir Herbert Maxwell.

The taking or destroying the eggs of these two birds within the Island of St. Kilda is prohibited by a special Order made by the Secretary for Scotland on the 5th May last.

The general law for the protection of wild birds as it now stands may, if I read it right, be summed up as follows:—

There is a close time during which no bird of any kind, old or young, can legally be killed or taken by any one but the owner or occupier of the land on which it is found, or by the deputies of the one or the other, nor by them if the bird is one of those scheduled for special protection.

The close season (originally intended to cover the nesting season only) is, in the absence of special Orders to the contrary for any particular locality, from the 1st March to the 1st August. But on the application of County or Borough Councils in Great Britain or Justices in Quarter Sessions in Ireland, a Secretary of State in England, the Secretary for Scotland in Scotland, the Lord Lieutenant in Ireland can vary these dates, and in the case of particular birds, to be specified, extend the close season to cover the whole year.

Any one offering for sale or having in his possession after the 15th March—a fortnight, that is after the beginning of the close season—any wild birds recently killed or taken is assumed to have obtained it illegally, and made liable to the penalties attaching to a breach of the law.

The authorities having power to vary the close time, have power also

(a) To add to the Schedule of specially-protected birds, or to remove any birds from the protection of the Acts,
Protection Acts in Great Britain and Ireland.

Under the latter of these provisions House Sparrows in several counties, and in one or two maritime counties, Shags and Cormorants, and in two Irish counties the Merganser also have been deprived of protection.

(b) To prohibit the killing or taking of particular birds during the whole or any part of the year.

(c) To forbid the taking of the eggs of particular birds anywhere within the county to which the Order applies.

(d) Lastly—following an excellent Colonial precedent—to establish "sanctuaries," within which birds and eggs, both alike or either, shall be sacred.

Under this provision sanctuaries, within which no bird may be killed at any time of the year, have been established in five English counties: Berks, Lancashire, Cheshire, Somerset, and the East Riding of Yorkshire, and in two boroughs, Liverpool and Warrington.

Sanctuaries, within which no egg may be taken, have been set up in eleven English counties and three English boroughs.

It is a serious flaw in the law that there is no power reserved, as in Holland and other foreign countries, to grant permission to take protected birds or eggs for scientific purposes, though the suggestion that this should be done was more than once made in Parliament.

The penalties for offences against the Wild Birds Protection Acts are as follows:

For killing protected birds.—If in the scheduled list, for each offence a fine not exceeding £1; if not in the Schedule, for a first offence payment of costs only. For later offences a fine not exceeding 5s. for each offence, with costs.

For taking protected eggs.—For each offence a fine not exceeding £1.

In addition to these penalties, the convicting Court can order the forfeiture of the birds or eggs taken, and of the implements used in taking them.

No Sandgrouse can be killed at any time of the year in any part of the United Kingdom, nor may any pole-trap be used.

The penalties are: For killing a Sandgrouse, a fine not exceeding £1 for each offence; for using a pole-trap, for a first offence a fine not exceeding 40s. For later offences a fine not exceeding £5.
I had hoped to have been able to draw up for the information of the Congress a tabular statement of the manner in which the law has been applied by statutory Orders in the several counties of the United Kingdom; but have found myself obliged to give up the idea as hopeless.

In Ireland the Orders are comparatively few and short. The eggs of a few birds, notably those of the Cornish Chough, are protected in a few counties; but the Orders for the most part are confined to an extension of the close time for Snipe and Woodcock. The close season for Snipe is extended to the 1st October in fourteen counties, and in seven of these the Orders include the Woodcock also.

In Scotland, thanks to the active interest of Lord Balfour of Burleigh (when Secretary for Scotland), the Orders are drawn upon a uniform system. They cover the same periods and vary only in points of detail.

In the fifteen counties grouped as the Northern District, with the exception of the counties of Forfar, Ross, and Cromarty and Sutherland, the Golden Eagles, bird and egg, are protected throughout the year, and in all but Forfar the Sea Eagle also.

In Aberdeen, Banff, Kincardine and Perth the taking of the eggs of (inter alia) the Pheasant is prohibited.

It would be curious to know how gamekeepers within these counties reconcile this provision with the practice of artificial Pheasant rearing.

In England, however, these Orders are so complicated and confused as to render tabulation of any kind impossible.

To take as an instance the treatment of Owls in a single county.

In Gloucestershire the Long-eared Owl is made safe, so far as the law can make it so, all the year round. The Tawny and Barn Owls are protected only from the 1st March to the 1st August; during the period, that is, of the general close time fixed by the Acts of 1880.

The Short-eared Owl is by a special provision of the county Orders protected from the 1st March to the 1st November.

As the Short-eared Owl commonly comes over with the Woodcock in the latter half of October, the practical result of Gloucestershire legislation in his favour is to make it
illegal to kill him during the months he is not as a rule to be found, legal as soon as he is likely to arrive.

A few more illustrations will be sufficient to show the confusion and want of system existing:

The general close time, fixed by the Act of 1880, is, as already stated, from the 1st March to the 1st August, but may be varied by Orders.

In Cheshire and Derbyshire it has been extended to the 13th August; in Herts to the 15th August; in Essex to the 16th August; in Bedfordshire, Durham, and the Isle of Ely to the 31st August; in Devon and Dorset to the 1st September; in Carnarvon to the 30th September; in Denbigh to the 1st October, and so on.

In the home counties, Hertfordshire, Kent and Surrey, a distinction is drawn between the parts of the counties lying within and outside the metropolitan area. But within that area there is no community of action either among the counties themselves or with the County of London.

Thus, within the metropolitan area, in Surrey 73 birds' names have been added to the 1880 Schedule; in Hertfordshire 15, and in Kent 10.

In the County of London itself the additions are 14.

It might have been not unreasonably supposed that the protection within the metropolitan areas of the several counties would be more stringent than in the outlying districts. This is by no means invariably the case. Thus, in Hertfordshire, the Hawfinch, Tree-creeper, Nuthatch, Heron, and Crossbill are scheduled for special protection outside, but not inside, the metropolitan area.

So, too, in Kent, some 13 birds unscheduled in the metropolitan area are scheduled for the rest of the county.

Again, in Hertfordshire, the eggs of Herons, Grebes, and Crossbills are protected outside, but not inside, the metropolitan area.

It is, perhaps, as a protest against old superstitions and to show that we have advanced since the days of our grandmothers, who thought it unlucky to injure a Robin, that although the metropolitan protection Orders contain long
lists of from 50 to over 70 birds whose eggs may not be taken in Middlesex or within the metropolitan areas of Kent, Hertfordshire, and Surrey, in none of the lists is the name of the Robin to be found.

London itself is more conservative, it includes in a shorter list the eggs of "the Robin or Red-breast."

If time and the patience of the meeting permitted it would be easy to multiply inconsistencies of this kind indefinitely. I will only ask to be allowed to mention one more,—a typical instance of the absence of anything like uniformity of action in adjoining districts to be found everywhere in England.

In Norfolk three birds only are added to the Schedule of 1880, in East Suffolk 39, and in West Suffolk 48 are added.

In Norfolk one bird only (the Great Bustard) is protected throughout the year. In West Suffolk, in addition to the Great Bustard, Owls of all kinds, Kestrels and Kingfishers, and in East Suffolk as many as 57 are protected through the year.

In Norfolk and East Suffolk the close season (excepting only for ducks) is extended to the 1st September.

In West Suffolk it ends on the 1st August.

There is one and only one point upon which there seems to have been any general agreement.

In 19 counties and 10 boroughs Sunday bird-catching is forbidden.

Confused and conflicting as the different county Orders are, they have, I am informed, in the opinion of the police authorities, been on the whole effective.

During the five years ending on the 31st December, 1903, the average number of persons against whom proceedings were taken under the Wild Birds Protection Acts was no less than 386 in each year.

In 132 cases the defendants were discharged under the Summary Jurisdiction Act of 1879, which enables a Court "should it think that though a charge is proved the offence was in that particular case of so trifling a nature that it is inexpedient to inflict any punishment," to "dismiss the information," and in 181 cases fines were inflicted.
With the law as it now stands with regard to birds, as distinct from eggs, I do not think that much fault is to be found. All are agreed that, within reasonable limits, it is desirable that the breeding season should be a close time, and that birds of exceptional rarity or interest should be protected throughout the year.

As to the necessity for the protection of eggs also, those of small birds more especially, I do not venture to express an opinion. It is a point on which authorities of equal weight are not of one mind. I believe I am correct in stating that the Close-time Committee of the British Association, looking at the matter from a practical point of view, was not altogether in favour of interference, unless in very exceptional cases, with birds-nesting, holding that protection should be given to the breeding stock rather than to their progeny and that this would be found sufficient.

But, assuming the protection of eggs as well as the parent birds to be desirable, the law as it is now applied in most English counties is open to a serious objection. It must almost of necessity work unequally, and weigh more heavily on the poor and uneducated than on well-to-do people, such as the dealers, who do most mischief.

I refer not to the establishment of sanctuaries within which no eggs of any kind may be taken—this is not open to the same objection—nor to the protection of the eggs of one or two vanishing birds, such as the Cornish Chough, which is the only bird whose eggs are protected in Cornwall and more than one Irish county, but to the more usual provision to be found in county Orders protecting the eggs of long lists of comparatively common species (to the exclusion of others at least as rare or interesting), most of which could only be sworn to if the bird had been actually seen on the nest.

It would be interesting to know how many of the 180 odd annual convictions for offences against the Bird Protection laws in England were for taking the eggs of scheduled birds, and in how many of these the offender was defended or sufficiently intelligent to fight his own battle.

It would be even more interesting to know the nature of the evidence accepted as conclusive by the convicting Court.
When one reads the distinctions drawn in most counties between indistinguishable eggs, it is difficult to believe that, whatever may be the case with illiterate offenders, any one capable of pleading his own cause or able to employ a lawyer to defend him could be convicted.

It is the commonest thing in a county now to find, for instance, two or three Warblers scheduled, while others, not more common, or Chiffchaffs, all building much the same nests and laying eggs in size and general appearance almost identical, are unscheduled.

In Carmarthenshire the Blue Tit is scheduled, the Coal Tit unscheduled. In Derbyshire the case is reversed: the Blue Tits' eggs being unprotected, the Coal Tits' protected. In Cheshire the Common Tern is scheduled, but not the Arctic. The same invisible arbitrary lines separating the legal from the illegal runs through most of the English Orders.

I hope I may be pardoned for venturing, in conclusion, again to invite attention to another possible method of protecting birds' eggs already more than once advocated in "The Times" and elsewhere. It has at least the merit of simplicity and has received, in an article in "Blackwood's Magazine" with very slight reservation, the support of Sir Herbert Maxwell, and in "The Times" the unqualified approval of an even higher authority, the late Lord Lilford.

It is that the principle recognised by the Act of 1880, that owners and occupiers have a legitimate interest in the wild birds found on their lands, should be carried a little further and eggs made the property of those on whose land they may be laid, and that it should be left to them to allow birds-nesting or not as they may judge right.

The objection that many of the birds most needing protection often nest on spots which have no private owner would be sufficiently met by a provision in the new Act vesting foreshores and other places of doubtful ownership for the purposes of the Act in County Councils or other local authority.

If a simple Act were passed to this effect, placing wild birds' eggs on the same footing as gooseberries and apples, there should be no very great difficulty in securing all reasonable protection for rare birds' nests.
BIRD LEGISLATION IN AUSTRALIA.

BY THE

Hon. Sir John Cockburn, K.C.M.G., M.D.

Although Queensland in 1877 passed an Act for the protection of native birds, the earlier laws relating to birds in Australia are chiefly to be found among the Game Acts.

Birds were in the first instance protected not so much for their own sake as for sporting and gastronomic ends.

Their lives were preserved in order that more pleasure might be derived from killing them. It was a case of cupboard love, like that of the little girl who, watching the lambs frisking in the meadow, exclaimed, "I do so love the little lambs—cold with mint sauce!"

Later on economic considerations came into play. It was found that birds were in many cases the best friends and allies of the gardener and farmer, and readily entered into profitable partnership with them. In passing an Act on one occasion the results of practical experience were reinforced by quotations from Longfellow's poem "Birds of Killingworth."

Humane sentiment also joined hands with utility. No creature appeals so strongly to our tenderness as does a bird.

It is the emblem of human aspiration. We do not covet the limbs or integument of beast, reptile, or fish, but who has not sighed for the wings of a dove? Many motives therefore converged towards the framing of special legislation for birds. All the Acts were not, however, of a protective nature. There was a notable exception. Side by side with measures for the preservation of the class there ran Acts for the destruction of the Sparrow. The equilibrium of life is less stable in a new country than in an old. The limits of food supply and natural enemies do not afford so rigid a check to propagation, and consequently any newly-introduced form of life may, under favouring conditions, run riot through the land. The early settlers loved to surround their homes with familiar objects of the animal and vegetable kingdoms. Enterprising colonists imported and turned loose Rabbits and
Sparrows: these rapidly became a scourge, and caused widespread devastation.

For a long time a controversy was waged as to the attitude of the Sparrow. Theorists defended him as a friend to agriculture, maintaining that the tell-tale grains of wheat in his crop amounted merely to a small commission for his insectivorous services. The farmer knew him for a complete harvester, and eventually the overwhelming verdict was “Guilty”; accordingly a price was set on his head and eggs. In addition to his destructive propensities, the Sparrow is a Chinaman among birds, and where he settles the others have to leave.

The present Bird Protection Acts in the various Australian States, having similar objects in view, bear a family likeness to one another. That of South Australia, where there is a branch of the Royal Society for the Protection of Birds, may be taken as a fairly advanced type. In it birds are divided into three classes, as shown in the three following schedules:

*The First Schedule comprising birds protected during the whole year, viz.:

Owls of all species; Moreporks and Night Jars of all species; Swifts of all species; Swallows and Martins of all species; Laughing Jackasses and Kingfishers of all species; Wood Swallows of all species; Diamond Birds (or Pardalotes) of all species; Piping Crow-shrikes (or Native Magpies) of all species; Butcher Birds and all species of small Crow-shrikes; Magpie Larks; Blue Doves, Thickheads, Shrike-tits, and Bell Birds; Thrushes of all species; Fantails and other Fly-catchers; Robins of all species; Superb Warblers, Emu Wrens, Blue Wrens, and Wrens of all species; Native Tits of all species; Tintacks and Ephthianuras of all species; Pipits and Larks of all species; Reed Warblers and Bush Larks of all species; Bower Birds; Tree Creepers of all species; Cuckoos of all species; Stone Plovers or Night Curlews; Ibises and Spoonbills of all species; Herons, Bitterns, Egrets of all species; Sea Gulls of all species; Terns (or Sea Swallows) of all species; Cape Barren Geese.
Bird Legislation in Australia.

The Second Schedule comprising birds protected during part of the year, viz.:

- Emus
- Swans
- Wild Geese (except Cape Barren Geese)
- Plovers of all kinds
- Wild Ducks of all kinds
- Bustards or Native Turkeys
- All other wild birds, whether indigenous or imported, except those mentioned in the First and Third Schedules

From the first day of June to the twentieth day of December, both inclusive.

From the first day of August to the twentieth day of December, both inclusive.

From the first day of July to the twentieth day of December, both inclusive.

The Third Schedule comprising birds not protected, viz.:

- Crows (Corvus); Wattle Birds (Anthochera); Silver Eyes (Zosterops); Cormorants (Phalacrocoryx); Sulphur Crested Cockatoos (Cacatua galerita); Hawks; Snipe (Gallinago); English Starlings; English Chaffinches; English House Sparrows; Rosella Parrots (Platycercus adelaidensis, Platycercus eximius).

Power is given to the Governor in Council to transfer birds from one schedule to another and to vary the close seasons. The operation of the Act can thus be adapted to requirements without the necessity of Parliamentary action. The English Starling, now an outlaw in South Australia, is still protected in some of the States, so also is the Wattle-bird. There is power to proclaim any Crown lands, or public reserve or seashore, a bird-protected district, wherein all birds, except the outlaws of the Third Schedule are absolutely protected.

