THE

HUMMING BIRD.

A QUARTERLY

SCIENTIFIC, ARTISTIC, and INDUSTRIAL REVIEW.

EDITED BY

A. BOUCARD.

VOLUME IV.

London, 1893.

ENTERED AT STATIONERS' HALL.

BOURNEMOUTH :

PARDY & CO PRINTERS.

NEW SPECIES OF BIRDS AND INSECTS,

Described in Vol. III. of the Humming Bird.

AVES.

TROCHILI.

INSECTA.

COLEOPTERA, CETONIDÆ.

CONTENTS OF VOLUME III.

TRAVELS OF A NATURALIST,

BY A. BOUCARD.

Vol. III. Part 1.] MARCH, 1893. [Price 2/6.

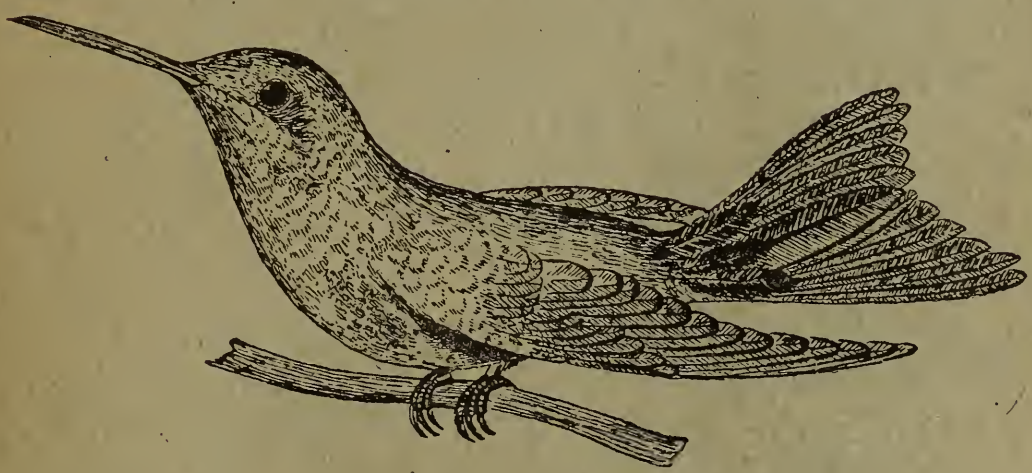
The Humming Bird

A QUARTERLY

SCIENTIFIC, ARTISTIC AND INDUSTRIAL REVIEW

EDITED BY

A. BOUCARD.



Arinia Boucardi

Annual Subscription: United Kingdom, Europe, N. America and Canada, 10/- All other Countries, 12/-

Vol. I. and II., complete, 10/- each.

Published by A. Boucard, 225, High Holborn, London, W.C.

BOUCARD, A., Works by :—

GUIDE POUR RÉCOLTER PRÉPARER ET EXPÉDIER DES OBJETS D'HISTOIRE NATURELLE, Brochure in 8vo., 32 pages, Rennes, 1871 ... ... 1/-

The same in Spanish 1/-

NOTES SUR QUELQUES TROCHILIDÉS, Brochure grand, in 8vo., 16 pages, Lyon, 1873 ... ... 1/6

HAND-BOOK OF NATURAL HISTORY, 2nd Edition, Vol. in 8vo., 234 pages, profusely illustrated with Woodcuts, London, 1874 ... ... 4/-

COLOURED DIAGRAMS OF NATURAL HISTORY, 2nd Edition, 20 sheets, 18in. by 24in., comprising 166 Diagrams of typical animals and plants, natural size, and 37 natural typical specimens of woods, and minerals, all neatly mounted on strong cardboard 40/-

The same, varnished 45/-

NOTES SUR LES TROCHILIDÉS DU MEXIQUE, Brochure grand in 8vo., 16 pages, Lyon, 1875 ... 1/6

MONOGRAPHIC LIST OF THE COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES. Pamphlet, in 8vo, with coloured plate, illustrating five new species ... 4/-

The same, with black plate 2/6

CATALOGUES AVIUM HUCUSQUE DESCRIPTORUM, 1 Vol. in 8vo., cloth, 352 pages, 2546 genera, and 11,031 species recorded. London, 1876. A useful book for Museums and Ornithologists. Price reduced to 10/-

The same, with French preface 10/-

The same, interleaved with blank sheets of paper, French or English preface 12/-

NOTES ON PHAROMACRUS COSTARICENSIS. Pamphlet 4to, 8 pages. Brighton, 1877 ... ... 4/-

ON BIRDS COLLECTED IN COSTA RICA, by Mr. Adolphe Boucard. Pamphlet in 8vo, 72 pages, with coloured plate of ZONOTRICHIA VOLCANI. Boucard, London, 1878 ... . 4/-

The same, with black plate 2/6

NOTES ON SOME COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF THREE NEW SPECIES FROM MEXICO AND CENTRAL AMERICA. Pamphlet in 8vo, 4 pages, with coloured plates, illustrating fine species, P. RODRIGUEZI, BADENI, BOUCARDI, MNISZECKI, and PRASINA 4/-

The same, with black plate 2/6

NOTES SUR LES OBJETS EXPOSÉS PAR LA RÉPÚBLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1878, Brochure in 8vo, 32 pages. Paris, 1878 1/-

LISTE DES OIREAUX RÉCOTTÉS AU GUATÉMALA EN 1877, PAR M. ADOLPHE BOUCARD, Brochure grand, in 8vo, 48 pages. Lyon, 1878 ... ... 2/6

DESCRIPTIONS OF TWO SUPPOSED NEW SPECIES OF SOUTH AMERICAN BIRDS. Pamphlet, in 8vo., with coloured plate, figuring CHIROMACHACRIS CORONATA. Boucard, London, 1879 ... ... 2/-

The same, with black plate 1/-

DESCRIPTION D'UNE ESPÈCE NOUVELLE DE PSEUDOEOLAPTES DE COSTA RICA. Paris, 1880 ... 6d.

DESCRIPTIONS DE DEUX ESPÈCES NOUVELLES DE CICINDÉLIDES DE PANAMA. Paris, 1880 ... 6d.

ON A COLLECTION OF BIRDS FROM YUCATAN (MEXICO), WITH NOTES BY MR. OSBERT SALVIN, F.R.S. Pamphlet, in 8vo., 30 pages. London, 1883 2/6

NOTICE BIOGRAPHIQUE SUR FRANCOIS SUMICHRAST, NATURALISTE VOYAGEUR, Brochure in 8vo., avec portrait. Paris, 1884 ... ... 2/-

VISITE AUX RUINES DE XOCHICALCO (MEXIQUE). Paris. 1887 ... . 1/-

CATALOGUE DES OBJETS EXPOSÈS PAR LA RÈPUPLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1889 .. .. 1/-

CATALOGUE DES OISEAUX DE LA COLLECTION RIOCOUR. Paris, 1889 ... . 1/-

THE HUMMING BIRD. A MONTHLY SCIENTIFIC, ARTISTIC, AND INDUSTRIAL REVIEW. Vol. I. London, 1891 ... ... 10/-

Contents of Vol. I.

The same, Vol. II. London, 1892 ... ... 10/-

Contents of Vol. II.

SAUVETAGE DU PANAMA, 4éme edition, Brochure in 8vo., 32 pages. Tours, 1892.. .. .. 6d.

CATALOGUE DES COLLECTIONS D'HISTORIE NATURELLE RÉCOLTÉES AU MEXIQUE PAR M. ADOLPHE BOUCARD 1/-

CATALOGUE DE MAMMIFÈRES, OISEAUX REPTILES, POISSONS ET COQUILLES DE LA CALIFORNIE, LOUISIANE, MEXIQUE ET URUGUAY 1/-

CATALOGUE DE CARABIQUES ET COLCOPTÈRES DIVERS, 1477 espèces 1/-

CATALOGUE D'HÉTEROMÈRES ET DE CURCULIONIDES, 2242 espèces 1/-

CATALOGUE D'OISEAUX, REPTILES ET POISSONS, 1157 espèces 1/-

LISTE DE COLÉOPTÈRES EXOTIQUES, 2636 espèces 1/6

LISTE DES COLÉOPTÈRES EN VENTE CHEZ M. ADOLPHE BOUCARD, 7956 espèces 4/-

LISTE DES OISEAUX EN VENTE CHEZ M. ADOLPHE BOUCARD, 4584 espèces 4/-

La série complète des huit Catalogues et Listes ... 12/-

PANAMA.

IT is with great sorrow that I have been reading, day by day, all the accounts published on this unfortunate affair. As one greatly interested in this gigantic enterprise, for the salvation of which I am doing all I possibly can, I am very much distressed with the events which have lately taken place, leaving no possible doubt about the mismanagement of the Direction from the beginning. It reads like a romance; but unfortunately there are thousands of victims, of which a large number have been completely ruined.

It is not my intention to incriminate any one, which is the work of Justice; but, nevertheless, I think that so many have incurred great responsibilities in contributing, one way or another, to the Panama disaster, that I can only see one way to deal with such a calamity. The French Government, which is partly responsible for what has happened, *ought to find the means* to indemnify the victims of their losses in a certain measure. This could be done easily by authorising a grand Lottery, from whose proceeds half should be put away to repay, little by little, in its totality or in part, the losses sustained by the thousands of honest people who have subscribed the Panama Bonds, carried away in so doing, by the moral support given to the Panama Company by the Government, as also by the famous promises constantly repeated by the Directors of the Company. Another way should be for the Government to propose to the Parliament to vote a certain sum to that effect.

Some other means must surely exist to attain the same end; but what is certain is this: that the thousands of victims will not be satisfied until something of that sort is done in their favour. It will be quite impossible for the majority of them to understand why, as I said before, a Government, partly responsible for the loss of their economies, should not find the means to reimburse their losses in totality, or in a certain measure. I have every reason to believe that if such a step was taken by the French Government, it would be the

most sensible, honest, and adequate one in the present circumstances.

I am afraid that nothing short of this will satisfy the victims of the Panama Company. [Ed.]

Réunion plénière des Actisnnaires et Obligataires de Panama.

Une réuníon plénière des Actionnaires et Obligataires de Panama convoquée par les Directeurs de l'Avenir du Panama et du Bulletin Officiel du Comité Central (mais qui malheureusement na pas eté annoncée comme elle aurait dû l'être) a eu lieu à Paris, au Tivoli, Waux-Hall le 15 Janvier. Environ 2000 porteurs étaient presents, parmi lesquels un certain nombre de Présidents et Vice Présidents des Comités régionaux. Le Commandant Saleta qui présidait cette réunion a prononcé un discours qui a été très bien accueilli par l'assistance. Aprés lui Monsieur Keratry a retracé un historique très succint du Panama, depuis ses débuts jusquà ce jour, qui a été écouté avec beaucoup d'attention. Il a démontré comme quoi l'actif actuel n'était pas à dédaigner et après avoir vivemeut critíqué la gestion du Liquidateur officiel, Mr. Monchicourt, il a insisté tout particulièrement sur la nécessité de reconstituer l'entreprise avec la co-opération des capitaux américains. Ensuite Mr. Focké, Directeur de l'Avenir de Panama a raconté les démarches faites par lui près de Monsieur Monchicourt, démarches qui n'ont pas été accueillies par ce dernier comme elles le méritaient. Il a cité deux personnalités françaises Messieurs Bonnardel & Christophle qui seraient disposés a prendre la direction d'une nouvelle Compagnie pour le relévement de cette affaire en faisant observer toutefois que la co-opération de Mr. Christophle, lié comme il l'etait par les statuts qui régíssent le Crédit Fonçier, dépendait de l'autorisation du Gouvernement Français, qui vû les circonstances actuelles ne pouvait guère la lui refuser.

Les résolutions suivantes ont été votées à l'unanimité.

1ére Résolution.

Sont nommés Membres d'un Comité d'éxécution. M.M. de Kératry, de Vos, Moitessier, Hennet de Goutel, Saleta, Alfred Harel, Albert Harel, Baillet, Martinie, et Focké.

2éme Résolution.

Le Comité élu est chargé par l'assemblée plénière de porter à Mr. le Président de la Républíque, à M.M. les Ministres des affaires étrangères, des finances et de la justice, les résolutíons et les voeux adoptés par elle en ce jour.

3éme Résolution.

Sont nommés comme Délegués auprès du Gouvernement colombien et des Capitalistes Américains, Messieurs de Kératry et Martinie.

4éme Résolution.

Une Délégation particulière de trois membres prise en dehors du Comité de reconstitution, sera nommée pour arréter d'accord avec Mr. Monchicourt, les mesures capables de faire obtenir la restitution, taut des Actions du Panama Railroad, données en gage à divers, que des sommes détournées à quelque titre que ce soit de la caisse soçiale de la Socíeté de Panama, en liquidation. Sont nommés Membres de cette délégation. M.M. Odelin, Habert et Labrousse.

5éme Résolution.

L'assemblée décide que Mr. Monchicourt Liquidateur Judiçiaire, devra avec les fonds disponibles et appartenant aux intéressés, faire face aux dépenses nécessitées par l'envoi des deux délégués, tant a Bogota qu'aux Etats-Unis.

J'approuve les résolutions votées par l'assemblée des Actionnaires et Obligataires daus la réunion du 15 Janvier et j'ajoute pour ma part qúil n'a jamais été question d'exclure les capitalistes Américains ou autres qui sont prêts à aider au relévement du Panama.

Dès le principe, cette grande entreprise a été internationale et il est juste et nécessaire qu'élle conserve ce caractère. Dans mes précédentes brochures sur le Panama, j'ai constamment fait valoir que cette œuvre grandiose ne pouvait étre sauvée que par les anciens porteurs, lesquels appartiennent à toutes les nationalités. Une entreprise de cette envergure et d'un intérêt général pour le Monde entier doit être le bien de tous en genéral et non d'un seul pays en particulier. La France doit se contenter d'être l'initiatrice d'une des plus belles conceptions du dix neuviéme Siècle. C'est une gloire plus que suffisante pour un pays qui est toujours prêt a se mettre à la tête des entreprises d'un intérêt géneral pour le monde entier.

Maintenant il ne reste plus aux hautes personnalités qui veulent bien se dévouer au relévement de cette entreprise que de faire connaitre leur programme et de ne pas avoir peur de se mettre en avant. Méme s'ils ne réusissaient pas complétement, ils auront toujours droit à la gratitude de TOUS.

Il est certain que si on adopte mon projet financier, soit dans sa totalité soit en partie, on pourra compter sur le concours de presque tous les anciens porteurs, car il est indispensable de demander en espèces, le minimum possible, et d'échelonner les paiements de façon à les rendre faciles aux intéréssés.

En outre si on acceptait ma combinaison de reprendre toutes les anciennes valeurs du Panama à un taux moyen uniforme, on simplifierait beaucoup la formation et la réussite de la nouvelle Societé, en permettant à ceux qui veulent se retirer, de vendre leurs titres, à un prix raisonnable, à ceux qui ont foi dans le Canal. Pour une entreprise comme celle de Panama, il ne faut que des Collaborateurs qui aient LA FOI, et qui soient prêts, non seculement à fournir des fonds á la nouvelle Societé, mais même à l'occasion, a donner GRATUITEMENT une partie de leur temps, et faire profiter la nouvelle Société de leur expérience des affaires.

Il serait âussi a souhaiter que les journaux de toutes nuanças, prêtâssent leur appui au relévement de cette grande affaire, *sinon gratuitement*, ce qui serait peut être bien difficile, mais cependant possible, tout au moins à des conditions modestes, acceptables et toutes autres de ce qui a eu lieu jusquà a jour, car il est vraiment ridicule de parler de patriotisme et autres belles phrases de ce genre, quand on a été largement payé pour cela.

En dû temps; s'il y a lieu, je communiquerai aux Actionnaires et Obligataires de Panama une modification à ma combinaison financière, qui simplifierait encore de beaucoup la constitution d'une nouvelle Société et qui ne nécessiterait de la part des anciens porteurs qu'une mise de fonds presque insignifiante, tout en conservant la propriété exclusive du Canal dans leurs mains.

GROVER CLEVELAND,

The elected President of the United States.

Mr. Stephen Grover Cleveland, who will take office in March, 1893, for four years, as the twenty-fourth President of the United States, was President from 1884 to 1888. He was born at Coldwell, New Jersey, March 18, 1837, his father being a Presbyterian minister. Before he began to study law at Buffalo in 1855, he had been a clerk in a village store, and a book-keeper and assistant-teacher in a Blind Institution. He was called to the Bar in 1859, was elected Sheriff of Erie county from 1870 to 1873, and in 1881 was elected Mayor of Buffalo. In this post he introduced various reforms in the administration of city affairs, which led to his election in the following year as Governor of the State of New York. He was nominated for the Presidency at the National Democratic Convention at Chicago, in 1884, and in the following November defeated Mr. Blaine, and was elected. Being defeated at the 1889 election, he resumed the practice of the law in New York City.

The main reasons given for the Democratic success are dissatisfaction with the McKinley tariff, and opposition to the Force Bill, combined with a continuance of the desertion of the Republicans in the Western States to the People's party.

We have every reason to believe that one of the first acts of the Democratic Government will be the repeal of the McKinley tariff, which will be replaced by a new legislation, more adequate to modern times.

Now is the time when *United States* ought to take the lead of Nations, and give a fair trial to *Free Trade* in its entirety.

By so doing, I am convinced that a new era of prosperity and greatness (impossible to estimate) would begin for the United States, and give to that country a prominent place among the Nations of the World.

Descriptions of several supposed New Species of Humming-Birds.

by *A. Boucard.*

Metallura Peruviana, N.Sp.

Male.—Upperside bronzy-green. Median rectrices dark greenish-bronze with bluish-purple reflections in certain lights; beneath shining bluish-purple with reddish-purple reflections. Throat luminous grass-green. Sides of neck and breast golden-green. Abdomen and flanks bronze-green. Anal region white. Undertail-coverts bronze-green margined with pale buff. Wings purplish-brown. Bill black.

Total length, $3\frac{7}{8}$in. Wing, $2\frac{2}{8}$. Tail, $1\frac{6}{8}$. Culmen, $\frac{1}{2}$.

Female.—Upperside bronzy-green. Tail like that of male with the two outermost rectrices tipped with grayish-white. Underside pale buff, whiter on abdomen and flanks, minutely spotted with bronze-green. Throat and breast spotted with golden-green. Anal region white. Wings purplish-brown. Maxilla black, mandible flesh colour at base, rest black. Size like that of male.

This new species was discovered in Peru, by Mr. Whitely. It is closely allied to *M. smaragdinicollis;* but is a larger bird and easily distinguished from that species by the greenish colour of the tail above, and the undersurface more golden.

Lesbia aequatorialis, N.Sp.

Male.—Upperside, sides of throat and breast, vent and flanks grass-green. Chin and throat metallic grass-green. Lower part of abdomen and undertail-coverts pale rufous. Rest of plumage as *L. victoriæ.* Tail longer with tips of central rectrices greener than in *L. victoriæ.*

Total length, $9\frac{1}{2}$in. Wing, $2\frac{5}{8}$. Tail, 7. Culmen, $\frac{1}{2}$.

Female.—Upperside grass-geen. Underside pale rufous washed with green. Throat white speckled with green. A small patch of pale golden feathers in the centre of throat. Tail, half the length of that of male and coloured similarly.

I have separated this species from *L. victoriæ,* because in the large number of specimens which I have (over one hundred) collected at Rio Napo, by Buckley, the differences in colour mentioned above are constant, and it is impossible to confound the two species.

OREOTROCHILUS BOLIVIANUS, N.Sp.

Male.—Upperside olive-brown passing to shining reddish bronze on uppertail coverts. Median rectrices dark shining bronze-green, lateral white edged outwardly with dark brown, outermost ones white at base internally, and the remainder dark greenish black. Throat glittering green with an imperceptible dark blue margin at base. Breast and abdomen grayish-white passing to grayish-buff on flanks. A narrow line of greenish-blue in the middle of the abdomen. Undertail coverts grayish-brown. Wings brown externally and purplish internally. Bill black and curved.

Total length, $4\frac{6}{8}$in. Wing, $2\frac{7}{8}$. Tail, $2\frac{1}{8}$. Culmen, 1.

Female.—Upperside like that of male. Lateral and outermost rectrices with white tips. Underside grayish-brown. Throat spotted with green.

This new species is closely allied to *O. leucopleurus* from which it differs by the band of throat which is scarcely perceptible, the line in centre of abdomen very narrow and greenish-blue, and the tail and the uppertail-coverts differently coloured. It forms the passage between *O. estellæ* and *leucopleurus.*

My specimens were collected in Bolivia by Buckley

HYLOCHARIS BRASILIENSIS, N.Sp.

Male.—Upperside shining green, golden on back. Median rectrices bronze with purplish reflections, lateral chestnut edged with purplish-black. Chin rufous. Throat and breast metallic greenish-blue. Flanks and abdomen green. Wings purple. Bill flesh colour with black tips.

Total length, $3\frac{1}{2}$in. Wing, 2. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female.—Unknown.

I have only one fine male specimen of this new species received from Brazil. It differs considerably from *H. sapphirina* and *guianensis,* by the colour of throat and breast, and the golden colour of its general plumage.

AMAZILIA FORRERI, N.Sp.

Male?—Upperside shining golden-green, brownish on head. Rump and uppertail-coverts chestnut. Median rectrices purplish-chestnut passing to reddish-bronze at tips, lateral purplish-chestnut with dark reddish-black edges near the tips, outermost one chestnut. Throat and sides of neck golden-green. Chest, abdomen and vent white. Flanks pale

rufous. Undertail-coverts pale chestnut margined with white. Wings brown passing to purple on shoulders. Maxilla black. Mandible flesh colour with black tip.

Total length, 4in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

I have only one specimen of this new species, which I bought in San Francisco (California). It was sold to me with many other birds as having been collected in Mazathan by Mr. Forrer, to whom I am happy to dedicate it.

SAUCEROTTIA WELLSI, N.Sp.

Male.—Forehead metallic grass-green. Upperside dark shining green passing to bronze on lower part of back, rump, and uppertail-coverts. Tail shining dark purplish-blue. Upperside metallic grass-green. A tuft on flanks, anal region and thighs, white. Undertail-coverts, bronze margined with gray. Wings purple-brown. Maxilla black. Mandible flesh colour with black tips.

Total length, $3\frac{5}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female.—Exactly like the male, but slightly less brilliant. Centre of anal region grayish.

This species is closely allied to *S. erythronota ;* but can be easily distinguished from it by the colour of the upperside and tail. It was sent to me by Mr. Wells, from *Grenada* (West Indies), and I have the pleasure to dedicate it to him.

URANOMITRA WHITELYI, N.Sp.

Male.—Head and sides of neck metallic green. Upperside bronze-green. Median rectrices bronze, lateral bronze with a sub-terminal blackish bar. Throat, breast and abdomen pure white. Flanks golden-green. Undertail-coverts white with the centre pale gray. Wings purplish-brown. Bill black.

Total length, $3\frac{3}{8}$in. Wing, 2. Tail, $1\frac{2}{8}$. Culmen, $\frac{5}{8}$.

Female.—Head and sides of neck shining green; but not so brilliant as in male. Upperside bronze-green. Underside white. Flanks white, washed with green. Tail bronze, lateral with a brown sub-terminal bar, and tips margined with gray.

This new species is closely allied to *U. milleri ;* but easily distinguished from that species by the colour of its bill.

It was discovered in British Guiana, by the late Mr. Henry Whitely, to whose memory I dedicate it.

AGYRTRIA SPECIOSA, N.Sp.

Male.—Upperside dark bluish bronzy-green. Throat and breast dark glittering-blue. Flanks gray washed with bluish-

green. Middle of the abdomen vent, undertail-coverts and tuft on each side of vent pure white. Median rectrices bronze, lateral bluish-black with slight gray tips. Maxilla black. Mandible flesh colour with black tip. Wings purplish-brown.

Total length, 3½in. Wing, $2\frac{2}{8}$ Tail, $1\frac{2}{8}$. Culmen, $\frac{11}{16}$.

Female?—Same colouring as the male, with throat and breast shining pale blue. Lateral rectrices tipped white.

My specimens of this new species were collected in Brazil by Mr. Gounelle. It is allied to *A. bartletti* and *lactea*, but easily distinguished from both, being of the same size as *A. lactea*, with the colouring of throat and breast of *A. bartletti*, and undertail-coverts pure white.

With *A. lactea* it belongs to the genus *Agyrtria*, and not to that of *Hylocharis*, this last genus being easily distinguished from *Agyrtria* by the flesh colour of its bill and the rectrices of tail, which are wide and nearly equal in size. In the genus Agyrtria the central rectrices are shorter, the others are narrower, and the white band in the middle of the abdomen is a special characteristic of that genus, with all the brightly coloured species.

CHRYSURONIA BUCKLEYI, N.Sp.

Male.—Head dark shining blue. Upperside golden-green. Tail and upper-tail coverts shining golden-bronze. Underside metallic emerald-green, passing to golden on abdomen and flanks. Undertail coverts, golden, fringed with gray. Wings purplish-brown, Maxilla black, mandible flesh colour, with black tip.

Total length, $3\frac{5}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female.—Unknown.

This species is closely allied to *C. josephinæ*, from which it is easily distinguished by not having any blue on the chin, its smaller size, and the bill much shorter.

It was discovered in Bolivia, 1876, by the late Buckley, and I dedicate it to his memory.

PHÆTHORNIS GARLEPPI, N.Sp.

Male.—Upperside pale greenish-bronze, slightly darker on crown, rump of the same colour, margined with rusty red. Medium rectrices, bronze-green for three-fourths of their length, the next one, bronze-green for half its length, with a broad, black band, and the remainder white, the other rectrices

including outermost ones, bronze-green for about half their length, then black margined with white at tips. Lores and ear-coverts black, with a pale buff stripe over and under. Underside cinnamon, paler on throat and in the centre of the abdomen. Vent white. Undertail coverts pale-buff. Wings purplish-brown, Maxilla black, mandible flesh colour with black tip.

Total length, $5\frac{6}{8}$in. Wing, $2\frac{2}{8}$. Tail, $2\frac{7}{8}$. Culmen, $1\frac{1}{8}$.

This new species, which is closely allied to *P. pretrei,* can be easily distinguished from that species by its lateral and outermost rectrices, which are broad and nearly rounded, instead of narrow and pointed as in *P. pretrei.* The central and the next one are also shorter ; the bill is also much shorter. It forms the passage between *P. pretrei* and *gounellei.* My typical specimen is an adult male, collected in Bueyes (Bolivia), by the well-known collector, Mr. Gustav Garlepp, in 1890, and I have much pleasure in dedicating it to him.

HEMISTEPHANIA GINANENSIS, N.Sp.

Male.—Forehead shining dark blue, nape dark reddish bronze appearing almost black in certain lights. Upperside dark bronze-green. Uppertail, coverts grayish-blue. Tail black with bluish reflections. Throat, breast and flanks very dark green-bronze. Abdomen and undertail coverts very dark blue. Wings purplish, bill black.

Total length, $4\frac{1}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $1\frac{1}{8}$.

Female. Forehead shining green, head purplish-bronze. Upperside golden-green passing to grayish-blue on uppertail coverts. Tail bluish-black with grayish-white tips on lateral and outermost rectrices. Chin rufous. Underside dark gray, washed with golden-bronze. Undertail coverts bluish, margined with gray. Wings purplish. Bill black.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{3}{8}$. Culmen, $1\frac{1}{8}$.

This new species is closely allied to *H. johannæ,* but easily distinguishable by the colour of the throat, breast and flanks of the male, which are dark green-bronze, instead of bluish-black. This difference in coloration is greater still in the female, the underside of which is dark gray, washed with golden-bronze instead of the pale bluish-green of *H. johannæ.*

My specimens were collected by the late Mr. Henry Whitely in the mountains of Merime, and along Carimang River (British Guiana).

VISITS TO THE

ZOOLOGICAL GARDENS

OF LONDON.

1.—The Insect House in Winter.

One would imagine the Insect House to be, during the winter months, one of the most uninteresting buildings in the Gardens, and indeed, there is little activity in the world of insects at that season of the year. But still, there is much that is worthy of more than a passing glance to be seen in the few cases which still remain on the tables, besides which there are many rare and curious birds placed here on account of the extra warmth which this house affords. I may here state, for the information of those who have not yet had the oppuntunity to visit these delightful Gardens, that the Insect House is situated on the north bank of the Regent's Canal, close to the North or Primrose Hill Entrance. It is a glass structure, like a large greenhouse, and heated with hot-water pipes, by means of which an even temperature is maintained day and night. Iron troughs, filled with water, are placed over the pipes, the evaporation from which produces that warm, humid atmosphere so necessary to the welfare of the many inhabitants of tropical climes which are to be seen here. The centre tables, which now merely contain a number of beautiful plants, are given up to cases of living insects during the summer, shewing every stage and metamorphosis from the egg to the perfect insect. Several fine indiarubber trees enhance the pleasing appearance which the interior of the building presents, and the cleanliness and good order, which is maintained in all the houses in the Gardens, is reached to perfection here. One thing, which often excites the wonder of those who visit the Insect House for the first time, is that the legs of all the tables are placed in small bowls of water. This is to prevent the cases being invaded by a small species of red ant, with which the house is infested, and which would quickly destroy the inmates were they able to effect an entrance.

The cases which contain the insects are not unlike square fern-cases, the front, back, and sides being of glass, and the top of perforated zinc, thus affording plenty of light and air to the occupants. On entering the house, and turning to the

left, half-a-dozen cases, containing cocoons of various large Silk-Moths, belonging to the family Saturnidae, are seen. Each case has a preserved specimen of the perfect insect placed over it for the enlightenment of those not versed in the science of entomology. By means of these, we see that the first case contains cocoons of the Indian Moon-Moth *(Actias selene),* a magnificent insect with wings of a beautiful green colour, each wing having a crescent-shaped mark in its centre, whence the name, Moon-Moth; the hind pair, moreover, are elongated into tails, which add greatly to the appearance of the insect. Two other cases contain cocoons of *Attacus atlas,* the Great Atlas Moth, also a native of India, a veritable giant among insects, the wings of which often attain a width of twelve inches or more. Perny's Silk-Moth *(Antherea pernyi),* is interesting on account of the facility with which the larvæ can be reared in this country. These latter are black when first hatched, afterwards changing to bright-green, with rows of yellow tubercles down the back and sides. These thrive best on oak leaves in England, but will also feed on hawthorn and several other trees.

Another species, somewhat larger than the preceding, is the Tusseh Silk-Moth *(A. Mylitta),* some cocoons of which are in another case. These cocoons are remarkable for their peculiar oval shape, and the long, leathery stalks with which they are attached to the food-plant. They are wonderfully tough, and how the moth can make its way out on emerging from the pupa case is a puzzle to the uninitiated. This process is effected as follows:—The moth, on issuing from the pupa-case, exudes a brown liquid, which softens the top of the cocoon, enabling the insect to break the threads and work its way out.

The visitor now comes to a cage containing a pretty bird from East Africa, the Madagascar Pratincole *(Glareola ocularis);* it is light-brown in colour, with black wings, dark head, and a white streak from the base of the bill across the cheeks. It is said that these birds are great locust eaters, following in flocks the swarms of these insects, and destroying great numbers of the pests, and that they are protected by the natives for this reason. Next to this interesting bird is a tank in which are two Electric Eels *(Gymnotus asterias),* from South America. They are ugly brutes, with small eyes and sluggish movements. Visitors are allowed to receive electric shocks from these living batteries on payment of a fee of a

shilling to the keeper in charge. A cage, containing a pair of birds from the Argentine Republic, comes next. These are graceful creatures, but somewhat shy at present. They are called short-winged Tyrants *(Machetornis rixosa),* and are brown on the backs and wings, with grey heads, whitish throats and yellow breasts.