Among the offences against the Act are: (1) Killing, wounding, or catching, having in possession, selling or offering for sale, or exporting any protected bird; (2) taking from the nest or destroying in the nest, selling, offering for sale or having in possession for sale the eggs of any protected bird; (3) selling or offering for sale any skin or feather of
any protected bird or any article made therefrom; (4) entering or being upon any land with intent to commit any offence under the Act is equivalent to guilt of such offence.

The penalties are for the first offence against the Act not less than £1, nor more than £2; for the second or subsequent offence not less than £2, nor more than £25, together with £5 for every bird in the First Schedule and £2 for every bird in the Second Schedule. The proceeds of penalties are paid half to the Zoological Society and half to the Treasury. The owner or occupier of any garden, vineyard, or field of corn, or other cultivated crops, may kill or take therein any bird mentioned in the Second Schedule, and permits may be granted for collection of specimens for scientific purposes. The use of a swivel or punt gun, or any gun fired otherwise than from the shoulder, is also an offence against the Act. After much definition, the South Australian Act prohibits and renders liable to forfeiture any gun other than such as is usual for pigeon shooting—that is, with a bore greater than No. 8, or weight over 15 lbs.

Any person found offending and not giving name and address, or giving a false name or address, or not giving up any bird, egg, weapon or instrument to the owner or occupier of the land, or to any constable, may be taken into custody.

It will thus be seen that there is but little loophole for offences against the Act. In Australia everyone has a voice in framing the laws of the land, and the power that makes, insists on enforcement; therefore no laxity in the administration of the law is permitted.
THE RATIONALE OF BIRD PROTECTION.

BY

FRANK E. LEMON, M.A., LL.B.Cantab.

Hon. Sec. Royal Society for the Protection of Birds.

Protection of birds is a subject which has of late gained increasing support, but notwithstanding this the need for it is every year becoming greater. The object of this paper is briefly to recall and emphasise such need, and at the same time to set forth some rational basis which should secure universal approval. The question of the balance of Nature and how far protection for wild birds would be needed, were it not for the increase of population and the spread of civilization, is too hypothetical a question and cannot be entered upon now: but, as a prelude to setting forth the reasons for, and the best methods of securing the general adoption of, bird protection it may be well to enumerate some of the causes for the diminution in bird-life which has taken place in many districts. I should here, perhaps, state that I am proposing to speak only of what we in England call "wild birds," distinct so far as may be from "game birds" and from domestic poultry. I mention this latter because I find that at the International Ornithological Congress of 1884, held at Vienna, one of the three chief points brought forward seems to have been how best to improve the breed of poultry. I am basing my paper on the plea that, speaking generally, although bird-life may have increased in places, many interesting, useful, and beautiful species are disappearing; a few rapidly, others more slowly though none the less surely, and this I believe to be the opinion of the majority of those who have considered the question. I think we may claim that in England there is a strong reaction in favour of protecting beautiful and rare species, and many that were considered rare or were becoming so have largely increased in numbers and also are increasing their area of distribution, as, for example, the Great Crested Grebe, many kinds of Ducks, which are now breeding
commonly with us, the Goldfinch, all the Woodpeckers, and others.

Among the causes of the diminution of bird-life, some of which it is not possible to condemn, or to avert, except to a limited extent, may be quoted:—

(1) Increased occupancy of land and the advance of civilization, which has entailed the clearing of forests, the reclamation of marshes, and in some places the doom of trees and hedgerows.

(2) Bird slaughter for food. The extent to which this is carried on in some countries must be deprecated, all small birds—whether Swallows, Nightingales, Sparrows or Larks—being caught or killed to supply the rich man’s delicacy and the poor man’s hotch-pot; and I may here mention that the demand for Quail in every capital in Europe out of season calls loudly for international intervention.

(3) Bird massacre to provide feathers for feminine and military adornment; the more beautiful the bird the more eagerly is it sought, and the devastation which is wrought in the name of fashion is incalculable. The plumage being at its best during the nesting season, it is at that time that the commercial hunters take the heaviest toll for the supply of the plumassiers, and no species, however abundant or however prolific, can withstand such a drain; parent birds slain and young left to die of starvation must eventually bring about the extinction of species.

(4) Game preservation. Because of the ignorance and prejudice unfortunately too often displayed by gamekeepers in connexion therewith, strict preserving, as interpreted by certain gamekeepers, means the destruction of every wild creature that is not game, and this on some estates has brought about a deplorable decrease of the larger birds indigenous to England. Nature’s balance of action is thus put out of gear, and brings about a false preponderance of other species. (This preserving has, of course, acted largely in favour of many interesting small birds.)

(5) Collecting, especially on the part of that large majority who collect with little or no scientific purpose in
view, but merely to procure curios for their cabinets. Among the rare and interesting birds thus in danger at the hands of collectors in the British Isles are the Kite, the Osprey, the White-tailed Eagle, the Harriers, the St. Kilda Wren, the Bearded Tit, Dotterel, and Dartford Warbler.

(6) And lastly should be mentioned the absolute wanton destruction wrought through sheer ignorance and brutality, which are features that have to be reckoned with in all questions of this nature.

To put it briefly, some of the results of bird destruction are that the more beautiful birds are rendered scarce, that indigenous species are in danger of extermination, and that the charm of country life is affected. A further and more important result from the destruction of insectivorous birds is the effect upon agriculture, and the devastation which results from injurious insects in the absence of birds.

How, then, and to what extent should Bird-protection proceed so as to deserve universal support from all right-minded men and women? Within what limits must the efforts of Wild Bird Protection Societies be restrained so as to secure the approbation of the large land-owners, the game-preserver, the tenant-farmer, and the fruit-grower, as well as that of the ornithologist and the bird-lover?

Advocates for the protection of birds can, among other things, rightly claim:—

(1) Protection for native and indigenous species. The extent to which this may be needed must depend upon the country and the attitude of the people. All should at least aim at preserving and maintaining as nearly as possible the Avifauna of their country in as perfect a state as regards species as is compatible with human requirements and the already disorganised balance of Nature brought about by the agency of man.

(2) Protection during the breeding season. A provision desirable for most birds, but particularly so for rare and diminishing species which come to a country for their nesting. As for example, to quote from two extremes, the Hoopoe, Golden Oriole, Ruff, and Spoonbill in England, and the
flightless birds of the Antarctic regions; such birds as these need rigorous and careful safeguarding during the time when they are rearing their young. Properly regulated and enforced close times afford the strongest and best kind of protection possible, and here the powerful aid of game-preservers may be reckoned upon and is invaluable, especially when game-preserving is carried on in a broad-minded and intelligent way by those who do not see danger to game and wild-fowl in every bird that does not happen to be one or the other. All true sportsmen have a chivalrous and punctilious regard for the breeding-seasons of the creatures which they hunt and kill in the subsequent open season, and were it not for the wide tracts of land strictly preserved by land-owners, England would in all probability be at this moment a comparatively bird-less country, instead of one of the countries of the world numerically the richest in its bird population.

(3) Protection for spring migrants. Many dangers await birds on their long flight across land and sea, especially when they halt with the object of resting on their passage, as, for example, Swallows, Martins, Nightingales, and others; and for this purpose the co-operation of all nations should be invoked.

(4) Such prohibitory laws as will control or forbid the use of traps, such as the Pole-trap, and of certain poisons, bird-lime, nets and snares, including the last new English abomination, "Snarglu."

(5) Regulations as to the exportation of live birds. Regulations are needed to prevent the keeping in captivity of native and other wild birds which are unsuited for cage life, and to prohibit the export of all such birds. This is not dealt with in England except in cases of cruelty which come under the Wild Animals in Captivity Act, 1900.

The Model Law, propounded by the Audubon Societies, and adopted in several of the United States, prevents the holding of live birds in captivity, or the traffic in them, except where permission is given to a citizen of the State to keep a pet bird, provided the same is not sold or shipped out of the State.
The large number of birds exported weekly from Europe for caging purposes in America is an indication that European countries should take some action similar to that of the United States of America.

I am aware that this is not a full programme nor one that would satisfy the wishes of many bird-lovers, and, moreover, it is so far only restrictive and needs the aid of legislation.

We must further and above all look to public opinion and to education to bring about the results we are aiming at; and bird-protectors must strive to encourage a friendly feeling towards feathered life in both adults and children, and must endeavour to inculcate some appreciation for a bird as a bird. Bird-protection Societies and the efforts made to promote nature-study are or should be working towards this end. Many nations are, with beneficial results, including the study of birds in the curriculum of their schools of all grades. In America, in some of the Colonies, and of late years in parts of England, instruction about birds has centred round what might usefully become in every country a national institution, viz., Bird and Arbor Day.

It is because public opinion is not yet ripe and education not sufficiently advanced and extended, that need for restrictive legislation exists.

For detailed particulars of what is being attempted for bird-protection by legislation throughout the British Empire, I would venture to refer to the Summary of the numerous legislative Acts in force, which has been printed as a supplement to the current number of "Bird Notes and News," the organ of the Royal Society for the Protection of Birds.

A glance at this Summary will show that it is a subject which has received much careful consideration at the hands of legislators and rulers; the enactments make it evident that nearly every form of protection that may be required or desired has found support in one or more of the Colonies, and they also serve to indicate that measures may become necessary to keep in check the increase of certain species.

Much of the legislation emanating from central bodies is permissive, and rightly so, the needs of different districts being so various and so varying.

The bird-protection laws enacted by the British Parliament
and the Orders made thereunder are frequently misunder-
stood, and the difficulty of enforcement often renders useful
legislation of but little value. To my mind the absolutely
contradictory criticisms which are levelled at these Acts are
a strong indication that they are not far wrong. At the
same time they are accused by some of going too far, and
by others of being useless and a dead letter.

In the British Empire legislation has dealt with the
following ten points:—

(1) Close Time with due regard to the interest of the
farmer on his land. This has been attempted by either
making a list of birds to receive special protection or, as in
South Australia in 1900, by protecting all birds and making
a list of birds to be exempted.

(2) All the year round protection for such birds as require
it. Many lands give collector’s licenses of varied extent,
to representatives of National and Scientific Museums and
others.

(3) Protection of the eggs and nests of birds.

(4) Creation of areas (reserves, preserves, or bird-
protected districts as they are variously denominated)
wherein all birds or all eggs, or both are protected
(United Kingdom, 1896, etc.).

(5) Possession and offering for sale rendered illegal.

(6) Forbidding the use of pole-traps (United Kingdom,
1904), punt- or swivel-guns, and snares of various kinds.

(7) Penalties of varying severity, from the reprimand of
the United Kingdom Act of 1880 to the fine of 200 dollars
in Newfoundland, or £25 plus £5 for each bird in South
Australia, or the month’s imprisonment with hard labour
in Fiji.

(8) Forfeiture (in addition to fines and other penalties)
of the bird illegally taken (Jamaica since 1885, West
Australia since 1896, and United Kingdom since 1902),
and forfeiture of trap, gun, decoy-bird, swivel- or punt-
gun, etc.

(9) Traffic in bird-skins forbidden (in Cyprus since 1883),
the sale of feathers rendered illegal (in Victoria since
1896), the sale of articles made from bird-skins or feathers
prohibited (South Australia since 1900).
(10) Appointment by Government of special officers to enforce the Acts (in Queensland, rangers since 1877; in Ontario, wardens, since 1900; and in Western Australia, inspectors since 1902).

As an indication of what may be done internationally, I would draw attention to the laws for Africa, where will be found reference to the Acts passed in Lagos and the Gold Coast, to give effect to the International Convention for the Preservation of Wild Animals, Birds, and Fishes, in a tract of country extending across Central Africa, between the 20th parallel of latitude and the River Zambesi and the northern boundary of German South-West Africa. This Convention was signed in London in 1900, by representatives of Great Britain, Germany, Spain, The Congo, France, Italy, and Portugal.

Such events as the International Ornithological Congress must be powerful factors in bringing about the state of things as regards Bird-protection, so ardently desired by all bird lovers of whatever nationality. To understand and know about a living creature as a rule begets a love for it, and to love anything is to wish for its preservation.

International Congresses give an impetus to the exalted feeling of world-citizenship, and to a sense of the pride of possession in all the beautiful wild life of both hemispheres. To many individuals may be denied the pleasure of actually seeing except in imagination, or, thanks to the description of others, with the eye of the mind, many of the wonders of bird-life; but this is no reason why these people should not rejoice in the knowledge that such loveliness exists; intercourse with others increases knowledge, and the exchange of ideas between ornithologists of all nations will surely promote the desire to hand down to future generations the world of wild nature at least as complete and as rich as we found it. It is to be hoped, therefore, that the members of this Congress will unite in seeing to it, that man's best endeavours are used to preserve every treasure of bird-life with which the universe has been endowed by the lavish hand of Nature.
Protection of Wild Birds throughout the British Empire.¹

Throughout the greater part of the British Empire, efforts are being made to preserve and protect Wild Birds by legislation, whether on account of their utility, beauty, or rarity, or as game. A brief summary of the methods pursued and of the laws and ordinances in force may be of interest as showing practically the position of Bird-protection throughout the Empire, account being taken only of those which have reference to birds other than game. In addition to the Houses of Parliament meeting in London, there are about seventy Legislative Assemblies in the British Empire. A law is passed by a Legislative Assembly; an Ordinance is enacted by a Governor, either on his own responsibility or "in Council."

In the majority of cases birds to be specially protected are named in a schedule; but in one or two instances the method proposed for future legislation in England is adopted, viz., protecting all birds and prohibiting certain named species.

The Royal Society for the Protection of Birds will be very glad to receive any information and copies of enactments from friends in the Colonies, in order that this tabulation of the Society's records may be continually revised and kept up to date; and particulars as to Bird Protection in other lands will also be most welcome.

Europe.

United Kingdom of Great Britain and Ireland.—By the Acts of 1880 and 1881 a Close Time (breeding-season) is provided for all wild birds, but farmers and occupiers of land are allowed to kill any bird not named in the "Schedule." Provision is made for the variation of Close Time, and the offering for sale of birds, recently taken, is forbidden.

By the Act of 1894 power is given to prohibit the taking of eggs, and to amend the "Schedule" for any district.

By the Act of 1896 birds can be protected during that portion of the year not covered by the Close Time. "Sanct-

¹ From the Supplement to "Bird Notes and News," July, 1905.
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Toweries may be established wherein no birds may be killed (1896) and wherein no eggs may be taken (1894). Bird-catching on Sundays can be prohibited.

It is left to the Councils of Counties or County Boroughs to apply for Orders under these Acts.

By the Acts of 1896 and 1902 the Courts were empowered, in addition to the penalties by fine (maximum £1), to forfeit traps, nets, and decoy birds (1896), and the bird or egg illegally taken (1902).

By the Acts of 1904 the use of the pole-trap was made illegal, and legislation for the Island of St. Kilda was passed. The Act of 1896 does not apply to Ireland.

Isle of Man.—The Act of 1868 prohibits the killing of all Gulls and the taking of their eggs (“Gulls” including Gannets, Shags, Guillemots, Kittiwakes, and Skuas).

The Act of 1887 prohibits the killing or taking of all wild birds and the destruction of nests and eggs, February 1st to September 1st (with a higher penalty for scheduled birds), and the use of all nets, snares, traps, lime or lantern, for taking wild birds at any time.

Jersey.—The Act of 1879 protects all sea-birds, and forbids their sale or exposure for sale, or transport, between April 1st and August 1st; and also prohibits the killing of Gulls at any time.

Cyprus.—The Act of 1883 (No. 2) provides for the protection of birds “during the time when the island is infested with locusts” (February 15th to August 1st). By the Act of 1895 (No. 3) the High Commissioner may permit the killing of birds or taking of eggs in the interests of science. A recent Act (1904) (No. 13) declares it illegal to export the skins or eggs of any wild bird, except with special permission, and also creates eight areas wherein no birds may be killed.