The north side of the Insect House has a large cage or aviary built into the wall in each corner, each cage extending nearly half the length of the wall. That which is next to the Tyrant Birds, is tenanted by a large and handsome bird, the Radiated Fruit Cuckoo *(Carpococeyx radiatus),* from Sumatra, which has been here for many years. He is a remarkable looking fellow, and is evidently fully conscious of his superior appearance, putting on a dignified air that is most amusing, as if *he* was the real attraction and the other birds, &c., were merely placed in the house to fill up. In a recess, which comes between the aviaries, are placed two cages, one containing a specimen of Horsfield's Scaps Owl *(Scops lempyi),* from Malacca, and the other an enormous Cockatoo *(Cacatua triton),* from New Guinea. After these comes the other aviary, in which all keepers of foreign cage birds will recognize some very familiar pets, namely, the Undulated Grass Parrakeet, or Budgerigar *(Melopsittacus undulatus),* whose habitat is Australia. It is these little birds which are usually seen on the stands of the Italian fortune-telling women in the streets of London, their extreme hardihood and docility rendering them very valuable assistants to their dark-skinned mistresses. On the inquirer into the mysteries of the future tendering the sum of one penny to one of these fortune-tellers, one of these pretty little birds advances to a long box, which is placed in the front of the cage, and picks therefrom a slip of paper, on which is printed what purports to be a full prophecy of the future life of the customer.

In a small cage, hung within that of the parrakeets, is a pair of very rare birds, the Sahara Bunting *(Fringillaria saharæ),* from North Africa, presented by Lord Lilford, F.Z.S., in November, 1892. In the north-east corner of the house is a cage containing a couple of specimens of the Large Hill Mynah *(Gracula intermedia),* a member of the Paradiseidæ, or Paradise Bird family, closely allied to the Crows. It is a native of India, and, if properly trained, becomes a most charming talker and mimic. I did not hear these particular

individuals speak, but it is very probable that they had the power, as these birds are often very obstinate, refusing to utter a sound while being noticed, and then, when no one is looking, breaking out into peals of laughter, and carrying on quite a conversation in tones, the clearness of which would quite eclipse those of most parrots. There was a pair of Mynahs in this house in 1885 which were most amusing. I do not remember whether they belonged to this species or another, the Small Hill Mynah *(G. Religiosa),* but they answered certain questions in a manner which gave one the belief that they understood what was said to them. For instance, on a person entering the house, their usual greeting was, "Good morning, how are you?" in accents which made it difficult to believe that it was a bird speaking. On the visitor giving a suitable reply, and inquiring after their healths in the same manner, one would answer in shrill tones, "Alright, alright," while the other imitated the gruff accents of an old man, saying, "Quite well, quite well." At other times, on being asked how they did, they would suddenly develop most alarming coughs. After a little while, they often appeared to tire of their visitor, and would throw out a broad hint for his departure by exclaiming, "Good-bye, good-bye." One of their favourite amusements was to recall anyone who had just left the house by whistling and shouting, "Hi! hi! hi!" and then, on the perplexed individual returning to see who called him, they would burst into laughter, in apparent enjoyment of his discomfiture.

Next to the Mynahs are some small insect cases, one of which contains some greenish-yellow scorpions, from South Africa. These are curled up, and appear at first sight to be dead, but the keeper informed me that he picked one up one day in this position, thinking it was dead, when it suddenly struck at his finger with his venomous tail, and then ran under some moss with the greatest rapidity. Fortunately the blow was not given with sufficient force to pierce the skin.

In another case are several South African Millepedes, animals allied to the well-known Centipedes. These are very curious creatures, several inches in length, and dark brown in colour, the whole length of the body being furnished with innumerable pairs of legs, of a red or reddish-brown colour. They feed on decayed vegetables.

Following the small cases are two larger ones, each containing a Mygale, or Tarantula Spider, from Trinidad.

Another case is occupied by a smaller species from Demerara, while in a fourth is an enormous Brazilian species, which I believe to be the largest ever exhibited in the Insect House. As, however, he persisted in turning his back on visitors, and keeping himself half-concealed in an empty flower-pot, I was not able to observe much of his peculiarities, except that the greater part of the abdomen is of a light colour, and destitute of hairs, the remainder of the body and legs being covered with short, dark-brown hairs, interspersed with long, stiff, yellowish hairs. These gigantic spiders are usually fed on large cock-roaches, varied occasionally by a young mouse.

In the next case there are several specimens of a large Mollusc *(Bulimus oblongus),* from Africa. These are not unlike enormous whelks, but they live on the land, and not in the sea, as the whelk does.

The last case contains some pupæ of an American butterfly *(Papilio chrysphontes),* greatly resembling the pupæ of our own swallow-tailed butterfly *(P. Machaon).*

Altogether the visitor leaves the Insect House with a most favourable impression of what he has seen, and with the thought that, if it can be so interesting in dreary December, what must it be in June, when the whole insect world is called into full activity?

W. F. H. Rosenberg.

PARIS INTERNATIONAL

EXHIBITION OF 1900!

In November last a Commission, numbering amongst its members many French notabilities in Sciences and Arts, and nearly the whole of the Directors of the Exhibition of 1889, excepting the late Mr. Alphand, who will be much missed, has been nominated by His Excellency, the Minister of Commerce, to prepare the means suitable for the realization of the project of an International Exhibition to be held in Paris in the year 1900, from May to November of that year. There is no doubt, whatever, that all will be ready in time, and that it will be all that can be desired.

But it will be a great task for all the members of the Commission, as France must not remain behind N. America. What marvels France must prepare for the millions of visitors who will visit Paris during that year, it is impossible

to have any idea; especially after such an exhibition as that which is going to take place this year at Chicago; but all those who know France well, are certain that it will succeed, and that the Exhibition of 1900 will be one of the grandest manifestations of Peace and Labour ever held, and just the suitable thing to inaugurate solemnly and peacefully the beginning of the *Twentieth Century*.

Several magnificent plans have already been studied. Some recommend Vincennes, others Auteuil, Courbevoie, and Bagatelle; but it is probable that one of those recommending the neighbourhoods of the celebrated Bois de Boulogne will be the selected one, as no other place is so well adapted for the gorgeous display which is contemplated.

In fact, the Bois de Boulogne, close to Paris, offers all the required conditions; such as the facility of transport of the Visitors to the grounds, unlimited space, beautiful and picturesque sceneries, proximity to the Seine for nautical exhibits, and many other advantages which alone it possesses.

It is our intention to follow attentively all the phases of this grand enterprise, and to give in this "Review" a report of all the doings of the Commission. [ED.]

WORLD'S
COLUMBIAN EXHIBITION.

According to what we hear from all the distinguished travellers who visited Chicago last year, it appears that it will be the most magnificent exhibition ever held, everything being done on such a grand scale, that probably many years will pass before another can surpass it.

All the Nations of the World will be there, to do honour to the memory of the great navigator, *Don Christobal de Colon,* the discoverer of America, and will rejoice together over such a magnificent spectacle of PEACE AND LABOUR.

All of them are doing their utmost efforts to appear there at their best, and all those who will be able to visit Chicago, the fairy City of the West, will never forget the marvellous spectacle to be seen there. I hope that an immense number of people, from all parts of the World, will be able to do so and to enjoy this wonderful sight, and will return home convinced that there is nothing like *Brotherhood* and *Fraternity* among all Nations. [ED.]

BOUCARD, POTTIER & CO.,

Naturalists and Feather Merchants,

225, HIGH HOLBORN, LONDON, W.C., ENGLAND.

MESSRS. BOUCARD, POTTIER and Co. offer to sell on commission, Objects of Natural History, Collections of Mammals and Birds, Skins, Skeletons, Human and Animal Skulls, Insects of all orders pinned and set, or in papers; Marine, Fresh Water and Land Shells; Reptiles and Fishes in spirit; Crustaceæ and Arachnidæ in spirit; Ethnological Collections from all parts; Showy Bird Skins and Feathers for Plumassiers and Naturalists; Mammal Skins for Furriers; Bright species of Insects for Artificial Florists; Rare Old Stamps, used and unused; Curios of all sorts; Pictures and Works of Art, etc., etc.

All possessors of such objects should not dispose of them without consulting Messrs. Boucard, Pottier and Co., who having a large connection with Amateurs in all parts of the world, are able get the very best prices for them.

FOR SALE

About **6,000** species of Birds, **30,000** species of Coleoptera and Lepidoptera, Mammal Skins, from New Guinea, West Africa, South America, etc.; Land, Fresh Water and Marine Shells, *a large number of species:* Reptiles and Fishes in spirit; Crustaceæ, dried and in spirit; Insects of all orders; Skeletons; 5,000 different varieties of Postage Stamps, etc., etc.

A very fine collection of Shells, especially rich in LAND SHELLS, and containing *many types* and *new species*, about 40,000 specimens. For Price, etc., apply at 225, HIGH HOLBORN, LONDON, W.C.

STANDS, NEW STYLE.

No. 1.	For Humming Birds and Small Birds	at 20s. per hundred
,, 2.	For Small Birds, up to Tanagers	at 24s. ,,
,, 3.	For Tanagers up to Magpies	at 28s. ,,
,, 4.	For Magpies up to Crows or Small Hawks	at 32s. ,,
,, 5.	For Small Hawks to Large Hawks and Owls	at 40s. ,,

ARTIFICIAL EYES.

Black	Coloured.	Cornered.	Cornered and Veined.
Per Gross.		*Per Dozen Pairs.*	*Per Dozen Pairs.*
No. 1 to 4 6d.	1s. 6d.	No. 4 to 6 3s. 6d.	4s. 6d.
,, 5 to 8 8d.	2s. 6d.	,, 7 to 9 5s. od.	6s. od.
,, 9 to 10 1s. od.	4s. od.		
,, 11 to 13 2s. 6d.	7s. od.	,, 10 to 11 8s. od.	10s. od.
		,, 12 9s. od.	11s. od.
	Per Dozen Pairs.		
,, 14 to 16 3s. 6d.	2s. 6d.	,, 13 to 15 13s. od.	15s. od.
,, 17 8s. od.	3s. od.	Larger Sizes can be made to order.	
,, 18 12s. od.	4s. od.		

UTENSILS FOR COLLECTING, Etc.

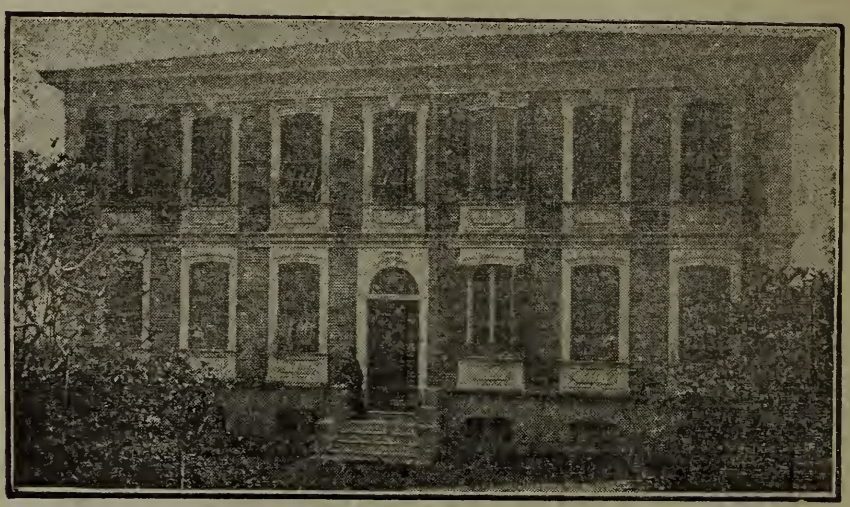
Bicarbolic Acid	quart 2/-	Insect Pins. English, French or German	...from 1/6 per 1000
Rectified Benzoline	,, 2/-	Setting Boards	from 1/- to 2/- each
Boucard's Insecticide	lb. 4/-	Butterfly Nets complete	,, 1/6 to 5/-
Collecting Corked Box	from 1/- to 5/- each	Sweeping and Water Nets	from 2/6 to 10/-
Pocket Corked Box	from 2/- each	Cork in Sheets	from 3/- doz.
Corked Box for Museums	from 24/- to 36/- doz.	Magnifying Glasses ..	from 1/- to 5/-
Botanical Box	from 2/6 to 6/- each	Hammers	,, 1/6 to 5/-
Pin Box, with 1,000 pins	3/-	Naphthaline	,, 4/- per lb.
Collecting Bottles with large opening	from 6d.	Botanical Grey Paper ...	,, 6/- ream
Boucard's Tin Collecting Box, with two partitions	2/-	Folding Umbrella for collecting Insects	from 10/-
Straight Scissors	from 2/-	Cutting Pliers	,, 2/-
Curved ,, ...	,, 2/-	Flat Pliers	,, 2/-
Taxidermist Knives	,, 1/6	Arsenical Soap	,, 2/- per lb
Long Forceps	,, 3/-	Glass Tubes	,, 1/- doz.
Small ,, ...	,, 1/-	*Taxidermist Case*, containing 1 Pair of Scissors, 2 Knives, 1 Lime, 1 Grater, 2 Pliers, 1 Hammer, 1 Pair of Forceps, 1 Brush, 3 Gimlets, etc. complete	from 12/- to 40/-
Insects' Nippers	,, 1/6		
Sieve	,, 2/-		
Blowpipe for cleaning eggs ..	,, 2/-		
Digger	,, 2/-		
Folding ditto	,, 6/-		

TO BE SOLD OR EXCHANGED,

For Properties of equal value in London, Brighton, or the Isle of Wight,

SEVERAL PROPERTIES AT SAN-REMO,

The Celebrated Winter Resort on the Riviera, 40 Minutes from MONACO.



VILLA MARIA LUIGIA.

Three Villas, known as *Villa Maria Luigia*, and *Villas Rondo*: the first one, detached with a beautiful garden of 2200 square yards; the last, semi-detached with front and back gardens. Villa *Maria Luiga* consists of three floors, with fifteen fine room, offices, kitchen, etc. Ten of the rooms are full south, facing the sea.

Villa *Rondo* n° 25, corso Garibaldi, consists of two floors, with nine rooms, kitchen, office and cellar. N° 27 has two kitchens and two more rooms on the underground floor.

Villa *Maria Luigia* and *Villa Rondo* n° 25, the smallest, are actually let unfurnished, 3800 francs per annum, for several years.—Villa Rondo n° 27, is also let at 1400 francs per annum. Furnished, they will produce between £400 amd £500 per annum.

All applications to be made at Mr. Boucard's, 225, High Holborn, London, W.C. (England), where photographs of the Villas can be seen.

JUST ARRIVED.

A very interesting collection of Beetles and Butterflies from SYRIA. Another of Beetles and Butterflies from Haiti (Antillae). It contains some very fine species of BUPRESTIDAE and CURCULIONIDAE, and one rare species of GYMNETIS. Collections of COLEOPTERA from Java and Japan. Large collections of Butterflies and Moths from Assam and Japan. Several interesting collections of Bird skins from Japan, British Guiana, Borneo, Gaboon, Congo, Guatemala, etc., etc. Specimens of CERIORNIS CABOTI, and other rare species of birds. A collection of shells from Australia, and many others, also AUSTRALIAN ECHIDNAE, in spirit, which can be seen at the

Naturalists' Agency, 225, High Holborn, London, W.C.

PARDY & Co., General Printers, 8, The Triangle, Bournemouth.

Vol. III. Part II.] JUNE, 1893. [Price 2/6.

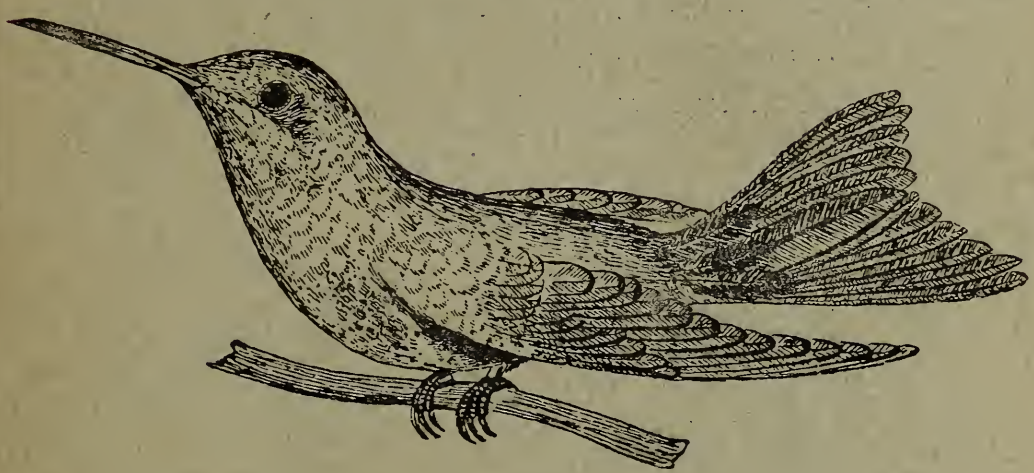
The Humming Bird

A QUARTERLY

SCIENTIFIC, ARTISTIC AND INDUSTRIAL REVIEW

EDITED BY

A. BOUCARD.



Arinia Boucardi

Annual Subscription: United Kingdom, Europe, N. America and Canada, 10/- All other Countries, 12/-

Vol. I. and II., complete, 10/- each.

Published by A. Boucard, 225, High Holborn, London, W.C.

BOUCARD, A., Works by :—

GUIDE POUR RÉCOLTER PRÉPARER ET EXPÉDIER DES OBJETS D'HISTOIRE NATURELLE, Brochure in 8vo., 32 pages, Rennes, 1871 ... ... 1/-

The same in Spanish 1/-

NOTES SUR QUELQUES TROCHILIDÉS, Brochure grand, in 8vo., 16 pages, Lyon, 1873 ... ... 1/6

HAND-BOOK OF NATURAL HISTORY, 2nd Edition, Vol. in 8vo., 234 pages, profusely illustrated with Woodcuts, London, 1874 ... ... 4/-

COLOURED DIAGRAMS OF NATURAL HISTORY, 2nd Edition, 20 sheets, 18in. by 24in., comprising 166 Diagrams of typical animals and plants, natural size, and 37 natural typical specimens of woods, and minerals, all neatly mounted on strong cardboard 40/-

The same, varnished 45/-

NOTES SUR LES TROCHILIDÉS DU MEXIQUE, Brochure grand in 8vo., 16 pages, Lyon, 1875 ... 1/6

MONOGRAPHIC LIST OF THE COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES. Pamphlet, in 8vo, with coloured plate, illustrating five new species ... 4/-

The same, with black plate 2/6

CATALOGUES AVIUM HUCUSQUE DESCRIPTORUM, 1 Vol. in 8vo., cloth, 352 pages, 2546 genera, and 11,031 species recorded. London, 1876. A useful book for Museums and Ornithologists. Price reduced to 10/-

The same, with French preface 10/-

The same, interleaved with blank sheets of paper, French or English preface 12/-

NOTES ON PHAROMACRUS COSTARICENSIS. Pamphlet 4to, 8 pages. Brighton, 1877 ... ... 4/-

ON BIRDS COLLECTED IN COSTA RICA, by Mr. Adolphe Boucard. Pamphlet in 8vo, 72 pages, with coloured plate of ZONOTRICHIA VOLCANI. Boucard, London, 1878 ... . 4/-

The same, with black plate 2/6

NOTES ON SOME COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF THREE NEW SPECIES FROM MEXICO AND CENTRAL AMERICA. Pamphlet in 8vo, 4 pages, with coloured plates, illustrating fine species, P. RODRIGUEZI, BADENI, BOUCARDI, MNISZECKI, and PRASINA 4/-

The same, with black plate 2/6

NOTES SUR LES OBJETS EXPOSÉS PAR LA RÉPÚBLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1878, Brochure in 8vo, 32 pages. Paris, 1878 1/-

LISTE DES OIREAUX RÉCOTTÉS AU GUATÉMALA EN 1877, PAR M. ADOLPHE BOUCARD, Brochure grand, in 8vo, 48 pages. Lyon, 1878 ... ... 2/6

DESCRIPTIONS OF TWO SUPPOSED NEW SPECIES OF SOUTH AMERICAN BIRDS. Pamphlet, in 8vo., with coloured plate, figuring CHIROMACHACRIS CORONATA. Boucard, London, 1879 ... ... 2/-

The same, with black plate 1/-

DESCRIPTION D'UNE ESPÈCE NOUVELLE DE PSEUDOEOLAPTES DE COSTA RICA. Paris, 1880 ... 6d.

DESCRIPTIONS DE DEUX ESPÈCES NOUVELLES DE CICINDÉLIDES DE PANAMA. Paris, 1880 ... 6d.

ON A COLLECTION OF BIRDS FROM YUCATAN (MEXICO), WITH NOTES BY MR. OSBERT SALVIN, F.R.S. Pamphlet, in 8vo., 30 pages. London, 1883 2/6

NOTICE BIOGRAPHIQUE SUR FRANCOIS SUMICHRAST, NATURALISTE VOYAGEUR, Brochure in 8vo., avec portrait. Paris, 1884 ... ... 2/-

VISITE AUX RUINES DE XOCHICALCO (MEXIQUE). Paris. 1887 ... . 1/-

CATALOGUE DES OBJETS EXPOSÈS PAR LA RÈPUPLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1889 .. .. 1/-

CATALOGUE DES OISEAUX DE LA COLLECTION RIOCOUR. Paris, 1889 ... . 1/-

THE HUMMING BIRD. A MONTHLY SCIENTIFIC, ARTISTIC, AND INDUSTRIAL REVIEW. Vol. I. London, 1891 ... ... 10/-

Contents of Vol. I.

The same, Vol. II. London, 1892 ... ... 10/-

Contents of Vol. II.

SAUVETAGE DU PANAMA, 4éme edition, Brochure in 8vo., 32 pages. Tours, 1892.. .. .. 6d.

CATALOGUE DES COLLECTIONS D'HISTORIE NATURELLE RÉCOLTÉES AU MEXIQUE PAR M. ADOLPHE BOUCARD 1/-

CATALOGUE DE MAMMIFÈRES, OISEAUX REPTILES, POISSONS ET COQUILLES DE LA CALIFORNIE, LOUISIANE, MEXIQUE ET URUGUAY 1/-

CATALOGUE DE CARABIQUES ET COLCOPTÈRES DIVERS, 1477 espèces 1/-

CATALOGUE D'HÉTEROMÈRES ET DE CURCULIONIDES, 2242 espèces 1/-

CATALOGUE D'OISEAUX, REPTILES ET POISSONS, 1157 espèces 1/-

LISTE DE COLÉOPTÈRES EXOTIQUES, 2636 espèces 1/6

LISTE DES COLÉOPTÈRES EN VENTE CHEZ M. ADOLPHE BOUCARD, 7956 espèces 4/-

LISTE DES OISEAUX EN VENTE CHEZ M. ADOLPHE BOUCARD, 4584 espèces 4/-

La série complète des huit Catalogues et Listes ... 12/-

CHICAGO EXPOSITION.

WORLD'S FAIR NOTES.

The Duke of Edingburgh has announced his intention of sending for exhibition at the World's Fair some of the almost invaluable collection of ancient musical instruments, which he possesses. A part of the collection is now on exhibition at the International Music and Art Exhibition at Vienna, where it attracts much attention.

The following schedule of allotments of space in square feet to foreign nations in the World's Fair Agricultural Building, includes grants of increase made since the first schedule of allotment determined upon some years ago. As finally fixed these allotments are as follows :—Brazil, 7,200; Argentine Republic, 2,976; Chile, 731; Honduras, 999; Nicaragua, 1,180; Columbia, 1,810; Peru, 1342; Salvador, 1,342; Bolivia, 1,342; San Domingo, 912; Porto Rico, 912; Cuba, 1,444; Ecuador, 1,710; Guatemala, 978; Hayi, 978; Ceylon, 1,684; Mexico, 6,020; Germany, 11,875; Great Britain, 18,346; France, 6,835½; Denmark, 1,584; Sweden, 1,769; Japan, 3,038.

A solid gold brick, weighing 500 pounds, and worth $150,000, will be exhibited in the Mines and Mining Building at the World's Fair, by a Helena, Mon., mine owner.

The Russian exhibit at the World's Fair will occupy 120,610 square feet, divided as follows :—Agriculture, 32,000; horticulture, 7,000; live stock, 200; fisheries, 6,300; mines, 2,400; machinery, 4,100; transportation, 2,500; manufactures, 50,000; electricity, 200; fine arts, 1,209; liberal arts, 12,400; ethnology, 10; forestry, 2,300.

Two of the cannon which, it is believed, were at one time mounted on board Christopher Columbus' flagship, were received at Chicago recently. The cannon are of the ancient and clumsy pattern of such guns turned out in the fifteenth century. Nothing but the body of the guns remain, the woodwork, of course, having rotted away centuries ago. The guns themselves are almost worn to pieces, and are not much more than huge chunks of rust. Indeed, the cannon are put on the "scrap iron" list in the custom house papers. These historic old pieces have been secured for exhibition at the World's Fair. One of the naval officers, who was detailed for

work in connection with the Columbian Exposition, found the relics at one of the West Indian islands. Tradition and substantial proof showed that the cannon had been used in a fort erected by Columbus' son, and that they were brought from Spain with Columbus' fleet. The ruins of the fort are still to be seen.

The Marquis de Lacaze, of Paris, has a portrait of George Washington, made by Stewart, an American painter, which he offers to lend to the World's Fair at Chicago. It was taken to France by his wife's grandfather, at one time minister to the United States. As the portrait is by an American artist, it cannot be exhibited in the French section, but the Marquis de Lacaze offers to send it over if the government will pay the charges, which it undoubtedly will do.

One of the curiosities of the Chicago Exhibition will be a *Salt Palace,* built by the inhabitants of San-Bernardo. Blocks of crystalized salt of one cubic foot will be used. These blocks being transparent, the effect will be extremely curious.

France intends to show its skill in landscape gardening at the World's Fair. A cablegram has been received from the French Commission asking that it be allowed to do, and bear the expense of, the "whole decoration of the spaces surrounding the Horticultural and the Woman's Buildings." This generous offer, doubtless, will be accepted if it does not interfere with plans too far advanced to be changed. The French are world-renowned as artistic landscape gardeners, and, it is believed, they would hardly have made the offer referred to unless they intend to make a display of surpassing beauty. The Commission asked also for 60,000 square feet for the French Horticultural Exhibit.

The rich and powerful Princes of India, writes Consul-General Ballantine, are preparing to send to the World's Fair a large collection of exhibits, including artistic articles of gold and silver, ivory carvings, paintings, lacquer and damask work, embroidery, lace, silver filigree work, etc. Several of the Princes have decided to visit the Fair with their retinues.

The Chicago Schuetzen-Verein has issued an invitation to the Sharpshooters of the World to participate in a great International Sharpshooters' Contest in Chicago in connection with the Exposition this year. Should a sufficient number of acceptances be received to warrant it, the festival will be

continued during the first five months during which the Exposition will be open. The Festival is to be conducted by the Chicago Society under the title of the Columbia Schuetzenfest. Communications should be sent to C. Schotte, 20 N. Canal Street, Chicago.

A huge octopus, or devilfish, has been captured outside the Golden Gate, Cal., by some fishermen. It measured fourteen feet from the end of the body to the end of the longest tenacle, and has eight arms, and as is usual with the fish, there are over 800 suckers on the arms. The body is nothing but a huge sack, and is soft and flabby; it is about two feet long. There are two eyes about an inch in diameter, and a faint resemblance to a beak and mouth. This specimen is one of the best in the country, and will be preserved and sent to Chicago for exhibition at the Exposition.

Some very interesting exhibits of Photography are to be sent to the Exposition from Sydney, New South Wales. The collection is being prepared by the Government Printing Office, and will consist of some 400 views, measuring 40 by 30 inches. Some of these pictures, when arranged in panoramic order, will finally measure 40 feet in length. An enlarged view of the moon, from a negative taken by Mr. Russell, the Government Astronomer at the Observatory, is said to be one of the collection.

It is proposed that one of Montana's contributions to the Exposition, to be made by women of the State, shall be a Fountain made of natural ore. The design will be selected by open competition. It is suggested that the base be made of native minerals, the bowl of silver, and the cup of gold.

The largest sample of gold quartz ever mined in Montana was taken out of the McIntyre lode. Its weight is 1,785 pounds. It came from near the surface. There are other large samples which came from the Shafer shaft at the depth of 110 feet; one from the Musser shaft, 100 feet, and another from the working shaft, 200 feet. All are destined for exhibition at the World's Fair at Chicago.

The bust of the Queen, upon which the Princess Louise has been engaged for some months, and which her Royal Highness has, with her Majesty's consent, promised to send to Chicago for exhibition at the World's Fair, is now complete. It is a notable example of the Princess' skill, and, standing in the Queen's boudoir, at Osborne, it has attracted much

attention among members of the Royal Family. The Princess has also been at work upon some pictures which are intended for Chicago, and these, it is said, will, after the Exhibition, be sold, the proceeds being given to some of the charitable institutions in this country in which she takes so much interest. Of all the daughters of the Queen, Princess Louise is the best artist, though she is closely run by Princess Beatrice.

One of the features of the California exhibit at the Exposition will be a pampas palace, twenty feet square, which will be erected in the state building. The palace is the contribution of Mrs. Harriet W. R. Strong, of Whittier, Cal., who is a large grower of pampas plumes.

Much apprehension has existed in the minds of many persons lest they should not be able to procure single specimens of the World's Fair souvenir half dollar, except by paying exorbitant prices to speculators. The Exposition could not sell, except in quantities, and the solution of the problem seemed difficult. The Hon. Thos. B. Bryan has solved it in a highly satisfactory manner. He has deposited with the treasurer of the Exposition $5,000, and the same number of half dollars, as soon as minted, are to be delivered to the Jenning's Trust Co. Any stockholder of the Exposition, on exhibition of his stock certificate and payment of the value, at the rate of one dollar for each, can receive one or more coins. These will be delivered in the order of the original application as filed. Applications should be made at once.

An exhibit of the Ice Age is being prepared, in Ohio, for the Exposition by Professor I. F. Wright. He will collect boulders from different parts of the State, and with them fragments from the original ledges in Canada, from which the Ohio boulders were brought by the ice; and specimens of scratched stones; exhibit a large Glacial Map of Ohio, an outline map showing the course the boulders have been brought, placard detailing the principal glacial facts, etc.

An optician of Baltimore, Md., has perfected an ingenious invention for cutting, grinding, and polishing lenses. The original device will be exhibited at the Columbian Exposition. It will make 400 lenses at the same time. It consists of a saw and a number of metal discs, both flat and oval, in which the glass is secured by clamps, and which are kept in constant motion by means of a pulley and wheel operated by a motor.

Late advices from Sydney, New South Wales, sustain the view that, notwithstanding the commercial and financial depression existent in some parts of Australia, the Australian Exhibit at the World's Fair will be a great and representative display. From Sydney will be sent a remarkable astronomical clock. This clock is forty-five feet high and twenty-five feet square at the base. Within it is exhibited the motion of the sun. Mercury, Venus, and the Earth revolving on its axis around the sun, and the moon around the earth. The sun is to be represented by an electric light, which will illuminate the surrounding planetary bodies.

The International Chess Tournament, to be held at Chicago in connection with the World's Fair, will distribute $7,000 in prizes.

Dauphin county, Pa., will send for exhibition, in the Woman's Building at the World's Fair, an elaborate carved table of extraordinary historical interest. It will be composed of woods taken from the yoke of the famous "Liberty Bell," from the house in which the first American flag was made, from Washington's headquarters at Valley Forge, from the old ship Constitution, and from a pillar in Independence Hall. The upper surface will be inlaid with Indian arrow heads, relics of the Six Nations, with whom, what is now Dauphin country, was once a favourite hunting ground.

The owners of the Mammoth Cave of Kentucky propose to reproduce the "Starry Chamber" in the Mining Building at the World's Fair.

Persons in Bombay, India, are persuaded that there will be considerable profit in making a varied display at the World's Fair. They propose to send over twelve elephants, so that visitors can take rides "in howdah with mahout;" to give exhibitions of suttee, cremation, jugglery, nautch, wrestling, etc., and to sell tea at ten cents a cup. They expect to sell a million cups.

Arrangements have been completed whereby excursion trains to the World's Fair, by whatever road they may arrive in Chicago, will run within the Exposition grounds and discharge their passengers there. No transfer of passengers at any point will be necessary.

Carl Hagenbeck, the celebrated German Collector and Tamer of Wild Animals, is in Chicago to arrange for the extensive Zoological Exhibit which he will make in Midway

Plaisance at the World's Fair. He will exhibit lions, tigers, panthers, leopards, bears, monkeys, etc., in great number, and will show the largest "happy family" ever seen.