Gibraltar.—The Ordinance of 1885 prohibits all persons from killing, taking, or attempting to kill or take birds, or using any decoy bird or other instrument for such purpose without being duly authorised. [Such authorisation is practically never granted.]

There are at present 140 such Orders in force.
Asia.

British India.—The Wild Birds Protection Act, 1887 (No. 20), extends to the whole of British India, and gives the local governments and cantonment and municipal authorities the power to define the expression "wild birds," and also to specify the breeding-season, during which it will be illegal to possess or sell any of the protected birds or their plumage within the cantonment or municipality. The amount of fine to be imposed for each offence is also specified.

The Court may order the confiscation of any wild bird or plumage in respect of which the breach was committed.

An edict of the Governor-General in Council (No. 13 of 1902) prohibits the taking by sea or land out of British India of skins and feathers of all kinds, except feathers of ostriches or skins as specimens illustrative of natural history.

[The history of wild bird legislation in India and the text of the 1887 Act will be found in the leaflets of the Society, Nos. 36 and 37.]

Straits Settlement.—By Ordinance No. 16 of 1904, wild birds are protected. Penalties are enacted for the killing or taking of all wild birds not named in the Schedule, or exposing them for sale. The Governor in Council may fix the Close Time and vary the Schedule. Licences to kill may be issued.

Hong Kong.—By Ordinance No. 6 of 1885 and No. 8 of 1904, protection of wild birds is enacted and sale forbidden during certain months—March to September, both months inclusive.

Australasia.

New South Wales.—By the Act (No. 26 of 1901) the Close Season for all scheduled birds, except quails, is fixed as between August 1st and January 31st. The Colonial Secretary may vary the Close Season for any district, and may add or remove any bird to or from the Schedule, which includes foreign birds such as Skylark, Chaffinch, Goldfinch, Linnet, Starling, and 47 native birds. The penalty is up to £5 for killing a bird and 10s. for each egg. Penalties are divided between the informer and the Zoological Society. Preserves
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may be declared. Persons may be authorised to "collect specimens of natural history for any scientific institution or museum."

Queensland.—By the Native Birds Protection Act of 1877, chap. 7, a Close Season (October 1st to March 1st) is provided for 30 birds and species named in a Schedule. The Governor in Council may extend the Act to other birds, may alter the date of the Close Season, and may appoint rangers. A moiety of the penalty goes to the informer. By the Amending Act of 1877, chap. 16, it was enacted that the regulations were not to apply to farmers as regards the protection of crops on their land, nor to the aborigines as regards food. By the Act of 1884, chap. 12, the Governor may proclaim reserves.

South Australia.—The Act of 1900 (No. 745) declares a perpetual Close Season [all the year round] for certain species (1st Schedule); declares no Close Time at all for other species (3rd Schedule); declares various Close Seasons for all other species (2nd Schedule). It empowers the proclamation of portions of the Crown Lands, and the sea shore, and public reserves as "bird protected districts."

Killing, possessing, selling, or exporting protected birds, and destroying or selling their eggs, or selling articles made from their skin or feathers, are made offences punishable by progressive fines, which when received are payable, one half to the Zoological Society, and the other half to the Government. The penalties are—for first offence, not less than £1 nor more than £2; for second offence, not less than £2 nor more than £25; and in addition in every case £5 to be paid in respect of any bird in the 1st Schedule, and £2 if in the 2nd Schedule.

Swivel- and punt-guns and the like are declared illegal devices, and may be forfeited.

By the Act of 1900, the Governor has power to transfer a bird from one Schedule to another, and in 1903 received power to vary the Close Times.

By the Amending Act, 1903, the need was established for bird-catchers' licences in respect of birds in the 2nd Schedule in the Northern Territory.

Tasmania.—By the Acts of 1895 (cap. 26) and 1896 (cap. 12)
a Close Time was fixed for certain birds. To shoot at or wilfully kill or destroy the eggs of the birds named in the Schedule (64 species) was made illegal, but the Governor has power to authorize protected birds to be taken for scientific purposes.

By the Acts of 1901 (No. 36) and 1902 (No. 21) the Wattlebird and Mutton-bird (Short-tailed Petrel) are protected.

By the Act of 1903 (No. 23) to buy, sell, or offer for sale the birds named in the Schedule of the Act of 1895 is made an offence.

By the Act of 1904 (No. 25) the nests and eggs of species of birds enumerated cannot be taken or destroyed except by the written order of a Justice of the Peace.

Victoria.—By the Game Act of 1890, Close Seasons are provided for various birds, and protection is given to certain species during the whole year; these latter include Swallows, Warblers, Wrens, Magpies, Flycatchers, etc. The Close Time provided for 28 species of wild birds, such as Larks, Plovers, Teal, Kingfishers, Tree-creepers, Herons, Cranes, etc., is August 1st to December 20th. The Governor may vary the Schedules. The penalty may be £2, and in addition the sum of 5s. for each bird destroyed, and for having in possession or for taking or destroying eggs 10s. A moiety of the penalty goes to the informer. By the Act of 1896 it is illegal to buy or sell the flesh, skin, or feathers of any native birds the killing of which is forbidden.

Western Australia.—The principal Act (1892) was passed to protect birds and to encourage persons to import birds, and gave the Governor power to proclaim a Close Season for native birds, and to establish Reserves. The penalty for destroying imported birds may be £20, and 10s. for each bird, and the instrument used may be forfeited. The Colonial Secretary may grant licences to kill, and penalties for taking or destroying eggs were fixed. Power to forfeit the bird or egg was given, and to sell such forfeitures.

By the Act of 1902 possession of dead birds protected by proclamation under the principal Act is rendered illegal, and provision made for the appointment by the Governor of Inspectors to assist in enforcing the Acts.
British New Guinea.—By the Ordinance (No. 2 of 1894) for the Protection of Wild Birds, the Administrator may issue proclamations prohibiting the destruction or capture of all or any wild birds; the penalty may be £10 or a month's imprisonment. Special permits may be given to kill birds, but these must specify the bird to be destroyed, the locality and period during which the killing may take place. By the Bird Collectors' Ordinance of 1897, the destroying or capturing by any means without a licence, of birds existing in a wild state, is forbidden for any object, except for using them as food or stopping them from doing mischief.

Fiji.—By the Ordinance (No. 6, 1895) for the protection of birds, a Close Time for any native game or wild birds, mentioned in the Schedule, is fixed for September 30th to March 1st. Hawks and Parrots may, however, be destroyed by a person in his own garden or premises. Permission to collect specimens of natural history may be given. The penalty for illegally taking birds or eggs, or having them in possession, during the Close Time, may be £5 or a month's imprisonment, with or without hard labour. The Schedule includes about twenty species, among which are the Starling, Lark, Thrush, Blackbird, and Plover, with their eggs. Preserves may be created.

New Zealand.—The principal Act of 1880 (No. 18) gives protection to indigenous birds and fixes certain Close Seasons for scheduled birds.

The Act of 1886 gives to the Governor power to protect any bird indigenous to the Colony.

In 1892, the sea-birds and their eggs on the Titi and Stewart Islands were protected.

An Act of 1902 (No. 25), however, makes it the duty of local authorities to take effective action for the destruction of birds gazetted by the Government as "injurious," provision being made for concerted action, and the laying of poisoned grain is permitted. In case of default, an inspector may be appointed to do the work.

The Act of 1903 alters the Close Season for the Godwit.

Africa.

Cape Colony.—The Act of 1899 (No. 42) enables the
Governor upon the petition of municipal and divisional councils to prohibit, under penalty, the destruction of all or of scheduled birds for the whole or part of each year.

Natal.—The Act of 1896 (No. 33) prohibits the killing or taking of birds in the Schedule or their eggs, except by express permission of the Governor for scientific research. The list includes Swallows, and may be added to by the Governor.

Gold Coast.—Ordinance No. 2 of 1901 was passed to carry out the Convention signed in London on 19th May, 1900, for the preservation of wild animals, birds and fish in Africa between the line of the river Zambesi and the 20th parallel of North latitude. By this Ordinance, the killing of Vultures, Secretary Bird, Owls and Rhinoceros-birds or Beef-eaters is prohibited on account of their usefulness. Provision is made to limit the number killed of Ostriches, Marabous, Egrets, Bustards and Francolins, Guinea Fowls and other "game birds."

Lagos.—Ordinance No. 15 of 1900 similarly carries out the Convention.

East Africa Protectorate.—By the Bird Protection Regulations of 1901, it is not lawful to shoot birds without a licence. Penalty, 50 rupees.

Seychelles.—

North-American Colonies.

British Columbia.—An Act of 1898 (No. 24) consolidates the laws for the protection of birds and provides for Close Seasons.

Manitoba.—By the Game Act (cap. 14, 1900) Close Seasons for certain birds, including the Plover, are provided.

New Brunswick.—An Act of 1895 (c. 10) protects all wild fowl and the nests and eggs of Gulls within certain portions of the province. By the Act of 1898 (No. 8) a Close Time was fixed for Wild Duck, Teal, and other birds, and it became an offence to destroy any Sea-gull, Pheasant, or any small birds which frequent the fields and woods, except "Black-birds," Crows and Sparrows.

The hunting or killing of birds on the beaches, islands, or lagoons along Northumberland Strait, Gulf of St. Lawrence,
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and the Bay of Chaleur is prohibited between December 31st and September 1st by the Act of 1899 (No. 39). The exportation of Partridges is forbidden.

North-West Territories.—The Act of 1901 (No. 11) was passed to protect useful birds. No person may hunt or kill any birds whatever, except certain named species. (This list of eighteen birds includes Hawks of various kinds, "Blackbirds," and the English Sparrow.) A licence to procure birds for scientific purposes may be obtained.

Nova Scotia.—Under an Act of 1896 (cap. 4) the killing of "Robins," Swallows, Sparrows, and other small birds of song which frequent the fields and gardens, and the selling, offering for sale, and having in possession of such birds when killed is prohibited.

Ontario.—The Act of 1897 (289) deals with the protection of insectivorous birds, and except as regards Hawks, Crows, "Blackbirds," and English Sparrows, prohibits the killing or snaring of any wild native bird, also the destroying of nests, young, or eggs, unless with the permission granted to an "ornithologist" or "biologist." Power is granted to seize birds unlawfully possessed.

Under the Act of 1900 protection may be given to migratory or non-migratory birds in danger of extinction, and wardens are appointed; and by the Act of 1903 towns, cities, and villages may make by-laws to prevent destruction of birds.

Prince Edward Island.—"Game" Acts passed in 1879, 1898 and 1899 are in force.

Quebec.—By the Act of 1899 (No. 24) a Close Time is fixed for Swallows, Warblers, Finches, and other birds, and snares or traps of any kind are forbidden. Birds illegally taken may be confiscated. The Act of 1903 (c. 23) fixes a Close Time for Wigeon, Teal and Wild Duck.

Newfoundland.—A Close Time (January 12th to August 20th) for Curlew, Plover, Snipe, and other wild or migratory birds (except Wild Geese) is fixed by the Act of 1902 (c. 17), and the eggs and nests of such birds protected. Maximum fine 200 dollars. In 1904 (c. 11) a close time was fixed for the Ptarmigan and its eggs (October 1st to January 12th).
West Indian Colonies.

Bahamas.—In 1905 a Wild Birds’ Protection Act was passed, protecting all song and insectivorous birds throughout the year, fixing Close Times for certain other birds, and empowering the Governor to establish “Reserves” from time to time. The eggs, as well as the birds, are protected, and selling or exporting is forbidden. Penalty may be £20 and forfeiture of bird, skin, feathers, or egg. The Governor may grant a licence for scientific purposes, but such licences may not authorize the taking of more than six birds or six eggs of any one species. [The proposal in the Bill for the protection of Terns was not passed.]

Bermuda.—The Act of 1902 enacts a penalty for shooting any scheduled wild bird, or for taking or destroying the eggs of such bird. The penalty may be £1, and half the penalty goes to the informer. Any person who shall produce to a Justice of the Peace a Crow or a Crow’s egg taken locally may be awarded 4s. for a bird and 1s. for an egg.

British Guiana.—By the Ordinances, No. 6 of 1877, and No. 12 of 1885, 39 birds, including Egret, Heron, Kingfisher, Owl, Sparrow, Swallow, are absolutely protected. The penalty for killing or wounding any of these may be 24 dollars, and exposing or offering for sale is forbidden. A Close Season is provided, April 1st to September 1st, for 19 species. Power to vary the Close Time and to alter the Schedule rests with the Governor and Court of Policy. Where too numerous, Carrion Crows may be destroyed by Inspectors appointed for the purpose.

Jamaica.—By the Birds and Fish Protection Law of 1885 (No. 32) the killing or wounding of twenty-one birds and species specified in the First Schedule is forbidden at all times, and a Close Season is provided for certain other birds. Any bird in respect of which a conviction takes place shall be forfeited to his Majesty. The Governor may license killing for scientific purposes. By the law of 1887 (No. 4) the Governor has power to vary the Schedule.

Trinidad and Tobago.—The Act of 1895 (No. 25) enacts a Close Time for the protection of wild birds and their eggs.
The Governor may vary the Close Time, and authorise killing for scientific purposes, and export may be prohibited.

Windward Islands.—(1) Grenada.—By the Ordinance of 1891, twenty-two birds named in Schedule No. 1, with their eggs and nests, are absolutely protected. A Close Time, March 1st to May 31st, is fixed for six birds named in Schedule No. 2. The Governor has power to alter the Close Time and to vary Schedule No. 2, and may authorise the killing of birds for scientific purposes. A moiety of the fines inflicted go to the informer, and birds illegally taken may be forfeited.

(2) St. Vincent.—By the Ordinance of 1901 (No. 11) similar provisions are enacted to those in force in Grenada.

Leeward Islands.—St. Christopher and Nevis.—By the Act of 1902 (No. 9) a Close Time for wild birds is established from February 1st to August 31st, and penalties prescribed for killing or wounding scheduled birds, or for taking or injuring eggs or nests.
THE FOOD OF BIRDS.

By Otto Herman.

If we trace the commencement of the international investigation of the food of birds, we find that this question was first debated by the economical section of the third International Ornithological Congress held in Paris in 1900, when it was decided to request the governments of the different countries to cause an investigation into the food of birds to be made. The International Agricultural Congress, sitting at the same time, fell in with this decision, and it was arranged that the results should be submitted to the fourth International Ornithological Congress to be held in London.

The decision, however, remained practically a dead letter, for no such request was made to the various governments, and the Hungarian Central Office of Ornithology alone carried on the investigations recommended by the Congress without awaiting any request to do so.

Only by an examination of their food are we enabled to decide the question as to whether birds are useful or otherwise, and without positive knowledge as to what birds eat at different seasons, their classification as useful or harmful, is a mere conjecture.

What must we understand by the usefulness or harmfulness of a bird? Does "harmful" mean with respect to nature or to man?

In regard to nature, the bird living as an organism according to the laws of nature, and being a necessary link in the chain of organisms, can be neither useful or harmful.

It is, then, only its behaviour with respect to man, or to human interests, which determines its usefulness or harmfulness.

If we enquire, which are those fields of human activity where the usefulness or harmfulness of a bird manifests itself, we shall find that, apart from sentiment, only agriculture, including horticulture, and sylviculture and the breeding of cattle as well as of other live-stock such as game, fish, bees, etc., can be taken into consideration.

1 Abstract from a paper published in "Aquila", 1904, vol. XI., on "Reports on the investigation of the food of Birds since 1900."
The Food of Birds.

But as all these branches of cultivation vary with the seasons, it is obvious that the examination of the food of birds must closely follow the different steps in the yearly course of these industries.

We must examine the food taken by every single species during a particular season, and then, in order to obtain a clear idea of the usefulness or harmfulness of a certain species, calculate the benefit or harm the species has caused to an individual branch of industry during a certain period.

Such, in its general outlines, is the method to be followed and, so far, it presents no insuperable difficulties.

Complications and difficulties arise, however, from the fact that an individual species may be considered useful in one country and harmful in another, according to the more or less pronounced divergency of interests prevailing in the different countries.

For example, it took nearly three decades, before an international convention concerning the protection of birds useful to agriculture, could be signed and a list of useful and harmful birds drawn up.

The question itself as to what food birds eat, is somewhat difficult of solution. First of all, many thousands of birds have to be observed, throughout the entire year in the case of permanent inhabitants, and in the case of migrating birds, during the time of their stay with us.

The data relating to their modes of life have to be recorded, the contents of stomach and crop have to be taken out, preserved, sorted and analysed by the aid of the microscope, and finally the number of individuals stated. In most cases there are only fragments of insects by means of which any determination can be made. Moreover, the results obtained by the examination of one individual furnish no rule.

To establish the characteristic features of a species, the examination of a large number of individuals is necessary, and how can these be obtained without the slaughter of innumerable birds?

I pass now to the work of the Hungarian Central Office for Ornithology.

Hungary did not wait for the decisions of the Congress of Paris, because the Government had already provided gene-
rously for the maintenance of the Hungarian Central Office for Ornithology whose task, apart from ornithophaenology, is chiefly to cultivate economic ornithology, and it was certainly one of the greatest merits of the former Minister of Agriculture, M. Ignace de Darányi, who has been again re-appointed, that he devoted great attention to economic ornithology and bird-protection.

The main purpose was to spread ornithological knowledge in order to interest the public in the subject.

This was accomplished by Stephen de Chernel’s large work, written by direction of the Minister of Agriculture, and entitled, “The Birds of Hungary, with particular reference to their importance for Agriculture.”

The writer of the present paper is also the author of a small popular book on the benefit and harmfulness of birds. This latter work served as a basis for the regulation of bird-protection in Hungary, and contains a list of all the popular synonyms of the names of protected birds.

Thanks to this, no one in Hungary can be in doubt as to whether a bird is protected or not, which also greatly facilitates the administration of the laws dealing with the subject.

In pursuance of the same purpose an examination of the food of birds was made. The contents to be examined were got from bird stuffers and others who formerly threw away the contents of the stomach. The examination was made with great care and extended over a long series of years, but it was thus unnecessary to kill the birds by hecatombs merely to obtain the contents of the stomach.

The proceedings adopted elsewhere, which consist in calculating the average quantity in an arithmetical way, do not lead to certain results. If we take into account the quickness of digestion, important results may be obtained, but they are chiefly of a physiological character, and do not give us a clear idea of the benefit or harmfulness of a bird in relation to agriculture or sylviculture.

The principles to be followed are determined by the nature of the subject itself; the food of birds has to be examined in the course of the seasons, and in organical connection with the periodical changes in agriculture and sylviculture.

This, of course, requires a long time, and generations will
have to co-operate before any satisfactory results can be obtained.

The Hungarian Central Office for Ornithology studies not only the species, which are already protected by law, but also those which have hitherto been considered as harmful, because a rectification of the views held respecting particular species is not impossible. For instance, a lecturer on one occasion spoke of the usefulness of the Buzzard (Buteo vulgaris), the indifference of the Black Kite (Milvus migrans), and the great harmfulness of the Hooded Crow (Corvus cornix) in regard to game, but when the birds were examined, in the stomach of the Buzzard was found a young hare, in that of the Kite two chickens, while in the Crow's stomach was nothing but an abundance of reed-seed.

According to the principles laid down above, the seed or plant-eating species were studied separately and the results published in a paper by L. de Thaisz, entitled "Kritische Bestimmung der Nützlichkeit oder Schädlichkeit der pflanzenfressenden Vögel auf Grund des Kropfinhaltes" (Aquila 6, p. 133, 1899).

In particular the Partridge (Perdix perdix L.) was carefully studied and the results published in an article by J. de Losy: "Positive Daten zur Lebensweise des Rebhuhns (Perdix perdix L.)" (Aquila 10, p. 231, 1903).

The study of the following species has been commenced and partially completed by Ernst Csiki, keeper of the Hungarian National Museum.

1. Lanius excubitor L. is generally considered harmful though its usefulness is undeniable.
2. Lanius minor Gm. A useful bird. There is no proof that it does harm to young birds.
3. Lanius collurio L. A useful bird whose food consists of insects. There is no proof that it destroys small vertebrates also.
4. Oriolus galbula L. feeds until middle of June exclusively on insects, afterwards on various fruits.
6. Cotile riparia (L.) is unquestionably useful.
7. Chelidon urbica (L.) is useful, though a large part of its food consists of indifferent insects.
(8) *Hirundo rustica* L. feeds on flying insects which are mostly indifferent.

(9) *Muscicapa grisola* L. destroys many noxious insects; it does not, however, spare the honey-bee and eats even the Spanish-fly.

(10) *Muscicapa atricapilla* L. Besides many noxious insects, we find in its stomach honey-bees also.

(11) *Muscicapa collaris* Bechst. Same as above.

(12) *Cicusus canorus* L. destroys many noxious insects, chiefly caterpillars and May-beetles.

(13) *Cerchneis vespertinus* (L.) destroys an immense number of insects, rarely small Vertebrates. If it devours here and there a bird, it is still useful in regard to agriculture.

(14) *Cerchneis tinnunculus* (L.) is useful, its food consisting of insects and mice.

(15) *Dendrocopus major* (L.) is useful.

(16) *Dendrocopus medius* (L.) is useful, though it chiefly eats indifferent insects.

(17) *Dendrocopus minor* (L.) is indifferent.

(18) *Dendrocopus leuconotus* (Bechst.) is useful.

(19) *Picoidees tridactylus* (L.) is useful.

(20) *Picus viridis* L. is indifferent, its food consists of multitudes of ants belonging to indifferent species.

(21) *Picos canus* (Gm.) is indifferent.

(22) *Dryoscopus martius* (L.) is useful, its food consists of larvae of wood-destroyers and wood-ants.

(23) *Jynx torquilla* L. is rather indifferent than useful, its food consists of indifferent ants; other and noxious insects are rarely found in its stomach.

(24) *Upupa epops*, L. is useful, destroys many noxious insects and their larvae.

(25) *Caprimulguis europaeus*, L. is useful and destroys many noxious insects and their larva, e.g., May-beetles.

(26) *Coracias garrulus*, L. is useful, though the contents of its stomach are sometimes found to be composed of useful insects also.

The results of these investigations were published in Vol. XI. of Aquila.

On account of the divergence of opinions, a special study was made of the Rook (*Corvus frugilegus* L.)
Upon representations made by the Hungarian Central Office for Ornithology, the Minister of Agriculture issued instructions to all agricultural reporters to inquire in their district about the Rook, and to fill up a question-sheet containing 16 questions.

The Hungarian Central Office for Ornithology also invited all official observers and many volunteers to help in the work.

On the return of the question-sheets, the material they contained was worked up and schematised by L. de Soos, former member of the Hungarian Central Office for Ornithology, and now assistant-keeper of the Hungarian National Museum. The results were published in Vol. XI. of the Aquila.

At the same time we gained the co-operation of M. Béla de Hauer, who has a large Rook colony on his estate, and as both agriculture and cattle-breeding are carried on upon this estate it was possible to observe the Rook from both points of view.

The observations proved that the principles adopted by the Hungarian Central Office for Ornithology were correct and that the Rook is of service both to agriculture and to cattle-breeding.

A further step in the observation of the Rook was the sending out of M. Titus Csörgéy, assistant of the Hungarian Central Office for Ornithology, to the county of Torontal, where much maize is grown and where the largest Rook colonies are to be found.

The observations were begun in the autumn 1903 and are still in progress.

Finally, I must mention that the foundation of the Hungarian Central Office for Ornithology was due to the munificence of the Hungarian Government and also that its programme of work is approved by the Minister of Agriculture, M. Ignace de Darányi.

Except the United States, no other country has as yet a similar Department.
ORNITHOLOGIE ÉCONOMIQUE.

A propos d'études sur le Régime alimentaire des Oiseaux.

Par le Dr. Quinet.

"Par une loi dont la nécessité est évidente chaque branche du système scientifique se sépare insensiblement du tronc lorsqu'elle a pris assez d'accroissement pour comporter une culture isolée, c'est-à-dire lorsqu'elle est parvenue à ce point de pouvoir occuper à elle seule l'activité permanente de quelques intelligences." (Auguste Comte, Cours de Philosophie positive.)

Nous croyons que ces vues sont parfaitement applicables à l'Ornithologie Économique. Cette branche encore jeune et neuve de l'Ornithologie Générale a pris assez de développement pour comporter une culture spéciale, puisqu'elle fait l'objet d'une section entière à ce Congrès, et qu'elle occupe l'activité de plusieurs Instituts aussi bien en Amérique qu'en Europe. Nous voulons dire la Section Ornithologique du département biologique des États-Unis de l'Amérique du Nord et le Bureau Central ornithologique Hongrois sans compter les Naturalistes qui se sont surtout attachés à juger l'importance économique des oiseaux en agriculture, sur une base positive, c'est-à-dire d'après l'analyse minutieuse du contenu des estomacs des Oiseaux; la seule voie scientifique à suivre.

L'Ornithologie Économique, rameau déjà puissant, est une science spéciale appelée au plus grand avenir, son champ d'études et d'observations, comme celui de ses applications est des plus considérables. Aucune branche particulière de l'Ornithologie n'offre autant et d'aussi importants rapports avec un aussi grand nombre de sciences, auxquelles elle fait d'importants emprunts en même temps qu'elle leur apporte un contingent précieux de connaissances. Ainsi envisagée, elle fait partie de l'histologie et de l'anatomie descriptive par la connaissance des organes et des divers tissus qui constituent, l'appareil digestif des Oiseaux.

Au point de vue de la Zoologie et de l'Histoire Naturelle elle établit les conditions de formes, de consistance, de dimensions et de nombre des organes préhenseurs, et de ceux qui concourent aux actes les plus importants de la nutrition dans la série des oiseaux.
Elle montre que l’appareil digestif obéit à des lois spéciales d’Evolution, d’après le régime alimentaire des espèces.

D’autres considérations sur la Structure des Organes établissent certains rapports. Ainsi avec le régime animal concorde une réduction progressive du nombre d’estomacs. Si les Pigeons, par exemple, granivores par excellence, ont trois estomacs (jabot, succenturié, gésier), les Piscivores et les Insectivores n’en ont plus qu’un, et chez ces derniers, il est réduit à l’état membraneux, de même que chez les oiseaux qui se nourrissent de chair. Elle se rattache encore à la Zoologie et à l’Histoire Naturelle par l’étude de l’Entomologie Scientifique et Économique, et par celle de certains Mammifères dont se nourrissent les Oiseaux.

Elle affecte en autre des rapports avec la Botanique et surtout avec l’Agriculture, la Sylviculture, l’Horticulture, la pisciculture, selon que le régime alimentaire est végétarien ou piscivore.

Enfin de l’étude approfondie de cette science, se dégageront de nouvelles classifications ornithologiques et économiques, ainsi que des applications précieuses. (Zones de Protection, Élaborations de lois et Règlements en conformité avec les résultats acquis.)

La connaissance exacte des organes qui servent à la préhension, et à la fonction digestive des oiseaux, peut souvent nous renseigner à priori sur le régime alimentaire des individus, parce que à telle ou telle conformation de bec, telle structure, ou tel nombre d’estomacs correspond tel ou tel régime diététique. Ainsi le groupe des Granivores, à bec solide, à bords tranchants, construit pour couper, écraser, décortiquer les graines et les fruits durs, a pour complément de cet appareil un estomac musculeux, et dans lequel on rencontre souvent des petites pierres faisant office de dents. Ils sont donc plutôt végétariens et ne se nourrissent d’Insectes que par occasion, et certaines espèces, comme le Pinson et l’Ortolan, pour élever leurs jeunes. Tandis que les Baccivores et les Insectivores joignent à un bec droit, effilé, souvent taillé en aléne, un estomac, membraneux et à priori, on peut dire qu’ils sont Baccivores et Insectivores selon la saison des baies, ou la période des Insectes.

Et voyez les conséquences, qu’on peut tirer des ces régimes, sur les moeurs et habitudes de ces espèces. Les granivores
émigrent en masses, en bandes sociables, et le plus souvent de jour; tandis que les Baccivores et les Insectivores plus querelleurs émigrent principalement de nuit et isolés. La différence de régime, végétal ou animal, a imprimé à leurs moeurs et habitudes, ainsi qu'à leur caractère, les modifications ci-dessus. La question de Migration découle donc également du régime alimentaire des Espèces, dont la faim est la première et la plus puissante des causes. On pourrait faire des reflexions analogues par l'étude comparée des organes digestifs des oiseaux appartenant à d'autres groupes et en tirer des déductions similaires très instructives. En somme la grande fonction de l'oiseau c'est l'alimentation, plus encore que le vol; voilà pourquoi l'Ornithologie Économique doit devenir une Science très importante.

On a beaucoup écrit sur les oiseaux dans tous les pays du monde parce que ces créatures privilégiées, douées de la faculté rare de se mouvoir sur les trois éléments l'air, l'eau et la terre, se prêtaient à la fois à des études littéraires, scientifiques et biologiques du plus haut intérêt. Mais comme le champ d'observation sur les moeurs et habitudes de ces êtres d'élite était immense et embrassait parfois un continent tout entier; il en est résulté à côté de faits précis et d'une incontestable exactitude, des masses d'observations incomplètes ou entachées d'erreurs. D'autres encore, qui tiennent plus du domaine de la fantaisie et de la poésie que de la Science, et le plus souvent, ce furent ces dernières, sans doute à cause de leur côté attrayant, étrange, ou mystérieux, qui se répétèrent dans les publications successives qui vinrent le jour depuis l'époque des grands Maîtres en Ornithologie. C'est principalement dans le domaine de l'Ornithologie Économique que les erreurs se propagent, et nous dirons même s'ancrent avec une telle force, que non seulement les observations ordinaires, mais même les esprits les plus éclairés et les plus positifs ne purent s'en défendre et s'en débarrasser.

Telle l'erreur encore profondément enracinée qui proclame à priori sans plus d'examen que les oiseaux Insectivores sont nécessairement utiles. Telle encore cette croyance corollaire de l'erreur ci-dessus, que l'Insecte c'est l'ennemi, et que la plus grande partie des Articulés ne nous cause que des dommages. Mais jusque dans ces derniers temps, le régime alimen-
taire des oiseaux d'Europe n'avait jamais été scientifiquement établi.

Les affirmations manquaient de bases judicieuses parce qu'elles ne reposaient point sur des données positives. Les observations avaient surtout été faites du vivant de l'oiseau en liberté, observations forcément très limitées, car nul ne peut suivre l'oiseau en ses multiples pérégrinations pour constater ce qu'il mange. Ensuite nul ne savait prétendre reconnaître tous les Insectes ailés happés au vol par les Oiseaux qui s'en nourrissent de cette façon, pas plus que les Insectes recueillis sur le sol ou sur les arbres. Système d'autant plus imparfait et sujet à être entaché d'erreurs que nos yeux ne voient pas les choses de la même façon que ceux de l'Oiseau, qui percevront foule de petits Insectes que nous ne soupçonnerons même pas, sans compter que l'Oiseau dédaignera souvent l'Insecte dont nous avons constaté le présence, pour en rechercher d'autres, qui lui plaisent d'avantage. Il fallait donc changer le système et étudier le régime alimentaire non plus d'après les renseignements vagues fournis par l'oiseau en liberté, mais d'après les données plus positives recueillies par les autopsies sur des sujets brusquement mis à mort, afin de les surprendre en pleine activité biologique.

C'est évidemment la seule méthode démontrant d'une façon péremptoire de quels animaux de quels végétaux se nourrissent de préférence les Oiseaux d'Europe aux diverses époques de l'année.