A very interesting exhibit in the Transportation Department of the World's Fair will be made by the Steamship and Railway Companies of England. The collection of models of battleships, yachts, cruisers, steamers and merchant vessels will be more complete than was ever before exhibited. The London and North Western Railway will send over a complete train of cars, headed by a great compound locomotive named "Great Britain." This will afford an opportunity to compare the English compartment cars and sleepers with American coaches. The Great Western Railway will exhibit the antiquated locomotive "Lord of the Isles," one of the first used on that road. Several of the Railways will show their signalling systems.

Sir Walker Buller, who owns the finest collection of native Maori curiosities and paintings in the world, has applied for space in which to display his collection, and intends visiting the Exposition with his family. Major John Wilson, of Auckland, has submitted a proposition to the Foreign Affairs Committee to bring a colony of Maoris to the Exposition, house them in one of their native-built forts, and let them show their native costumes, home life, and methods of warfare. The proposition is regarded with some favour, as it would add greatly to the value of the general ethnological exhibit of the Exposition.

Ivan Malakoff, a St. Petersburg capitalist, wants to reproduce at the Exposition a street scene from Nijni Novgorod, the celebrated place where expositions have been held for 800 years. He agrees to spend $250,000 upon the reproduction.

British Columbia has decided to build a structure, which will be a novelty in architecture, composed of every variety of wood known to the British Columbian forests. The building will be built first in sections of contrasting woods neatly mortised together. The roof will be of native slate and a variety of cedar shingles, making in all a pleasing effect. It is intended to ship the building in sections, ready to be erected on its arrival. The display will be unique in every way, the government and cities of the province subscribing to the fund.

The supporting columns for the Forestry Building are to be trunks of trees, with the bark on. Chief Buchanan has requested each State to furnish three trunks of trees for this purpose. Arkansas, California, Colorado, Connecticut, Illinois, Indiana, Iowa, Maine, Minnesota, Montana, Nebraska, New Mexico, Pennsylvania, Texas, Wisconsin, Washington, and West Virginia have promised to furnish their quota.

The president of Ecuador has ordered that a complete display of woman's work shall be prepared for the Fair. This is to include a collection of gold and silver braid work, woven straw, and other novelties. Two or three women may be sent to Chicago to take charge of the display.

Hassan Ben Ali, of Morocco, is seeking a concession to make a Morocco Exhibit at the Exposition. He says he will spend $50,000 in showing the people, manners, customs, amusements, etc., of his country, and in bringing to Chicago a tribe of Berbers.

Among the exhibits to be made at the World's Fair by foreign nations, the visitor will doubtless find that of Persia one of the most interesting. It includes rare specimens of art industry work. Rich and highly wrought fabrics will constitute an attractive feature, as will exquisitely fine embroideries and elaborately worked gold and silver jewelry, rare Persian rugs, carpets, embroidered hangings, etc. There will also be found in this Persian exhibit a department for manufactured articles, such as arms, curios and richly wrought armour, tiles and tile work, mosaics, objects of art, antiquities, musical instruments, wearing apparel, etc. Altogether the Persian exhibit is promised to be characteristic and exceptionally unique, a collection rich in objects of cost and beauty.

Fac-similes of thirty-seven of the most prominent of the Aztec idols in the museum in the City of Mexico, have been prepared for the World's Fair at Chicago.

From Holland an offer has been made to the Holland Society of New York, and the St. Nicholas Society of Brooklyn, to construct and present to them an exact reproduction of the Half Moon, the ship in which Henry Hudson discovered and explored the river which bears his name. The societies named have accepted the offer, and are planning to fit up the ship as a club house, and to take it to Chicago both to be exhibited and to be occupied by their members during the Exposition.

The owners of one of the finest business corners in Chicago have decided to erect a $1,000,000 sixteen-story building, to be called "The Columbus," in honour of America's discoverer. The plans contemplate a structure, strikingly artistic and ornate in appearance, of the Spanish style of architecture. On each side of the main entrance will be placed a bronze tablet, the first bearing this inscription :—

Erected in honour of
COLUMBUS
in the year 1892,
being the 400th anniversary
of the discovery of
America.

The other tablet will show :—

CHRISTOPHER COLUMBUS,
Born at Genoa in 1435,
Discovered America the 12th day
of October, 1492.
Died at Valladolid the 20th day
of May, 1506.

It is the intention to have the building completed by May 1st, 1893.

The Gold and Silver, and other Mineral exhibits at the Exposition will probably aggregate in value several million dollars. In exhibits of this description Colorado will naturally take front rank. It is announced that the gold and silver nuggets to be shown by that State alone, are worth a quarter of a million dollars. There has been made a splendid collection of native gold specimens, from all the richest mining districts. A single collection, valued at $60,000, has already been secured. This will be supplemented by the finest collections, secured as loan exhibits. The exhibit will be both technical and economic in its character, showing a scientific classification of the mineralogy of Colerado and a correct presentation of its geology. At the same time a

popular and massive display of ores, building stone, commercial clays and other mineral products will be made. Models, maps, and diagrams will be employed to show the progress made in mining. These will be accompanied by historical data and reliable information regarding the product and formation of veins in the mining districts. In the display will be the "Silver Queen," a beautiful statue of an ideal female figure executed in silver, and valued at $7,500 to $10,000.

It is announced that the Virginia Exposition Board intends to reproduce at the Fair, Mount Vernon, the famous home and last resting place of George Washington. If this is done a large and interesting collection of Washington relics will be exhibited in the structure.

A very interesting Exhibit which, it is reported, the British Commission is planning to make at the World's Fair, is a Large Scale Map, showing the discoveries which have been made in North America by Englishmen. Though Columbus discovered the West Indies, the credit of first sighting the mainland of America seems—if we put aside the unrecorded investigations of the Northmen—to be due to an Englishman, Sebastian Cabot; and the list of names of English explorers of America, which is headed by his, is a very long and distinguished one. Raleigh, Sir Humphrey Gilbert, Sir Hugh Willoughby, Frobisher, Davis, Hudson, Baffin, in the seventeenth century, were followed, in the eighteenth, by Scoresby and Cook; while the work they commenced was carried on during our own century by the Rosses, Parry, Franklin, Collinson, Maclue, McClintock, Nares and Markham. It will, therefore, be seen that there is ample material for a map such as that proposed.

The American flag now floats from the Administration Building at Jackson Park to signify that the World's Fair buildings and grounds are in the possession of the United States government. Vice-President Morton accepted them on behalf of the government on Dedication day, but actual possession was not taken until Director-General Davis, the chief government World's Fair official, moved into his offices in the Administration Building. The raising of the stars and stripes signalled that event.

All of the World's Fair offices, except two or three, are now removed to Jackson Park, and those will soon follow. For nearly two years the offices have been in the Rand-McNally building, in the centre of the city. Now, however,

the work of preparation of the great Fair has reached a stage requiring it to be carried on in the buildings which are to contain the exhibits. All of these buildings are now practically finished, and ready for the installation of exhibits. Most of the work remaining to be done on the buildings is of a decorative nature, and can be carried on and completed without interfering with the placing of exhibits.

In the Administration Building, with Director-Genenal Davis, are the offices of the departments of Foreign Affairs and Publicity and Promotion. The chiefs of the various exhibit departments—agriculture, electricity, mines, transportation, etc.,—have their offices respectively in the great department buildings.

The installation of exhibits has already begun, but has not yet progressed far. Soon, however, the interior of each one of the buildings will be the scene of great activity. The authorities are determined to have all exhibits in place at the opening of the Fair, and manifestly this cannot be accomplished if exhibitors are allowed to be dilatory. It will not do to permit the great mass of exhibitors to defer installing their exhibits until April, and accordingly, state and foreign commissions, and individual exhibitors, will be required to be prompt. Exhibitors, who are dilatory beyond a certain point, will lose their space and be barred out.

The requirements of the preparation of the official catalogue of exhibits also necessitate promptness on the part of exhibitors. This catalogue will be an elaborate publication, and, generally speaking, will have a separate volume devoted to each department. Its preparation is in charge of Major Handy, chief of the department of Publicity and Promotion. It is the determination to have it on sale, in complete condition, on the opening day of the Fair, if it is possible to do so. That will, of course, depend mainly on the promptness of exhibitors.

Under the east windows of the occupied wing of the Administration building lies a scene like a creation of the Arabian Nights. It is the grand court, the main gate-way to the World's Fair, the feature par-excellence of the entire perfect plan of the Exposition.

In the centre ripples the blue waters of the great basin, which, while constantly renewed by Lake Michigan, is yet sheltered from the giant waves foaming on the open shore. The sky line on the east side—where the gray-blue horizon

melts indistinguishably into the greyer blue of the lake and basin—is broken by the imposing pillared colonnade and the magnificent arch of the Perestyle. At either end stands the Music Hall and the Casino, disappearing in the soft misty haze behind the stately corner pavilion of the Manufacturers' Building on the north, and on the south partially hidden by the graceful front of the Agricultural Building. Above the dome of the latter the famous figure of Diana pirouettes with the shifting wind. This statute, being of heroic proportions and brilliantly gilded, is dazzlingly conspicuous amidst the prevailing white and grey of the landscape. Here and there, too, along the ornate fronts of these ivory palaces, are rich warm frescoes, in mellow reds and yellows, painted under the direction of Millet, the artistic magician of the World's Fair. At the east end of the great basin stands French's grand statute of the Republic, lifting her shapely length sixty feet from the pedestal, towering ninety feet above the waters of Lake Michigan. Opposite, and immediately in front of the Administration Building, is the celebrated McMonnies fountain, fast approaching completion. Columbia sits enthroned in the barque of Progress, heralded by Fame, and rowed by the genius of civilization, while Time, representing experience, keeps a firm steady hand on the tiller. It is a strikingly beautiful and particularly spirited conception, the wind from the lake seeming to rustle the snowy drapery of the forward bent figures at the oars.

To the right and left of this, workmen are toiling and machines are whirring, within two balustraded semi-circles, building the electrical fountains. These will give the finishing touch to the scene of enchantment, by throwing over it the light that never was on land or sea. Over the great basin, with its giant statutes and its encircling columns and palaces of ivory and gold, will play these cloud-touching fountains of myriad, ever varying hue, tinging them in turn with violet, rose, blue, green, crimson, or the mingled tints of the most resplendent rainbow.

There is no ground for the published report that Visitors to the Fair are to be made the victims of exorbitant charges. Competition will be so extensive and sharp as to prevent it. One who climbs to the top of one of the Exposition buildings and surveys the territory lying to the north, west and south of Jackson Park, can easily believe this statement. There, and indeed in all parts of the City, the amount of building

which is going on is simply astonishing. Hundreds of structures to meet World's Fair demands are being erected. Some of the new hotels are large enough to accommodate several thousand guests each. By the time the Fair opens Chicago will have living accommodations for not less than 300,000 strangers. Connected with the Exposition Management is a Bureau of Public Comfort, through the agency of which many thousands of visitors can be directed to hotels, apartments, boarding houses, furnished rooms, etc., where they will be comfortably cared for at moderate prices. Eating facilities, both outside the Fair Grounds and in the numerous restaurants in the Exposition Buildings, will be so extensive that no one need fear that he will not be able to get all he needs to eat, and at reasonable charges.

An effort is being made to arrange for a grand reunion, at the World's Fair, of surviving "49-ers"—the men who left their homes in the East in 1849 to become gold-hunters in California. It is thought that several thousand of them are still living, and that all would make an extra effort to go to Chicago this year, were a reunion arranged as is proposed. Many of them remained in California, but the majority returned and are now scattered throughout the States east of the Mississippi.

The most approved methods of Artificial Ice Making and Cold Storage will be exhibited at the World's Fair. These processes will be shown in a very fine building, 130×255 feet, and five stories high, with observatories at the corners and a lofty tower at the centre. About eighty tons of ice will be manufactured daily, three methods being employed, namely, the plate system, from filtered water; the can system, from condensed steam filtered and purified; and the can system from de-ærated water. Three different processes of cooling rooms will also be shown.

Ohio will erect a Mineral Cabin in the Mines Building at the World's Fair to illustrate its mineral resources. The Cabin will be 32×61 feet in dimensions, and twenty-three feet high, and be constructed entirely of Ohio mineral products.

The section from one of the big California redwood trees, which the government will exhibit in its building at the World's Fair, has arrived at the Fair grounds. Eleven freight cars were required to convey it across the continent. It measures thirty feet long by twenty-three feet in diameter. The section is hollowed out, and when placed on end, divided

into two stories and lighted, as it will be, it will form a rustic house, large enough for a family to live in.

The Educational Exhibit at the World's Fair is to have the space it requires. A new building, costing $120,000, has been ordered for the ethnological exhibit, which, accordingly, is thereby removed from the Manufactures and Liberal Arts Building, thus allowing more space for the Educational Exhibit.

RELICS AT THE FAIR.

The objects of historical value and interest, which will be shown at the World's Fair, will be legion. It is safe to say that the collection will be ten times as numerous as has ever been witnessed in one place before. The Columbus relics alone will be very great in number, and will include the majority of the important portable reminders of the famous explorer. They will be brought from Spain, Italy, Rome, the West Indies, and other widely separated parts of the earth. Every department, almost, of the great Exposition will have its relics on view—old records, portraits, machines, models, inventions, etc., each having historical interest, or marking a stage of progress in its own line. Particularly numerous will be these historical exhibits from the United States. Almost every state will contribute to the number something which will be viewed with interest because of its history or associations. One of the best contributions will be shown by Pennsylvania, the collection being furnished mainly from Philadelphia, under the auspieces of a committee of its city council. Among the objects in this collection are the following:—The chair occupied by Thomas Jefferson when writing the Declaration of Independence; the table on which it was signed; the silver inkstand used on that occasion; Thomas Jefferson's sword; chair of memorial woods, including parts of Columbus' house in Spain; bell rung at Valley Forge when Washington occupied that place with his army; sofa belonging to George Washington and used by him when he lived in Philadelphia; bench made from pew in old Christ Church occupied by Washington and Lafayette; punch bowl used by Gen. Washington and other officers of the Revolutionary army; baby clothes made by Mrs. John Adams for her son, John Quincy Adams; ale mug that belonged to John Paul Jones; Peale's portrait of Washington, the first ever printed; first lightning rod in-

vented by Ben. Franklin; electrical machine invented by Franklin; original model of John Fitch's steamboat which ran between Philadelphia and Burlington from 1787 to 1790; unsigned copy of the Declaration of Independence; fans used by Franklin at the court of France when he was minister there; cast of Washington's face taken during life, from original mould used for Houdon's statue; clocks of Benjamin Franklin, William Penn and Oliver Cromwell, running and keeping good time; Gilbert Stuart's portrait of Washington; Thomas Jefferson's thermometer; lock of Jefferson's hair; Pocahontus' necklace; surveying instruments used by William Penn in laying out the city of Philadelphia; and the famous Liberty Bell.

BIG PRIZES FOR LIVE STOCK.

Chief Buchanan of the World's Columbian Exposition Live Stock Department, has sent out about 3,000 copies of the live stock premium list to the various fair and breeders' associations of the country, and is receiving responses which show that the live stock exhibit at the Exposition will be something tremendous. Besides the large premiums offered by the Exposition for a live stock exhibit, all the various breeders' associations are offering large prizes, notably for shorthorns, Herefords and Jerseys. As an evidence of the widespread interest taken in the live stock show, A. E. Mansell, of Shropshire, England, offers a prize of $500 for the best American bred Shropshire ram. The State of Illinois offers $40,000 in premiums for live stock; the Clydesdale horse breeders offer $5,000 extra prizes; the cattle associations offer extra prizes as follows: Galloway, $3,000; shorthorn, $6,000; Hereford, $5,000; Jersey, $10,000, and Holstein, $10,000. The swine, sheep and dog breeders also offer extra money prizes. The money prizes to be paid for live stock will amount to $250,000 or more, which, of course, includes the sum of $150,000 voted by the Exposition company for premiums in that department. The Exposition Buildings for the accommodation of live stock will cover thirty acres.

WORLD'S FAIR SOUVENIRS.

How you can get one of the Columbian Half Dollars.

The World's Fair souvenir coins are "going like hot cakes," and those who want to get one or more of them will have to

bestir themselves, or they will be too late. The desire for one of these mementos of the Exposition seems to be almost as universal as is the interest in the Exposition itself, and orders for them have been sent in from all parts of the United States, and also from foreign countries.

This souvenir half dollar, it is reported from Washington, will be the most artistic coin ever issued from the mint. On the obverse side will appear the head of Columbus, designed from the Lotto portrait, and surrounding it the words, "World's Columbian Exposition, Chicago, 1893." On the reverse side will appear a caravel, representing Columbus' flagship, and beneath it two hemispheres. Above the caravel will be "United States of America," and beneath the hemispheres, "Columbian Half Dollar." There is no doubt that this coin will be regarded as the most distinctive and highest prized cheap souvenir of the World's Fair.

All of these souvenir coins, except five, are being sold at a uniform price of one dollar each. For the first coin struck off $10,000 has already been offered, and various prices have been bid for the 400th, 1,492nd, 1,892nd, and the last coin. Desiring that these souvenirs be distributed as widely as possible among the people, and that all, irrespective of locality, have an equal chance to obtain them, the Exposition authorities have sought to prevent syndicates and others from purchasing large quantities, and thus "cornering" the sale. On the contrary, they have arranged to supply banks, business houses, and individuals in all parts of the country, with as many as they may desire to distribute among their patrons, customers, or friends. They require only that the orders must be for fifty coins, or some multible of fifty, and that the order be accompanied by the cash, at the rate of one dollar for each coin. A great many banks and business firms have gladly complied with these conditions, and ordered each from 50 to 20,000 of the coins.

Notwithstanding these conditions have been widely published, still a vast number of inquiries by letter have been received at Exposition headquarters asking how the coins may be obtained. The best way is to get them through local banks, all of which are no doubt willing to accommodate in that way their patrons, and the residents of the city or town in which they are doing business. If, however, for any reason it is desired to obtain them otherwise, the proper method is to form a club of subscribers for fifty coins, or

some multiple of fifty, and select some one member of the club to send on the order and money and to distribute the coins when received. Orders should be addressed to A. F. Seeberger, Treasurer World's Columbian Exposition, Chicago.

THE GENERA OF HUMMING BIRDS.

Since the last six months I have been working and re-arranging my collection of Humming-birds, with the hope of finding a way to adopt partly, or in its entirety, the classification proposed last year, by Mr. Osbert Salvin, of *Trochili serrirostres, intermedii,* and *laevirostres ;* but I am sorry to say that I have not been successful, therefore I must continue to follow my own classification, which I have made as natural as possible ; but I must confess that it has been a very hard work. I do not believe that other birds present such difficulties of classification as the Humming-birds.

To give an idea of the difficulties encountered all along, I shall just mention some of the genera included in the Trochili serrirostres of Mr. Salvin. *Heliothrix*, *Schistes,* and *Augastes*, belong certainly to the family of *Petasophoridae*, having all in common, metallic blue or violet ear-covers, peculiar to that family.

Ramphodon, Androdon, and *Glaucis*, whose dentition is very conspicuous, cannot be well separated from *Pygmornis, Phaethornis, Threnetes, Eutoxeres,* etc., which are laevirostres.

Chlorostilbon cannot be separated from *Panychlora, Eupherusa*, and *Elvira* are closely allied to *Agyrtria*, and so on with many others.

From what has been printed of the Genera, in Vol. II. of the Humming Bird, I have been obliged to reprint pages 55 and 56, so as to make place for the genus, *Abeillia,* which finds its place in my family of *Cephalolepidae*, and I have been obliged to place *Patagona* after *Eustephanus*, agreeing with that genus in many particulars, and forming the passage to *Oreonympha,* which begins my family of *Metalluridae.*

A.B.

BOUCARD, POTTIER & CO.,

Naturalists and Feather Merchants,

225, HIGH HOLBORN, LONDON, W.C., ENGLAND.

MESSRS. BOUCARD, POTTIER and Co. offer to sell on commission, Objects of Natural History, Collections of Mammals and Birds, Skins, Skeletons, Human and Animal Skulls, Insects of all orders pinned and set, or in papers; Marine, Fresh Water and Land Shells; Reptiles and Fishes in spirit; Crustaceæ and Arachnidæ in spirit; Ethnological Collections from all parts; Showy Bird Skins and Feathers for Plumassiers and Naturalists; Mammal Skins for Furriers; Bright species of Insects for Artificial Florists; Rare Old Stamps, used and unused; Curios of all sorts; Pictures and Works of Art, etc., etc.

All possessors of such objects should not dispose of them without consulting Messrs. Boucard, Pottier and Co., who having a large connection with Amateurs in all parts of the world, are able get the very best prices for them.

FOR SALE

About **6,000** species of Birds, **30,000** species of Coleoptera and Lepidoptera, Mammal Skins, from New Guinea, West Africa, South America, etc.; Land, Fresh Water and Marine Shells, *a large number of species:* Reptiles and Fishes in spirit; Crustaceæ, dried and in spirit; Insects of all orders; Skeletons; 5,000 different varieties of Postage Stamps, etc., etc.

A very fine collection of Shells, especially rich in LAND SHELLS, and containing *many types* and *new species*, about 40,000 specimens. For Price, etc., apply at 225, HIGH HOLBORN, LONDON, W.C.

STANDS, NEW STYLE.

No. 1.	For Humming Birds and Small Birds	at 20s. per hundred
„ 2.	For Small Birds, up to Tanagers	at 24s. „
„ 3.	For Tanagers up to Magpies	at 28s. „
„ 4.	For Magpies up to Crows or Small Hawks	at 32s. „
„ 5.	For Small Hawks to Large Hawks and Owls	at 40s. „

ARTIFICIAL EYES.

	BLACK *Per Gross.*	COLOURED.	CORNERED. *Per Dozen Pairs.*	CORNERED AND VEINED. *Per Dozen Pairs.*
No. 1 to 4	6d.	1s. 6d.	No. 4 to 6 3s. 6d.	4s. 6d.
„ 5 to 8	8d.	2s. 6d.	„ 7 to 9 5s. od.	6s. od.
„ 9 to 10	1s. od.	4s. od.		
„ 11 to 13	2s. 6d.	7s. od.	„ 10 to 11 8s. od.	10s. od.
		Per Dozen Pairs.	„ 12 9s. od.	11s. od.
„ 14 to 16	3s. 6d.	2s. 6d.	„ 13 to 15 13s. od.	15s. od.
„ 17	8s. od.	3s. od.	Larger Sizes can be made to order.	
„ 18	12s. od.	4s. od.		

UTENSILS FOR COLLECTING, Etc.

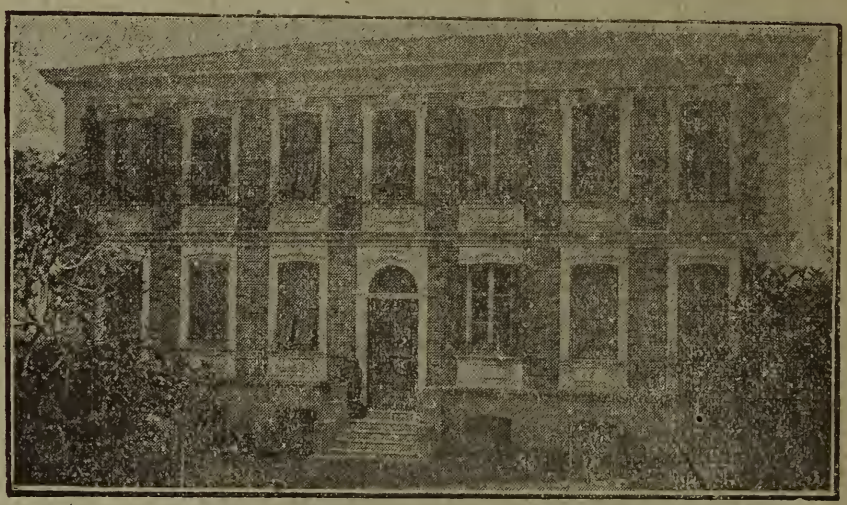
Bicarbolic Acid	quart 2/-
Rectified Benzoline	„ 2/-
Boucard's Insecticide	lb. 4/-
Collecting Corked Box	from 1/- to 5/- each
Pocket Corked Box	from 2/- each
Corked Box for Museums	from 24/- to 36/- doz.
Botanical Box	from 2/6 to 6/- each
Pin Box, with 1,000 pins	3/-
Collecting Bottles with large opening	from 6d.
Boucard's Tin Collecting Box, with two partitions	2/-
Straight Scissors	from 2/-
Curved „	„ 2/-
Taxidermist Knives	„ 1/6
Long Forceps	„ 3/-
Small „	„ 1/-
Insects' Nippers	„ 1/6
Sieve	„ 2/-
Blowpipe for cleaning eggs ..	„ 2/-
Digger	„ 2/-
Folding ditto	„ 6/-
Insect Pins. English, French or German	...from 1/6 per 1000
Setting Boards	from 1/- to 2/- each
Butterfly Nets complete	„ 1/6 to 5/-
Sweeping and Water Nets	from 2/6 to 10/-
Cork in Sheets	from 3/- doz.
Magnifying Glasses ..	from 1/- to 5/-
Hammers	„ 1/6 to 5/-
Naphthaline	„ 4/- per lb.
Botanical Grey Paper ...	„ 6/- ream
Folding Umbrella for collecting Insects	from 10/-
Cutting Pliers	„ 2/-
Flat Pliers	„ 2/-
Arsenical Soap	„ 2/- per lb
Glass Tubes	„ 1/- doz.
Taxidermist Case, containing 1 Pair of Scissors, 2 Knives, 1 Lime, 1 Grater, 2 Pliers, 1 Hammer, 1 Pair of Forceps, 1 Brush, 3 Gimlets, etc. complete	from 12/- to 40/-

TO BE SOLD OR EXCHANGED,

For Properties of equal value in London, Brighton, or the Isle of Wight,

SEVERAL PROPERTIES AT SAN-REMO,

The Celebrated Winter Resort on the Riviera, 40 Minutes from MONACO.



VILLA MARIA LUIGIA.

Three Villas, known as *Villa Maria Luigia*, and *Villas Rondo:* the first one, detached with a beautiful garden of 2200 square yards; the last, semi-detached with front and back gardens. Villa *Maria Luiga* consists of three floors, with fifteen fine room, offices, kitchen, etc. Ten of the rooms are full south, facing the sea.

Villa *Rondo* n° 25, corso Garibaldi, consists of two floors, with nine rooms, kitchen, office and cellar. N° 27 has two kitchens and two more rooms on the underground floor.

Villa *Maria Luigia* and *Villa Rondo* n° 25, the smallest, are actually let unfurnished, 3800 francs per annum, for several years.—Villa Rondo n° 27, is also let at 1400 francs per annum. Furnished, they will produce between £400 amd £500 per annum.

All applications to be made at Mr. Boucard's, 225, High Holborn, London, W.C. (England), where photographs of the Villas can be seen.

JUST ARRIVED.

Collections of *Mammal* and *Bird Skins* from Madagascar, containing new species of *Lemur*, the *Sea Eagle*, *Coua ruficeps*, *gigas*, *olivaceiceps*, and other species; *Leptosomus discolor*, *Brachypteracias*, *pittoides*, and *squamigera*, *Euryceros prevosti*, and many other rare species. Also a perfect specimen, fossil egg, of the supposed extinct species, *Aepyornis medius*, Insects various, etc. Collections of rare *Butterflies* and *Moths* from Madagascar, Japan, India, Gold Coast, Venezuela, Columbia, Brazil, and other countries. Collections of *Beetles* from India, Mexico, Venezuela, Columbia, Japan, Madagascar, Australia, Cape of Good Hope, etc. Collections of *Land*, *Fluviatile*, and *Marine Shells*, from Madagascar, New Guinea, Japan Venezuela, Paraguay, Mexico, Central America, etc. A unique specimen of the wonderful Pheasant from Tonkin, *Rheinardious ocellatus*. Also a unique and perfect pair of the very rare Pheasant, *Lobiophasis Bulweri*, and many other very rare species of Birds from Borneo and New Guinea.

ETHNOLOGICAL COLLECTIONS and Curiosities from New Guinea, Madagascar, Gold Coast, Mexico, Central America, Japan, etc.

PARDY & Co., General Printers, 8, The Triangle, Bournemouth.

Vol. III. Part III.] SEPTEMBER, 1893. [Price 2/6.

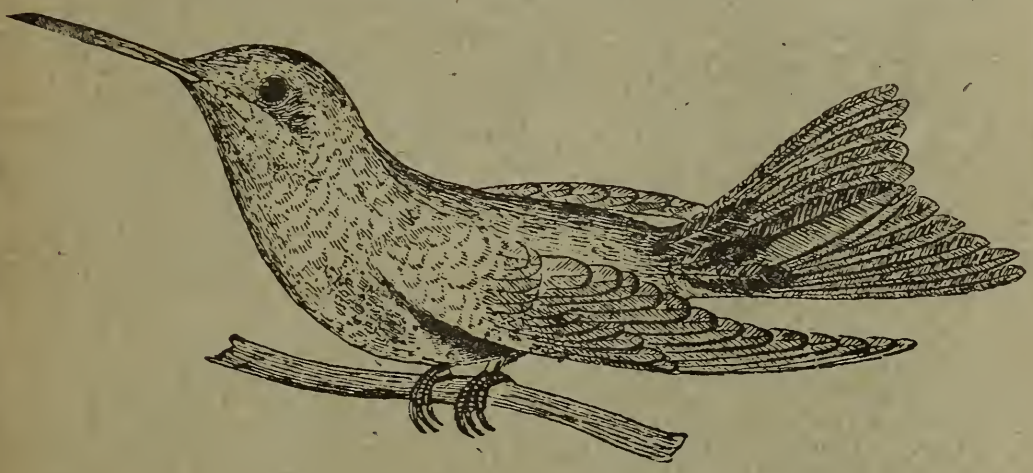
The Humming Bird

A QUARTERLY

SCIENTIFIC, ARTISTIC AND INDUSTRIAL REVIEW.

EDITED BY

A. BOUCARD.



Arinia Boucardi.

Annual Subscription: United Kingdom, Europe, N. America and Canada, 10/- *All other Countries,* 12/-

Vol. I. and II., complete, 10/- each.

Published by A. Boucard, 225, High Holborn, London, W.C.