C'est la seule voie scientifique pour arriver à la solution de cette question fort en vogue: "de l'utilité et de la protection des Oiseaux."

Chaque espèce fournira ainsi le bilan, le dossier du son degré d'utilité ou de nocuité vis-à-vis des intérêts de l'homme.

C'est dans ce but que nous proposâmes de faire une étude d'ensemble chez les différents peuples de l'Europe, une sorte d'enquête internationale sur le régime alimentaire des Oiseaux, afin d'aboutir à une solution plus conforme à la vérité scientifique, permettant ensuite à chaque peuple d'en tirer des conclusions pratiques, mettant de côté les questions d'esthétique et de sentimentalisme, puisqu'il s'agit ici uniquement d'intérêts économiques. Notre proposition fut agréée par le III-e Congrès Ornithologique de Paris en Juin 1900,
et l’on fixa une période de cinq ans pendant laquelle seraient faites des études expérimentales sur le régime alimentaire des oiseaux.

Nous ignorons si les divers Gouvernements de l’Europe, représentés à ce Congrès, et qui s’étaient engagés par leurs délégués à confier à des naturalistes la tâche d’élucider le problème, sont entrés dans cette voie, mais le Gouvernement Belge a tenu, un des premiers, à se conformer au voeu du Congrès de Paris, et M. le Ministre de l’Agriculture de Belgique a bien voulu nous désigner pour collaborer à cet ouvrage, avec M. Severin, l’entomologiste du Musée Royal d’histoire naturelle de Bruxelles.

Cette étude, commencée en 1903 seulement et poursuivie jusqu’au 15 Avril 1905, nous a permis de procéder à près de 2500 autopsies d’Oiseaux de toute espèce, et les analyses du contenu des estomacs se poursuivront activement pendant longtemps encore sans doute, parce que les débris d’Insectes, d’os, de peau, de végétaux, ainsi que les bourres etc., sont souvent à un degré très avancé de digestion, et demandent beaucoup de temps et de soin à déterminer.

Ces recherches devront porter sur un nombre respectable de pièces, pour pouvoir en tirer les conclusions les plus exactes possibles, et nous sommes les premiers à reconnaître que le terme de cinq ans est insuffisant pour mener à bien semblables travaux. Quoiqu’il en soit, nous tenons à faire constater que le Gouvernement Belge est peut-être le seul en Europe qui n’ait pas remisé dans les cartons le voeu du Congrès de Paris et qui ait fait procéder officiellement aux analyses expérimentales sur le régime alimentaire des Oiseaux.

Nous n’ignorons pas que l’Institut Ornithologique Hongois travaille de cette façon depuis plusieurs années à la solution de ce problème économique, et il sera déjà intéressant de jeter un coup d’œil sur les résultats acquis.

Nous comptons ainsi apporter notre pierre à l’édifice qui s’érige lentement en Europe et qui servira plus tard de base, soit à de nouvelles classifications ornithologiques, soit à des répartitions plus exactes et plus vraies des espèces dites utiles, indifférentes ou nuisibles.

Maintenant il nous tarde de vous exposer brièvement la méthode que nous avons suivie pour l’exécution de ce travail,
et vous montrer quelques spécimens d’analyses consignées en
tableaux synoptiques, accompagnés de remarques et commentaires
qu’ils comportent. Tout d’abord les Oiseaux nous furent
procuérés par les gardes forestiers de la Belgique, auxquels le
Gouvrnememt avait fait parvenir des bulletins imprimés

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dont ils avaient à remplir chaque colonne de renseignements
biologiques les plus importants sur chaque Oiseau, tels que
l’âge, la date de capture, les différentes localités du pays et
les endroits divers : bois, champs, jardins, prairies, vergers,
marais, etc., où s’était opérée la capture de l’Oiseau. Inutile
d’insister sur l’importance de ces détails, nous aurons l’occasion
d’en reparler encore.

L’autopsie consistait le plus souvent à extraire le ou les
estomas de la victime, selon que le jabot, le succenturié,
le gésier, ont une importance prépondérante dans l’acte de la
digestion. Puis un petit carton portant un numéro était fixé
à l’estomac et épinglé ou cousu, et le tout mis dans un flacon
d’alcool. Ensuite sur un registre étaient consignés le nom
de l’Oiseau autopsié se rapportant au numéro de son estomac
désormais conservé, ainsi que tous les détails donnés par
celui qui avait fait la capture de l’Oiseau. Enfin les flacons
étaient remis au spécialiste qui devait faire l’étude du contenu
de ces estomacs numérotés, de sorte qu'il ignorait à quelle espèce d'Oiseau avait appartenu cet estomac. Ceci afin d'éviter que l'entomologiste ne soit influencé par des idées préconçues sur le sujet de ses recherches.

Ces analyses ont donc été faites avec toute la sincérité désirée, et nous avons tenu à en faire connaître les détails particuliers, afin de mettre nos travaux à l'abri de toute critique ou de tout soupçon de ce côté.

Les commentaires qui accompagnent les tableaux, découlent de l'ensemble des résultats fournis par les estomacs analysés, et leur contenu est conservé en des tubes séparés afin qu'on puisse contrôler, re-étudier et pousser le plus loin possible l'étude des débris d'Insectes souvent si difficiles à déterminer.

Mais là ne git pas, d'après nous, la pierre d'achoppement du problème, et nous croyons que les difficultés surgiront surtout des divergences d'opinions et de vues des naturalistes sur les conclusions à tirer des résultats obtenus.

Et ici se place naturellement la question de savoir ce qu'il faut entendre par bête utile ou animal nuisible. Car cette question d'Ornithologie Économique touche à la question de chasse qui découlera naturellement aussi de l'enquête sur le régime alimentaire des Oiseaux, sinon elle n'aurait qu'un intérêt scientifique et nullement économique.

Disons donc qu'un animal peut être utile à l'homme pendant sa vie ou après sa mort, pour des raisons qu'il serait fastidieux de spécifier ici, chacun d'eux ayant sa sphère et ses degrés d'utilité, tandis que la bête nuisible lui cause des dommages d'une façon ou de l'autre.

Il ne suffit donc pas de faire des autopsies sur les estomacs d'Oiseaux pour résoudre la question de leur régime alimentaire au point de vue de nos intérêts, mais il faut savoir diagnostiquer les Insectes, les animaux et les végétaux qu'ils contiennent pour apprécier leur degré d'utilité ou de nocuité, et en ce qui concerne l'Insecte, il faut connaître son rôle à ses divers états—ovulaire, larvaire et Insecte parfait.

Ce n'est pas tout : il faudra encore tenir compte des conditions dans lesquelles l'Oiseau a ingéré telle ou telle nourriture. Par exemple, si l'on trouve beaucoup de grains dans le gosier d'un moineau, d'une alouette ou d'un corbeau freux après la récolte, ce fait n'a guère d'importance puisque
c'est sans préjudice pour personne. Il en sera de même pour les Insectes, leur valeur économique dépendra des endroits où ils auront été capturés par l'Oiseau, si c'est dans un milieu où ils peuvent causer ou non des dommages. Il faudra donc tenir compte de toutes ces données avant de porter un jugement définitif. De même encore, nous croyons que l'enquête, tout en étant internationale, ne saurait intéresser que le pays qui l'a faite, à moins de complications inextricables. Un Oiseau peut être utile au Nord, nuisible au Sud, bienfaisant au printemps, malfaisant à l'automne. Tous ces facteurs, et d'autres encore, devront entrer en ligne de compte afin de baser des conclusions sur des faits précis et de valeur certaine.

De ces considérations sur le régime alimentaire, nous croyons pouvoir tirer les conclusions suivantes : il y a, en Belgique, d'après le "Manuel" de M. Crépin, directeur du Jardin Botanique de Bruxelles, 1250 phanérogames parmi lesquels on compte tout au plus 100 espèces de plantes et essences utiles à nos intérêts.

Les Insectes sont actuellement classés en utiles, nuisibles et indifférents. Les phytophages sont considérés comme nuisibles, les carnivores comme utiles. Or, parmi les phytophages, tous ceux qui vivent sur les plantes qui n'appartiennent pas aux 100 espèces végétales utiles à l'homme, sont au moins indifférents et souvent utiles, puisqu'ils détruisent des plantes qui ne nous servent pas et qui prennent le plus souvent la place de nos plantes utiles.

D'autre part, sont seuls utiles les Oiseaux qui se nourrissent exclusivement d'Insectes qui nous causent des dommages réels, et encore ces Oiseaux n'ont-ils d'utilité que pendant la partie de l'année où existent les Insectes nuisibles.

Mais ces derniers sont en petit nombre, car sur 12,500 espèces d'Insectes qui composent la Faune Entomologique Belge, on ne compte que 300 espèces nuisibles et 300 espèces utiles, et le reste comme indifférent. On peut donc en inférer que le régime alimentaire des Insectivores sera surtout composé d'espèces indifférentes, puisqu'elles courent beaucoup plus de risque d'être capturées que les deux autres, en raison de cette proportion formidable, toutes choses égales d'ailleurs, d'après cela encore, il faut se garder de donner aux Oiseaux Insectivores un brevet d'utilité absolue, car à part leur
importance esthétique qui prime tout, mais dont il ne saurait être question en Ornithologie Économique, ces Oiseaux n’ont en réalité qu’une action plutôt indifférente en agriculture.

Il sera intéressant de voir si les études expérimentales entreprises sur leur régime alimentaire, viendront confirmer ou infirmer les déductions basées sur les considérations émises ci-dessus.

**Régime alimentaire du Rouge-gorge.**

Nous avons choisi le Rouge-gorge en raison de la multiplicité des endroits qu’il fréquente, de son long séjour parmi nous (il est presque sédentaire) et de la place qu’il occupe en tête des Rubiettes, qui comprennent le Rossignol ordinaire, le Rossignol de muraille, le Rouge-queue titys, le Gorge-bleue, etc., tout en étant proche voisin du groupe des Fauvettes.

Nous rappelons que, dans ces tableaux analytiques, les recherches sur le contenu des estomacs ont été faites par M. Severin, entomologiste et conservateur au Musée royal d’histoire naturelle de Bruxelles, et qu’il a ignoré jusqu’ici à quel oiseau ces estomacs avaient appartenu, afin d’éviter tout préjugé.

*(Voir le tableau du Rouge-gorge ci-contre.)*

**Bilan.**

Bien que tous commentaires soient surflous, ces tableaux parlant assez d’eux-mêmes, nous consignerons cependant que ces données positives établissent:

1° Que le Rouge-gorge n’est pas un oiseau exclusivement insectivore, mais qu’il est aussi bacivore et fait entrer dans son alimentation une minime quantité de substances végétales:

2° Que les 125 analyses d’estomacs que nous pourrions donner, si le cadre du journal nous le permettait, ne nous apprennent rien relativement à l’utilité ou à la nocuité de cet oiseau lors de sa mort;

3° Que le Rouge-gorge se nourrit principalement d’insectes vivant à terre ou sur des plantes basses et que la plupart de ces insectes sont indifférents à l’agriculture, à la sylviculture.

Nous bornerons là nos observations sur le rôle économique de cet oiseau, en constatant cependant que les résultats des recherches expérimentales confirment les déductions générales que nous avons émises dans notre article précédent.
### Ornithologie Economique.

<table>
<thead>
<tr>
<th>N°</th>
<th>CAPTURE</th>
<th>LOCALITÉ</th>
<th>DATE</th>
<th>AGE</th>
<th>CONTENU DE L'ESTOMAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>844</td>
<td>adulte</td>
<td>Graive</td>
<td>9 août</td>
<td>jeune de l'année</td>
<td>plein bois</td>
</tr>
<tr>
<td>861</td>
<td>adulte</td>
<td>Rance</td>
<td>4 août</td>
<td></td>
<td>liasse des bois</td>
</tr>
<tr>
<td>864</td>
<td>adulte</td>
<td>Zonnebeke</td>
<td>13 août</td>
<td></td>
<td>plein bois</td>
</tr>
<tr>
<td>901</td>
<td>adulte</td>
<td>Rancé</td>
<td>18 août</td>
<td></td>
<td>liasse des bois</td>
</tr>
<tr>
<td>925</td>
<td>adulte</td>
<td>Granale</td>
<td>17 août</td>
<td></td>
<td>vide</td>
</tr>
<tr>
<td>926</td>
<td>adulte</td>
<td></td>
<td></td>
<td></td>
<td>vide</td>
</tr>
<tr>
<td>927</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>vide</td>
</tr>
<tr>
<td>978</td>
<td>adulte</td>
<td>Stuy</td>
<td>22 août</td>
<td></td>
<td>vide</td>
</tr>
<tr>
<td>992</td>
<td>adulte</td>
<td>Bergbœuf</td>
<td>23 août</td>
<td></td>
<td>vide</td>
</tr>
</tbody>
</table>

**Description du contenu de l'estomac**

- Liasse des bois
- Plein bois
- Vide
- Divers

NOTE SUR LE FREUX—CORVUS FRUGILEGUS L.—
et son Utilité au point de vue de l'Agriculture
et de la Sylviculture.
Par Fp. Visart de Bocarmé.

On rencontre en Belgique quelques colonies de Freux, surtout
en Hesbaye, région de grande culture intensive de céréales
et de betteraves à sucre. On n'y récolte pas le maïs.

Habitant un village où existe un 'rookery' de 500 nids
environ, j'ai étudié souvent l'importance du bien et du mal
que fait cet oiseau : le régime des jeunes est essentiellement
insectivore. Pendant l'hiver beaucoup de Freux émigrent,
mais il en reste toujours un certain nombre dans le pays.

Quelques personnes demandent la proscription de cet oiseau,
d'autres soutiennent qu'il rend plus de services qu'il ne fait
de tort.

Certains chasseurs prétendent que le Freux détruit les
nichées d'oiseaux, mais j'ai toujours observé qu'ils confon-
daient le Corvus frugilegus L. avec le C. corone L.; c'est
ce dernier qui est très nuisible pour le gibier. "Le Freux," dit
le Baron de Sélys-Longchamps, "n'est carnassier que très
accidentellement et poussé par la famine. S'il était vrai,
comme on le prétend, qu'il fit la chasse aux nids et aux
couvées, nous n'aurions pas chez nous tant d'oiseaux inse-
tivores chanteurs dans les bois où il habite, et il ne devrait
subsister dans la localité aucun nid de perdrix."

Mes observations confirment absolument cette manière de
voir. J'ai vu des faisans, des perdrix, des petits oiseaux
cléver en sécurité leurs jeunes à proximité d'un 'rookery.'
J'ai constaté dans un champs de froment de 14 hectares,
voisin de celui-ci, l'existence de trois nids de perdrix et de
deux nids de faisans dont tous les œufs étaient parfaitement
clos. On a compté au mois d'août suivant 39 perdreaux
et 20 faisandeaux tous issus de ces nids.

Je pense donc que le Freux ne cause au gibier qu'un
dommage très accidentel. Plusieurs reprochent aux Freux

1 De Sélys, Bulletin de la Société Centrale Forestière de Belgique. Bruxelles,
1895.
de faire du tort aux semaines, de rechercher les grains dans les meules de céréales et de manger des fruits.

On peut cependant, moyennant quelques précautions, se garantir de ces dommages. Pour préserver les semaines, il existe plusieurs procédés ; il suffit d’employer celui indiqué par le savant naturaliste, M. X. Raspail, Président de la Société Zoologique de France : verser sur le blé du goudron de houille et le remuer jusqu’à ce que tous les grains en soient bien enduits, puis les rouler dans de la cendre de charbon de terre finement tamisée. Les grains ainsi traités peuvent être semés à la volée ou au semoir et, point important, les germes cryptogamiques qui pourraient y être attachés, sont détruits. Raspail dit que cette méthode est employée avec succès dans les États de Maryland et de Virginie (U.S.A.), où on laisse les corbeaux en paix, eu égard aux services inappréciables qu’ils rendent à l’agriculture.¹

M. Bournonville agriculteur à Emines emploie avec succès la méthode suivante pour écarter les corbeaux de ses semaines : planter dans les champs ensemencés des piquets enduits de goudron de houille (20 par hectare).