BOUCARD, A., Works by :—

GUIDE POUR RÉCOLTER PRÉPARER ET EXPÉDIER DES OBJETS D'HISTOIRE NATURELLE, Brochure in 8vo., 32 pages, Rennes, 1871 ... ... 1/-
The same in Spanish 1/-
NOTES SUR QUELQUES TROCHILIDÉS, Brochure grand, in 8vo., 16 pages, Lyon, 1873 .. ... 1/6
HAND-BOOK OF NATURAL HISTORY, 2nd Edition, Vol. in 8vo., 234 pages, profusely illustrated with Woodcuts, London, 1874 ... ... 4/-
COLOURED DIAGRAMS OF NATURAL HISTORY, 2nd Edition, 20 sheets, 18in. by 24in., comprising 166 Diagrams of typical animals and plants, natural size, and 37 natural typical specimens of woods, and minerals, all neatly mounted on strong cardboard 40/-
The same, varnished 45/-
NOTES SUR LES TROCHILIDÉS DU MEXIQUE, Brochure grand in 8vo., 16 pages, Lyon, 1875 ... 1/6
MONOGRAPHIC LIST OF THE COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES. Pamphlet, in 8vo, with coloured plate, illustrating five new species ... 4/-
The same, with black plate 2/6
CATALOGUES AVIUM HUCUSQUE DESCRIPTORUM, 1 Vol. in 8vo., cloth, 352 pages, 2546 genera, and 11,031 species recorded. London, 1876. A useful book for Museums and Ornithologists. Price reduced to 10/-
The same, with French preface 10/-
The same, interleaved with blank sheets of paper, French or English preface 12/-
NOTES ON PHAROMACRUS COSTARICENSIS. Pamphlet 4to, 8 pages. Brighton, 1877 ... ... 4/-
ON BIRDS COLLECTED IN COSTA RICA, by Mr. Adolphe Boucard. Pamphlet in 8vo, 72 pages, with coloured plate of ZONOTRICHIA VOLCANI. Boucard, London, 1878 ... . 4/-
The same, with black plate 2/6
NOTES ON SOME COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF THREE NEW SPECIES FROM MEXICO AND CENTRAL AMERICA. Pamphlet in 8vo, 4 pages, with coloured plates, illustrating fine species, P. RODRIGUEZI, BADENI, BOUCARDI, MNISZECKI, and PRASINA 4/-
The same, with black plate 2/6
NOTES SUR LES OBJETS EXPOSÉS PAR LA RÉPÚBLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1878, Brochure in 8vo, 32 pages. Paris, 1878 1/-
LISTE DES OIREAUX RÉCOTTÉS AU GUATÉMALA EN 1877, PAR M. ADOLPHE BOUCARD, Brochure grand, in 8vo, 48 pages. Lyon, 1878 ... ... 2/6
DESCRIPTIONS OF TWO SUPPOSED NEW SPECIES OF SOUTH AMERICAN BIRDS. Pamphlet, in 8vo., with coloured plate, figuring CHIROMACHACRIS CORONATA. Boucard, London, 1879 ... ... 2/-
The same, with black plate 1/-
DESCRIPTION D'UNE ESPÈCE NOUVELLE DE PSEUDOEOLAPTES DE COSTA RICA. Paris, 1880 ... 6d.
DESCRIPTIONS DE DEUX ESPÈCES NOUVELLES DE CICINDÉLIDES DE PANAMA. Paris, 1880 ... 6d.
ON A COLLECTION OF BIRDS FROM YUCATAN (MEXICO), WITH NOTES BY MR. OSBERT SALVIN, F.R.S. Pamphlet, in 8vo., 30 pages. London, 1883 2/6
NOTICE BIOGRAPHIQUE SUR FRANCOIS SUMICHRAST, NATURALISTE VOYAGEUR, Brochure in 8vo., avec portrait. Paris, 1884 ... ... 2/-
VISITE AUX RUINES DE XOCHICALCO (MEXIQUE). Paris. 1887 ... . 1/-
CATALOGUE DES OBJETS EXPOSÈS PAR LA RÈPUPLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1889 .. .. 1/-
CATALOGUE DES OISEAUX DE LA COLLECTION RIOCOUR. Paris, 1889 ... . 1/-

THE HUMMING BIRD. A MONTHLY SCIENTIFIC, ARTISTIC, AND INDUSTRIAL REVIEW. Vol. I. London, 1891 ... ... 10/-

Contents of Vol. I.

Preface—What is to be seen everywhere in London—The McKinley Bill—The Panama Canal—Notes on the Genus Pharomacrus—An easy way of making £100 a a year—Reports on Public Sales of Feathers and Bird Skins—Rapport sur la Vente publique, de plumes et d'Oiseaux à Londres, Décembre, 1890 — The Museum of la Plata, and my idea of a typical and practical Museum of Natural History—Reports on Public Sales of Postage Stamps—Notes on rare species of Humming Birds, and Descriptions of several supposed new species — Second International Ornithological Congress — Answers to Correspondents—Description of a supposed new species of Parrot in Boucard's Museum—Notes on the Crowned Superb Warbler (*Malurus coronatus* (Gould) —A Visit to the Gardens of Zoological Society of London—British Museum (Zoological Department)—Royal Aquarium—Books and Journals received—Obituary—Description of a supposed new species of Paradise bird in Boucard's Museum —The Pilgrim Locust—Description of a supposed new species of Tanager—Notes on the great Bower Bird (*Chlamydodera nuchalis*, Jard)—Collections made in Thibet and Central Asia—A Visit to the British Museum (Natural History Department)—The Plantain or Banana Plant—Inauguration of the statue of Pierre Belon, the Naturalist — A Giant Land Crab—Review of new Scientific Books—Report on the Public Sale of the celebrated Collection of Shells, formed by the late Sir David Barclay, and sold at Steven's on Monday, the 6th of July, and following days —Recommendations for the prevention of damage by some common Insects of the Farm, the Orchard, and the Garden—La Vie champêtre. La Destruction de la Larve du Hanneton (*Melolontha vulgaris*)—Crocodile, Snake, and Fish skins for industrial purposes—World's Columbian Exposition, Bâtiment de l'Administation.

The same, Vol. II. London, 1892 ... ... 10/-

Contents of Vol. II.

Description of a supposed new Species of Humming Birds, in Boucard's Museum—The World's Fair, International Exposition of Chicago—Review of New Scientific Books—Notes on the Rare Pheasant, Rheinardius ocellatus—Books received—Celebrated Gallery of Old Masters, of the late General Marquess de Garbarino—Customs Tariff of Great Britain and Ireland—Obituary—Biographical Notes on Henry Walter Bates, F.R.S., etc. (with portrait)—American Pearls—Fish from Volcanoes—A very large Tree—A Curious Rat Catcher—List of Birds collected, by Mr. Hardy at Porto-Real, Brazil, with description of one supposed New Species—Description of a supposed New Species of the genus Manticora, "Cicindelidæ," from Damara Land, South Africa—Description d'une espèce nouvelle de Diptère parasite de Costa Rica, Ornithomyia geniculata—The Completion of the Panama Canal —A complete list, up to date, of the Humming Birds found in Columbia, with descriptions of several supposed New Species—Christopher Columbus—Festivities and Exhibitions, held in honour of Christopher Columbus in America, Spain, Italy and France—America—Le Canal de Panama—International Exhibition in Monaco—A new Emission of Postage Stamps.

REVIEW OF NEW PUBLICATIONS, comprising :—Annual Report of the Board of Regents of the Smithsonian Institution, 1890-1891—Catalogue of Birds in the British Museum, Vol. XX., 1891, Vol. XVI., 1892, Vol. XXII., 1892—Zoological Record, Vol. XXVIII., 1892—Proceedings of the Zoological Society of London, 1892—The Ibis, Vol. IV., Sixth Series, 1892—Mémoires de la Société Zoologique de France, Vol. V., 1892—Memorias y Revista de la Sociedad cientifica, Antonio Alzate, 1892—Actes de la Société scientifique du Chili. Vol. I., 1892—The Entomologist's Monthly Magazine, 1892, etc.

OBITUARY :—August von Pelzen—Dom Pedro d'Alcantara—M. Alphand—Monseigneur Freppel—Armand de Quatrefages de Breau—Duke of Clarence—Henry Walter Bates—Etienne Arago—Hermann Charles Burmeister —Carl August Dohrn—Marshal da Fonseca—Ernest Renan—Alfred Tennyson—Xavier Marmier.

GENERA OF HUMMING BIRDS, by A. BOUCARD, pages 1 to 56.

SAUVETAGE DU PANAMA, 4éme edition, Brochure in 8vo., 32 pages. Tours, 1892.. .. .. 6d.
CATALOGUE DES COLLECTIONS D'HISTORIE NATURELLE RÉCOLTÉES AU MEXIQUE PAR M. ADOLPHE BOUCARD 1/-
CATALOGUE DE MAMMIFÈRES, OISEAUX REPTILES, POISSONS ET COQUILLES DE LA CALIFORNIE, LOUISIANE, MEXIQUE ET URUGUAY 1/-
CATALOGUE DE CARABIQUES ET COLCOPTÈRES DIVERS, 1477 espèces 1/-
CATALOGUE D'HÉTEROMÈRES ET DE CURCULIONIDES, 2242 espèces 1/-
CATALOGUE D'OISEAUX, REPTILES ET POISSONS, 1157 espèces 1/-
LISTE DE COLÉOPTÈRES EXOTIQUES, 2636 espèces 1/6
LISTE DES COLÉOPTÈRES EN VENTE CHEZ M. ADOLPHE BOUCARD, 7956 espèces 4/-
LISTE DES OISEAUX EN VENTE CHEZ M. ADOLPHE BOUCARD, 4584 espèces 4/-
La série complète des huit Catalogues et Listes ... 12/-

The Humming Bird.

PANAMA.

Prorogation for the Completion of the Panama Interoceanic Canal.

SINCE the issue of Part 1, Vol. iii., of the *Humming Bird*, a treaty has been signed between Mr. Monchicourt, Liquidator of the Panama Canal Co., and the Columbian Government, by which the latter has agreed to a prorogation of twenty months, thus giving ample time to the Company to promote and form a new Society for the completion of the Canal.

So far so good, as I never doubted that the Columbian Government would protect, as much as possible, the interests of the first subscribers; but I am sorry to see that one of the clauses of the treaty mentions that a total sum of four millions of francs be paid to Columbia by the new Society, the first payment of 500,000 francs to be made by the Liquidation in the course of next month.

Knowing as I do, the great difficulties existing in the formation of a new Society, I am afraid that the said clause will be a great obstacle to the formation of a new Company, and I really believe that Columbia has made a mistake in introducing that clause in the treaty.

The interests of Columbia were to facilitate by all means in its power the promoting of a new Company, and by making such terms, I am afraid that the result will be quite the reverse of what that country expects.

I know of one Company, with a capital of twenty millions of francs, which is willing to resume work in Panama, but it cannot do so if that clause is maintained, because the twenty millions which it possesses are required in their entirety, for the disposing of the principal obstacle standing in the way of the Canal, I mean the removal of the *Culebra*. This done,

confidence would be restored, and the rest made easy; but it cannot be done if the new Company has to pay four millions, from its capital, to the Columbian Government.

This is the state of affairs at the present moment, and I think that the only way of rescuing this gigantic international and most useful undertaking should be the immediate convocation of an International Congress, either at Paris, London, New York, or Chicago, where suitable measures could be taken to that effect. [ED.]

THE IMPERIAL INSTITUTE.

On Wednesday, the 12th of May, the Imperial Institute was officially opened by Her Majesty the Queen.

The weather was magnificent, and that day of rejoicing and spontaneous holiday making, will be remembered during their life time, by all Londoners who assisted, either as guests or spectators, at that grand ceremony.

Crowds began to assemble in the vicinity of Buckingham Palace and along the line of route to be taken by the Royal cortege, as early as nine o'clock in the morning, and it is quite impossible to form an exact estimate of the number of spectators who assembled together to do honour to QUEEN VICTORIA, but we think that nothing less than several hundred thousands lined the passage followed by the Royal Family. Triumphal arches, festoons of evergreens, and flags could be seen everywhere. Add to that, most magnificent weather, and you will have an idea of the glorious appearance of that part of London, on the 12th of May last.

No such gathering had been seen since the Jubilee celebration. Shortly after noon the appearance of the six carriages forming the Queen's procession was signalled by a flourish of trumpets from the Queen's trumpeters. The first four carriages, preceded by an escort of Life Guards, contained the Equerries, the Lords and Ladies in Waiting, and the Court officials. Then came a carriage containing Prince Christian and Prince Henry de Battenberg. A body of Life Guards, followed by the Australian, Canadian and Indian troops, preceded the Queen's state carriage, drawn by six cream coloured horses. Her Majesty, who appeared to be in excellent health, was dressed

in black, as usual. Opposite her, were Princess Christian and Princess Henry de Battenberg. Another body of Life Guards followed the Imperial carriage. Their Royal Highnesses, Prince of Wales, Duke of York, Duke and Duchess of Edinburgh, Princess May, and Duke of Connaught who had gone in advance, received Her Majesty on her arrival at the Institute.

Her Majesty took her seat at the north end of the Hall. On each side were placed chairs for the Royal Family, the Indian Princes, and the high Dignitaries.

Opposite were the guests, among which could be seen many well-known celebrities, civil and military. After the usual ceremonies, the Imperial Institute was declared open by Her Majesty.

The Imperial Institute, a magnificent building, nobly carried out by the architect, Mr. Colcutt, has been built with the contributions made to that effect by private individuals, in honour of the Queen's Jubilee.

The foundation stone of this great building was laid five years ago, by Her Majesty on the occasion of her Jubilee. Its object is to bring the Colonies into closer touch with the mother country, by friendly and commercial intercourse, by the exhibition of the raw materials and manufactured products of England and its Colonies, by the advancement in every possible way of trades, handicrafts, etc. The Institute will form a kind of international club for colonists and others visiting England, where information may be easily gained and good fellowship promoted. In fact, it will be the Colonies' Palace of Commerce, Art, and Industry, a fit homage rendered by the nation to Her Most Gracious Majesty, Queen Victoria.

On the evening of the 17th, a grand reception was held by His Royal Highness, the Prince of Wales. The guests numbered over 15,000, including all the Fellows, the guests invited on the day of opening, the members of the London County Council, the London School Board, the London Corporation, the mayors, provosts, and town clerks throughout the country, and about 1,000 officers of the Army and Navy. An immense buffet had been placed in the north gallery, at which guests were supplied with all kinds of wine, fruits, and other refreshments. As far as possible, the articles supplied at the buffet were obtained either from England or from the Colonies. It was a grand success.

WORLD'S
COLUMBIAN EXHIBITION.

On the 1st of May, President Cleveland inaugurated the Chicago Exhibition and delivered a remarkable speech on that occasion, chiefly in praise of Labour and Peace.

It was a magnificant ceremony all through. Over three hundred thousand spectators assisted at this solemn inauguration. An orchestra of 1,200 performers played National tunes all the while.

The Duke of Veragua, direct descendant of *Christopher Columbus,* and his wife, assisted at the ceremony as special guests of the American Government, and were much cheered.

The Austrian, English, German, and French Exhibitions were much admired by President Cleveland and suite.

The German Exhibition which was nearly completed was inaugurated by President Cleveland on that day.

In general, the foreign exhibitions were more advanced than the American sections, but it was hoped that all of them would be completed during the month.

Mrs. Palmer inaugurated the Ladies' Exhibition, and in her speech she said that special thanks were due to Queen Victoria, to the Empress of Russia, to the Queen of Italy, to the Queen Regent of Spain, and to the Committee of the Belgian ladies for the great help and interest taken by all of them in that part of the Exhibition.

The Duchess of Veragua replied in the name of the Spanish ladies, Countess Piazza in the name of the Italian ladies, and Princess Schakowsky in the name of the Russian ladies.

"The Ladies' Section," said Mrs. Palmer, "proves that the talent is not the privilege of one sex alone."

On the 15th, the Women's Congress was opened in the of Hall Columbus, in the new Art Institute. Nearly seventy organisations composed exclusively of women, and many hundred societies and associations were represented, the number of participants in the Congress being over 5,000.

The Countess of Aberdeen, Miss Jane Cobden, and the most prominent of Women's Rights representatives in America occupied seats on the platform.

Addresses were delivered by Marie Stromberg (Russia), Miss Unwin, Mrs. Fenwick Miller and Marie Fisher (England), Isabelle Bogelot, and Cécile Ranoz (France), and by other delegates from Canada, South America, etc.

On the 16th, twenty different conventions were in session.

The French Section of Fine Arts attracts a great deal of attention. On the 9th, a banquet was given by Mr. Roger Ballu, the principal French Commissioner of Fine Arts, to the Officers of the Chicago Exhibition, the foreign Commissioners of Fine Arts, artistic notabilities, and others.

The Japanese Exhibition is also much admired.

Much remains to be done; but even as it is, months would be required to see all the marvels accumulated in the Exhibition.

It is a great pity that such a wonderful display should have such an ephemeral life.

During the six months of its existence there is scarcely time enough to study conscientiously only those peculiar branches which interest most.

The Chicago Exhibition occupies about ten times more space than the last Paris International Exhibition of 1889. Those who saw the Paris Exhibition will know what that means.

The Palace of the Administration is in the centre. It is a wonderful structure and one of the great attractions of the Exhibition. It cost very nearly one million of dollars, or £200,000. All the buildings are distributed right and left of that palace. On the right, the Palaces of Mines and Electricity, two colonial structures. Further on, the leviathan of all, or Palace of Manufactures and Liberal Arts, the centre of which is occupied by England, France, Germany, and United States. Then comes the Palace of Music where 7,000 spectators and over 2,000 artists can be easily seated.

Opposite the Palace of Liberal Arts is the Palace of Agriculture, another colonial structure, and so many others that it would fill several pages of this journal to give their names. I shall only mention the Horticultural Palace, the Women's Palace, the Federal Government Palace, the States Buildings, the Foreign Palaces, and the gigantic Aquarium.

In the place called Midway Plaisance, two hundred yards wide, and over one mile in length, are concentrated the places of amusement and the curiosities of the Exhibition, such as: —A captive balloon, Algerian, Indian, Austrian and Tunisian villages, Japanese bazaars, Panorama of the Alps, Dutch sledges, Pompeian house, Temples, etc., etc. On the lake can be seen crafts of all descriptions, from an Indian canoe to a man of war, and it will certainly be one of the greatest attractions of the Exhibition. Restaurants and drinking stalls are to be seen everywhere, so it is to be hoped that visitors will not experience the unpleasant feeling of thirst and hunger, as happened several times to the visitors of the last Paris International Exhibition, who could not get, inside the grounds, a glass of wine, or a piece of bread, for love or for money.

The Humming Bird has been one of the first Journals which, from the beginning, has had the greatest and most constant faith in the complete success of the World's Columbian Exhibition. It has constantly kept its readers well informed of all the doings of the directors and officers of the administration; of all the preparations made by American, European, and other foreign countries to appear at the Fair at their best; and the Editor is very happy to say that everything has come to pass exactly as announced. It is the grandest and finest Exhibition ever held, and it does great credit to all those who, in one way or another, have contributed to it.

The North Americans can be justly proud of their glorious achievement in commemoration of the four hundredth anniversary of the discovery of America, by Christopher Columbus.

How far it will prove an European success, time will show, because for want of habit of travelling, it is much less easy for Europeans to go to America than for Americans to come to Europe; but what is certain, is, that it will be a *colossal American success*, and that Europeans will be seen this year in America in greater numbers than ever before, and we hope that such a friendly and peaceable intercourse between all the nations of the World at the Fair, will do more for the maintenance of PEACE than all the armaments of the World. [ED.]

The Queen-Regent of Spain has conferred a sufficiently large pension on Don Cristobal Colon, Duke of Veragua, to keep him from want, and even to enable him to maintain some of the position of his rank. It will be remembered that this great Spanish nobleman, who is the principal lineal descendant of the discoverer of America, was declared bankrupt, and his possessions sold by auction, a few days after the recent Columbus celebration in the United States. He was Minister of Marine in Don Sagasta's Cabinet.

Mr. John D. Rockefeller, the Standard Oil Company millionaire, has made an additional donation of $1,000,000 to the University of Chicago.

Mr. Phil Armour, a Chicago millionaire, left for Europe somewhile ago, and after his departure it was learned that he had made a gift to the city of a splendid five-storey building, which is to be called the Armour Institute, for manual training in science and art. Mr. Armour gives an endowment of $1,400,000 to maintain the establishment.

ANVERS INTERNATIONAL EXHIBITION.

In May, 1894, will be opened an International Exhibition at Anvers, Belgium.

All those willing to participate in it can communicate directly with the Belgian Consuls in England and in other countries, who will give all the required information to intending exhibitors.

ROYAL INSTITUTION.

A series of scientific lectures is being given at the above Institution by the well-known lecturer and ornithologist, Mr. Bowdler Sharpe, of the Zoological Department of the British Museum. In the two lectures already given, Mr. Sharpe has treated principally of the extinct species, and the geographical distribution of Birds. Very good diagrams of fossil and of rare birds were shown. We wish all success to Mr. Sharpe for these popular lectures.

DESCRIPTION OF ONE SUPPOSED NEW SPECIES OF CETONIA, FROM SYRIA.

CETONIA DELAGRANGEI, N. Sp.

C. delagrangei, supra vividi-aurata ; capite crebre punctulato ; thorace subtuliter punctulato; scutello loevi ; elytris fortiter punctatis ; infra metallico violacca ; tibiis tarsisque, violaceo tinctis ; antennis rufis.

Length, $\frac{1}{2}$ to $\frac{3}{4}$ of an inch.

Habitat.—Akbes, Syria.

Head and pygidium metallic-coppery, strongly punctured, thorax, scutellum and elytrae golden-green with coppery reflections in certain lights, especially on the thorax and on the margins of the elytrae, the thorax is very minutely punctured all over, the scutellum quite smooth, the elytrae strongly punctured all over with only a vestige of two white lines on each elytrae, one external at about two-thirds of its length, the other internal slightly lower ; undersurface dark metallic violet, tibiae and tarsi of same colour, darker on tarsi. I have some specimens with the thorax metallic coppery and others entirely metallic coppery.

This new species is closely allied to the well-known *Cetonia aurata,* but is much smaller and much brighter in colouration. The white markings of *C. aurata*, scarcely exists at all in this species. Some specimens have no trace whatever of them. It is a beautiful insect, finding its place between *C. aurata* and *C. affinis.*

I have much pleasure in dedicating this new species to its discoverer, the well-known Syrian collector, Mr. Delagrange.

I have also a fine series of what may be a variety of this species, but in the doubt, I give the description below, and propose the name of *Cetonia syriaca* for it, if it should prove to be a distinct species.

Head, thorax, scutellum and elytrae, brilliant metallic dark green, with golden reflections in certain lights ; undersurface, including pygidium, tibiae, and tarsi, dark bluish-purple. On some specimens one small white mark is seen on the external margin of the elytrae, on others none.

Habitat.—Akbes, Syria.

It is a beautiful insect.

The Humming Bird.

HOW ANIMALS ARE PROTECTED AGAINST THEIR ENEMIES.

The most casual observer cannot fail to be interested in the wonderful manner in which all classes of animals, from the largest quadruped to the smallest insect, are protected against the various enemies which seek to destroy them, and the study of this subject is a source of never-ending delight to the naturalist, or, indeed, anyone who is embued with a true sense of the lessons to be learnt from the wonders of nature. It will be seen at once that those animals which are not endowed with strong teeth, claws, or other weapons of defence against their foes, always have some peculiarity of shape or colour which conceals them by harmonizing with their surroundings, and thus guards them, to a certain extent, from the attacks of those predatory creatures into whose clutches they would otherwise easily fall. And this is as it should be, for, if those carnivorous animals whose natural food they are, were able to find their prey too easily, they would destroy for the love of slaughter, even after the pangs of hunger were satisfied. But as it is, predatory animals are obliged to use a large amount of cunning and energy in hunting their victims down, and therefore they do not as a rule kill more than are absolutely necessary to satisfy the cravings of the stomach. Thus is the balance of Nature evenly preserved, all species of animals maintaining their proper proportions to one another. At the same time, we must not forget that the same resemblance to surrounding objects which conceals many animals from their stronger foes, serves them also as a means of more successfully hunting those weaker creatures upon which they in their turn prey.

Anyone who has seen the Hippopotami in the Gardens of the Zoological Society of London must have been struck by the resemblance these huge animals bear to half-sunken rocks, when laying quietly in the small lake which is attached to their house, with only part of the back and top of the head

showing above the surface. This, and their power of sinking noiselessly when alarmed, affords them, no doubt, a means of concealment from the hunter. A somewhat similar case in point is seen in the Crocodiles and Alligators, which look exactly like dead logs laying in the water, especially in their native haunts, when they are surrounded by slime, water-plants, fallen trunks of trees, etc. A curious means of defence, familiar to everyone, is that of the Hedgehog, which, besides having its body covered with spines, has the power of rolling itself into a ball when attacked, entirely concealing its head and legs (which, with the belly, are the only parts not protected by the spines), and thus becoming nothing but an impenetrable prickly ball. The "fretful porcupine" is another animal protected by spines, these latter being, however, much longer than those of the Hedgehog; it also differs from the latter by being unable to roll itself into a ball. There are several other animals besides the Hedgehog which possess this power, one of the principal being the Armadillo, a little animal from South America, which is covered with a kind of bony armour on the upper parts of the body and head, and by this means is, when rolled up, as secure from danger as the Hedgehog. There is also a species of woodlouse called the Armadillo, which is frequently met with in England, under the bark of decayed trees, etc., and is armour-plated like the mammal referred to above, rolling itself into a little ball like a black pill when disturbed. Indeed, it is said that the old-time doctors used to have great faith in their virtues as pills, and dried them for the purpose, administering them, along with their powdered snake-skins and other equally delightful prescriptions, to their confiding patients.

An interesting instance of nature's protection is afforded by the Stoat, or Ermine *(Mustela erminea)*. This animal is reddish brown in summer, which colour harmonizes well with the undergrowth in which the creature lives. But, being an inhabitant of northern countries, where snow lies on the ground during part of the year, its summer dress becomes too conspicuous amongst its white surroundings, and its colour then changes to white, which, while effectually concealing it from its foes, at the same time enables it to approach, unseen, the small mammals and birds upon which it feeds. It is while it wears this winter coat that it is called the Ermine, and it is then hunted for its skin, which is highly valued. Among birds, the Ptarmigan *(Lagopus vulgaris)* is one which changes its colour in the same manner as the

Stoat, its plumage being composed of various shades of brown, grey, &c., during the summer months, like other birds belonging to the grouse family, and then turning pure white in the winter. The Reindeer is an inhabitant of countries which are under snow for the greater part of the year, like Lapland, and these countries being also the home of thousands of hungry wolves, which are the worst enemies of the Reindeer, the latter would be in constant danger were it not for the large size and peculiar formation of his hoofs, which are cloven like those of other deer, but which are very large and which, moreover, spread apart over the snow instead of sinking into it, enabling the animal to travel at great speed, and thus escape its enemies. Antelopes, living as most of them do in countries which are infested with the larger Carnivora, besides being much hunted by the natives for their flesh, skin, &c., would be in great danger of extermination were it not for their fleetness of foot, which is greatly aided by their lightness and elegance of build.

Almost all animals which are gregarious, *i.e.,* travel or feed in herds or flocks, appoint some of the oldest and most experienced among them to act as sentinels and give warning of the approach of an enemy. The Baboons of Africa are an example, and, if attacked by a Leopard or other foe, the old males will not hesitate to give battle to the enemy, so as to keep him at bay whilst the females and young escape. Wild Horses, when attacked by wolves, usually form themselves into a circle, with their heels outwards, and woe be to the imprudent wolf who ventures within reach of their hoofs.

A curious instance of protection for the young is afforded by the Marsupials, or Pouched Animals, of which the Kangaroo is a familiar example. The females of these remarkable creatures, as all visitors to the Zoological Gardens know, have a pouch in front of their bodies in which the young are reared, and to which, after they are old enough to run and feed themselves, they retreat when alarmed. It is a most interesting sight to see the pretty little animals protrude their bright eyes and pointed ears from their mother's pouch, and cautiously emerge, hastily scrambling back again at the least alarm.

Nearly all birds which live much on the ground, such as larks, partridges, quails, etc., are dull in colour, the various browns and drabs which are the usual hues of their plumage being the most indistinguishable among grass and undergrowth, and these birds usually sit very quiet on the approach

of danger, preferring to trust to the assimilation of their plumage with the surrounding objects than to their powers of flight. The females of most birds are of a dull colour, as, if they wore the brilliant dress which a large number of the males do, they would easily betray the whereabouts of their nests. This is especially the case with birds like the peacock and pheasant.

There are probably no animals which are more effectually concealed from their enemies than the toads and frogs, especially the former, for although many of them are brightly coloured underneath, in most cases they are dark on the upper parts of the body, and they usually make a small depression in the ground and lay flat in it, when, their backs being on a level with, and of a similar colour to the earth, they are extremely difficult to distinguish. Those species which inhabit swamps, marshes, etc., are usually of a greenish colour, like the slime and ooze in which they live, the only thing brilliant about them being their beautiful eyes, which often betray them to the practised eye of the collector.

Among fish, the flat-fish, such as plaice and soles, are about the most defenceless, being comparatively slow in their movements, but to compensate for this defect they are able to hide themselves very effectually. As everyone knows, they are brown on one side, which most people call the back, and white on the other, commonly supposed to be the belly. But a close examination of the position of the intestines, mouth, fins, &c., will show that these fish lie on one side, the eyes being the only organs which are in a different place to those of other fish, as they are both on the uppermost side. These fish lie at the bottom of the water, the brown side uppermost, and often covered with sand, the only parts visible being the mouth and eyes; these latter are rather prominent, so that they remain above the sand when the fish has the rest of its head buried beneath it, and he is thus enabled to watch all that is going on above him while lying securely hidden. It is only necessary to visit the Fish House at the Zoological Gardens to verify this, as there are usually several buried beneath the sand at the bottom of their tank there. A remarkable means of protection is that of the Torpedo Fish and the Electric Eel *(Gymnotus)*. The former is a member of the ray, or skate family, and has the power of giving very severe electric shocks to anyone who touches them.

The Electric Eel is common in rivers in many parts of South America, where they are said to grow to the length of

six feet, and to be able to give a shock strong enough to stun a horse. However that may be, I had ample opportunities of observing two of these fish at the Insect House, Zoological Gardens, in 1885. They were only medium sized specimens, but they could give a somewhat severe shock, as I have myself experienced, causing a most unpleasant sensation and momentarily paralyzing the arm sometimes, as they were apparently able to regulate the strength of the shock. Nor is it necessary to touch them in order to receive a shock, as they could send a current of electricity through the water, though I was unable to ascertain to what distance. They also make use of their wonderful power to obtain their food, which consists of small fish, &c. They have very small eyes, and are by no means active, therefore they would soon starve were it not for the aid of their electrical apparatus. The two specimens referred to used to have small roach, carp, and other fish for their food, which, of course, were given them alive. As soon as the eels became aware of the presence of their prey, they would send several electric currents through the water, which would cause the fish to float, dead or stunned, upon the surface. The eels would then feel about with their mouths, their eyesight being, as I have said, very poor. As soon as they felt a fish they would seize it voraciously and swallow it whole. I noticed an interesting circumstance one day, which shewed that they must possess a certain amount of reasoning power. A small perch had inadvertently been given them among the other fish, and when one of the eels seized it, he turned it round so as to swallow it head foremost; had he tried to dispose of it tail first, the fins, which are very spiny in the perch, would have stuck in his throat and choked him. The most remarkable point about this incident was that they never troubled how they swallowed the carp, roach, etc. I do not think they gave very strong shocks as a rule while feeding, as on several occasions I took apparently dead fish out of the water, and on putting them into a bowl of fresh water they gradually came too and swam about as lively as ever. I saw these two eels only last June alive and well, and with a notice over their tank intimating that visitors who pay one shilling to the keeper are entitled to receive an electric shock from these extraordinary fish.

But it is among insects that we find the most wonderful instances of protection and disguise against their foes. Their enemies are so numerous, including mammals, birds, reptiles, fishes, and even the stronger members of their own

class, that it is only the extraordinary means of concealment which many of them possess, combined with their remarkable fecundity, that stands between them and total extinction. As it is, however, they are enabled to hold their own with such success as to greatly out-number the remainer of the animal world. No doubt birds are the greatest destroyers of insects, especially when the latter are in the larval state, as almost all birds, even the seed-eating species, feed their young on insects. As a means of protection against these destroyers, a large number of insects lay their eggs either in the ground or in the future food-plant of the young larvæ. Among the former are the cockchafers and grasshoppers. The cockchafer is fearfully destructive when in the larval stage, as the grub lives under the ground, where it is comparatively safe from the attacks of birds, feeding on the roots of plants and doing enormous damage to growing crops. It is for this reason that rooks, starlings, and other birds follow the plough, in order to find these and other grubs which may have been turned up with the soil. Consequently, these useful birds should never be destroyed, but, on the contrary, should be encouraged as much as possible. The weevil, a small beetle belonging to the family of *Curculionidæ,* is another insect which, unfortunately for the farmer, is well concealed from its foes when in the larval state. The eggs are laid in grains of corn, and the larvæ hatch and feed in security, causing immense destruction on account of their numbers. Another beetle which lays its eggs so that the young grubs find themselves in the midst of their food on hatching, is the Burying Beetle, which, however, is not injurious to farmers. On finding the dead body of a mouse, small bird, or something of the kind, these insects bury it in the earth. and then lay their eggs in it. Among the larvæ of Lepidoptera may be found some of the most interesting examples of the subject of this paper. The larvæ of a large number of species belonging to the family of *Vanessidæ* feed on nettles, thistles, and other plants which are more or less spiny or hairy; in order to conceal them as much as possible, these larvæ are covered with branched spines, which look very formidable, but which, however, are quite soft and harmless. The pupæ of the same insects hang by their tails from the stems, etc. of their food-plants, and from a little distance look exactly like dead leaves which have shrivelled up.

The larvæ of a remarkable North American butterfly, *(Limenitis disippus),* are curious from the fact that in

colour and shape they resemble the excrement of a bird, so much so as to deceive even the most experienced eye; indeed, I should think that even the birds themselves were mislead, so extraordinary is the similarity. They spend about three weeks in the larval stage, and eleven or twelve days as pupæ. The Leaf Butterflies *(Kallima)* of India are brightly coloured on the upper side of the wings, but quite sober in hue underneath, and they look exactly likebrown leaves when the wings are closed, the middle vein of the leaf being represented by a dark line extending across both wings, which are also marked with blotches and spots, just like a leaf commencing to decay. Each hind wing is elongated into a kind of tail, which, when the butterfly is in repose, rests against the stem of the plant on which the insect is sitting, and thus resembles the stem of the leaf. They are very variable in colour on the underside, all shades from yellow to dark brown being found, and no two specimens are exactly alike. One of the most difficult British pupæ to find is that of the Puss Moth *(Dicranura vinula),* on account of the shape and colour of the cocoon. When the larva is about to undergo its metamorphosis it selects a comfortable crevice in the bark of the poplar or willow tree on which it has been feeding. It then bites the bark away in small chips until it has made a slight hollow, a little longer and broader than itself; then, with the aid of a gummy secretion, which it possesses in lieu of the silk with which most larvæ of Lepidoptera are provided, it proceeds to glue together the chips of wood which it has bitten away, until it has built an oval shaped dome over itself, which soon hardens with exposure to the air, becoming almost impervious to the sharpest knife. During the winter months the cocoons get discoloured, and often covered with lichens, etc., so as to be indistinguishable from the bark of the tree. If comfined in a box, it will compose its cocoon of cardboard or whatever substance the box is made of. This larva is also interesting from the fact that it has two so-called tails on the extremity of the body, which are in reality whips for driving away ichneumon flies. When it feels one of these flies alight on its back, for the purpose of laying its eggs in the caterpillar's body, the larva protudes these curious organs from the sheathes in which they are encased, and uses them as whips to drive its foe away.

Countless other examples could be added to those already enumerated, such as the snail, which has a shell into which it retires when threatened with danger; the cuttle fish, which

discharges a black fluid into the water to darken it and thus cover its retreat; the hermit crab, which lives in the old shells of whelks, etc., but it would fill many volumes to mention all of them. In fact one may say that every animal has some special protection, or disguise, to guard it from the dangers which beset it. Moreover, there are always fresh points of interest to be discovered in this connection, and there is a wide field of study and research still left open for every lover of natural history.

W. F. H. ROSENBERG.

ABUNDANCE OF WASPS.

The extraordinary hot and dry weather which has been experienced this year in Europe, has been partly injurious to the crops of cereals and grasses; but, as a compensation, it has been extremely favourable to all trees and plants bearing fruit.

The quantity of fruit has been so large this year, that everywhere can be seen trees, so overloaded with them, that many of their branches not being able to support such a weight, lie broken on the soil.

The year 1893 will always be remembered as an exceptional year in that respect. The Vines are in the most flourishing condition as to quantity and quality, and it is now certain that this year, the wine will be of an exceptionable good quality.

But what is of greater interest to the Zoologist, is the prodigious number of Wasps, which can be seen everywhere in the orchards. Millions, or better say milliards of them are feasting on fruits, and it is a great task, for gardeners and others, to preserve their crops from these insects. From where did all these insects come from, precisely at a time when there is such an abundance of fruit, is more than we can say? It is one of those mysterious doings of NATURE, which we can well admire, but not so easily explain? [ED.]

BOUCARD, POTTIER & CO.,

Naturalists and Feather Merchants,

225, HIGH HOLBORN, LONDON, W.C., ENGLAND.

MESSRS. BOUCARD, POTTIER and Co. offer to sell on commission. Objects of Natural History, Collections of Mammals and Birds, Skins, Skeletons, Human and Animal Skulls, Insects of all orders pinned and set, or in papers; Marine, Fresh Water and Land Shells; Reptiles and Fishes in spirit; Crustaceæ and Arachnidæ in spirit; Ethnological Collections from all parts; Showy Bird Skins and Feathers for Plumassiers and Naturalists; Mammal Skins for Furriers; Bright species of Insects for Artificial Florists; Rare Old Stamps, used and unused; Curios of all sorts; Pictures and Works of Art, etc., etc.

All possessors of such objects should not dispose of them without consulting Messrs. Boucard, Pottier and Co., who having a large connection with Amateurs in all parts of the world, are able get the very best prices for them.

FOR SALE

About **6,000** species of Birds, **30,000** species of Coleoptera and Lepidoptera, Mammal Skins, from New Guinea, West Africa, South America, etc.; Land, Fresh Water and Marine Shells, *a large number of species:* Reptiles and Fishes in spirit; Crustaceæ, dried and in spirit; Insects of all orders; Skeletons; 5,000 different varieties of Postage Stamps, etc., etc.

A very fine collection of Shells, especially rich in LAND SHELLS, and containing *many types* and *new species*, about 40,000 specimens. For Price, etc., apply at 225, HIGH HOLBORN, LONDON, W.C.

STANDS, NEW STYLE.

No. 1.	For Humming Birds and Small Birds	at 20s. per hundred
„ 2.	For Small Birds, up to Tanagers	at 24s. „
„ 3.	For Tanagers up to Magpies	at 28s. „
„ 4.	For Magpies up to Crows or Small Hawks	at 32s. „
„ 5.	For Small Hawks to Large Hawks and Owls	at 40s. „

ARTIFICIAL EYES.

BLACK *Per Gross.*	COLOURED.	CORNERED. *Per Dozen Pairs.*	CORNERED AND VEINED. *Per Dozen Pairs.*
No. 1 to 4 6d.	1s. 6d.	No. 4 to 6 3s. 6d.	4s. 6d.
„ 5 to 8 8d.	2s. 6d.	„ 7 to 9 5s. od.	6s. od.
„ 9 to 10 1s. od.	4s. od.		
„ 11 to 13 2s. 6d.	7s. od.	„ 10 to 11 8s. od.	10s. od.
		„ 12 9s. od.	11s. od.
	Per Dozen Pairs.		
„ 14 to 16 3s. 6d.	2s. 6d.	„ 13 to 15 13s. od.	15s. od.
„ 17 8s. od.	3s. od.	Larger Sizes can be made to order.	
„ 18 12s. od.	4s. od.		

UTENSILS FOR COLLECTING, Etc.

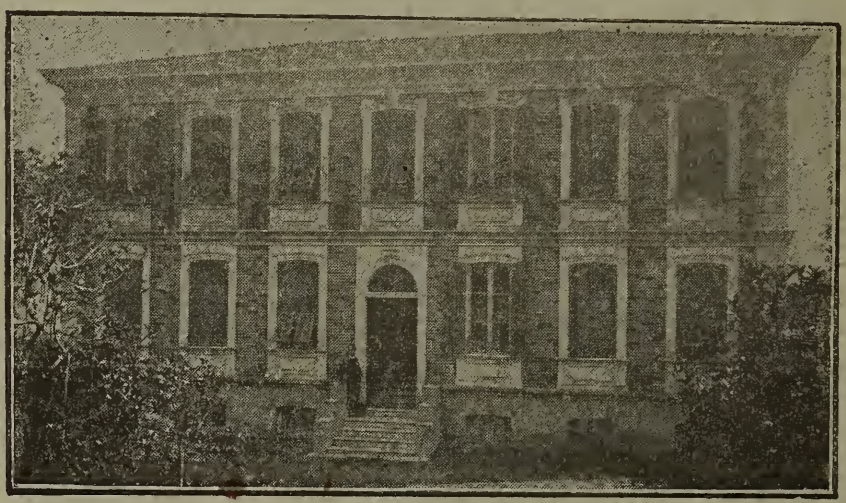
Bicarbolic Acid	quart 2/-
Rectified Benzoline	„ 2/-
Boucard's Insecticide	lb. 4/-
Collecting Corked Box	from 1/- to 5/- each
Pocket Corked Box	from 2/- each
Corked Box for Museums	from 24/- to 36/- doz.
Botanical Box	from 2/6 to 6/- each
Pin Box, with 1,000 pins	3/-
Collecting Bottles with large opening	from 6d.
Boucard's Tin Collecting Box, with two partitions	2/-
Straight Scissors	from 2/-
Curved „	„ 2/-
Taxidermist Knives	„ 1/6
Long Forceps	„ 3/-
Small „	„ 1/-
Insects' Nippers	„ 1/6
Sieve	„ 2/-
Blowpipe for cleaning eggs ..	„ 2/-
Digger	„ 2/-
Folding ditto	„ 6/-
Insect Pins. English, French or German	...from 1/6 per 1000
Setting Boards	from 1/- to 2/- each
Butterfly Nets complete	„ 1/6 to 5/-
Sweeping and Water Nets	from 2/6 to 10/-
Cork in Sheets	from 3/- doz.
Magnifying Glasses ..	from 1/- to 5/-
Hammers	„ 1/6 to 5/-
Naphthaline	„ 4/- per lb.
Botanical Grey Paper ...	„ 6/- ream
Folding Umbrella for collecting Insects	from 10/-
Cutting Pliers	„ 2/-
Flat Pliers	„ 2/-
Arsenical Soap	„ 2/- per lb
Glass Tubes	„ 1/- doz.
Taxidermist Case, containing 1 Pair of Scissors, 2 Knives, 1 Lime, 1 Grater, 2 Pliers, 1 Hammer, 1 Pair of Forceps, 1 Brush, 3 Gimlets, etc. complete	from 12/- to 40/-

TO BE SOLD OR EXCHANGED,

For Properties of equal value in London, Brighton, or the Isle of Wight,

SEVERAL PROPERTIES AT SAN-REMO,

The Celebrated Winter Resort on the Riviera, 40 Minutes from MONACO.



VILLA MARIA LUIGIA.

Three Villas, known as *Villa Maria Luigia*, and *Villas Rondo:* the first one, detached with a beautiful garden of 2200 square yards; the last, semi-detached with front and back gardens. Villa *Maria Luiga* consists of three floors, with fifteen fine room, offices, kitchen, etc. Ten of the rooms are full south, facing the sea.

Villa *Rondo* n° 25, corso Garibaldi, consists of two floors, with nine rooms, kitchen, office and cellar. N° 27 has two kitchens and two more rooms on the underground floor.

Villa *Maria Luigia* and *Villa Rondo* n° 25, the smallest, are actually let unfurnished, 3800 francs per annum, for several years.—Villa Rondo n° 27, is also let at 1400 francs per annum. Furnished, they will produce between £400 amd £500 per annum.

All applications to be made at Mr. Boucard's, 225, High Holborn, London, W.C. (England), where photographs of the Villas can be seen.

JUST ARRIVED.

A very interesting collection of Beetles and Butterflies from Syria. Another of Beetles and Butterflies from Haiti (Antillae). It contains some very fine species of Buprestidae and Curculionidae, and one rare species of Gymnetis. Collections of Coleoptera from Java and Japan. Large collections of Butterflies and Moths from Assam and Japan. Several interesting collections of Bird skins from Japan, British Guiana, Borneo, Gaboon, Congo, Guatemala, etc., etc. Specimens of Ceriornis caboti, and other rare species of birds. A collection of shells from Australia, and many others, also Australian Echidnae, in spirit, which can be seen at the

Naturalists' Agency, 225, High Holborn, London, W.C.

Pardy & Co., General Printers, 8, The Triangle, Bournemouth.

Vol. III. Part IV.] DECEMBER, 1893. [Price 2/6.

The Humming Bird

A QUARTERLY

SCIENTIFIC, ARTISTIC AND INDUSTRIAL REVIEW

EDITED BY

A. BOUCARD.

Arinia Boucardi

Annual Subscription: United Kingdom, Europe, N. America and Canada, 10/- *All other Countries,* 12/-

Vol. I. and II., complete, 10/- each.

Published by A. Boucard, 225, High Holborn, London, W.C.

BOUCARD, A., Works by :—

GUIDE POUR RÉCOLTER PRÉPARER ET EXPÉDIER DES OBJETS D'HISTOIRE NATURELLE, Brochure in 8vo., 32 pages, Rennes, 1871 ... ... 1/-

The same in Spanish 1/-

NOTES SUR QUELQUES TROCHILIDÉS, Brochure grand, in 8vo., 16 pages, Lyon, 1873 ... ... 1/6

HAND-BOOK OF NATURAL HISTORY, 2nd Edition, Vol. in 8vo., 234 pages, profusely illustrated with Woodcuts, London, 1874 ... ... 4/-

COLOURED DIAGRAMS OF NATURAL HISTORY, 2nd Edition, 20 sheets, 18in. by 24in., comprising 166 Diagrams of typical animals and plants, natural size, and 37 natural typical specimens of woods, and minerals, all neatly mounted on strong card-board 40/-

The same, varnished 45/-

NOTES SUR LES TROCHILIDÉS DU MEXIQUE, Brochure grand in 8vo., 16 pages, Lyon, 1875 ... 1/6

MONOGRAPHIC LIST OF THE COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF SEVERAL NEW SPECIES. Pamphlet, in 8vo, with coloured plate, illustrating five new species ... 4/-

The same, with black plate 2/6

CATALOGUES AVIUM HUCUSQUE DESCRIPTORUM, 1 Vol. in 8vo., cloth, 352 pages, 2546 genera, and 11,031 species recorded. London, 1876. A useful book for Museums and Ornithologists. Price reduced to 10/-

The same, with French preface 10/-

The same, interleaved with blank sheets of paper, French or English preface 12/-

NOTES ON PHAROMACRUS COSTARICENSIS. Pamphlet 4to, 8 pages. Brighton, 1877 ... ... 4/-

ON BIRDS COLLECTED IN COSTA RICA, by Mr. Adolphe Boucard. Pamphlet in 8vo, 72 pages, with coloured plate of ZONOTRICHIA VOLCANI. Boucard, London, 1878 ... . 4/-

The same, with black plate 2/6

NOTES ON SOME COLEOPTERA OF THE GENUS PLUSIOTIS, WITH DESCRIPTIONS OF THREE NEW SPECIES FROM MEXICO AND CENTRAL AMERICA. Pamphlet in 8vo, 4 pages, with coloured plates, illustrating fine species, P. RODRIGUEZI, BADENI, BOUCARDI, MNISZECKI, and PRASINA 4/-

The same, with black plate 2/6

NOTES SUR LES OBJETS EXPOSÉS PAR LA RÉPÚBLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1878, Brochure in 8vo, 32 pages. Paris, 1878 1/-

LISTE DES OIREAUX RÉCOTTÉS AU GUATÉMALA EN 1877, PAR M. ADOLPHE BOUCARD, Brochure grand, in 8vo, 48 pages. Lyon, 1878 ... ... 2/6

DESCRIPTIONS OF TWO SUPPOSED NEW SPECIES OF SOUTH AMERICAN BIRDS. Pamphlet, in 8vo., with coloured plate, figuring CHIROMACHACRIS CORONATA. Boucard, London, 1879 ... ... 2/-

The same, with black plate 1/-

DESCRIPTION D'UNE ESPÈCE NOUVELLE DE PSEUDOEOLAPTES DE COSTA RICA. Paris, 1880 ... 6d.

DESCRIPTIONS DE DEUX ESPÈCES NOUVELLES DE CICINDÉLIDES DE PANAMA. Paris, 1880 ... 6d.

ON A COLLECTION OF BIRDS FROM YUCATAN (MEXICO), WITH NOTES BY MR. OSBERT SALVIN, F.R.S. Pamphlet, in 8vo., 30 pages. London, 1883 2/6

NOTICE BIOGRAPHIQUE SUR FRANCOIS SUMICHRAST, NATURALISTE VOYAGEUR, Brochure in 8vo., avec portrait. Paris, 1884 ... ... 2/-

VISITE AUX RUINES DE XOCHICALCO (MEXIQUE). Paris. 1887 ... . 1/-

CATALOGUE DES OBJETS EXPOSÈS PAR LA RÈPUPLIQUE DE GUATÉMALA ET PAR M. ADOLPHE BOUCARD À L'EXPOSITION UNIVERSELLE DE PARIS, 1889 .. .. 1/-

CATALOGUE DES OISEAUX DE LA COLLECTION RIOCOUR. Paris, 1889 ... . 1/-

THE HUMMING BIRD. A MONTHLY SCIENTIFIC, ARTISTIC, AND INDUSTRIAL REVIEW. Vol. I. London, 1891 ... ... 10/-

Contents of Vol. I.

The Humming Bird.

NOTICE.

WITH the present Part, we close the Third Volume of the *Humming Bird*. In Volume IV. will be concluded the *Genera of Humming Birds*, and the First Volume of *Travels of a Naturalist*.

This Fourth Volume will be issued Quarterly: the First Part on the first of March, and the Fourth and last one on the first of December.

The price for Subscribers, post prepaid, will be Ten Shillings for the United Kingdom, Europe, North America and Canada; and Twelve Shillings for all other countries. The subscription for Vol. IV. is now due.

THE REDACTION.

NOTES ON WASPS.

BY A. BOUCARD.

The Wasp *(Vespa Britannica)* is an hymenopterous insect belonging to the family *Vespidae,* or family of Wasps and Hornets. The principal characters of these insects are taken from the structure of the wings. These, four in number, as in all the species of *Hymenoptera,* are folded throughout their entire length when the insect is at rest; the fore-wings have one marginal and three sub-marginal cells, with an incomplete terminal sub-marginal cell, and in all the species the neuration is the same. Some wasps are solitary in their manner of life, and these have been separated from the social species and formed into a distinct family EUMENIDAE.

The social wasps have their bodies usually black with yellow markings; they have strong and dentated mandibles, and the females and neuters have a long, powerful, and venomous sting. Their legs are unprovided with apparatus for collecting pollen. They live in societies composed of

males, females, and neuters or workers; but their communities are dissolved at the commencement of the winter. The nests in which they live, called sometimes vespiaries, are either built under ground, in holes, in banks, or attached to the branches of trees. Within these nests, which are varied in size and appearance, they construct hexagonal cells, arranged in combs like those of the bees, and in which the larvæ and pupæ are contained. A large nest sometimes contain an hundred females, and though few escape the rigour of the winter, the few that do emerge in spring commence to construct a new habitation.

The males perform no menial work, this is left to the neuters which are always the most numerous and busiest of the community. These are the architects and the soldiers; they build the nests, gather provisions, regulate the nurseries, and revenge insults. Wasps are very voracious, preying upon insects, sugar, meat, fruit, honey, etc. *Vespa Britannica* is a true wasp, and builds its nest of a thin substance like paper, but of a very fine and close texture, and suspends it from the branch of a tree.

This year, as everyone knows, there has been quite an abundance of wasps in all Europe, and many were the notices published in many of the leading European papers on these insects. Nearly all of them have stated that the wasps was one of the greatest pests to orchards, vineyards, etc. Myself, in Part III. of the *Humming Bird,* 1893, page 48, mentioned that millions of wasps were feasting on fruits, and considered them as extremely injurious insects; but since then, I have been thinking a great deal over the matter, and I have completely altered my opinion. I am not at all certain that they are so injurious as I thought. On the contrary, I think that they are very useful, and that it is chiefly due to these insects that such an abundance of fruit has been gathered this year in all Europe. I quite believe that they are the greatest auxilary of Agriculturists in destroying an immense number of parasitic, minute insects well known as injurious to fruit, and I call the special attention of the Hymenopterists and other Entomologists to what precedes. It is of such vital importance to Agriculture, that we should know with certainity, which are our friends or our enemies among the insects and other animals, that I consider that money and time could not be better spent than in trying to solve this most important point, and more especially so about the wasps when we see that in many European countries, money has been spent largely for

the destruction of these insects, when perhaps quite the reverse, is what ought to have been done. Supposing for one instant that my opinion about the utility of these insects could be satisfactorily proved, it is easy to see of what importance it is to the whole world at large, especially so, if we take into account the immense number of wasps which have been destroyed this year, by order, or by supposed friendly advices.

It is quite true that several fatal casualties, occasioned by these insects, have been made known by different newspapers; but these are only accidents, similar to many others, to which we are daily exposed, during the course of our life; and we may say that imprudences were perhaps made by the victims.

Unless man is attacked by a multitude of these insects, in trying to destroy their nests, the sting of a single wasp is not a pleasant sensation, but is not dangerous. With a few drops of pure ammonia, immediately applied on the wound, the irritation disappears very quickly; and in all my rambles over the world, I have never heard of wasps attacking man, without provocation of his part, neither seen one of these Insects stinging anyone of its own accord.

During a stay of several weeks made this year in the Isle of Wight, I have been greatly annoyed with them, when walking, bathing, and even at meal times. When bathing, they came along and wanted to rest on me (for what purpose I don't know); when walking about and in perspiration, they seemed as if they wanted to suck me; when eating fruits or sugared cakes, they swarmed round and even dared to stand on the cake or fruit which I had in my hand, and devoured part of it; and, lastly, when taking my breakfast or dinner, they ransacked what was on the table, chiefly butter and sugar.

On the 24th of August, when at breakfast, I witnessed what I consider a very interesting fact, on the voracious habits of wasps: that of a wasp hunting a common house fly, which was partly stuck in the butter. A wasp which assisted to nearly all my meals—now flying about in all directions, now partaking of the sugar, then of the bread, etc.—perceiving the fly half stuck in the butter, pounced upon, seized it, and carried it on the glass of the French window. In less than two minutes it had cut off the two wings of the poor fly, and swallowed it all. If I had not seen it, I could not have believed it.

I shall conclude my Notes on Wasps with the reprint of two principal notices on Wasps, taken from the "Petit Journal" de Paris, and "Pearson's Weekly" of London.

THE WAYS OF WASPS.

In many parts there is a regular plague of wasps. Here are some interesting facts about these pests.

I know naturalists say that the wasp has really no bloodthirsty designs in our direction, but I have not noticed this myself. Anyway, they always go for me and I always retaliate and slay them wholesale and when they are asleep if possible. In my opinion, the taking of a wasps' nest is a great and glorious occupation—if you don't get stung.

There are more wasps about this year than ever. But in 1892 there were hardly any to be found. It is easy to understand why, too, if we look into their domestic ways and habits.

At the end of each summer every "waspy," as the village lads call them, who has escaped the avenging hand of man falls into the clutches of death with the exception of the biggest females or self-crowned queens. Now upon these ladies depends the entire responsibility of propogating the species. On the death of their husbands they become torpid, and so manage to survive the cold bleak winter, which kills so many millions of their tribe.

Sometimes as many as 500 of these regal dames are produced in one nest, and if there happen to be a succession of heavy rains, the chances are that the hibernating queens are drowned in their beds. And every female carried off represents a loss of from 10,000 to 30,000 wasps the next season. And so it is easy to understand that a wet winter materially reduces the number of nests for us to take during the ensuing summer.

On the advent of spring every queen who has survived quits her snug quarters and sails out into the open air to select a suitable site for her future home.

By the side of sunny banks she flits searching for apartments. If she cannot find a decent rat hole or other subterranean passage, she starts building on her own account. As soon as the excavations are complete, or the original ones altered and improved to her majesty's taste, the problem of upholstering the establishment presents itself. Off she darts and searches diligently till she finds a tree with rotting bark, or some weather-beaten paling.

Clinging to the wooden fence or gnarled branches, as the case may be, she strips off scraps of the outside wood and gathers them in bundles, leaving behind her a pale glistening streak wherever she has passed.

She carries the fibre home and then turns it into paper-pulp; for it was Mrs. Wasp who gave us our first lesson in paper-making.

All the odd bits of vegetable matter which have been collected are mashed most carefully, most thoroughly, with a sticky secretion from her mouth, and are then plastered together into a thin film of stucco, which looks for all the world like some crumpled sheet of tissue.

A variable number of cones are connected together with scaffolding, made of this papier maché, and then a strong external wall is built, having two doors. The next operation is to form a pillar riveted to the roof of the cavern, and then the topsy-turvey lady, whose sting is in her tail, not in her mouth, begins at the roof and builds gradually down towards the foundations.

The energetic female does not complete the building of her inimitable walled citadel without assistance; and feeling the want of fellow workers, she sets to and manufactures some for her own purposes.

Every cell she furnishes with an egg, which, as time goes on, becomes converted into a grub. The maternal duties now interfere considerably with the professional ones, and bring the building operations to a standstill. The queen-builder turns huntress. She leaves her little colony to chase and capture luckless flies and other insects, which she forthwith churns into a palatable mess and retails to the little grubs.

As they are fed up in this way several times a day the ugly grublings soon begin to grow in breadth and stature, until they suddenly burst forth into full-blown wasps, and immediately begin to relieve their mother of her multitudinous duties. When they grow old enough they take the building operations entirely out of her hands and finish the great work she began so gamely.

These new-comers are neither masculine nor feminine, but neuter. They are, above all things, workers, and the mother does not let them forget it either. She allows no lazying. She sends them out into all parts of the world to collect food for the younger generations of grublings, and it is when they feel too lazy to suck the flowers and gather honey from the fields that they come into our rooms, drive us from our dinners, and browse on the jam-tarts and the fruit.

As time goes on this champion mother produces more and more grubs, and these in their turn have to build for their prospective brothers, and so the paper mansion grows bigger every day.

Then, as the summer draws to a close, the little boy and girl wasps are born. They are rather larger than the genderless workers, and have more spacious cells apportioned out to them as becomes their more exalted position in the colony. The females have a section of the nest to themselves, and are not allowed to mingle with their brothers.

Finally the young ladies and gentlemen break through the barriers which divide them and quit their homes in nuptial flight, which secures the continuance of the species, whilst the poor workers who have fed them and the mother who has tendered them so long are left behind to die.

—*Pearson's Weekly.*

LES GUÊPES.

L'été exceptionnel que nous avons eu cette année a développé dans des proportions vraiment extraordinaires l'activité de ces insectes. Le printemps qui a commencé de très bonne heure leur a permis de multiplier leurs pontes et, l'été venu, ils se sont montrés en si grande abondance qu'ils ont fait courir de sérieux dangers à nos arbres à fruits, nous ont très désagréablement incommodés nous-mêmes et ont causé de très graves accidents.

Dans quelques régions de la France, en Auvergne notamment, ils ont fait de tels dégâts dans les cultures fruitières que l'administration préfectorale a pris contre eux un arrêté. Ne riez pas. L'administration préfectorale pouvait employer sa puissance à de moindres objets.

Vous le connaissez tous cet insecte malfaisant. Vous savez qu'il est proche parent de l'abeille, mais qu'il ne fournit ni miel ni cire utilisables. Les guêpes en effet vivent souvent en nombre, mais ne forment pas de véritables communautés industrieuses. On en compte plus de cent mille espèces aussi nuisibles les unes que less autres, carnassières et féroces, ne vivant que de rapines.

Elles établissent leur nid,—leur guêpier,—un peu partout, sous la terre, dans les tiges creuses des arbres, les coquilles vides des limaçons, les trous de vieux murs; parfois leurs alvéoles sont appliqués contre une pierre on une branche d'arbre.

Le guêpier souterrain est leur guêpier de prédilection. Elles ont, comme tous les animaux de la terre, l'instinct de la

conservation très prononcé et elles n'ignorent pas qu'un nid souterrain est plus difficile à détruire qu'un nid aérien.

Il y a chez elles, comme chez toutes les espèces animales, des individus imprudents, inexpérimentés, sans souci du lendemain. Ce sont ces individus qui risquent leurs alvéoles aux branches de nos arbres. Ces guépiers-la sont faciles â détruire. Rien n'est si aisé que de les prendre, à la nuit close, lorsque les guêpes sont toutes rentrées et de les jeter au feu.

La destruction des nids souterrains présente plus de difficultés. D'abord, ce nid, il faut le découvrir. Où est-il ? D'où viennent ces guêpes dont l'aiguillon est si menaçant ? Quand nous aurons trouvé le nid, comment le détruirons-nous ?

Dans l'instruction qui accompagne l'arrêté préfectoral auquel je faisais allusion plus haut, nous trouvons réponses à ces questions. Je ne résiste pas au désir que j'ai de citer ce document, car il est instructif. Vôici d'abord le texte de l'arrêté pris par le préfet du Puy-de-Dôme :

Art 1^cr^.—La destruction des nids de guêpes est obligatoire dans toute l'étendue du département, dans toutes les propriétés closes ou non closes, dans les huit jours qui suivront la publication du présent arrêté.

Art. 2.—Les propriétaires ou fermiers devront, en tout temps, permettre sur leurs terres aux agents de l'autorité la constatation de la destruction des insects dont il s'agit.

Art. 3.—Les contraventions aux dispositions qui précèdent seront constatées par des procès-verbaux, et punies par les peines prévues a l'article 5 de la loi du 24 décembre 1888, sans préjudice de la destruction des nids de guêpes qui pourra étre opérée d'office, aux frais des contrevenants, conformément aux dispositions de l'article 4 de cette dite loi.

Notez bien ceci : la destruction des nids de guêpes est obligatoire.

C'est là évidemment une obligation qui, si elle n'est pas observée, ne donnerait pas lieu à une contravention sérieuse, quoi qu'en dise l'article 3 de l'arrêté. Mais ne pourrait-on pas la rendre pour ainsi dire effective, cette obligation, en facilitant la destruction des nids de guêpes par les moyens dont on se sert parfois pour se débarrasser des hannetons ?

Pourquoi, par exemple, ne donnerait-on pas une récompense aux destructeurs de guêpiers ? La question vaut la peine d'être examinée par nos Sociétés agricoles et, au besoin, par le ministre de l'agriculture lui même qui ne reste étranger à rien de ce qui peut intéresser son départment.

Mais revenons aux instructions qui accompagnent l'arrêté. Elles sont intéressantes et les voici :

Les moyens recommandés pour se soustraire aux dégâts causés par les guêpes consistent à rechercher les nids et à détruire les insectes avant leur départ dans les vergers et les vignes.

Pendant le jour, on doit observer la direction suivie par les guêpes lorsqu'elles emportent leurs provisions. Si l'on remarque que toutes les guêpes suivent la même direction, on peut être certain que l'on se trouve à proximité d un nid.

Le guêpier découvert (le plus souvent il se décèle par un petit tas de terre extraite par les guêpes), on plante alors une fiche à une certaine distance, et la nuit ou de grand matin, lorsque toutes les guêpes sont réunies, on se rend à l'endroit, muni d'une lanterne : on agrandit l'orifice du nid et l'on creuse jusqu'a la rencontre de son enveloppe, on la perce au moyen d'un báton, et on verse rapidement un quart de litre de pétrole ou de sulfure de carbone ; enfin, on rebouche le trou et on tasse la terre, toutes les guêpes de la colonie se trouvent asphyxiées.

Pour les nids installés dans les vieux murs, on pourra se servir d'une pompe pour faire pénétrer le pétrole ou le sulfure ; quant aux nids suspendus aux arbres, on les emprisonne, la nuit, dans des sacs de toile grossière que l'on plonge ensuite dans l'eau.

Il est à peine besoin de reeommander aux opérateurs de prendre mille précautions. Si on oubliait de boucher l'entrée du nid avoc soin et rapinement, les guêpes en sortiraient et feraient sentir à leurs ennemis que ce n'est pas pour rien que dame Nature leur a donné une arme terrible : un aiguillon.

C'est maintenant surtout qu'il faut rechecher les guêpiers si nous ne voulons pas, l'an prochain, avoir à souffrir cruellement des guêpes Voici le moment où les femelles vont se terrer pour passer chaudement l'hiver. Au commencement du printemps, ces femelles feront une premiére ponte d'une vingtaine d'œufs environ, qu'elles placeront soigneusement dans les alvéoles fabriqués par elles à l'avance. Au fur et à mesure de l'éclosion des premières larves, ces mères-guêpes construiront de nouveaux alvéoles où elles continueront à pondre tout en nourrisant leurs premiers . . . rejetons.

Quelques jours suffisent aux larves pour se transformer en guêpes. Ces guêpes sont dépourvues de sexe et sont condamnées à servir comme ouvrières dans la famille ; elles ne sont que les domestiques de la mère-guêpe. C'est pour elle et pour les nouveaux venus, les dernières larves, qu'elles

vont à la recherche de leur proie de prédilection, escarbots, chenilles ou arraignées. Et pendant trois ou quatre semaines, grâce à ce mode d'évolution, au dévouement des ouvrières, c'est par milliers qu'il faut compter la population d'un nid de guêpes vers la fin du printemps.