Je crois d’ailleurs que le préjudice causé aux semaines est fort exagéré, car j’ai vu souvent des champs fréquentés par les Freux, à l’époque de l’ensemencement, produire des récoltes magnifiques. De Sélys dit n’avoir jamais vu des vides réels occasionnés par les Freux dans les champs cultivés² et mon père m’a affirmé aussi n’avoir pas constaté un dommage appréciable causé par ces oiseaux dans ses récoltes. Je crois que le Freux ne cause du tort qu’aux semaines faites tardivement par suite de diverses circonstances et c’est l’avis de plusieurs cultivateurs mes voisins.

Cet oiseau attaque parfois les meules de céréales insuffisamment protégées, mais le fait ne se produit que pendant les périodes de gelée ; on peut s’en garantir en construisant bien la meule, en y plaçant des épouvantails, en affutant les oiseaux. Chez nous beaucoup de meules sont battues à la machine avant l’hiver.

Le Freux mange aussi quelques fruits, mais le dommage

² De Sélys, loc. cit.
causé est accidentel et peu important ; il diffère sous ce rapport des *Corvus corone* L. et *C. monedula* L.

Pendant les mois de Juillet et d'Août les Freux sont très rares sur nos campagnes et ne causent aucun tort au moment de la maturité des céréales.

On peut se prêserver assez bien des dommages causés par les Freux, mais l'importance des services rendus par ceux-ci, vaut-elle la peine que l'on devrait se donner pour se garantir du tort qu'ils peuvent faire ? Afin de le savoir j'ai examiné, depuis 1902, 251 estomacs de Freux tués à différentes époques de l'année ; en voici les résultats :

<table>
<thead>
<tr>
<th>Lettre</th>
<th>Description des aliments dans les estomacs</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>27 estomacs contenaient des grains.</td>
</tr>
<tr>
<td>B</td>
<td>12 estomacs grains et insectes.</td>
</tr>
<tr>
<td>C</td>
<td>5 estomacs fruits.</td>
</tr>
<tr>
<td>D</td>
<td>126 estomacs insectes en majorité et aussi divers aliments renseignés au litt. F. Pas de grains.</td>
</tr>
<tr>
<td>E</td>
<td>25 estomacs grains et aliments comme au litt. F.</td>
</tr>
<tr>
<td>F</td>
<td>33 estomacs grains d'avoine provenant de crottins, débris de maïs, restes d'immondices, insectes, lombrics, limaces, cloportes petites graines diverses de plantes sauvages.</td>
</tr>
<tr>
<td>G</td>
<td>3 estomacs, souris—campagnols.</td>
</tr>
<tr>
<td>H</td>
<td>20 estomacs, rien (surtout en hiver).</td>
</tr>
</tbody>
</table>

251

*Les animaux nuisibles sont :

1. Souris et Campagnols—rarement.
4. Taupin (*Agriotes segetis* Bierk.).
5. Larves d'Elatérides probablement Agriotes.
7. Casside nébuleuse (*Cassida nebulosa* L.), rarement.
8. Noctuelle des moissons (*Agrotis segetum* Schiff.).
Note sur le Freux.

11. Larves de la Tipule des prés (*Tipula oleracea* L.). Larves très nuisibles appelées par les Anglais vers à jaquette de cuir; rongent les radicelles des graminées, des betteraves, des légumes; dommages notables aux prairies.

12. Taon (*Tabanidae* sp. ?) rarement.

13. Oestre du cheval (*Oestrus equi* Clarke); larves trouvées par les Freux dans les crottins de chevaux.


17. Chenilles (sp ?)

Insectes utiles.

1. Carabe doré (*Carabus auratus* Fabr.) rarement.

2. *Carabidae* sp. ? rarement.


5. Bousier (*Onotaphagus* sp. ?).


Espèces indifférentes; quelquefois utiles ou nuisibles.

1. Lombrics (*Lombricius*), Plutôt utiles.

2. *Birrhus varius*.

3. Charançons, genre (*Chlorophanus* Ger.).

4. Eristales ‘larves’ (*Eristales tenax* Latr.).

5. Iule terrestre (*Iulus terrestris* L.), mille-pattes.

6. Punaise des champs (*Geocorisoë* sp. ?).

7. Hétéroméres ou *Tenebrionidae* (larves) sp. ?


9. Nombreuse débris d’insectes (sp. ?).

Afin de bien évaluer les services rendus par le Freux, il faut considérer l’importance des ravages commis par plusieurs insectes qu’il détruit en quantité énorme.

J’ai trouvé avant midi dans un seul estomac 20 larves de la *Tipula oleracea* L., et dans un autre 14 Vers blancs et un Hanneton. Le dommage causé par le Ver blanc est considérable: ainsi le célèbre entomologiste Kunckel d’Herculais dit que sur 10,000 hectares de betteraves à sucre près de St.
Quentin, la perte fut, en 1868, de 160 millions de kilogr. de racines, soit environ 4 millions de francs ou 400 francs par hectare.\(^1\)

La destruction par le Ver blanc d'une seule betterave par mètre carré, représente une perte de 3 à 4 mille kilogr. par hectare, ou 84 à 112 frs. Le Ver blanc cause un dommage considérable aux pépinières : M. Nys de Gembloux me signale qu'en 1905, le tort causé par cette larve dans 25 ares d'une partie de ses pépinières plantée de pommiers a été de 500 frs. Il a trouvé au pied de certains arbres jusqu'à 62 larves de Hannetons.

En Anjou, dit G. Rogeron,\(^2\) l'augmentation des ravages du Hanneton coïncide avec la diminution notable des Corbeaux, et de Sélys constate que les Hannetons sont rares là où existe une colonie de Freux. Un vieux propriétaire des environs de Namur, M. Alf. Bequet, me disait qu'autrefois les Hannetons pullulaient à tel point qu'ils dépeuillaient, chaque année, de leurs feuilles les chênes de sa propriété. Depuis l'établissement d'une colonie de Freux, ces insectes sont devenus rares dans la commune.

On doit aussi signaler à l'actif du Freux la grande consommation qu'il fait de larves de la *Tipula oleracea*. Chaque année j'en ai trouvé un grand nombre dans leur estomac.

Je pense que le Freux découvre la présence des larves sous terre au moyen de l'odorat. M. X. Raspail a raison de conclure à la suite de ses excellentes observations que les oiseaux ont ce sens très développé.\(^3\)

Le Silphe des betteraves, qui autrefois s'était multiplié en Angleterre, en Suède et dans les départements du Nord de la France\(^4\) au point d'anéantir des champs entiers de betteraves, est maintenant chez nous en nombre inoffensif.

Burton\(^5\) renseigne aussi le *Silpha obscura* L. comme nuisible aux betteraves, mais il y a peut-être confusion avec le *S. opaca* L.

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\(^3\) Mémoires de la S. Z. de France, 1905.


Le Freux détruit aussi beaucoup de charançons très nuisibles aux feuilles, aux bourgeons et aux jeunes pousses des arbres. Aux genres cités plus haut, on peut ajouter ceux signalés par M. Titus Csorgey dans sa belle étude sur l'importance économique du Freux : Cleonus et Otiorhynchus ; je pense que cet oiseau serait aussi très utile pour la destruction des espèces des genres Hylobius et Pissodes fléaux des arbres résineux.

A signaler aussi le Taupin et la Limace des champs.

Enfin, bien que les chenilles des Noctuelles aient plusieurs parasites, notamment l'Ichneumonide (*Ophion buteüs* Grav.) et la Guêpe fouisseuse (*Ammophila sabulosa* L.), les Freux rendent encore de notables services pour la destruction de ces larves nuisibles en arrêtant rapidement leurs ravages et préservant ainsi la récolte.

L'importance de ce dernier service a été bien mise en lumière par les observations du baron de Sélys et de Mr. A. Grégoire, ingénieur agricole qui ont constaté que pendant les années où les chenilles de *Agrotis segetum* Schiff. et de *Plusia gamma* L. sévissent au point de compromettre les cultures de betteraves, les Freux les garantissent de cette catastrophe dans les localités où ils se reproduisent en colonies. Ils se transportent même assez loin à la recherche des champs envahis.

Si l'on examine impartialement la cause du Freux, on arrive à considérer cet oiseau comme utile et méritant la bienveillance de l'agriculteur et du sylviculteur. Le sénateur Couteaux, grand agriculteur français et naturaliste distingué, qui écrivait dans le journal *Le Temps* les articles sur la "Vie à la Campagne," a signalé plusieurs fois l'utilité des Freux, qui "sont plutôt insectivores, et rendent indéniablement de grands services en détruisant quantité de vers et de larves." 3

En Belgique un arrêté royal du 28 Avril, 1891, défend de

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1 de Sélys, loc. cit.
2 *Journal de l'Association des anciens élèves de l'Institut agricole de Gembloux*, 1893.
tuer les Corbeaux dans une partie du pays, sauf du 15 Septembre au 30 Novembre. Il a été pris afin de protéger les sapinières de la Campine contre les grands ravages de certains insectes.

M. Crahay, inspecteur des eaux et forêts, apprécie en ces termes l’utilité des Corbeaux: “rappelons également les services importants rendus en Campine par les Corbeaux lors de l’invasion de la Nonne—Liparis monacha L.—il y a 3 ou 4 années, et, plus récemment encore, en juin dernier, lors de l’apparition du Lophyre du pin—Lophurus pini L.”

On peut se garantir, assez facilement, des dommages causés par le Freux et les peines qu’il faudrait se donner dans ce but ne seraient qu’une faible prime de l’assurance, que la culture payerait pour se mettre à couvert des risques qu’elle court de la part de plusieurs de ses ennemis.

M. Charlier, ancien secrétaire de la Société d’Entomologie de Namur, auquel j’avais envoyé, sans l’informer du nom de l’oiseau, quelques estomacs de Freux, afin d’en examiner le contenu, me répondit en ces termes: “L’oiseau en question doit être, me semble-t-il, extrêmement utile, sauf à l’époque des semaines.”

Ma conclusion sera donc qu’il ne faut pas proscrire le Freux. On ne doit pas encourager la destruction du Freux au moyen de primes et le système Belge permettant, sauf dans certaine partie du pays, à celui qui croit cet oiseau nuisible de le tuer sur ses propriétés, même au moyen du fusil, est plus que suffisant. En Belgique, le nombre de Freux sédentaires n’est pas excessif et ne s’accroît pas outre mesure à cause des grandes hécatoembes de jeunes, trop considérables peut-être, qui sont faites chaque année dans certaines localités. Il est évident pour tous ceux qui ont étudié le Freux de près, que les insectes nuisibles détruits par cet oiseau causeraient dix fois plus de dommages que celui-ci.

1 Bulletin de la Société Centrale Forestière de Belgique, 1894.

2 Cette appréciation paraîtra peut-être exagérée; mais M. Reisset agriculteur dans le département de la Seine-Inférieure, estime qu’une année les Vers blancs lui ont causé dans son exploitation de 100 hectares un préjudice de 18,700 frs. Cette perte portait principalement sur la culture de la betterave.—A. E. Brehm, loc. cit.
THE SPARROW!

IS IT USEFUL OR HARMFUL TO AGRICULTURE?

By Igalí Svetozár.

I am a Hungarian agriculturist, and am very anxious, if possible, to see the above question settled. Some years ago at the last “International Conference for the Protection of Birds” in Paris in 1895, a list of birds, which were considered to be useful or harmful to agriculture, was drawn up. The family of the Passeres was mentioned, but no special attention was drawn to the “Moineaux” (Sparrow, Spatz, Vrábácz, Veréb). The Minister of Agriculture for Hungary has recently (1904) also drawn up an elaborate schedule in regard to this question, in which again no special mention is made of the Sparrow.

The Fourth Ornithological Congress will do a most useful piece of work, if the question can be settled, as to whether this bird should be protected or have war à outrance declared against it. I am, as I have already said, an agriculturist, and also a wine-grower and a gardener. I am very sorry to have to announce that I am the pitiless enemy of this little brigand, and that I am convinced that, if we could only succeed in exterminating the whole species, it would be distinctly to our advantage as agriculturists. I should be very glad if someone from the ranks of the “Sparrow-friends” could upset my opinion. I will state my indictment against it.

Following the fashion of Switzerland and Württemberg, I have constructed nests out of cigar boxes, hollowed wood, etc., and placed them on the trees in my orchard and vineyard. I have also placed artificial nests for occupation by the really useful birds, such as the Nightingale, Goldfinch, Red-breast, Song Thrush, Oriole, and Redstart, between the sprays of the climbers Glycine chinensis and Periploca graeca, which grow thickly upon the walls of my habitation.

I destroyed all cats that I knew were addicted to bird-killing, and during the winter I distributed food, and attended to the water supply.
The result of all this was to find myself engaged in a ruthless war with the Sparrows, who had insolently occupied these nesting boxes.

In the ripening corn, fruit, and grapes, the Sparrows are the first to take their share—no insignificant one, if their number is large.

As regards other kinds of food, during the past winter I purposely left the caterpillar nests on one apple tree and one pear tree near the abodes of the sparrows to see the devastation that the feathered hosts would make on them. Well: the first sprays of each tree have been entirely eaten by the insects, notwithstanding the swarms of Sparrows that hatched out on these trees.

Could you have a more convincing proof of the mischievousness and uselessness of this little scoundrel?

I know the opinion of the Frenchman Henri Fabre, who came to the conclusion in favour of the protection of the Sparrow.

I know also the anecdote of Frederic the Great, who ordained the destruction of all these birds, for having eaten his cherished cherries, and that afterwards he had no fruit, because the insects had ravaged it all. In spite of this I am bold enough to maintain my assertion and to make the following proposition, viz.—that in Ministerial Instructions, which may be issued, dealing with lists of useful and harmful birds, the Sparrow shall be mentioned as harmful; that the really useful birds shall be more carefully protected than they have been hitherto; that the parents of the boy "lifters" of the nests of useful birds shall be fined severely, being held responsible for their children's misdoings in this respect.

It should be ordered that each commune should erect in suitable positions artificial nesting places for useful birds; that they should take care to provide food for them in severe winters; and protect them from their natural enemies. The distinctions between the eggs of different birds should be taught in the schools.

Finally, it might be useful to have a staff of ornithologists attached to the Administration of Agriculture, who could give instructions to the Inspectors for the culture of bees,
silkworms, fish, and poultry, to see that these proscriptions for the protection of useful birds were actually carried out.

Then, and then only, can we rid ourselves of this nuisance, as I call it—the Sparrow.¹

¹ Since reading this paper a year ago, I am sorry to note that nothing has been done in this matter. Nevertheless, I am still of the same opinion, viz., that the Sparrow is to the agriculturist and gardener an embodied abomination, imbued with reproachful tastes. To make an end of their depredations, I encouraged my little son Izava to kill as many as he could. During the summer months of this year (1906) he caused a holocaust amongst the winged marauders. And lo! what was the result of this massacre? The Sparrows vanished, and their place is now occupied by our friends the Warblers.
ÉTUDE SUR LA GROSSEUR DES GRÊLONS DANGEREUX POUR LES OISEAUX.

Par Paul Martin,
Sylviculteur à Toul (Meurthe et Moselle) France.

Les grêlons dépassant un certain poids constituent par leur chute un danger réel pour les petits animaux.

À l'approche d'un orage à grêle, tous les oiseaux cherchent un abri contre les grêlons; souvent néanmoins ils en sont victimes. On a cité les cas d'orages à grêle ayant causé la mort non seulement de petits oiseaux, mais encore de perdrix et même de lièvres.