Si donc, au printemps et à l'été prochains, nous ne voulons pas voir sortir de terre d'innombrables colonies de ces insectes nuisibles, détruisons les nids où les femelles, dans quelques jours, vont chercher un abri pour y passer l'hiver et y pondre tout á leur aise.

—*Petit Journal.* THOMAS GRIMM.

RECTIFICATION OF NAME FOR SEMIOPTERA GOULDI.

The Bird of Paradise which I described as a new species in Vol. I. of the Humming Bird, page 47, under the name of *Semioptera gouldi,* is undoubtedly the same as what Count Salvadori has described under the name of *Semioptera wallacei* var *halmaherae.* When I made my description, I did not know that another species of Semioptera had been described. It is Doctor Kurt Lampert, of Stuttgart, who first kindly informed me of this, and I quite agree with him; especially since I have received specimens of this bird from *Halmahera.* Therefore it is the name bestowed by Count Salvadori which has the priority, and it must stand as follows:—

SEMIOPTERA HALMAHERAE, Salvadori.
Semioptera gouldi, Boucard.

ALLIGATORS.

During last year, 250,000 alligators have been killed in Florida, for the sake of their skins, which are in great demand in Europe for the manufacture of purses, bags, pocket books, shoes, etc., etc. These animals are now so scarce in that country, that alligator farming is one of the principal ressources for many of the inhabitants, and lately alligators' eggs have been hatched by incubators. The actual demand for the skins of these reptiles is very large, much in excess of the supply, so that about half the population of the villages find it a lucrative employment to explore the shores of the swamps for eggs.

The usual time required for the full growth of these reptiles is about fifty years; but when they attain this fine old age, they are usually very large and have a skin so tough that they are of very little value for manufacturing purposes. When old, it is nearly impossible to soften enough its skin for manufacturing purposes. The skins which fetch the highest prices are those from two to three years old.

In Vol. I. of the *Humming Bird,* page 83, I have already called the attention of the readers of this Journal to the farming of alligators, and the value of their skins for manufacturing purposes. Fifty years ago if such a thing had been told, that a day would come when thousands of people would find a living, and even make money with the farming of alligators, every one would have laughed at the suggestion. This shows us once more that there is scarcely anything in this world, which one day or another, cannot be turned to good account to the welfare of the community.

A. B.

Handbook of the DESTRUCTIVE INSECTS OF VICTORIA, Part II., by French.

I have just received the book entitled as above, and I congratulate heartily my friend, Mr. Chas. French, the Government Entomologist of Victoria, for its publication. It is a very interesting and useful book which ought to be in the hands of all farmers, and other persons interested in Agriculture. It consists of 193 pages of text, twenty-two beautifully coloured plates of insects, and eleven black plates figuring apparatus, and showing the way how to apply the remedies recommended by the author, concluding with a very good index.

The principal insects figured are :—

Green French Aphis *(Myzus sp.)* and its parasites.
Common garden Ladybird *(Leis conformis).*
Black Peach Aphis *(Myzus cerasi).*
The Plum Curculio *(Conotrachelus nenuphar).*
The Cherry Green Beetle *(Diphucephala colaspidoides).*
The Cottony Cushion Scale *(Icerya purchasi).*
The Oleander Scale *(Aspidiotus nerii).*
Red Scale of the Orange *(Aspidiotus coccineus).*
Orange Moth *(Hydrusa sp.)*
The Orange Aphis *(Siphonophora sp.)*

The Case Moth of the Orange *(Metura elongata)*.
Lemon Scale *(Mytilaspis citricola)*.
The Apple-root Borer *(Leptops hopei)*.
The Vine Moth *(Agariste glycine)*.
The Silver Striped Vine Moth *(Chaerocampa celerio)*.
Phylloxera or Grape Louse of the Vine *(Phylloxera vastatrix)*, two very good plates, with a great deal of information on this too much known pest.
The White Ant *(Termes australis)*.
Potato Moth *(Lita solanella)*.
The Cabbage Moth *(Plutella cruciferarum)*, and its parasites.
The Cabbage Aphis *(Aphis brassicae)*.
The Strawberry Beetle *(Rhinaria perdix)*.

The perusal of this cheap and useful book, issued at 2/6, has again reminded me that in England and in many other European countries, such appointments as Government Entomologists do not exist, at least I am not aware of their existence. Why is it so? I am quite unable to say. In my opinion, it is imperative that it should be remedied at once.

During this year, I have travelled in the country, in England as well as in France, and I have been quite astonished to see the gross ignorance of the countrymen and others about the animals useful or injurious to their crops. Of course I met with several scientists who knew a great deal about these insects, but it was of little use to them; meanwhile it is one of the most vital questions of the present time to farmers, and I really believe that the time has arrived when the heads of all the Agricultural Departments in Europe ought to take the means to publish at a nominal price, such handbooks as the present one. I will say more, these books ought to be printed extensively, and given away to all whom it may concern, and before long, a large harvest would be reaped by all those who will take the trouble to study them, and put into practice the remedies, discovered by many Scientists and Specialists, for the destruction of those pests which cause so much injury to Agriculture. It is a well known fact that in Canada, in the United States, and now in Australia, where such institutions exist, they have been the means of saving a large part of the crops of cereals and fruits grown in these countries, during the last years, and the benefits obtained have been of such a magnitude, that if expressed in pounds sterling, they would amount to several millions yearly.

A. B.

INTERNATIONAL EXHIBITIONS.

THE LATE WORLD'S FAIR.

CHICAGO, NOVEMBER 2nd, 1893.

Although the returns relating to the World's Fair have not yet been completed, it has already been definitely ascertained that the receipts cannot have fallen short of $14,000,000. The Chairman of the Finance Committee reports that all obligations have been met, and that there is a cash balance in hand of $2,500,000. It is expected that a sufficient sum will, in the end, have been received from gate receipts and salvage to pay working and general current expenses. Hence the stockholders, whose capital represented a total of $5,000,000 upon which, however, they did not expect to realise anything, will be reimbursed to the extent of 50c. per dollar. It was understood, however, that most of them would contribute their stock to the Columbian Museum, and a careful estimate shows that $1,500,000 in stock will be so presented, giving that institution, with the help of other donations and subscriptions, a working capital of over $8,000,000. The exhibits are being rapidly removed from the late World's Fair, but no immediate step is to be taken for the demolition of the buildings. —*Reuter.*

The Chicago Exhibition was closed on Monday in mourning, with flags at half-mast and without festival exercises, which would have taken place but for the murder of Mr. Harrison, the Mayor. The total number who paid for admistion during the Fair exceeds 20,000,000. All expenses have been paid, and stockholders will receive 10 or 15 per cent. of sheir subscriptions. As the stockholders never expected to be repaid, it is contended that the Fair can be pronounced a financial success—wonderfully so, considering the unprecedented amounts expended upon buidings. Chicago contributed $10,000,000 without expecting any return, this city being the chief stockholder.

INTERNATIONAL EXHIBITION OF LYON (FRANCE), 1894.

On the 1st of May, an International Exhibition, will be held at Lyon, France, the capital of the Rhône, justly celebrated for its fine manufactures of brocades, and all silky

textures. The Directors have done wonders to attract Exhibitors and Visitors to their fair Capital, and everyone thinks that the Exhibition will be a great success.

All intending Exhibitors should apply at once for space, *to the Chief Director, Exposition Internationale de Lyon, Lyon, Rhône, France.*

INTERNATIONAL EXHIBITION OF PARIS, 1900.

During the month of November, the Commission entrusted with the selection of the site for the future Exhibition of 1900 have met under the Presidency of Mr. Picard, the General Director, and decided that it should take place in Paris, making use of the *Palais de l'Industrie, Cours la Reine, Quai de la Conférence, Invalides, Trocadero,* and *Champ de Mars.* Additional bridges will be erected on the Seine to facilitate the communications between the two banks of the Seine. Besides, many concourses and feasts will take place at *Vincennes,* the well-known and beautiful park, unfortunately situated on the wrong side of Paris.

For my part, although I am quite certain that as a whole, the Exhibition of 1900 will greatly surpass the memorable one of 1889, I regret very much that the Commission has not decided in favour of the *Bois de Boulogne* or *Vincennes.* Anyone of the two would have been much better than the *Trocadero, Champ de Mars,* etc., of old memory. What was wanted for such celebration, as the event of the twentieth century (the Century of Peace and Labour, I hope) would have been something quite new, grand, and in a magnificent scale, quite distinct of all what has been done before, and this could only have been properly carried on in the parks mentioned above, where space and fine scenery exist all round.

This International Exhibition of Paris, which is to take place in 1900, reminds me that in England no such exhibition has been held since 1862, as we cannot call by that name all the partial Exhibitions held in London since. How is it that London has not had its International Exhibition since 1862, I cannot imagine? It is a well-known fact that International Exhibitions are a great stimulus to COMMERCE, ART and SCIENCE, and are the means of reviving *Trade* and *Industry,* and I sincerely hope that before long, I shall hear that London is going to prepare one of these great festivals of *Labour and Peace.*

INTERNATIONAL EXHIBITION OF INDUSTRY, SCIENCE, AND ART, IN HOBART TOWN (TASMANIA), 1894-95.

It has been decided to hold an International Exhibition in Hobart during the Summer of 1894-95, and the Government of Tasmania has been pleased to grant their Official Patronage to the undertaking.

The proposal has been taken up by the people of Tasmania and the adjacent Colonies with such general approval, that the necessary capital has been most readily subscribed.

The City of Hobart is most favourably situated. The Colony of Tasmania has a population of 150,000, and with the neighbouring Colonies the total population numbers about 4,000,000 inhabitants. Launceston and other centres are within a few hours by rail. The Australian Colonies are easy of access by steam, and the tourists' routes to all places of interest radiate from Hobart.

The objects of the Exhibition are:—To promote and foster Industry, Science, and Art, by inciting the inventive genius of our people to a further improvement in Arts and Manufactures, as well as to stimulate commercial enterprise by inviting all nations to exhibit their products, both in the raw and finished state. Samples of the products for which this and the other Australasian Colonies have become famous will be exhibited with a view to increase the development of their natural resources.

Similar and more varied exhibits may be expected from Great Britain, the Continent of Europe, America, India, Canada, the Cape, and other Colonies, to which the Government of Tasmania have forwarded an official invitation to grant their substantial support to the undertaking.

A Fine Art Section will form an important and attractive department of the Exhibition. For the accommodation of the Art Treasures and Historical Objects a special block of the building will be reserved, and the most ample precautions will be taken for the security of valuable property lent for the purposes of the Exhibition.

Two Sections, viz., the Women's Industrial and the Artisan Section, will be particular features. Special arrangements will be made for the management of these.

The site which has been granted by the Government for the Exhibition Buildings covers about eleven acres. It is one of exceptional beauty and convenience, being that portion of the Queen's Domain adjoining the Battery and the Central Railway Station.

The Buildings which it is proposed to erect will be constructed according to plans prepared by competent architects. The ornamental flower pots, shrubberies, fountains, etc., will be enclosed in the Exhibition Grounds, where musical promenades and other entertainments will be provided for the enjoyment of visitors.

The situation of the Exhibition Buildings is specially convenient of access for Exhibitors by means of rail, which can be made use of day or night for the passage of railway trucks. Heavy goods can be delivered at a minimum cost and with the least possible amount of risk. In addition to this, the Port of Hobart offers a cheap and ready means for the receiving and delivery of all sea-borne goods.

It is intended to afford full postal, telephonic, telegraphic, and banking facilities within the Exhibition Buildings, so that all necessary business may be conducted by Exhibitors and others without leaving the premises.

The whole arrangements are in the hands of a powerful Directorate, and everything will be done to facilitate the work of Exhibitors, and minimise their outlay.

REGULATIONS FOR EXHIBITORS.

An International Exhibition of Industry, Science, and Art, under the immediate patronage of the Government of Tasmania, will be held in Hobart in 1894-95.

The Exhibition will be opened on the 15th day of November, 1884, and will continue open during the day and evening for a period of about six months.

Certificates of Merit will be awarded by competent Juries in every Section, Special Certificates being given for Exhibits showing superlative merit.

Charge will be made for space, except in special cases, to be determined by the Directors. The charge for space inside the building will be 2s. per square foot, with a minimum charge of £2 10s. Space in main avenues will be charged extra, according to position; and wall space, which must be mentioned when making application, will be charged according to location. In all cases the amount of space money must accompany the Application Form, and no Exhibits can be admitted unless all

payments for space have been made. Spaces not occupied within fourteen days previous to the opening of the Exhibition will be otherwise allotted, and all payments made in respect thereof absolutely forfeited. Exhibitors will have to pay all expenses of conveying, delivering, arranging, fixing, and removing their Exhibits, and also the cost of the erection of all fixtures, screens, and counters when required; and they must personally, or by a representative, superintend the transmission, reception, unpacking, installation, and (at the close of the Exhibition) the removal of their goods. The Executive Committee reserve to themselves the right of doing whatever may be considered necessary at the expense of the Exhibitor, unless this regulation is strictly complied with. Should any goods be deposited in the Exhibition premises during the absence of the Exhibitor or his representative, the Directors will not be responsible for any loss or damage from whatsoever cause arising.

Motive power, steam, gas, or water, will be supplied by the Directors at cost price, and subject to certain regulations. Exhibitors requiring such motive power must fill up the Special Application Form which has been prepared for that Section, and which will be supplied on application. Exhibitors requiring counters, shafting, pulleys, and belting, must supply them at their own expense.

Schedules and Applications for Space may be had from the Secretary, or any of the Official Agents. These must be filled up and returned on or before the 1st of September, 1894, to ensure the Exhibits being entered in the Official Catalogue.

The nature of the articles which it is proposed to exhibt must be fully specified in the Form of Application for Space, and no article which is not clearly described in the Application Form will be allowed in the Exhibition without the special permission of the Directors.

The Directors reserve the right to refuse any Exhibt without stating any reason for so doing.

Foreign and Colonial Commissioners or Official Agents are invited to communicate with the Secretary. The Directors will place at their disposal all information, plans, or documents that may be useful to them.

Applicants for space from countries in which no Commissioner or Official Agents have been appointed will correspond direct with the Secretary.

The Directors will endeavour to obtain from the various

railways, carriers, and steamship companies special terms for the conveyance of Exhibitor's goods to and from the Exhibition, and these arrangements will be communicated to intending Exhibitors.

INTERNATIONAL EXHIBITION IN SAN FRANCISCO (CALIFORNIA).

I have just received the following letter from the Chief Director of the International Exhibition of San Francisco:

"Monsieur le Rédacteur,

"Quelques nouvelles concernant l'Exposition Hivernale, Internationale de Californie intéresseront probablement vos lecteurs, et nous vous serions bien obligés en faisant bon accueil à notre lettre et en reproduisant ce que vous jugerez utile, le plus tôt possible.

THE SCOPE OF THE EXPOSITION.

What the California Midwinter International Exposition is and what it isn't.

An account of the plan and scope of the Midwinter Exposition has been requested verbally and orally by so many people that the writer believes that he cannot fail to interest his readers by giving answers to some of the questions which have been asked.

It must not be forgotten that while the California Fair will be essentially international in character, it will not be as great in sizes as the Chicago Fair. The Midwinter Fair has been modelled upon entirely different lines. The difference in the character of the two Expositions will be quite as marked as the difference in size. At the World's Fair is shown all that human effort has accomplished. The Midwinter Fair will show all that is best in the art, science and industry of the world. The great fault found with the World's Fair is that it is too large and the multiplicity of the exhibits makes it impossible for anyone to see everything. One of those men, who have a fondness for queer calculation, has discovered that if but two minutes were allowed to each exhibit, it would take thirty-two years to see the Fair. The visitor who can remain in Chicago but a few days, must waste much of his time seeing things of but little interest to him. So well is this recognized

that numerous guides enabling visitors to tell the wheat from the chaff have been prepared under such titles as "What to see at the Fair" "The best things to see and how to find them," etc.

There will be no necessity for any such guides at the Midwinter Fair. Everything will be worthy the careful attention of the visitor; anything else will not be shown. The best and most interesting exhibits in each department will be removed from Chicago to San Francisco after the close of the World's Fair. In addition to this, many interesting displays, which are entirely original, will be made. An exposition such as this, is a novelty in America where there are no exhibitions between a State fair on the one hand, and such a world's wonder as the Centennial or the Columbian Exposition on the other. But in Europe International Expositions, comparatively small in size but extremely select in character, are of almost yearly occurrence. They have been established upon the single basis of merit, and in the scores which have been held, but very few are marked as failures. Each has been a profitable investment and all have possessed a great influence upon the industrial life of the nation within whose borders they have been held.

There are many people in the United States of moderate circumstances who have been all their lives desirous of paying a visit to the "Land of Fruit and Flowers." These have been prevented from accomplishing their wish by the large amount the railroad were, on account of the distance, forced to charge. Now, however, the railroads have promised to make a one fare rate for the round trip, and the passenger fares may be cut still lower. This will bring the cost of a trip within a sum which even those with poorly lined purses may be able to afford; and the double attraction of a winter without snow or ice, and a wonderful International Exposition will prove irresistible.

THE SITE OF THE EXPOSITION.

The site selected for the Midwinter Exposition is one to which the San Franciscans point with justifiable pride—Golden Gate Park, one of the largest and most beautiful pleasure reservations in the world. A hundred acres of the best portion is set aside as the site of the Midwinter Exposition. This splendid reservation is only two miles from Kearney and Market Streets, the practical centre of San

Francisco. The grounds will be easy of access from any part of the city. Five railway lines will run directly to the gates.

The park extends west to the ocean and is three miles long and a half-mile wide. In it are miles of beautiful walks and drives bordered by flowers and shrubbery, the result of years of labour and a most generous expenditure of money. Here and there are statues, and spanning the driveways are artistic bridges, and among the buildings that are a permanent part of the park are the Lodge, Casino and the cosy Observatory on the shore of the Pacific. The highest point and picturesque centre of the park is Strawberry Hill, below which a waterfall dashes down several feet into a lake covering six acres. There are two main drives to the ocean; and the entire arrangement of the park is upon elaborate plans. A more picturesque setting for an Exposition could not be found anywhere, and every natural advantage will be made use of.

EXECUTIVE DEPARTMENT,

Sacramento, Cal.

"As Chief Executive of the Sovereign State of California, I desire to give notice to the official heads of the various Governments, States and Departments of the world, that the people of this State will hold an International Exposition in the City of San Francisco, commencing January 1st, 1894, and I would most respectfully invite the same hearty support of your citizens, if possible, as was so generously given to the Columbian Exposition at Chicago.

Given this the sixth day of September, at the Capitol at Sacramento, California, United States of America.

H. H. MARKHAM,

Governor of the State of California."

There exists in California the greatest enthusiasm in favour of the Exposition. Rich and poor have gladly, willingly and spontaneously given their assistance as far as lay in their power.

The insured success of the California Midwinter International Exposition bridges over the doubts that eastern people have had that the undertaking was greater than California could accomplish. The Atlantic and Western States have had their electric storms in fearful grandeur, when the elements lash with fury, but the people of the Pacific

Coast have their cyclones in brain and muscle. Midwinter is the spring-time of this favoured land.

In regal splendour the valleys and hills are clothed in vernal beauty, and the sun smiles patronizingly upon the earth. The oranges hang upon the branches in all the wealth of a golden hue, and the landscape is bedecked with flowers. There is a charm of bloom everywhere. The valleys teem with industrial machinery, and nature invites to a feast of joy. Here the tourist can enjoy the beauties of the landscape, while his eyes may rest upon the white-capped mountain crests, and enjoy the beauty and grandeur of a state upon whose mountain peaks the eternal snow never melts, and in whose valleys the perennial rose ever blooms.

THE EXPOSITION'S INTERNATIONAL CHARACTER.

Twenty-Five Nations will be Represented when the Fair opens in San Francisco on New Year's Day.

The scope of the California Midwinter International Exposition is broadening daily. The work of securing exhibits, which has been prosecuted here under the direction of Assistant Director-General Cornely, has been progressing quietly, and although it is by no means finished, the administration knows that there will be at least twenty-five nations represented at the Fair when it opens in San Francisco on New Year's Day. An enormous number of applications for space have been made to the Commissioners representing the various countries which will take part. It is feared indeed that there will be too many applications. So well is this understood, that even after the Commissioners have rejected a number of applications as below the high standard which has been made for the Midwinter Fair, it has even now been found necessary to build annexes to two of the buildings. Those which have been arranged for are to the Fine Arts Building and Palace of Mechanical Arts.

Besides the principal buildings, many of the foreign countries will have buildings of their own. Among those which it is positively known will erect their own houses are Honduras, Costa Rica, Brazil, China, Japan, Ceylon and Guatemala. A number of other nationalities are arranging for buildings, but the plans have not been perfected.

The International character of the Exposition is therefore assured. But besides the main buildings and the buildings erected by the different nations there is another feature. In those buildings there will be the products of the country, but a number of concessions have been granted to those who wish to show Americans these strange people themselves. The subjects of the Mikado will, for instance, be seen in the Japanese village, not only as they are to-day in that most picturesque of nations, but as they were in distant times. Pictures of the life, customs and manners of the Chinese, Turks, Egyptians, Algerians, Persians, Dahomeyans, Hawaiians and other residents of countries, the customs of which are more or less unknown to us.

Manufacturers in all parts of the world are taking great interest in the Exposition, and applications for space in which they may make exhibits are daily pouring in at the offices, both here and in San Francisco. The exhibitors will not be content to reproduce their exhibits at the World's Fair, but most of them promise novelties.

The display made by Great Britain and Colonies will be extremely interesting and contain many novel features. The Englishmen are taking great interest in the Fair. Sir Edmund Elten, Bart., the famous potter, is designing some china especially for the display, and Arups, of London, is at work on some terra cotta ware which will astonish the people of the Pacific Coast. Kate Reilly, the Queen's dressmaker, has promised an original exhibit which will fill the heart of many a women with covetousness. The Colonies will also offer specimens of their handicraft, which will include many new features. East India, Ceylon and Jamaica will be strongly represented. Sir Henry Trueman Wood, the Executive Commissioner of Great Britain at the World's Fair, is taking quite an interest in the Midwinter Exposition, and has expressed his intention to aid Mr. J. H. Stiles, the British Commissioner for the California Fair, in every way possible.

A. C. Goldenberg, Canadian Commissioner to the Midwinter Fair, has received applications for space from some of the most important of his country's exhibitors at the World's Fair. The Carlin Ale Co., and Hiram Walker & Sons, are among the forty business houses from the Dominion which will be represented at San Francisco.

The revolution in Brazil happens at an unfortunate time for the Fair. Admiral Joaquim Antonio Cordevil Maurity says, however, that if it should be impossible for the Govern-

ment to be officially represented, the exhibitors at the World's Fair will probably take the matter in their own hands and build a building of their own to hold their exhibits at San Francisco.

Manuul M. de Peralto, Envoy Extraordinary and Minister Plenipotentiary from Costa Rica, has promised to endeavour to secure official representation by his Government at the Exposition. Should he fail in this, the Costa Rica Exhibitors here will take their Exhibits to California on their own account.

Commissioner W. T. Thackeray said yesterday that Honduras would have a building of its own. Indeed, the plans have already been made of it, and the masons and carpenters will soon be engaged in its construction. The building will be 50 by 20 feet and surmounted by a roof garden.

Prof. V. I. Shopoff, Bulgarian Delegate to the World's Fair, has written to his Government requesting permission to transfer the exhibit of his country to San Francisco in its entirety.

Theodora H. Mangel has been appointed Commissioner-General for Costa Rica to the California Midwinter International Exposition. Mr. Mangel will return to that country after the close of the World's Fair. He expects that his country will be largely represented at the Midwinter Fair, and it will surely have a building of its own.

The French citizens of San Francisco, at the suggestion of Mr. de Lylando, Consul of France, held a meeting in behalf of the California Midwinter International Exposition. As a result, an Auxiliary Committee was appointed, which sent a letter to the leading French Exhibitors at Chicago, urging them the importance of representation at San Francisco, and offering their individual and collective assistance in the matter of transportation, allotment of space, insurance, customs, etc. As to the importance of a large representation of French industry, they say : "We have the assurance that a participation of the French is very much desired at San Francisco, and that the French Exhibitors will find an impressive and cordial welcome, not only by the French Colony, but also by the American population. We think it but right to inform you that the importation of French merchandise has always been considered here as of the greatest importance. The rich and well-to-do classes have always appreciated and looked out for the products of our national industries ; therefore there is a vast field open for trials, and we think that the participation of our compatriots will bear beneficial results for them as well as for France."

Auxiliary Committees have been formed by the natives of France, Sweden, Mexico, Roumania, Servia, Montenegro, Switzerland, Italy, and Germany, residing in San Francisco. The object of these organisations is to assist Exhibitors from their countries in the matter of transportation, allotment of space, insurance, customs, etc., at the California Midwinter International Exposition. They are also designed to stimulate interest in the Exposition in their respective countries, and furnish any information requested.

W. E. Von Johannsen, Commissioner of the Californian Midwinter International Exposition for Roumania, Servia, and Montenegro, writes Assistant Director-General Cornely that the entire Servian and Montenegrian Colony of San Francisco is enthusiastic over the Fair. The Servian newspaper, *The Slobada,* of San Francisco, is publishing a special edition for transmisssion to Servia and Montenegro. One of the features of their participation at the Midwinter Fair will be parades in the picturesque costumes of Servia and Montenegro, the participants giving exhibitions of national games, national dances, etc

The Italians will be largely represented at the Fair. At a recent meeting of the Italian Exhibitors when they were addressed by Royal Commissioners, Dr. Ettore Candiani and C. Pogliani, all but three of the sixty present declared their intention of removing their exhibits to San Francisco. Dr. Ettore Candiani will shortly leave for Italy to prepare for the sending out of fresh exhibits solely for the San Francisco display.

Among the exhibits promised are Ferrari's famous statue of the death of Lincoln, Froubetzkois' marble group of "American Red Men," Majilica pictures valued as highly as $20,000 each, ivory and ebony inlaid furniture costing as much as $6,000 for a single cabinet, Florentine Mosaics, Etruscan wares in endless variety, reproductions of ancient Pompeiian jewellery, the product of the finest silk looms in Italy, tapestry, filigree work and carved marble in abundance. In addition to all this, Signor Bacigalupi, of San Francisco, contemplates some sort of an exhibit where the different States of Italy shall be historically and industrially represented by tableaux, in which the costumes of each province will be faithfully introduced.

V. Zeggio, Royal Commissioner to the World's Columbian Exposition, who has been appointed Commissioner of Fine Arts at the California Midwinter International Exposiţon, has left for Rome. Signor Zeggio expects to have a most

interesting exhibit of the works of Italian artists and sculptors. His intention is to expose in the Italian section only the work of those artists who have been awarded medals by the Fine Arts Jury at the World Fair. This will make the display well worth a visit, easily eclipsing the one in the Fine Arts Building here, which has attracted so much attention. During Signor Zeggio's absence in Rome, his private secretary, Giovanni Almagia, will represent him as Fine Arts Commissioner for Italy.

The Mexican Consul at San Francisco has promised to co-operate with Col. Geo. M. Green, Commissioner Genera for Mexico, in obtaining an excellent display from that country.

Vladimir Artsimovitch, the Russian Consul at San Francisco, has been appointed President of the Commission in charge of the Russian Exhibits at the Midwinter Fair.

Diaro Official, the official paper of Mexico, prints a Prospectus of the Midwinter Fair upon which it comments favourably.

A committee has been formed by the German citizens of San Francisco in aid of the Midwinter Exposition. They have decided to send an address to the authorities of the empire at Berlin, through Secretary of State Gresham and the American Legation at the German Capital. In that address the German Government will be asked to give its official recognition to the Midwinter Exposition, and to send all or part of its exhibit now at Chicago to San Francisco.

I am of opinion that all those who will be able to go to San Francisco next winter will not regret the expenses and time required for visiting that wonderful country, which climate is really delightful during the months of January, February and March.

Not only will they be able to enjoy the numerous and interesting sights of San Francisco and surrounding countries, but also the most remarkable sights of the *Rocky Mountains* and *Sierra Nevada*. They can easily also, visit the wonderful Salt Lake, and the chief city of the *Mormons*. Having travelled in all these countries, I guarantee to the visitors of the International Exhibition of San Francisco that they shall have no regrets of having undertaken this somewhat long journey; because I consider California as one of the most interesting sights of the World. A. B.

BOUCARD, POTTIER & CO.,

Naturalists and Feather Merchants,

225, HIGH HOLBORN, LONDON, W.C., ENGLAND.

MESSRS. BOUCARD, POTTIER and Co. offer to sell on commission, Objects of Natural History, Collections of Mammals and Birds, Skins, Skeletons, Human and Animal Skulls, Insects of all orders pinned and set, or in papers; Marine, Fresh Water and Land Shells; Reptiles and Fishes in spirit; Crustaceæ and Arachnidæ in spirit; Ethnological Collections from all parts; Showy Bird Skins and Feathers for Plumassiers and Naturalists; Mammal Skins for Furriers; Bright species of Insects for Artificial Florists; Rare Old Stamps, used and unused; Curios of all sorts; Pictures and Works of Art, etc., etc.

All possessors of such objects should not dispose of them without consulting Messrs. Boucard, Pottier and Co., who having a large connection with Amateurs in all parts of the world, are able get the very best prices for them.

FOR SALE

About **6,000** species of Birds, **30,000** species of Coleoptera and Lepidoptera, Mammal Skins, from New Guinea, West Africa, South America, etc.; Land, Fresh Water and Marine Shells, *a large number of species:* Reptiles and Fishes in spirit; Crustaceæ, dried and in spirit; Insects of all orders; Skeletons; 5,000 different varieties of Postage Stamps, etc., etc.

A very fine collection of Shells, especially rich in LAND SHELLS, and containing *many types* and *new species*, about 40,000 specimens. For Price, etc., apply at 225, HIGH HOLBORN, LONDON, W.C.

STANDS, NEW STYLE.

No. 1.	For Humming Birds and Small Birds	at 20s. per hundred
,, 2.	For Small Birds, up to Tanagers	at 24s. ,,
,, 3.	For Tanagers up to Magpies	at 28s. ,,
,, 4.	For Magpies up to Crows or Small Hawks	at 32s. ,,
,, 5.	For Small Hawks to Large Hawks and Owls	at 40s. ,,

ARTIFICIAL EYES.

BLACK *Per Gross.*		COLOURED.	CORNERED. *Per Dozen Pairs.*	CORNERED AND VEINED. *Per Dozen Pairs.*
No. 1 to 4	6d.	1s. 6d.	No. 4 to 6 3s. 6d.	4s. 6d.
,, 5 to 8	8d.	2s. 6d.	,, 7 to 9 5s. 0d.	6s. 0d.
,, 9 to 10	1s. 0d.	4s. 0d.		
,, 11 to 13	2s. 6d.	7s. 0d.	,, 10 to 11 8s. 0d.	10s. 0d.
			,, 12 9s. 0d.	11s. 0d.
		Per Dozen Pairs.		
,, 14 to 16	3s. 6d.	2s. 6d.	,, 13 to 15 13s. 0d.	15s. 0d.
,, 17	8s. 0d.	3s. 0d.	Larger Sizes can be made to order.	
,, 18	12s. 0d.	4s. 0d.		

UTENSILS FOR COLLECTING, Etc.

Bicarbolic Acid	quart 2/-	Insect Pins. English, French or German	...from 1/6 per 1000
Rectified Benzoline	,, 2/-	Setting Boards	from 1/- to 2/- each
Boucard's Insecticide	lb. 4/-	Butterfly Nets complete	,, 1/6 to 5/-
Collecting Corked Box	from 1/- to 5/- each	Sweeping and Water Nets	from 2/6 to 10/-
Pocket Corked Box	from 2/- each	Cork in Sheets	from 3/- doz.
Corked Box for Museums	from 24/- to 36/- doz.	Magnifying Glasses ..	from 1/- to 5/-
Botanical Box	from 2/6 to 6/- each	Hammers	,, 1/6 to 5/-
Pin Box, with 1,000 pins	3/-	Naphthaline	,, 4/- per lb.
Collecting Bottles with large opening	from 6d.	Botanical Grey Paper ...	,, 6/- ream
Boucard's Tin Collecting Box, with two partitions	2/-	Folding Umbrella for collecting Insects	from 10/-
Straight Scissors	from 2/-	Cutting Pliers	,, 2/-
Curved ,, ...	,, 2/-	Flat Pliers	,, 2/-
Taxidermist Knives	,, 1/6	Arsenical Soap	,, 2/- per lb
Long Forceps	,, 3/-	Glass Tubes	,, 1/- doz.
Small ,, ...	,, 1/-	*Taxidermist Case*, containing 1 Pair of Scissors, 2 Knives, 1 Lime, 1 Grater, 2 Pliers, 1 Hammer, 1 Pair of Forceps, 1 Brush, 3 Gimlets, etc. complete	from 12/- to 40/-
Insects' Nippers	,, 1/6		
Sieve	,, 2/-		
Blowpipe for cleaning eggs ..	,, 2/-		
Digger	,, 2/-		
Folding ditto	,, 6/-		

TO BE SOLD OR EXCHANGED,

For Properties of equal value in London, Brighton, or the Isle of Wight,

SEVERAL PROPERTIES AT SAN-REMO,

The Celebrated Winter Resort on the Riviera, 40 Minutes from MONACO.

VILLA MARIA LUIGIA.

Three Villas, known as *Villa Maria Luigia*, and *Villas Rondo:* the first one, detached with a beautiful garden of 2200 square yards; the last, semi-detached with front and back gardens. Villa *Maria Luiga* consists of three floors, with fifteen fine room, offices, kitchen, etc. Ten of the rooms are full south, facing the sea.

Villa *Rondo* n° 25, corso Garibaldi, consists of two floors, with nine rooms, kitchen, office and cellar. N° 27 has two kitchens and two more rooms on the underground floor.

Villa *Maria Luigia* and *Villa Rondo* n° 25, the smallest, are actually let unfurnished, 3800 francs per annum, for several years.—Villa Rondo n° 27, is also let at 1400 francs per annum. Furnished, they will produce between £400 amd £500 per annum.

All applications to be made at Mr. Boucard's, 225, High Holborn, London, W.C. (England), where photographs of the Villas can be seen.

JUST ARRIVED.

A very interesting collection of Beetles and Butterflies from Syria. Another of Beetles and Butterflies from Haiti (Antillae). It contains some very fine species of Buprestidae and Curculionidae, and one rare species of Gymnetis. Collections of Coleoptera from Java and Japan. Large collections of Butterflies and Moths from Assam and Japan. Several interesting collections of Bird skins from Japan, British Guiana, Borneo, Gaboon, Congo, Guatemala, etc., etc. Specimens of Ceriornis caboti, and other rare species of birds. A collection of shells from Australia, and many others, also Australian Echidnae, in spirit, which can be seen at the

Naturalists' Agency, 225, High Holborn, London, W.C.

Pardy & Co., General Printers, 8, The Triangle, Bournemouth.

TRAVELS

OF A

NATURALIST.

BY

A. BOUCARD.

LONDON, 1894.

BOURNEMOUTH:
Pardy & Son, 8, The Triangle.

TRAVELS

OF A

NATURALIST.

A Record of Adventures, Discoveries, History and Customs of Americans and Indians, Habits and Descriptions of Animals, chiefly made in North America, California, Mexico, Central America, Columbia, Chili, etc., During the last Forty-Two Years.

BY

A. BOUCARD,

NATURALIST,

Officier d'Académie, Knight of the Royal Military Order of the Conception, Knight Officer of the Royal Order of Cambodia, Knight Commander of the Royal Order of Isabel, Corresponding Member of the Zoological Society of London, of the Geographical Society of Lisbon, of the Museum of Madrid, Member of many Scientific Societies, Etc., Etc.

London, 1894.

TRAVELS OF A NATURALIST.

TABLE OF CONTENTS.

CHAPTER V.

CHAPTER VI.

CHAPTER VII.

CHAPTER VIII.

CHAPTER IX.

CHAPTER X.

CHAPTER XI.

CHAPTER XII.

CHAPTER XIII.

CHAPTER XIV.

CHAPTER XV.

CHAPTER XVI.

TRAVELS OF A NATURALIST.

A Record of Adventures, Discoveries, History, and Customs of Americans and Indians, Habits and Descriptions of Animals, Chiefly Made in North America, California, Mexico, Central America, Columbia, Chili, etc., etc., during the last Forty-two Years.

By A. BOUCARD.

PREFACE.

Although forty-two years have elapsed since I sailed from Havre to San Francisco, *via* Cape Horn, as I have kept a diary of all my peregrinations, I think the best plan is to follow the same, and to relate successively all the wonderful adventures and discoveries as they were made during this long period of time, which embraces some of the most wonderful events of the nineteenth century, such as the discovery of gold in California, resulting in the opening of an Inter-oceanic route, *via* Nicaragua. Immense loss of property in San Francisco, the result of frequent conflagrations, which have only been equalled since, by the great fire of Chicago, Gambling hells of San Francisco. Expeditions of Marquis de Pingret and Count de Raousset, Boulbon in Mexico. Murders, frequently committed on returning successful miners from California. History of California, Acapulco, and Nicaragua, International Exhibition of New York, 1854. Epidemics of yellow fever in New Orleans, Habana, and Véra Cruz. History of Mexico. Reigns of Santa Anna, Comonfort, Alvarez, Zuloaga, Miramon, and Juarez. Mexican revolutions between the liberal and clerical parties, Intervention of England, France, and Spain in the affairs of Mexico. Occupation of Mexico by the French troops. Return to Europe. Second voyage to

Mexico. Reign of Maximilian, Emperor of Mexico. Evacuation of Mexico by the French troops. Battles between Maximilian, Miramon, and Mejia, against Juarez and Escobedo. Capitulation and tragic deaths of Maximilian and his faithful generals. Second return to Europe. Stay in Europe, International Exhibition of Paris, 1867. Third voyage to New York, International Exhibition of Philadelphia, 1876. Excursions to Boston, Cambridge, Niagara, Baltimore, Washington, etc. Scientific expedition in the Republics of Colombia, Costa Rica, Nicaragua, and Guatemala. History of these countries. Second visit to California. Return to New York, *via* Salt Lake City, Omaha, and Chicago. Third return to Europe, International Exhibition of Paris, 1878. Excursions in Belgium, Holland, Spain, Portugal and Italy. Second stay in England, International Exhibition of Paris, 1889, etc., etc.

A.B.

TRAVELS OF A NATURALIST.

CHAPTER I.

AT SEA.

Departure from Havre — Tempest in the Channel — Harbouring in Weymouth—Nearing the Tropics—Dead Sea—Wonderful Sunsets—Baptism of the Line—Crossing the Equator—Flying Fishes —Dolphins—Shark and Pilot Fishes — Sucking Fishes — Fishing Petrels — Giant Albatross — Cape Horn—Whalebone Whales—Cachalot Wales—Tempest—Juan Fernandez Island.

I EMBARKED at Havre, on the 19th of January, 1851, in the sailing ship, *l'Union,* commanded by Captain Morley. From the 19th to the 26th we had very stormy weather, the rudder was broken, several yards were carried away, and we were compelled to put into the port of Weymouth to repair damages. A sad beginning for a voyage from Havre to San Francisco, round Cape Horn. We stayed at Weymouth five days. This was my first landing in England, the hospitable country, which, afterwards, I selected as a residence for many years.

In reading my diary, after forty-two years, I am very much amused with the juvenile remarks which I made then on Weymouth. The first thing I mention is that Weymouth is a pretty town, with picturesque green walks, from which a fine sea view is enjoyed. We went to the market, which was kept then on Wednesdays and Saturdays. On Saturdays, ladies finely dressed, were seen marketing, and I did consider it a very pretty and agreeable sight for visitors. As I have never been again to Weymouth, I don't know if it is still so. In the market we bought some fine and good apples, eight for twopence, which I thought cheap. We had a glass of beer at the Crown Hotel, and I made the remark that the ale was sweet and nice, and the porter very bitter and strong. I also noticed that the saloon was a fine room, and well heated, that there were no balconies to the houses, and lastly, my attention was called to the coaches; as of very good make and fine appearance, with accommodation for about fifteen people, the outside being reserved for gentlefolks.

Having completed our repairs, we left Weymouth on the 1st of February, with fine weather and a good breeze, which lasted until the 14th, during which time we made 1350 miles, leaving Madeira far back. During those days we saw many birds, porpoises, fishes, heteropods (Nautilus), and seaweeds, with large quantities of shells attached to them.

During the 15th, 16th, 17th, and 18th, we had very foul weather, and ran great dangers, all the passengers being sea-sick all these days, but fortunately, on the 19th the wind abated. We were then close to the Canary Islands, which coasts we saw plainly during several hours. Birds and tortoises were plentiful. Up to the 2nd of March we had beautiful and warm weather. On the 3rd of March we saw, for the first time, the Southern Cross, an indication that we were nearing the Equator. Up to the 9th, the wind left off entirely, and, during that time, we lost many miles, carried away back by adverse currents. Nothing is more tedious at sea than a complete calm ; although I must say that I enjoyed it very much, fishing every day, notwithstanding the heat. We hooked many fishes, among which was one shark, measuring thirteen feet in length. It was rather an exciting scene to hoist the monster on board. When young, the flesh is eatable but not succulent. The one we caught was cut to pieces, the dorsal fin, skin, and jaw cleaned, and sold to a passenger as curiosities. Sticks are made with the dorsal fin. The vitality of these fishes is wonderful. After being cut into many pieces, the inside emptied of its contents, the head cut off, this last part retained sufficent strength to close its jaws on some objects if put into its mouth. It is also prudent not to approach its tail, with which it can give a blow, strong enough to break arms or legs of the careless looker-on. To avoid these dangers, the tail is securely fastened, and a stick of some sort is introduced between the jaws during the process of cutting and skinning. The skin is very hard, and can be used for the manufacture of bags and such like. These fishes are usually caught with a large hook baited with salted pork.

On the evening of the 9th of March we had the magnificent spectacle of a tropical sunset, which lasted about half-an-hour. The sky was covered with black clouds, lined with fiery gold and silver, and surrounded with every variety of colour, blue, rose, pink, orange, and red. Every minute or so there was a change of scenery, now representing animals of gigantic sizes, changing as quickly into castles, cathedrals,

towns, mountains with snowy peaks, lakes, and the like, as in a kaleidoscope. It is so magnificent that it must be seen to be believed. Some travellers say that the sun-rises are still more wonderful to look at, but for myself I can hardly see any difference between the beauties of both. We were enthusiastically admiring the conclusion of this grand sight, when we were disagreeably surprised by receiving on our heads showers of water, poured over by some sailors concealed among the yards, on the top of the masts. There was a momentary panic among the passengers, but it was soon explained to us that these showers of water was poured over by the assistants of *Neptune*, KING OF THE SEA, to greet us with the welcome knowledge that the next day we were expecting to pass the Line, the domain of his Majesty the King, who forbade travellers to pass that part of his realm without being first baptised. I think that this ancient custom, so dear and producive to sailors, is dispensed with now. This baptism is administered only once; so the old hands, who knew all about it, had taken care not to be on deck with the other passengers.

On the 10th of March, between 10 and 5 p.m., the sailors do nearly as much as they like. Knowing what is coming on, the passengers dress as scantily as possible. At 100'clock sharp the fun began by throwing water, flour, rotten eggs, and other missiles on the passengers and officers, who, including the captain, take part in the fun. Then a carnavalesque procession, headed by Neptune, strident in hand, and followed by Lucifer, policemen, verger, assistant carrying a basin of water, Father and Mother Line and followers, all of them in more or less eccentric costumes, made its appearance on deck and took position. A letter was then delivered to the captain by Neptune's secretary, with the injunction to read it to the passengers, which was forthwith done. In this letter King Neptune offers his felicitations to the captain for the safe arrival of the ship in this part of his domain, and requests him to deliver all the passengers and sailors who have not passed the Line before, reminding him that those who should try to pass without receiving the usual baptism would be condemned to be thrown overboard at once as food for the sharks. Of course, no one being willing to undergo that fate, all consented to be delivered into King Neptune's hands and receive the usual baptism. Then one by one was conducted to a mock chapel, erected on empty barrels, where those of wild tempers are rather badly treated, first by being shaved with a

gigantic wood razor, anointed with tar in guise of soap, after which ceremony, by cutting a rope maintaining your chair, standing over a barrel full of dirty water, you fall inside taking an involuntary dirty bath. Then it is the turn of another, until all the passengers and sailors have undergone the same ceremonial. During all that time there is a continual throwing of buckets of water, flour, eggs, etc., on one another. At 5 o'clock it concludes, and all go to wash and dress for a gala dinner, with champagne and other delicacies, which is usually given on that day, which ends with a comedy of some sort, acted by sailors and amateurs willing to help. As a rule this day of carnival is rather enjoyed by all, as, by giving a piece of four shillings to Father Line, you can escape from the worst parts of the day's proceedings. For my part I must confess that I did enjoy it thoroughly, these showers of water being rather agreeable with the hot temperature as we had on that day. On our ship all went well, and even the ladies took an active part in the fun of the day; but sometimes it happens that some of the passengers are not willing to part with their four shilling piece or oppose themselves to the baptism. In that case they are generally overpowered by the sailors and come out the worse for it.

On the 14th of March we felt the shock of a submarine earthquake. On the 15th, we crossed the Equator with a good breeze and splendid weather. Fish were plentiful, and many were harpooned. On the 21st we met the English ship *Ellen,* with whom we spoke. Flying fishes *(Exocætus volitans)*, were very abundant. It is one of the most extraordinary sights of the tropical seas. The power of flight possessed by these fishes is not very great; but they can fly to a distance of about one hundred yards, and frequently fly so high that they fall on the deck of ships. This happens often enough when persecuted by large fishes, such as dolphins, albicores, and others. We also saw many sharks *(Galeocerdo arcticus),* some of a very large size. They were usually surrounded by pilot fishes *(Naucrates ductor)*. This last fish is about the size and shape of the mackerel, and is marked with dark blue transverse bands passing round the body. Its name of pilot fish is derived from the belief that sailors have, that it acts as a pilot, directing sharks were to obtain a good meal. Certain it is, that when sharks are about the ship, there the pilot fishes are also, swimming round about and underneath them with perfect impunity, a good understanding existing apparently between them. Another fish,

which we have always found attached to sharks, is the sucking fish *(Echeneis remora)*. This genus of fish is distinguished from all the others by the top of its head being flattened, and occupied by a laminated disc, composed of numerous transverse cartilaginous plates, the edges of which are spiny and directed obliquely backwards. By means of this apparatus, these fishes are able to attach themselves to ships, large fishes, and the like. In some countries, the inhabitants make use of these fishes to capture turtles. A ring is fastened to the tail, and a rope being attached to it, the sucking fish is carried out by the fishermen in their boat in a vessel of water, and thrown into the sea, where turtles abound. In endeavouring to make its escape, the fish attaches itself to the nearest turtle, and both are handed in together.

Another fish, which was very abundant, and often harpooned for the delicacy of its flesh, was the dolphin *(Coryphaena hippurus)*. It is a brilliant golden fish about four feet in length, and is so swift in its motions, that it darts through the water like a radiant meteor. We have often seen them swimming round our ship when at full speed. Its dorsal fin is light blue, with golden reflections, the tail-fin and the body are green, and the belly is of a silvery lustre, separated from the back by a yellow lateral line. When swimming swiftly in the water there is an extraordinary display of colours upon it, and at night the effect is simply marvellous. After being caught, and shortly before dying, it presents a remarkable change of colour. The dolphins live chiefly upon the flying fishes. It is a grand sight to see, when a shoal of dolphins are in chase.

On the 26th of March, by 30.20 of latitude, and 30.40 of longitude, we sighted TRINIDAD ISLAND, and shortly after the rocks of MARTIN VAS.

On the 1st of April we were near Rio Janeiro, the capital of Brazil. The heat was intense. Numerous gulls were hovering round the ship.

On the 10th we saw some white pigeons, and on the 15th some petrels for the first time. During the night of the 16th we were overtaken by a tempest, which lasted twenty-four hours. Two sails were carried away, and the great yard was broken.

On the 18th we saw immense shoals of sardines, and a large quantity of Cape pigeons *(Daption capensis)*, feeding upon them. On that day we had a very particular enjoyment,

that of catching these birds with fishing lines! They were very easily caught by baiting the hooks with salted pork. Scarcely had the line reached the water when many of these birds pounced on the baits, and one was caught, the hook penetrating in its upper mandible. Then it was an easy task to hoist it on board. We skinned several specimens. The Cape pigeon, or *Daption capensis,* is a bird belonging to the family of petrels, or *Procellaridae.* It is snow-white, beautifully spotted with brownish black. Hence their vulgar name, draught, or *damier* in French. The flesh of these birds is oily, and has a bad taste, nevertheless the sailors eat it.

On the 21st, we saw for the first time some albatrosses, or Cape sheep, as they are vulgarly called by sailors. We fished one of them, and made a fair skin of it. The albatrosses, the largest sea-birds known, belong also to the same family of *Procellaridae.* Many species are known; but the two usually met with in the South Atlantic are the *Diomedea culminata* and the giant albatross, or *Diomedea gigantea.* They are especially characterized by their beak being as long as their head, formed of several pieces and sharply hooked at the tip, their nostrils tubular at the base or on the side of the bill, their hind toe elevated and consisting merely of a claw, and the tarsi being reticulated, and usually shorter than the middle toe. They are oceanic birds, and generally found at sea at great distances. Their flight is rapid and powerful, and apparently they can keep it for days and nights together. When the sea is agitated, and the winds high, is when many are seen, seeking their food in the midst of the agitated waves. Sometimes they are seen resting on the waves, and it is with difficulty that they can take their flight again. They live chiefly on fishes, crustaceae, and carcases. They seldom seek the land, except at the breeding season, when they build their nests in the holes of rocks. The flesh is a very poor eating. From the bones of the wings, sailors make pipe stems. The palms of the feet are made into tobacco pouches, and very good pillows and quilts are made with the feathers. The heads are kept as curiosities. The specimen we caught was about thirteen feet wide from the extremity of one wing to the other.

On the 22nd, we sighted PATAGONIA, Cape Blanc, and Pingouin's Islands were distinctly visible. In the evening we passed the Gulf of St. George. We saw many birds, vulgarly called *fools (Sula bassana),* and many stormy petrels *(Procellaria pelasgica),* called satyrics by the sailors. This is the smallest known species of petrels. Seven species are known,

all of them very much alike, sooty black in colour, scarcely larger than a sparrow. They have the faculty of running lightly on the surface of the water, and with considerable rapidity. Hence the derivation of their name petrel, the navigators comparing them, on account of their habit of walking on the surface of the water, to St. Peter. Peterrill being a diminutive of Peter. It is very amusing to watch them when doing that exercise. Alike the other petrels they are voracious, and are easily caught with hooks. We secured several specimens, which were made into skins.

On the 26th of April, we sighted TIERRA DEL FUEGO and the Bay of San Sebastian. The weather was getting cold, and winter dresses came handy.

On the 29th, we sighted BELL'S MOUNTAIN, which is 1,250 feet high, NEW ISLAND, CAPE OF SAN DIEGO, and CAPE OF GOOD SUCCESS, all of them belonging to the STRAITS OF LEMAIRE, by which we wanted to cross to the Pacific Ocean, but, unfortunately, the bad weather that we experienced in these parts did not permit it. Up to the 4th of May we had very rough weather.

On the 4th of May, which was a Sunday, we sighted at last the celebrated CAPE HORN. It is a rock of several hundred feet in circumference, and seeming to rise about 50 feet over the sea. It is usually covered with snow. On that day we saw our first whale. It was a grand sight for me. The species seen was a specimen of *Balaena australis,* or whalebone whale. This animal belongs to the class *Mammalia;* order, *Cetacea;* family, *Balaenidae;* and genus, *Balaena.* They are marine, viviparous, suckle their young as other mammalia, respire by lungs, and have distinct separate blow-holes. They have warm blood, and have no teeth; these are replaced by plates of baleen, the well-known article of commerce. This family contains the whales known by the name of whalebone whales, which are of immense size, reaching sometimes fifty feet in length. About twelve species are known. The name *Balaena* is derived from the Phœnician word *Baalman,* which means, but incorrectly, the *King of Fishes.* It reigns over the innumerable tribes of marine animals. One of the peculiarities of the whales is the blowing of steam that they eject when in the act of breathing. This column of steam, which rises to a good height, has usually been erroneously taken for water. The head of this whale is of great size, being a third, and sometimes more, of the whole body, and the upper jaw is

furnished with plates of a horny structure, arranged transversally in rows of a triangular shape, and having their edges armed with long thread-like processes which hang loose in the mouth. These plates are from eight to ten feet long, and number about 300 on each side. These are the baleens, a valuable article of commerce, which sells in European markets from £200 to £300 per ton. Another important article of commerce procured from these whales is the oil, of which many thousand tons are annually brought to Europe; but lately this trade has somewhat decreased, in consequence of the scarcity of these mammals, which is felt more and more every day. Its food consists of small marine animals, crustaceae, molluscs, medusae, etc., the narrowness of its gullet preventing the passage of larger animals. With its bones harpoons and spears are made, and very good fishing lines with the threads of the whalebones. As a rule, it is a very quiet and tranquil animal, but when wounded, becomes quite furious, and very dangerous to approach. Its strength is prodigious, and occasionally, sailors, when fishing these animals, have been overturned, boat and all, and sometimes with loss of life.

On the 7th May, we sighted the ISLAND OF DIEGO RAMIREZ. It was excessively cold. Both water and oil were frozen. On that same day we sighted HERMITE'S ISLAND, explored in 1624 by the Dutch Admiral l'Hermite. The prolongation of these Islands is what forms the land known now-a-days on the maps, as CAPE HORN. It was discovered by M.M. *William Corneliszon* and *Jacob Lemaire* in 1615. It is situated in 55.58.41 latitude, and 69.30.17 longitude west. We sighted also ILDEFONSOS and BOAT'S ISLANDS, and we ran great dangers between these islands, which is a very dangerous passage for ships. We met an English sail going in the same direction as ours.

On the 9th of May, we met large quantities of whales, *Cachalots* or sperm whales, and whalebone whales. There is a great difference between these two mammals, which belong to two distinct families. The cachalot (*Physeter macrocephalus*) is distinguished from the whalebone whale by not having baleens, or whale bones, which are replaced by numerous conical teeth, the upper portion of the skull is more or less symmetrical. The external respiratory organ is single, the two nostrils uniting before they reach the surface, and usually in the form of a transverse crescentic valvular aperture, situated over the top of the head. When the mouth is open

it presents a cavity capable of containing a merchant ships jolly boat. The cachalot is also a very large animal, attaining sometimes fifty feet or more in length, and about thirty to forty feet in circumference. One whale occasionally yields more than twenty tons of pure oil, known as *sperm-oil,* and much used in the manufacture of candles. From the great cavity above the skull is extracted the oil called *spermaceti,* which is also much used for the same purpose and for ointments. The sperm oil is obtained from the thick layer of fat, or blubber, lying sometimes several feet in thickness under the skin. The substance called *ambergris,* largely used in perfumery, is a concretion formed in the intestines of the sperm whale, and is found floating on the surface of the seas which they inhabit.

On the 12th of May, we were again assailed by a tempest of wind, hail, and rain, which caused some minor damages. The hail stones were of a large pea size. Until the 1st of June we had rough and cold weather. Sometimes the wind was so strong that waves of immense size constantly shipped over the deck. It was dreadful to see these gigantic waves seemingly on our heads, as if they were going to swallow up the ship and all. In one instant we were on the top of one of them, as on the top of a hill with a sort of abyss under, in another we were at the bottom with the waves above us. You must experience it to have an exact idea of that fearful spectacle. But by this time all of us were more or less sailors made, and it did not affect us so much as the first gale experienced in the channel. The only inconvenience was to be obliged to remain in the saloon, and a little more or less fright with some of the passengers.

On the 1st of June, we were at the same latitude as VALPARAISO and in sight of JUAN FERNANDEZ ISLAND, the celebrated abode of Alexander Selkirk, so well known as Robinson Crusoe.

CHAPTER II.

Arrival at Valparaiso—Excursions in the Suburbs—Humming-birds—Gold Mines of Quillatas—Conquest by the Spaniards—Dutch Expeditions in Chili—Description of Chili—Boundaries—Topography—Climate—Earthquakes—Volcanoes—Lakes and Rivers—Actual Population—Santiago—Valparaiso—Mercantile Marine—Railroads—Commerce—Principal Articles of Importation and Exportation—Remarkable Animals—Llama and Alpaca—Chinchilla—Mole-Armadillo—Condor—Chilian Humming Birds—Chilian Insects—Future of Chili.

ON the 8th of June we were at last in sight of VALPARAISO, after 142 days of navigation. We sighted the light-house at four in the morning. At that hour we had a fine breeze, and were going at the rate of eight miles an hour; but when only two miles from the bay, the wind suddenly abated, and we could go no further. The boats had to be lowered, and after several hours' hard rowing for the sailors, we entered the bay at one o'clock in the afternoon. After the visit of the sanitary inspector, we were allowed to land. I shall never forget the delightful impression which I experienced in landing for the first time on American soil. On that day we visited the city and the suburbs. When returning, we met a boy who had two humming-birds alive. We bought them for a few pence.

We remained only a few days in Valparaiso, but we employed our time well, and we enjoyed it very much. These days passed on land, after our long navigation, seemed to us paradise days. We scarcely could believe that we were on land again. First we visited the churches, which are very fine, and we were quite surprised to see them devoid of seats. The ladies usually kneel on small carpets, carried for that purpose by their maids, the men remaining standing, apart from the ladies. At the conclusion of the service, the young men group themselves in double file near the porch, so that the ladies have to pass between them, saluting and speaking to one another as they pass by. We visited the Tivoli Gardens, in the village of Polanco, and the Labadie's Garden, in the suburbs of the city. They are kept by French gardeners. It was there that I saw humming birds (*Eustephanus*

galeritus, Mol) for the first time. This I remember as one of the most remarkable epochs of my life. They were plentiful and flying about in all directions, from one flower to another, in search of food. When feeding, they introduce their bills, and sometimes the best part of their heads, in the calices of the flowers, and, during all the time, remain on the wing (exactly as the moths of the genus Sphinx do in Europe, on our flowers), and in a very short time extract the honey and all the minute insects, on which they feed, emerging from there with pollen, and even honey, on their foreheads. Not one single flower escapes detection. They continue this active exercise during the earlier hours of the morning, and until late in the afternoon. When the days are cloudy, they may be seen visiting flowers during all day; but usually as soon as the heat begins to be felt, they retire on their favourite dry branches and rest there. Occasionally they are seen starting with the rapidity of lightning in a straight direction and returning a little while after. This means that an intruder, often of the same species, has passed near by, and that it started in pursuit. During the nuptial time, they are quite warlike. They don't allow any other bird to approach their nests. Many times I have watched these Liliputians battles. During that time the humming-bird is fearless. If it fights a larger bird, it makes good use of its sword-like pointed bill, with which it inflicts such blows as it can on the head of the intruder. When it is with another humming bird, the sight is still more interesting. First, it starts straight at the intruder provoking it to fight, then they both rise perpendicularly to a great height where they are lost to sight, and in like manner they descend with the utmost rapidity until nearing the ground. This is repeated over and over again until the sudden escape of the intruder. The male always sits near the nest, and, in many species, sings during the incubation. It sits sometimes on the nest. The nest, which is one of the most admirable and delicate structures, scarcely larger than a walnut, is made of moss, intermixed together, and the inside filled up with vegetable silk, usually the produce of (*Bombax ceiba*) cotton or suchlike. It always contains two white eggs, scarcely larger than a large pea, but oval in form. The incubation lasts about sixteen days. The young at birth is entirely naked and helpless, hence its classification in the division PSILOPAEDES, Sundervall. A few days after birth, minute quills begin to appear all over the body, from which feathers grow little by little. On the twentieth day it is well furnished with them, and a few days after, it is able to fly

and feed by itself. During this time life is sustained by the introduction of food into the throat by means of the parents' bill. It is incredible how much food they require during their growth, especially the first few days after birth. The parents are constantly seen bringing food to their young. Their digestion is very active, as can be seen by the numerous excrements accumulated outside their nests.

These charming creatures, although allied in some respects to the Picarian birds, are quite distinct from all, and in 1876, I proposed for them the name of a new Order, (TTOCHILI.) At first, I met with a certain opposition, but I am happy to say that it is now accepted by many ornithologists, and last year, *Mr. Osbert Salvin,* the eminent English ornithologist, in the Catalogue of Birds in the British Museum, vol. xvi., 1892, page 27, has made use of that name, TROCHILI, as a Suborder for them. The principal characteristics of these birds are:—The second, third, and fourth toes directed forwards, the hallux backwards, the body very small, the bill very slender, the nostrils basal, linear, covered by an operculum, sometimes hidden in frontal feathers, the tongue slender, filiform capable of great extension, the wings narrow and pointed, the primaries, ten in number, stiff and long, the secondaries very short, the sternum large, the tail, composed of ten feathers, varying greatly in shape and size. Their plumage is of the most brilliant metallic hues in the males, although in several species they are sombre, and in some few the plumage of the females, usually tern, is as beautiful as that of the males. They surpass in brilliancy, and in variety of colours, that of the most precious stones, such as rubies, emeralds, topazes, amethysts, turquoises, sapphires, garnets, etc. They are the unequalled gems of Nature. Only in AMERICA and its adjacent islands, they are to be met with. Actually, we know over *five hundred distinct species,* and many more remain to be discovered. From immemorial times they have been admired, and their splendid feathers made use of for adorning the mantles of the Mexican and Peruvian Emperors, as also for the manufacture of superb mosaics, representing scenes of Indian life, portraits, and the like, and lastly, for millinery and jewelry purposes, such as mantles, soirées dresses, head gears, hat ornaments, earrings, brooches, etc. They are also used in the preparation of groups for the adornment of drawing-rooms; but, I am sorry to say, that a great destruction of these beautiful birds have been made of late for all these purposes, and I hope

that a strict regulation for the killing of these birds, only at fixed times, will be soon enforced by all the American Republics, or else, one day, we may have to deplore the total extermination of these splendid birds, one of the most conspicuous and wonderful sights, peculiar to the tropical countries of AMERICA.

Now-a-days that the mania of collecting is spread among all classes of society, and that everyone possess, either a gallery of pictures, aquarels, drawings, or a fine library, an album of postage stamps, a collection of embroideries, laces, fans, shoes, sticks, pipes, ethnological curios, arms, prints, handbills, watches, bronzes, buttons, and such like, a collection of humming-birds should be the one selected by ladies. It is as beautiful and much more varied than a collection of precious stones, and costs much less. Besides, it can be kept in one cabinet, which can be made to fit with the furniture of the most splendid palace, as that of the most modest home. Nothing can surpass in beauty and variety a collection of humming-birds. Many species of these charming birds can be bought at a nominal price, others are very scarce, and can scarcely be had in a life's time. Hence a constant and agreeable occupation for many years, and quite the thing for all those who have money, taste, and leisure.

During our stay in Valparaiso we made many interesting and pleasant excursions in the country, and we saw many rare animals and plants.

As I shall have no opportunity to speak again of this country, I shall give now a short description of Chili, its inhabitants, their customs, the rare animals found in Chili, and other facts which I consider of interest.

CHILI was discovered in 1536 by *Diego Almagro*. Almagro was of Spanish nationality, and inhabited Panama for some years. He first entered Chili by the valley COPAYAPA, through the Andes, where he lost many of his followers and horses from hardships and cold.

Copayapa bears that name from the turquoises, which a mountain there produces in great abundance. This valley is said to be one of the most fruitful of all Chili. It produces the best maize (*Indian corn*), each ear being over one foot and the stalk five feet long; each grain sown yields at least three hundred in harvest.

Through the midst of COPAYAPA runs a river of the same denomination, and twenty leagues in length from the Andes, and at its mouth has a convenient harbour.