Lorsqu'un corps tombe dans l'air, sa vitesse augmente jusqu'à une certaine limite qui dépend de son poids, de son volume et de la densité de l'air. La vitesse cesse de s'accroître et le mouvement devient uniforme lorsque la résistance opposée par l'air au moment de chute devient égale au poids du corps tombant. Les lois de la résistance de l'air permettent de calculer la vitesse de chute des grêlons supposés sphériques.

Dans un air à la température de 15° et à la pression de 750 mm, la vitesse de chute des grêlons arrivant à terre est donnée par la formule \[ V = \sqrt{3.27 \times a}, \] dans laquelle \( V \) est la vitesse en mètres par seconde et \( a \) le diamètre en millimètres, la densité étant égale à 1. La force vive de chaque sphère exprimée en kilogrammètres est donnée par la formule:

\[ F = \frac{0.873 \times a^2}{10^6} \]

Il semble résulter de quelques observations qu'une sphère de densité égale à 1, d'une assez grande dureté assomme un animal, lorsque le nombre de kilogrammètres qui mesurent la force vive du choc est presque égal au \( \frac{1}{2} \) du nombre de kilogrammes qui mesurent le poids de l'animal.

C'est en appliquant cette règle que l'on détermine le poids des animaux pour lesquels un grêlon de grosseur déterminée devient dangereux.

Ainsi des grêlons de 10 mm. sont dangereux pour les petits...
La Grosseur des Grélons.

oiseaux, de 15 mm. pour les perdrix, de 25 pour les lièvres, et, si l'on veut aller plus loin, de 60 pour les hommes.

Le diamètre des grélons dépasse assez rarement 1 centimètre et leur poids 0,5 gr.; toutefois on a observé des chutes de grélons dont le poids atteignait plusieurs décagrammes.

Le tableau ci dessous indique le poids des différents animaux assommés par la chute des grélons:

<table>
<thead>
<tr>
<th>Diamètre des grélons</th>
<th>mm.</th>
<th>10°</th>
<th>12°</th>
<th>14°</th>
<th>16°</th>
<th>18°</th>
<th>20°</th>
<th>30°</th>
<th>40°</th>
<th>50°</th>
<th>60°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poids des grélons</td>
<td>gr.</td>
<td>0,324</td>
<td>0,994</td>
<td>1,44</td>
<td>2,14</td>
<td>3,06</td>
<td>4,19</td>
<td>6,19</td>
<td>9,35</td>
<td>13,5</td>
<td>113</td>
</tr>
<tr>
<td>Vitesse de chute des grélons</td>
<td>m.</td>
<td>18,1</td>
<td>19,1</td>
<td>21,44</td>
<td>22,9</td>
<td>24,3</td>
<td>25,0</td>
<td>31,3</td>
<td>32,6</td>
<td>40,4</td>
<td>44,3</td>
</tr>
<tr>
<td>Force vive au choc des grélons</td>
<td>k.</td>
<td>0,00873</td>
<td>0,0181</td>
<td>0,0335</td>
<td>0,0573</td>
<td>0,0917</td>
<td>0,140</td>
<td>0,798</td>
<td>2,24</td>
<td>5,46</td>
<td>11,3</td>
</tr>
<tr>
<td>Poids des animaux assommés par la chute des grélons</td>
<td>k.</td>
<td>0,061</td>
<td>0,127</td>
<td>0,254</td>
<td>0,400</td>
<td>0,624</td>
<td>0,950</td>
<td>4,95</td>
<td>15,7</td>
<td>38,7</td>
<td>79,9</td>
</tr>
</tbody>
</table>
NOTICE SUR L'OPPORTUNITÉ DE PROTÉGER LA BÉCASSE AU PRINTEMPS.

Par Louis Ternier.

Lors du Congrès ornithologique, tenu à Paris en 1900, on a discuté très longuement la question de la protection des oiseaux de passage au moment de leur retour vers les pays de nidification. Le Congrès avait émis un vœu favorable à une entente internationale sur les mesures à prendre pour assurer cette protection. Dans un cadre plus restreint, la commission internationale qui fut chargée d'élaborer un projet de législation régissant les divers états d'Europe quant à la protection des seuls oiseaux "dits" utiles à l'agriculture, a certainement fait une œuvre utile et qui repose sur des bases solidement établies. Mais, il faut bien le reconnaître, pas plus pour la protection générale des oiseaux de passage que pour la protection particulière des espèces utiles à l'agriculture, l'entente rêvée n'a eu lieu et la question de protection des oiseaux reste plus que jamais à l'ordre du jour.

Je n'ai point la prétention de soulever ici à nouveau une discussion qui a occupé d'autres séances de ce Congrès. Je veux seulement attirer l'attention de mes honorables collègues sur un essai de protection, conforme à celui visant la protection de tous les oiseaux de passage en général, qui a été fait en France depuis trois ans pour un oiseau intéressant au plus haut point: la Bécasse. Depuis trois ans, en effet, il est interdit de tirer la Bécasse en France, après la clôture officielle de la chasse, laquelle, sauf quelques exceptions pour certaines espèces, a lieu dans le courant de Janvier.

M. Mougeot, ancien Ministre de l'Agriculture, a été le promoteur de cette interdiction maintenue, cette année, par son successeur M. Ruau.

Le maintien de cette interdiction n'a pas été sans soulever de vénéreuses protestations.

Toutes ces protestations ont reposé sur le défaut d'entente internationale qui rendrait illusoire la prohibition, les "chasseurs à outrance" considérant comme une duperie de
Protection de la Bécasse au Printemps.

respecter des oiseaux qui, suivant eux, doivent aller fatalement se faire tuer sur les pays voisins.

Ce que je voudrais démontrer aujourd’hui, sans revenir sur les raisons qui militent en faveur de la protection de la Bécasse, c’est qu’au contraire de ce qu’avancent les partisans de la chasse de printemps, la protection sur une contrée déterminée est absolument efficace et est appelée à donner, pour cette contrée, d’excellents résultats, que par suite, même à défaut d’entente internationale générale, chaque pays, sans se préoccuper de ce qui se passe chez ses voisins, a un intérêt particulier à essayer ce qui à été tenté avec succès en France.

J’ai été, antérieurement aux mesures protectrices prises en France, un des premiers partisans de l’abolition de la chasse à la Bécasse à son passage de retour. À l’origine, j’étais surtout très penché de cette idée que, contrairement à la thèse soutenue par mes contradicteurs, plus on laisse de reproducteurs se diriger indemnes vers leurs pays de nidification, plus il y a de chances, malgré les risques de route, de voir augmenter les individus de l’espèce dont les reproducteurs ont été respectés. Je savais aussi que, lors du passage de retour, les Bécasses sont appariées, et que bon nombre d’entre elles restent à nicher en France. C’est cette dernière considération qui m’amena à rechercher ce qu’avait révélé, au sujet de la Bécasse, l’enquête de 1885 et 1886—faite en France par ordre du Ministère sur la distribution géographique et la nidification des oiseaux.

L’enquête est venue corroborer ce qui m’avait été dit, ce qui j’avais moi-même constaté, à savoir que la Bécasse niche en France en assez grand nombre.

L’Ornis, bulletin du Comité Ornithologique, a publié mon étude sur l’enquête qui établit que, sur mille observateurs, plus de quatre cents ont consigné des observations de nidification régulière ou accidentelle de la Bécasse sur soixante de nos départements. Une contre-enquête facile à faire, du reste, m’a convaincu de l’exactitude de la plupart de ces observations.

J’ai eu ensuite l’occasion de soutenir la cause de la Bécasse dans la “Chasse Illustrée” et à la suite des articles parus dans ce journal j’ai reçu quantité de communications dont
beaucoup émanaient d'incrédules convertis, m'avisant, qu'après enquête, ils avaient reconnu que souvent la Bécasse nichait dans leurs bois, fait qu'ils ignoraient auparavant.

J'ai donc aidé de tout mon pouvoir le Ministère dans les mesures de protection, parfaitement convaincu que cette protection aurait un résultat, et que notamment la nidification de la Bécasse augmenterait sensiblement sur notre territoire. C'est en effet ce qui est arrivé : La Bécasse a niché depuis deux ans en plus grand nombre en France et depuis les mesures de protection elle s'est montrée beaucoup plus abondante à son premier passage.

La protection de la Bécasse à son retour a eu en France un autre champion, beaucoup plus autorisé que je ne saurais l'être, le C® Clary, Président d'une Société, reconnue d'Utilité publique, le Saint Hubert Club de France, dont le principal objet est l'amélioration de la chasse et, pourrais-je ajouter, la protection des oiseaux en général, de ceux de chasse en particulier. Le C® Clary a constamment soutenu les ministres dans leurs mesures protectrices de la Bécasse et dernièrement encore il est venu apporter un argument bien puissant en faveur du système de protection.

Il nous a appris, dans une statistique très documentée qu'en 1902-1903, époque à laquelle la législation ancienne était encore appliquée, sur 24,247 Bécasses entrées à Paris, il y avait 2303 Bécasses de provenance française contre 21,944 de provenance étrangère. Dès 1903-1904, après les mesures de protection, la proportion était inversée et le chiffre des Bécasses de provenance française passait à 21,476 contre 1614 étrangères.

En 1904-1905 la proportion s'est maintenue avec augmentation, puisque le total des Bécasses entrées à Paris a été de 30,200.

J'ai moi-même reçu nombre de lettres de correspondants et de lecteurs me disant que depuis deux ans la Bécasse s'est montrée beaucoup plus abondante qu'autrefois. Et il y a quelques jours encore, un de nos honorables Sénateurs, à la suite de la reproduction dans le bulletin du "Saint Hubert Club" d'un de mes articles paru dans la "Chasse Illustrée," m'a écrit que "grâce à l'interdiction du droit, du privilège de tirer la "Bécasse à la passe de Mars l'an dernier, il y a eu dans sa "région une quantité exceptionnelle de ces excellentes
Protection de la Bécasse au Printemps. 661

"voyageuses, fidèles au sol français." Et il ajoute "En
"1870, la chasse fut interdite en France, on ne put donc tuer
"sur notre territoire la Bécasse ni en Novembre 1870, ni en
"Mars 1871; or, dans l'hiver de 1871-1872, la quantité de
"Bécasses fut telle que les vieux chasseurs ne se rappelaient
"pas en avoir jamais autant vu et il faut noter que la règle-
"mentation de la chasse dans les pays voisins, sur le
"parcours de ce gibier, au Sud en Espagne et en Italie, au
"Nord en Belgique, Hollande et Angleterre, n'avait reçu
"aucune modification et que par conséquent la destruction
"de ce gibier n'y avait subi aucune diminution. L'abondance
"exceptionnelle des Bécasses en France cette année provient
"donc," continue mon correspondant, "de la non-destruction
"de cet oiseau chez nous, et par suite de la multiplication
"naturelle de nos Bécasses de France, tant chez nous que
"dans leur région ordinaire de nidification."

Le Dr. Quinet, dans une étude très remarquable qu'il
vient de publier en Belgique sur la même question, partage
sur beaucoup de points mon avis et il ajoute qu'en Angleterre,
depuis que par suite de l'extension donnée à l'élevage des
faisans la chasse dans les bois est virtuellement supprimée
au moment du passage de retour des Bécasses, cet oiseau
s'y reproduit en quantité très notable.

Tous ces faits établissent parfaitement que conformément
tant particulier, migrateur à cantonnements fixes, revient
généralement vers des lieux déterminés et que chaque pays abandone ses
Bécasses comme il a ses autres oiseaux à cantonnement
déterminé; ils prouvent également que la Bécasse, si elle
n'était pas inquiétée, nicherait certainement dans les contrées
où elle se fixe seulement d'une façon temporaire quand
elle est poursuivie lors de son mouvement de retour. Et
par suite, chaque pays a intérêt à protéger les Bécasses qui
le visitent au printemps parceque certaines d'entre elles
y resteront à nicher et que les autres, après avoir été se
reproduire dans leurs contrées habituelles de nidification,
reviendront se cantonner à leur passage d'automme dans
les endroits qu'elle ont déjà visités et choisis, entraînant
avec elles leur nouvelle famille qui augmentera le contingent
des oiseaux appelés à se répandre, en vertu de la loi de diffusion de ces migrateurs, sur la totalité de son territoire.

En France, l'essai tenté pendant trois ans a réussi ; nous souhaitons qu'il soit continué.

Mais il me paraît à désirer que la France ne reste point isolée dans ses mesures de protection. Ce qui a donné des résultats chez nous en donnera de semblables dans les autres pays ; c'est pourquoi, envisageant la question au point de vue qui nous réunit ici, celui de l'intérêt général de l'ornithologie dont l'objet est aussi la conservation de toutes les espèces sans préoccupation de nationalité et sans souci des frontières, je demande aux membres de ce Congrès d'insister, comme je l'ai fait en France, auprès de leurs gouvernements respectifs pour, *qu'en dehors de toute entente internationale*, l'essai individuel tenté avec succès par la France le soit par chacun de leurs pays.

En dehors de sa valeur comme gibier, la Bécasse est un oiseau trop intéressant pour les ornithologistes pour que ces derniers ne se rallient point à ceux qui veulent entraver l'anéantissement de l'espèce. La Bécasse tentera toujours les savants par le côté mystérieux de son existence. Alors que les mœurs de presque tous nos oiseaux indigènes commencent à ne plus avoir de secrets, l'étude de celles de la Bécasse réserve toujours de l'imprévu de même que sa chasse est fertile en surprises. Il faut donc que les savants et les chasseurs de tous pays s'unissent pour assurer à la Bécasse la tranquillité et la sécurité au temps des amours et de la reproduction.

* * *

[Note.—Depuis que ces lignes ont été écrites, la chasse de printemps a de nouveau été autorisée en France, nous ne pouvons que le regretter.]
Section V.

AVICULTURE.

THE IMPORTANCE OF AVICULTURE AS AN AID TO THE STUDY OF ORNITHOLOGY.

BY

D. Seth-Smith, M.B.O.U.

A writer in the current number of the "Ibis" (1905, p.169) remarks:—"It is well to remember that the systematic naming and diagnosis of a species is merely the threshold at the entrance to the essential knowledge of its life-sphere—a small fraction only of the sum total of the natural history of the species." Cabinet ornithology is a science of the very utmost importance, and without our well arranged museums and excellent systematists we should be hopelessly in the dark in our study of birds. But however valuable is the work of the cabinet ornithologist (and I would not on any account underrate its importance) it is, after all, a skin-deep study only—it tells us little of the natural history of birds. We want to know the life-history of the various species; how they construct their nests, upon what they feed their young, the number of eggs they lay, how long they take to incubate, the plumage of their young at various ages, and a thousand points which can only become known by a close study of the living birds.

There are hundreds of species represented in our museums, the actual life-history of which practically nothing is known. Collectors have obtained them, in most cases, merely for the sake of securing specimens, and with no thought of observing
their habits and mode of life, even if such observations were possible.

But the careful study of the wild birds, which would at first sight appear to be the ideal way of adding to our knowledge of their life-history, is next to impossible in many cases; the wild birds are often excessively shy, and their skulking habits, and the fact that their nests are often located amongst the densest vegetation, render close observation impossible. And it is only a very limited number of us who have the opportunity of travelling to the uttermost parts of the earth where alone many of the most interesting forms are to be found.

One is consequently led to the conclusion that the most satisfactory way of studying what one might call the private life of many species is to have them in captivity, and to keep them in a state as nearly as possible approaching that in which they exist when wild, for in such a position alone can they be carefully observed from day to day, and a record kept of their doings.

We are sometimes told that birds do not behave naturally in captivity; and to a certain extent this is true, but I think those who make this statement have, as a rule, only a knowledge of captive birds in cages or very small aviaries, possibly kept at a uniform temperature in a living room the whole year round. In such a situation birds will become abnormally tame, probably much too fat, and will moult at any time during the year, if not more or less the whole year through. Kept, however, under conditions as nearly as possible approaching those to which they are accustomed when wild, that is to say, in good-sized aviaries out of doors, they will exhibit their natural habits in almost every way except in that of migration. They will pair, make their nests, rear their young, indulge in their natural song and various "call" and "alarm" notes, and teach us more about themselves than we could possibly learn, in the case at least of birds from out of the way parts of the earth, in any other way.

It is a simple matter even for those of us who have but small gardens to erect fairly large aviaries in which we can keep some of the most interesting of the feathered tribe. It
The Importance of Aviculture.

is a simpler matter still for those who possess large estates. Much valuable work ought to be accomplished in the various Zoological Gardens, considering the splendid material there to work upon. It is very satisfactory to notice how much more is being done at our London Zoological Gardens now than formerly; one may mention, for example, the breeding last year of the Brush Turkeys and the Crested Screamers (*Chauna cristata*), the last of which had never bred in captivity before, and practically nothing was known of its breeding habits, or of its young. But the difficulty the authorities have to contend with is the fact that the birds must be kept more or less "on show," and submit to the prying eyes of hundreds of visitors, and under such conditions they must be somewhat accommodating if they will condescend to build their nests and rear their young: hence private aviculturists have the advantage in this respect.

I propose now to bring to your notice a few instances as showing something of what has been done, by the study of captive birds, to advance our knowledge of the Avian kingdom.

Certainly some of the most important discoveries directly attributable to Aviculture are those made by Mr. Meade-Waldo, who, besides being a very enthusiastic aviculturist, is one of the best field-naturalists of the day. His observations on the habits of some of the Sand-Grouse are of the greatest interest and scientific importance. He has kept in his aviaries for some years specimens of the Greater Pin-tailed Sand-Grouse (*Pterocles alchatus*), and these have repeatedly nested and successfully hatched and reared their young.

Now, when wild, these birds breed in the dry sandy desert, often far from water, and, since the young are fed on more or less dry seed, it is necessary for the parents to convey moisture to them.

In order to do this the birds fly to the nearest water they can find and then commence to dip their breasts into it and saturate the feathers. They then fly straight home to the young, who proceed to suck off the water.

Mr. Meade-Waldo has seen the wild birds procuring water
for their young in this way, but had he not witnessed the whole proceeding in his aviaries he would never have understood what it meant, but would have considered the birds to have been demented and trying to dust themselves in muddy water when an unlimited expanse of dusting ground surrounded them on every side. Another very extraordinary thing about these Sand-Grouse is that the male has no less than four different plumages. There is first the nestling plumage, which is assumed direct from the down; this being moulted in the autumn into a winter plumage. Then in the very early spring this is changed into the breeding plumage, and in the late summer the male puts on an eclipse plumage which closely resembles that of the female.

Again, Mr. Meade-Waldo was the first aviculturist to breed the beautiful little Chinese Painted Quail (Excalfactoria chinensis, in captivity, rearing a brood of seven in 1898. He was able to note that the period of incubation was twenty-one days, the young were able to fly when about ten days old, and at five weeks had assumed their full adult plumage. I succeeded in breeding this species the following year, and since that time have reared one or more broods every year, and I have also succeeded in breeding the Australasian Excalfactoria lineata. This is generally regarded as merely a subspecies, or slightly darker race of the typical form, but it differs somewhat in its habits from E. chinensis, and when the young were hatched I noticed an extraordinary difference in their appearance from those of the typical form, for whereas the latter are buffish brown with darker brown stripes, those of the Australasian birds are almost entirely black. This difference had never, I believe, been noticed before, but it seems to me to be an important one, and such differences should, I think, be taken into account when determining the validity or otherwise of a species. I found that these two forms bred quite freely with one another, and the progeny was perfectly fertile.

The period, however, undoubtedly varies somewhat according to the temperature of the weather, and I have known it to be completed in nineteen days. Even this is long for so small a species, considering that the larger forms, such as Coturnix delegorguei and C. pectoralis, complete their incubation in from sixteen to eighteen days.—Avic. Mag. (November, 1906), D. 8-8.
Aviculture is again responsible for the production, in England, of the first young Touracou that has, I believe, been seen in Europe. In his book on the Uganda Protectorate, Sir Harry Johnstone briefly refers to the young of one of the Central African Touracous, but I believe that no specimen has ever been brought to this country. Last year (1904), however, a pair of the West African Touracous (Turacus macrorhynchus), belonging to Mrs. Johnstone, a well-known aviculturist, nested in an aviary in Suffolk, and hatched one young bird which, although it was not reared to maturity, lived sufficiently long to give us an insight into the first stages of the life history of these interesting birds, and proved that most of what had been written on the subject was mere conjecture, and inaccurate. [Avic. Mag., N.S., Vol. III. (1905), pp. 26-29, 55-63.]

To turn now to that Neotropical group of birds, the Tinamous. Not very much is known of their habits even now, but some of the most important facts that are known have been ascertained by a study of the birds in captivity.

The common Rufous Tinamou (Rhynchotus rufescens) has been kept and bred in this country many times, and in the P.Z.S. for 1868 (p. 115), the late Mr. A. D. Bartlett wrote an interesting paper on this subject. He showed that the young of this species exhibited very distinct Ratite characters, and that, as in the Ratite, the incubation was undertaken by the male alone.

M. Dulaurier has done more with the Martineta Tinamou (Calopezus elegans). In the 'Bulletin of the Acclimatization Society of France,' for October, 1903, he published a very valuable paper on the breeding of this species in his aviaries. He commenced with a single pair of these birds, but so many eggs were laid that he found it necessary to give the first twelve or fifteen to a domestic hen, the remainder being left with the male Tinamou. In the spring of 1903 M. Dulaurier kept two males with the one female, and he found that after laying a clutch of six or eight eggs for the first male, she paired with the second and laid another clutch upon which he commenced to sit; and M. Dulaurier considered that he would have had even better results if he had had three males to the one female. He has, therefore, proved pretty con-
clusively that this species at any rate is polyandrous, that in a wild state the female, after laying one clutch of eggs which male No. 1 takes charge of and incubates, goes off and finds male No. 2, and having laid a second clutch for him, proceeds to find a third husband.

Most probably all of the Tinamous are polyandrous, but we cannot say for certain that this is so, without many more experiments. I have proved, however, that another species, belonging to a distinct genus, is also polyandrous, and I will proceed to relate my experience with these birds. In the autumn of 1903 I obtained a pair of the small Tataupa Tinamou (*Crypturus tataupa*) from Brazil. I had not had them more than a few weeks when I discovered a rough nest on the ground behind some sticks, in a corner of the shed which formed part of their aviary. Three eggs were laid, and the male commenced to sit. During incubation the female took no notice whatever of the nest, but when the male left it she would run to him and show off, evidently with the object of inducing him to pair, which suggested that had there been a second male she would have nested again immediately. However, a second male was un procurable, and it was too late in the season to allow them to breed again. The three eggs hatched after twenty-one days' incubation, but the weather being cold, the young were not reared. The following spring, however, they commenced to breed again, the full clutch consisting of six or seven eggs, and the young were reared without difficulty. When the male was sitting it was perfectly evident that the female wanted to find a second mate. She was almost continuously calling, and never failed to display to the male whenever he left the nest.

On the 6th of June I had the good fortune to obtain a second male of this species, but he was very timid and apparently quite young, and I hardly expected that he would breed that year. When this bird arrived the original male had just commenced to sit on a clutch of six eggs, and the female was introduced to the new bird. She at once commenced to display to him but, being quite young and very shy, he would have nothing to do with her, but nevertheless she made a nest and laid two eggs within three weeks of the completion of the last clutch.
When the first male had hatched and partly reared his brood the female was allowed to go back to him, and she very soon commenced to lay again and, when the cock began to sit, I again let her into the aviary in which was the new male; this was on July 28th. He had now become tamer, and his bill, which was dull lead colour when he arrived, had turned red, a sign of maturity. By August 10th the female had laid five eggs and this male commenced to sit, and on September 1st hatched a brood of four. Again the female went back to the first male and laid another clutch of six eggs.

These experiments prove conclusively, I think, that this species also is polyandrous, and add to our knowledge of these curious birds.

Polyandry answers extremely well in cases in which the male undertakes incubation and the rearing of the young, and I am not at all sure that it is not the rule amongst the Hemipodes, as some experiments I have made in the breeding of two species of this family point to the conclusion that this may be the case.

As every one is aware in the Turnicidae the females are, in almost every case, larger and more brilliantly coloured than the males, and it was known that the males took upon themselves at least the greater part of the task of incubation, but, probably, no one in this country had, prior to the year 1903, witnessed the breeding habits of any species of Turnix, so it may be worth while to recount some observations I have made on these birds, two species of which have successfully bred in my aviaries.

In October, 1902, I was fortunate enough to obtain a pair of the Indian Turnix tanki. In this species the female, when in full breeding colour, possesses a well-defined reddish collar at the back of her neck, which is lacking in the male, and it was supposed, and has been stated by the latest authorities, that this character denoted maturity, and when once attained was permanent, in other words, that no seasonal changes took place in these birds. Indeed, an examination of the series in the British Museum would lead one to this conclusion, for several female specimens, lacking the red collar, were assumed by the collectors to be immature, and are so labelled.
The female of my pair, on arrival, possessed the characteristic red collar, but as the winter approached she commenced to moult, and assumed the plumage which has been supposed to denote immaturity, in fact she was hardly distinguishable from the male except for her larger size. This proved conclusively that this species has two complete seasonal plumages.

Another proof of this was afforded when, later on, I succeeded in rearing young from this pair, for the females assumed the adult summer plumage, with the red collars, when only six weeks old.

The breeding of these birds was very interesting and instructive. Three eggs were laid, and the male undertook the whole task of incubation, the female rarely going near the nest. Incubation was completed in the remarkably short space of twelve days. The male took entire charge of the young birds, which were able to run well immediately, brooding them most tenderly and rushing savagely at one's hand or foot if one approached them too closely. For the first few days the chicks would not pick any food up from the ground, but took everything from the bill of their parent, who, whenever he found a tender insect or grub, held it out and called them with low crooning sounds.

I have this spring (1905) had the good fortune to breed
the larger and more handsome *Turnix varia* of Australia. I secured a pair of these in March last. The following is their history up to date:

About May 6th the female commenced to utter her cooing or booming note frequently. On May 12th I first noticed her display to the male by running backwards and forwards before him, with tail erected and crop puffed out like that of a Pouter Pigeon. The same day I discovered a neat round nest formed in the middle of some hay and moss that had been placed behind some sticks in a corner of the aviary. On the 13th and 14th the female spent a considerable time in the nest, often twisting round on her breast with tail erect, and continually pulling bits of hay around her and over her head to form a dome over the nest. While on the nest she was continually uttering low crooning sounds while the male was near, or if he went away she would immediately commence her "booming" call-note. On this day I noticed that the female frequently picked up morsels of food which she presented to the male after calling him with a faint clucking sound, in the same way as a rooster calls his hens.

On May 17th the female was constantly booming, and frequently displaying to the male. The display was generally performed thus: the male squats on the ground amongst short grass, and the female runs round him in a circle with
tail more or less erected and the crop puffed out. She then stops and faces him, and commences “booming” or “cooing” to him (much as a cock Pigeon coos to the hen) the while stamping and scratching on the ground with her feet. The male meanwhile answers her with low crooning notes.

At this time the female would very frequently pick up a dainty morsel, such as a grub or grain of seed, and holding it at the tip of her bill, would call her mate and present it to him.

On May 20th the nest was apparently complete, being carefully domed over with hay, and the female frequently occupying it. May 21st, one egg, four more being laid on consecutive days. The male commenced to sit on the 25th, and from that time the female took no further notice of the nest, though she still uttered her booming call-note frequently, which would seem to suggest that she was calling for another mate.

Three chicks hatched on the morning of June 7th, the other two eggs failing to hatch, although fertile. The incubation had thus occupied just over thirteen days.

Newly-hatched young of *Turnix varia*.

The male takes entire charge of the chicks, the female taking no notice whatever of them.

The young birds are to-day (June 16th) nearly fledged, the
down on the body having given place to the juvenile spotted plumage, which at the age of five or six weeks will again have given place to the plumage of maturity.

The habits of these two species of *Turnix* appear to be practically identical, and I have no doubt are much the same in all of the *Turnicidae*.

To refer once more to the work of Mr. Meade-Waldo, I may mention some observations he has made with regard to the nesting plumages of some of the Owls, which he has kept and bred in his aviaries for a great many years. He has noticed that in *Bubo* (the Eagle Owls), *Surnia* (the Wood Owls), *Athene* (the Little Owls), and *Speotyto* (Burrowing Owls), the nestling down is succeeded by a second down-plumage, which gradually becomes more feather-like, and is eventually changed in the autumn for true feathers, the last down to give place to the feathers being that on the secondary wing-coverts and the nape.

In the genus *Scops* there is only one down-plumage, which is changed direct into true feathers, and the bird is in full plumage at five weeks old or less. In the genus *Strix* (Barn Owls) there is also only one down-plumage which changes direct into feathers, but these Owls take much longer to mature than the Scops Owls. I believe these observations of Mr. Meade-Waldo's are quite new, and they are certainly extremely interesting and important.

One might mention many more instances to show the importance of aviculture as a means of studying the breeding habits of birds and the plumage and character of their young. Instances such as that of the extraordinary ornamentation of the mouths of the young of several of the *Ploceidae* might be given, some of which are decorated with the most brilliant bead-like excrescences, which enable the parents in the semi-darkness of the covered nest to see where to place the food. But I have said enough on the subject of breeding birds. I have only now to mention a few cases in which the keeping of birds in captivity has enabled us to clear up some difficulties and errors that have existed with regard to the question as to whether certain forms belong to distinct species or merely varieties, or are only freaks of nature.
Two of the most commonly imported African Weavers, the so-called red-billed Weaver (*Quelea quelea*), and Russ's Weaver, have always been considered perfectly distinct species. Dr. Butler obtained two pairs of the former and a male of the latter species in 1888. All of these birds regularly came into colour each year in the normal fashion until the year 1896, when one of the males of *Q. quelea* appeared in the breeding-plumage of *Q. russi*, which seems to prove that the latter is simply another phase of the former.

In the "Proceedings" of the Zoological Society for 1891 (p. 130, pl. XII.), Count Salvadori described and figured a Parrakeet, which he named *Platycercus erythropeplus*. It was intermediate between the two commonest species, *P. elegans* and *P. eximius*, and its habitat was unknown, though it was presumed to be Australian. By pairing together the two species I have just mentioned aviculturists have produced Salvadori's *P. erythropeplus*, showing it to be merely a hybrid.

In October, 1897, a specimen of Ramsay's *Platycercus mastersianus* was received at the London Zoological Gardens, and formed the subject of a coloured plate in the "Proceedings" of the Zoological Society for 1902. This specimen, however, has gradually changed into a typical example of Pennant's Parrakeet, *P. elegans*, showing *P. mastersianus* to be only an abnormal variety of *P. elegans*, the peculiar colouring being probably due to a weak constitution.

Then in the case of the two forms of the Gouldian Finch, Gould thought them to be distinct species, and named the red-headed phase *Poephila mirabilis*, and the black-headed form *P. gouldiae*.

Now by keeping several of these birds together, both black and red-headed, we find that a black-headed female is just as likely to take to a red-headed male as to one with a black head; or a female of the red-headed form is as likely to take a black-headed as a red-headed husband. And the result of such an union is, not a bird with a reddish or black and red head, as should be the case if it were a hybrid, but either a typical red-headed or a typical black-headed bird.1 This

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1 Nevertheless, one occasionally finds old black-headed birds with a few red feathers on the head.
seems pretty clear evidence that they belong to one and the same species.

Finally, I would say that the little that has been done already by aviculturists is as nothing compared with what remains to be accomplished, and I would strongly recommend those who have the opportunity of doing so, to take up aviculture which, as I have tried to show, is of the greatest importance as an aid to the study of bird-life to which we are all so deeply devoted.
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