From there he went in the valley CHILI, which gives its name to the whole country. In that valley are the famous gold mines of QUILLATAS, from whence Valdivia, in 1544, carried an invaluable treasure. The South Sea makes here a large and convenient harbour.

Almagro did not remain long in Chili. In 1541 he was succeeded in his attempt to conquer that country by Valdivia, who was partly successful. When Sir Francis Drake visited this place in 1577, he was driven away, with great loss, by the Spaniards.

In Valparaiso, which he also visited about the same time, he took a ship from VALDIVIA, laden with two thousand four hundred bars of gold. But the Netherland Admiral, *Joris Spilbergen,* who went there in 1615, had not such a good success.

At the time when *Oliver van Noort* anchored there in 1600, the Governor, *Franciso de Quinones,* commanded seven hundred Spanish soldiers to reduce the revolted Chillians.

Elias Herkmans was once nearly taking possession of MARIA ISLAND for the Netherlands.

MOCHA ISLAND, belonging to *Arauco,* was first inhabited by *Juan Claeszoon,* a Dutchman, condemned for some crime to be landed there. This was in 1600.

Fifteen years after, *Spilbergen* landing there with four boats, found the shore full of people, who had brought all sorts of provisions to barter against axes and knives. The islanders going aboard wondered to see the soldiers drawn out in order, and much more when a gun was fired. They furnished the Hollanders with a hundred sheep, amongst which was one with an extraordinary long neck, and the body marked like a camel. This was certainly a specimen of llama (*Auchenia lama*).

In this island a man could marry as many wives as he could maintain. They all lived peaceably with one another, and went clothed with a pair of breeches and frock without sleeves. The women tied their hair in braids; but the men let it hang down carelessly.

The Netherlands Admiral, *Hendrick Brewer,* when he landed on the coast of GUADALANQUEN in 1643, was informed by the Chilians that years before they had burned Valdivia, murdered the Spanish that were in garrison, and poured melted gold into the Governor's throat and into his ears, and

made a drinking cup of his skull, and trumpets of his bones. This is said to have been the sad end of General Valdivia.

On the shore of the river LEBO, *Garcia Mendoza* built the town Canete, which, not long after, was deserted by reason of the wars with the Chilians. He built also the towns of *Nueva Londres,* in the province of CALCHAQUI, and *Cordova,* in the territory of the *Juries;* but they were also soon deserted.

After many cruel wars with the natives, the Spaniards conquered all the country, excepting Araucania, and retained it until 1810, when Chili, in conjunction with Buenos Ayres and Colombia, raised the cry of Independence. Since, it has greatly developed, and is now one of the most prosperous of the South American Republics.

In consequence of its very favourable climate, which is neither too warm nor too cold, Chili has been selected by many English, French, Americans, Italians, and others, as a place of residence, and they have much contributed to the welfare and prosperity of the country. Lately Chili has much suffered from a cruel and long civil war, with great losses on both sides; but it is to be hoped, now that it has concluded, that a new and lasting era of peace and prosperity has commenced for that country.

The Republic of Chili occupies the narrow strip of country lying along the south-western part of South America, between the Andes and the Pacific Ocean. It extends from the Camarones River on the north, separating it from Peru, to Cape Horn in the south. The treaty made with the Argentine Republic in 1881, gave to Chili the greater part of Tierra del Fuego and the Straits of Magellan, taking Cape Virgin, on the Atlantic, for its starting point, running directly south to the Ocean, and west to the summit of Mount Aymon, thence along the northern shore of the Straits of Magellan, to where it intercepts the 52nd parallel of latitude, in longitude 70° west. Thence the lines follow the summit of the Andes to the northern extremity of the two countries.

A lower range of mountains, called the Cordillera of the Coast, runs parallel with the lofty Andes, and walls in the great central plain, leaving only narrow passes for the rivers which descend from the Andes. Its actual area is about 300,000 square miles.

The narrow fertile strip of land which forms the territory of Chili may be regarded as the skirt of the Andes, sloping

rapidly towards the Pacific, and traversed by numerous rivers which fertilize it. The peculiarity of this territory, apart from the diversity of its climate, which varies from that of the tropics to that of the antarctic regions, is the variety of its geological and topographical structures.

The first, or northern zone, which includes the provinces of Atacama and Coquimbo, the territories of Antofogasta and Tarapaca, is the most sterile, but prodigiously rich in minerals, especially silver, copper, saltpetre, borax, and gypsum.

The second zone, which commences at the Aconcagua river, and extends to *Bio-Bio*, the king of Chilian rivers, may be denominated the agricultural zone. It is formed of a series of extensive valleys of rich soil, yielding abundant crops of cereals. Fossil remains of extinct species of animals are frequently found in this zone.

The breadth of these valleys vary from 25 to 50 miles, and occupies from 150 to 180 miles from the Andes to the Pacific.

The third zone, which extends from *Bio-Bio* to the Tolten river, is still occupied by the valourous Araucanian Indians, who never were conquered by the Spaniards ; but the white race is rapidly encroaching upon these fertile lands, and before long these fierce and independent Indians will have to submit to the Chilian Republic, or to disperse in the Pampas. Actually they number about forty thousand.

The fourth zone includes the system of lakes, not yet drained by plutonic action, as were those at the north. Of these, the Andina lake, *Villa-Rica,* the source of the Tolten river, 24 miles in circumference, is the most picturesque, and Lake Llanquihue, thirty miles from the coast, is the largest. It is triangular in form, twenty to thirty miles across. This zone includes all the southern end of Chili, and is the section of the primeval forests.

The climate of these sections has the same variety as their latitudes. In the deserts of Antofogasta and Atacama it scarcely rains at all ; meanwhile in Chiloe and Valdivia it rains nearly all the year. In general the climate is mild and healthy.

The winter months are June, July, and August; the summer months are December, January, and February. In the second zone, where are situated *Valparaiso* and *Santiago,* it seldom rains except during the winter months.

The mean tempeature in that zone is 70° in summer, and 52° in winter, and for the year 61°.

Earthquakes are frequent, and have caused great destruction. Those of 1647, 1730, 1751, 1822, and 1835, have been terrific, and destroyed the cities of *Santiago, Valparaiso,* and *Concepcion.*

The Andes, of which the most southerly peak forms *Cape Horn,* (where they say that gold has just been discovered in large quantity), present in Chili an immense range, their course being north and south. Their base has a uniform breadth of about one hundred and fifty miles. The rivers rising in them run almost parallel at right angles to the Pacific, and cut the mountains with immense gorges and cañons. The mean altitude of the Andes is from eight thousand to ten thousand feet. Not less than seventy volcanoes, extinct and active, crown the range of the Chilian Andes. The most noted peaks are the following: *Mount Aconcagua,* 24,418 feet, *Mount Tupungato,* 21,104 feet, *Mount Maipo,* 17,660 feet, *Mount San José,* 18,145 feet, in activity since 1881. *Mount Villa Rica,* 15,990 feet, and several others, ranging from 6,000 to 10,000 feet.

Chili possesses many islands, the most notable of which are JUAN FERNANDEZ, four hundred miles west of Valparaiso, MOCHA ISLAND, PASCUA ISLAND, and CHILOE ISLANDS, with its numerous Archipelagoes.

The rivers of Chili are counted by the hundred, but very few are navigable. The principal ones on the northern zone are the COPIAPO, watering the valley and city of that name; the COQUIMBO, the LIMARI, the CHOAPA, and the LIGUA.

From the Maule, south, the larger rivers are navigable, but only for small vessels. The MAULE is navigable to PERALES, the BIO-BIO to CONCEPCION, the VALDIVIA to VALDIVIA CITY, at whose wharves the ocean steamers call; and the BUENO to OSORNO.

The population of Chili, according to the last census, 1890? was 2,766,747, which shows an augmentation of 690,776 since the census made in 1875, of which about 50,000 are foreign born. There are 41 cities, 78 corporate towns, 186 villages, 83 hamlets, and 35 ports belonging to seventeen provinces, 60 departments, 682 sub-delegations, and 2738 districts.

The principal provinces are those of SANTIAGO, VALPARAISO, COQUIMBO, CONCEPCION, COLCHAGUA, NUBLE, and ACONCAGUA, with a population of about 1,500,000.

The principal cities are the following:—SANTIAGO, VALPARAISO, TALCA, CONCEPCION, SERENA, COPIAPO, IQUIQUE, and ANTOFOGASTA. First of all stands SANTIAGO, the Capital of the Republic, with a population of about 200,000. It was founded in 1541 by the Conqueror Pedro de Valdivia. Its situation is in an extensive valley called MAPOCHO, bounded on the east by the Cordillera, on the west by the mountains Prado and Poanque, on the north by the small river Colina, and on the south by the river Mapocho, which passes the city on one side, and feeds many *assequies,* or small canals, for irrigation. It also supplies the city with water.

The city is divided into squares, about one-hundred-and-fifty, marked out by the streets, which are well paved, broad, and clean. Besides many sumptuous private buildings, belonging to wealthy owners of mines, and large landed proprietors, there are some important ones, such as the Mint, the Presidential Palace, the Cathedral, the University, with a Museum of Natural History, under the direction of the Venerable and well-known Scientist, Doctor R. A. Philippi, and many other Colleges, Hospitals, etc. Most of the private houses are built in the old Spanish style, and only one story high, as a precaution against the earthquakes.

The bridge across the Mapocho is a handsome structure. Close by is the Alameda, or public promenade, forming a triple avenue more than half-a-mile long, and much frequented by foot passengers. The middle one, planted with a double row of Lombard poplars, serves for the carriages and horses.

Mirth and gaiety preside in the Chilian society, and foreigners are received with much friendship and conviviality.

Next in importance stands VALPARAISO, or *Vale of Paradise,* the most important port of Chili, with about 120,000 inhabitants, according to the last census. The bay is of a semi-circular form, surrounded by very steep hills which rise abruptly almost from the edge of the water, particularly to the southward. The principal part of the town is built between the cliffs and the sea. The principal street faces the bay and forms the great artery of Valparaiso, and is skirted by elegant warehouses, banks, government and other private buildings. A great activity always reigns here. At the back, the houses rise one above another, forming a species of amphitheatre, which, when first seen from the sea, have a most beautiful and picturesque appearance. At night the sight is more peculiar still, the lights being scattered about the

hills in every direction, giving the appearance of a general illumination.

It is in this city that the foreign element in the population is more considerable. European and American are well represented, and French, English, Italian, and German languages are heard on all sides as much as Spanish. The tone of society is very agreeable and friendly. Once introduced you are always sure of a hearty welcome.

The bay of Valparaiso is large and beautiful, alive with fishes, but very badly protected from the north winds. Tempests are very frequent in the months of June and July, and the only way to avoid the danger of being wrecked is by going at large, and returning when it it has ceased ; but even by so doing, complete security is not always obtained, and many are the ships which are annually lost in these parts. In the winter of 1823, during a *norther,* as they are called, eighteen vessels were totally lost in twenty-four hours. There are fine steamship companies doing business on the coast, the principal is the Pacific Steam Navigation Company, of England, sailing weekly to England via Panama, and bi-monthly by the Straits of Magellan.

In 1883, Chili had in operation 1,102 miles of railroad, and surveys were being made for the speedy construction of as many more. Chili is the first country of South America which inaugurated the construction of a railroad, that from Caldera to Copiapo, in 1850.

The commerce of the Republic is very prosperous, and by reason of its agricultural products for export, and its extraordinary mineral riches, is one of the great markets of the world.

The importation of foreign goods can be estimated at about £10,000,000, chiefly in Articles of food, Textile fabrics, Clothing, Jewelery, Machines, Furniture, Tobacco, Drugs, Wines and liquors, Material for railways, etc., etc. England is the largest importer, France and Germany come next, and the United States holds the fourth place. The principal articles of exportation are wheat, flour, barley, wool, hides, skins, wines, silver and copper in bars, ingots, or ores.

In the animal kingdom, Chili possesses some remarkable forms, some of them peculiar to that country, and others which are also found in the neighbouring Republics of Bolivia, Peru, and Argentine. Among the Mammals the *Huanaco* and the *Vicuna,* usually called *Llama* and *Alpaca,* when

domesticated, are very conspicuous and remarkable, as closely allied to the Camels, although their backs are not humped. They are natives of the Andes, easily domesticated, and extensively used as beasts of burden, but they cannot carry heavy loads. If overladen, they kneel on the soil, and will not rise until the load has been lightened. Their wool, especially that of the *Alpaca*, is long and fine, and of considerable value for the manufacture of valuable clothes. In a wild state, the llamas keep together in herds, sometimes of one or two hundred. When disturbed, they gallop off with great rapidity. In many of their habits they are like a flock of sheep, and are not difficult to be caught. They have the habit of jumping and kicking with their hind legs. Unfortunately, these animals are fast disappearing.

Next comes several species of *Chinchilla* or *Lagotis,* belonging to the Order of RODENTS, or GNAWING MAMMALS. They are beautiful creatures, about the size of a squirrel, measuring about nine inches, exclusive of the tail. They are remarkable for their fur, which is long, thick, close, somewhat crisped, very soft, and of a pearly grey. An extensive trade is carried on with these skins, which find their employ in the manufacture of muffs, tippets, lining of cloaks, pelisses, etc. They fetch a very good price in Europe. These interesting animals live in holes under ground, are very sociable and very timid. They are found in considerable numbers in the mountainous parts of the country.

Another remarkable form among the Chilian mammals is the extraordinary Mole-Armadillo *(Chlamydophorus truncatus),* belonging to the family of *Dasypodidae,* a pigmy, when compared to his gigantic predecessor *Glyptodon,* a fossil species, which was certainly more than a thousand times larger. Like all the other species of Armadilloes, it leads a subterranean life. It is the smallest and the rarest of the species known, scarcely larger than a mole, hence its name. In structure it differs from the other Armadilloes in having the outer shield attached to the hip bones by a peculiar bony process; meanwhile, in *Dasypus,* the shield is imbedded in the skin of the body, with the central rings free and the tail exserted. About twenty living species are known, the largest being *Priodon maximus,* the Giant Armadillo, measuring three feet in length. They walk on the soles of their feet, with the claws expanded, and are able to burrow in the soil with surprising rapidity, either to escape danger or in search of their food, which consists of insects, worms, etc.

When surprised out of their burrows, they roll themselves up in the form of a ball, and easily escape detection from their enemies, but not from man, who secure them very easily. Its flesh, which is white and tender, is exquisite to eat. They are only found in the tropical countries of America. In the the old World, they are represented by the *Manidae,* or *Pangolins.*

Among the Chilian birds, the most remarkable species is the *Condor, Sarcoramphus gryphus,* belonging to the family of *Vulturidæ.* This giant bird is a native of the Andes, choosing its breeding place between an altitude from 10,000 to 16,000 feet; but they are also seen frequently on the coast, especially when in search of carrion. Flocks are never seen except around a large carcase. Otherwise they are met singly, soaring at great height in vast circles. Its flight is slow and majestic. Its head is constantly in motion as in search of food. To rise from the ground, it must needs run for some distance, then it flaps its wings three or four times, and ascends at a low angle, till it reaches a considerable elevation, when it seems to make a few leisurely strokes, as if to ease its wings, and moving in large curves it glides along without the least apparent vibratory motion. In walking the wings trail on the ground, and it has a very awkward gait. When well gorged with food, it is slow in its movements and stupid, and is easily captured. Although a carrion bird, it also feeds on calves, sheep, dogs, or the like, when it has the chance. It has been said and written that children have been carried away by this bird; but I doubt that any authenticated case has ever been proved.

They are most commonly seen standing on rocks, around vertical cliffs, where their nests are. It lays two white eggs, three or four inches long, on an inaccessible ledge. It makes no nest proper, but places a few sticks around the eggs. It is very difficult to get at them, and they are still rare in the collections. Incubation occupies about seven weeks, and takes place in the months of April and May. The young at birth are scarcely covered with a dirty white down, and it takes a considerable time before they can fly. No one has ever been able to state satisfactorily how long they are fed by their parents, but it is probable that it is not much shorter than a year. They are as downy as goslings until they nearly equal in size a full grown bird. During all that time they are very voracious, and the parents are constantly chasing for their support.

A second species, *Sarcoramphus aequatorialis,* has been described some years ago by Mr. Sharpe; but having actually in my possession one specimen agreeing exactly with the type now in the British Museum, I am of opinion that it is only a young male, aged three or four years, and that it is the usual plumage of that age. It is then brown, or ash colour, all over, meanwhile the fully adult plumage of *Sarcoramphus gryphus* is black, with secondaries exteriorly edged with white, and a downy white ruff on the upper part and sides of neck. This last is naked and of a good size; the skin lies in folds in the male. The caruncles on the head of the adult males are well developed, and have somewhat the shape of a crown. A full grown bird measures from twelve to thirteen feet. The olfactory organs are well developed, and it has been said that it has an extraordinary power of scent; but I am more inclined to attribute the faculty of detecting their proper food, at considerable distances, to their sight, which must be prodigious. Life is scarcely extinct when flocks of these birds, invisible to naked eyes, pounce upon their prey.

Another species of birds, peculiar to the Andes, is the GIANT HUMMING-BIRD, *Patagona gigas.* It is about the size of a swallow, dark brown all over, with a white patch on the rump. It is found at great altitudes.

Four other species of Humming-birds, *Eustephanus galeritus, burtoni, fernandensis,* and *leyboldi,* are only found in Chili and the adjacent islands of *Juan Fernandez* and *Mas-a-fuera.* No other species of that genus has ever been found anywhere else. They are beautiful birds.

Among the Insects many remarkable forms exist nowhere else, especially amongst the *Carabidae, Lucanidae,* and *Scarabaeidae.* The most interesting among these are those belonging to the common European genus, *Carabus,* which is represented by a fine series of about twenty species, most of them adorned with bright metallic colours, coppery-gold, coppery-red, or coppery-blue. Among the *Lucanidae,* or Stag-beetles, I will mention the peculiar form of *Chiasognathus Grantii,* only found in Chili. Amongst the *Scarabaeidae,* or *Lamellicorns,* the interesting genera, *Cotalpa, Oogenius, Modialis,* and others, peculiar to Chili. The same can be said of the vegetable and mineral Kingdoms, all of which proves that Chili is a favoured country as regards its natural products, its climate, and its inhabitants, and has in perspective a magnificent future.

CHAPTER III.

AT SEA.

Departure from Valparaiso—Islands of San Felix and San Ambrose—Phaeton and Frigate Birds—Bonito Fish—Eclipse of the Moon—Dorado Fish—Passage of the Tropic—Tunny Fish — Floating Varec — In Sight of San Francisco — Heavy Fog — Pelicans, Porpoises, Sea-Lions, or Seals—Bay of San Francisco—Guillemots —Arrival at San Francisco.

ON the 14th of June we sailed from Valparaiso, but for want of wind we were obliged to return to the bay for the night. On the 15th, which was a Sunday, the boats were lowered, and the sailors had to tow the ship for several hours, as there was no wind whatever; but in the evening a good breeze, which lasted up to the 18th, took us a long way from the coast.

On the 19th, a northern overtook us, and we had several miserable days and nights to endure, besides the constant danger of being wrecked. Afterwards, we learnt that this northern had been also felt in Valparaiso, and that several ships were lost.

On the 20th, the northern abated, and we progressed satisfactorily. On the 22nd, we sighted San Felix, and San Ambrose Islands. When in view of these islands, an extraordinary mirage appeared to us. Ships were seen anchored in the bay of San Felix, a large town defended by a fortress; country houses, etc., were visible on shore, and the captain was very much puzzled about the whole thing. He did not leave the marine glass for a moment. This extraordinary vision lasted all the time that we were in sight of the island, which is marked on the map as uninhabited.

On the 28th, and following days, we saw many Phaeton and Frigate birds. The former one is a beautiful white bird, with two long narrow feathers projecting from the tail, from which it takes its French name of *"Paille en queue."* It belongs to the order *Gaviae,* and the family *Phaetonidae.* Only three species are known, *Phaeton aethereus, flavirostris* and *rubricaudus.* They are closely allied to the Petrels

and Sea-swallows. They have a long, pointed, and strong bill, slightly curved at the end, and denticulate on its edges, short feet, the toes all united by a membrane, like all the *Palmipedes;* the wings are narrow and very long, the tail is short, but with two middle feathers very narrow and long, in consequence of which sailors usually call them "Boatswain bird." The Phaetons, or Tropic birds, are Oceanic birds, and are generally met with far out at sea flying very high and very rapidly. They feed on fish, and are especially fond of flying-fish. They breed on the most unfrequented islands, and place their nests in the most inaccessible concavities of rocks.

The Frigate bird belongs to the order of STEGANOPODES, and to the family of *Pelecanidae.* The sub-family *Atageninae* has been made for the two species known :—*Atagen aquilus* and *minor;* but I am of opinion that they ought to be separated from the true Pelicans, and united with *Graculus* and other allied genera, under the family name of GRACULIDAE. They have also been named *Tachypetes* and *Fregata* by various authors; the last name was given to them in consequence of the rapidity of their flight, from which the vulgar name of *Man of war* has also been bestowed on the bird. *Atagen aquilus,* the species seen by us, is found in all the tropical seas. It is entirely black, glossed with green and blue on the back of the neck. It has a red pouch of a good size. The body is light, the size of its wings immense in proportion, its tail long and much forked, so that it possesses not only great rapidity of flight, but can maintain it for a very long time; its bill is longer than the head and hooked at the tip, the feet are membranous.

The Frigate bird is very voracious, and is met far out at sea. It feeds on fish, and it has the very curious habit of attacking the gulls until these birds disgorge the fish they have captured, which is immediately swallowed by its persecutor. It is a very interesting and amusing sight. When flying high, and gliding apparantly motionless in the air, it has the appearance of a kite. Its sight is very keen. It builds its nests on rocks, high cliffs, or lofty trees in uninhabited islands. The eggs are of a carnation colour, dotted with crimson.

On the 30th, we saw large quantities of birds—phaetons, frigates, gulls, and others, all of them feeding on flying fish, which were very abundant. Not only birds were persecuting these fishes, but also larger species of fish, principally dolphins and bonitos.

We harpooned several of them. The bonito, *Scamber pelamys,* is a fish belonging to the order *Acanthopterygi*, and to the family of *Scombridae,* or mackerels. It is very abundant, and is always seen in shoals. It is a very pretty fish of a fine blue colour, with four dark lines extending from the pectorals along the side of the belly to the tail. It reaches about two feet in length. Its flesh is delicious eating.

During the night of the 11th of July, we passed the Equator. On the 12th, we had the rare and magnificent spectacle of an Eclipse of the Moon, of which we could observe all the phases at leisure. The night was splendid, and the weather warm. On the 27th, we passed the Tropic, and we saw large quantities of *John Dorys* (or *Dorades* in French) and Tunny fishes. We caught some of both. The John Dory belongs to the family of *Scombridae,* or mackerels. I think the species we caught was *Zeus opah,* or king fish. It is a superb fish brilliantly coloured, measuring between four and five feet in length. It is apparently destitute of scales, and perfectly smooth. The body is very high and compressed, and the mouth has a few small erect teeth. The scales are very small and satin like. They have one single dorsal fin, and a short tail. It has a metallic lustre of a gray-silvery colour, traversed with yellowish bands, and has a black mark on each side of the back. It is very delicate and excellent eating. It is supposed that the fish which St. Peter took out from the sea, by command of Jesus Christ, and in whose body the piece of money required for paying the tribute was found, was one of these fishes.

The tunny-fishes, THYNNUS, belong also to the same family, and one species *Thynnus thynnus,* is very abundant in the Mediterranean, where it is caught in very large quantities, preserved in oil and otherwise, and sent to all parts of the world.

Up to the 12th of August we had very fair weather, a good breeze, and an average heat of about 30° Réaumur. It was excessively pleasant to all, and very different to what we had experienced in the Atlantic. Every day we could admire the magnificent sunrises and sunsets, which are constantly to be seen in the Pacific. The currents were also in our favour, so everyone was content. As we were nearing San Francisco, many of the passengers were already making their plans with regard to their future movements. The majority of them were going to California, with the intention of trying their luck in the gold diggings; we shall see later on how few of them

succeeded; but for the present everyone was in good health and spirits. Many friendships had been contracted on board, and some were sorry to think that in a few days they would have to part, each one on his own way, perhaps never to meet again.

We passed the time in playing chess, draughts, dominoes, cards and other games, while others were reading, writing, or seated in rocking chairs for hours, and on the whole very good harmony existed amongst the passengers, officers and sailors, during the voyage.

On Sundays, we had concerts, and sometimes comedy. The performers were passengers and sailors, some of whom were really good players, and time passed agreeably and quickly.

On that day, dinner was more selected, and good wines, including champagne, were liberally given. During all our voyage, there was no death. Excepting sea-sickness, and that only for a short time, the health of all remained excellent all the time, a good proof of the excellent treatment bestowed upon us. In fact, all our officers were not only first-class mariners, but very cordial with all, and we liked them very much. For my part, like the boy that I was, I made friends with all, and I had a great time of it. From the Captain and other officers, I learned a great deal about the places that we passed, all the nautical terms used on board, etc. With their assistance, I pointed on a map, which I possess still, our track day by day, and now after forty-two years, it is a real treat for me to look over this map and peruse the route made then. With the sailors, I learned to climb on the masts, the names of the masts, yards, sails, cords, etc. I caught many birds and fishes, and enjoyed it more and more every day; but it is time to go on with my narrative.

On the 13th, we met with large quantities of floating varec and also some trunks of trees, proceeding probably from the Sacramento river, or its tributary streams. Many sailing ships going in the same direction as ours were in sight.

On the 14th, ten different vessels, French, English, American, Spanish, and Dutch, were in view. We could see the coast of San Francisco. Life was very active. Pelicans, porpoises, and other fish were plentiful. The first we had not seen before; but we often met shoals of the second, both in the Atlantic and Pacific. It is one of the most interesting sights of the sea.

The porpoise is a Mammalia of the order CETACEA,

family DELPHINIDAE. This family consists of true dolphins or bottle-noses and porpoises. The larger species are dignified by the name of whales. The Narwhal, or sea unicorn, belongs to this family. Nothing can be more interesting at sea than to watch a shoal of porpoises disporting themselves round the ship. They swim with the utmost rapidity, and distance easily the fastest steamers. The agility and grace of their movements in the water are always watched with admiration. They are very abundant in all seas. Their principal food is fish. The species mostly met with, was the common porpoise, *Phocaena communis,* derived from the Italian name, porco-pesce, or hog-fish. It is about six feet in length, and is of a bluish-black colour on the back, and white underneath. The whole body is covered with a layer of fat, nearly an inch in thickness, and the flesh beneath is red and resembles that of the hog. It has numerous small sharp teeth in both jaws, and a dorsal fin in the middle of the body. For hours they will follow the same direction as the ship, constantly rolling and tumbling over the water, and passing from one side of the ship to the other. They feed on fish, and are seen sometimes on shore, searching for food in the soil, like hogs. Their flesh is considered very good, and tastes somewhat like that of beef. The oil procured from the blubber is of the purest kind and very valuable. With the skin, duly prepared, coverings for carriages and wearing apparels are made. Lately I have had a pair of boots made of porpoise skin, and I have not been able to wear them out. It is quite impermeable, and the right thing for hunting or fishing purposes.

The Narwhal, *Monodan monoceros,* belongs to this family, but differs greatly from all the others by its dentition. It has only two teeth, both of which lie horizontally in the upper jaw. In the female, both remain concealed within the bone of the jaw, so that this sex is practically toothless; but in the male, while the right tooth remains concealed and abortive in general, the left is immensely developed, attaining more than half the whole length of the animal. In some, both teeth are fully developed, but this is very rare. The use of this tooth, or spiral twisted tusk, is not known, but I think it must be used as an offensive and defensive weapon.

The Narwhals inhabit the Arctic regions, where they are abundant, and met with in shoals of twenty or more. They are often seen sporting about the ships, like the porpoises. They feed on fish, molluscæ and crustaceæ.

They attain a length of from twenty to thirty feet, and have a tusk in proportion. A superior quality of oil is extracted from the blubber, and is considered as a great delicacy by the Greenlanders. The ivory of the tusks is exceedingly dense and hard, white, and easily polished. It constitutes a valuable article of commerce, but it is getting scarce. The celebrated throne of the Danish kings is made of these tusks.

In the evening of the 14th, the pilot arrived on board. It was great excitement for those who spoke English. Everyone was anxious to have news of San Francisco, the placers, etc. We were about thirty miles from that town, and with the hope of arriving there in the night, when we were surrounded by such a dense fog that nothing could be seen three yards ahead. It was just as bad as what we know as a London November fog.

In the circumstances, the pilot said that it was quite useless to try the passage of the channel that night, so we had to bring down all sails and try to keep our position until the morrow. During the night, many whales were seen quite close to the ship, and early the next morning, when the fog cleared a little, we saw large quantities of birds, fishes, cetaceæ, and seals around the ship.

Among the birds, the most conspicuous were gulls, terns, grebes, and guillemots, *Uria grylle*. This last species is found all over the world; but this is the great place for them. All the uninhabited islands near the coast of California, and even in the bay of San Francisco, are crowded with these birds, and in the breeding season, boat-loads of their eggs arrive every day in the San Francisco market.

The Guillemot belongs to the order of IMPENNES, family URIIDAE. It is web-footed, and closely allied to the penguins, and to the auks, which family includes also the now supposed extinct species *Chenalopex impennis,* or Great Auk. The actual value of a good skin of the great auk is between £300 and £400, and the last egg of this species sold in London three years ago, fetched £160.

The Guillemot is a bird of the size of a goose. It has a straight bill arched at the point and with a notch, its tail is short, the wings are extremely short. It is brownish-black above and white underneath. It breeds in vast numbers on the narrow ledges of rocks, where they may be seen in successive rows one above another. In some uninhabited rocky islands, they can be seen in thousands, occupying all

available spaces, and a passage can only be effected by treading upon the eggs. They are supposed to lay from two to three eggs, but this is not quite certain, and I am of opinion that they are more prolific, because the amount of eggs gathered in their places of breeding is prodigious. They are of a large size, about one-third larger than that of a turkey, and pointed at one end. In colour they vary greatly, from white to pale blue, with brownish or black spots sprinkled all over, especially in the middle, and representing all sorts of arabesque figures. The young ones are sometimes eaten ; but the flesh of the adults is oily and has a disagreeable taste. They swim with great rapidity, and dive frequently, reappearing at a distance of fifty yards or more. They live on fish, crustaceæ, and molluscæ.

Lately thousands of these birds have been killed for the sake of their feathers ; but these have a very low market value, and are not worth gathering.

The Grebe, *Podiceps affinis,* belongs to the order PYGOPODES, and to the family of PODICIPIDAE or Divers. It is a web-footed bird of about the size of a water hen, brownish on the upper surface, and pure snow-white underneath. The bill is compressed at the tip, smooth, straight, and pointed. It has short wings, and a short pointed tail, which it uses as a rudder. The backward position of their legs causes them to walk with difficulty, and obliges them to remain upright when out of the water. Most of them fly badly, and their short wings aid them in swimming, so that they may be compared to fins. It swims very swiftly and for a long distance under the water. Its food consists of fish, crustaceæ, molluscæ and such like. They are valued for their white silky plumage. During the last twenty years large quantities of skins of these birds have been sent to the European markets, where they are bought and manufactured into caps, muffs, pelisses, trimmings, etc. Sometimes they are found in inland waters. Their nests are generally placed among reeds, and rise and fall with the water. Its flesh is rank and nauseous.

The Sea-lion, *Otaria stelleri,* belongs to the Fin-footed Carnivorous Mammals, or CARNIVORA PINNIPEDIA, and are distinguished from all the other members of the Order by possessing small external ears, and by being able to bend their hind feet forward under their bodies and to use them for walking on land. *Otaria stelleri* belongs to the family of OTARIIDAE, which also includes the Northern

Fur-seal, *Callorhinus ursinus,* from the North Pacific. It is the skin of this last species which is the most valuable.

The principal characters of the family of seals are short limbs, which are so enveloped in skin as to be more like fins than legs. The neck is very short, so that the head appears united with the body, the nostrils are operculated, the animals possessing the power to open or close them at leisure. Their head in shape resembles that of a dog. Their body is elongated and uniform and their tail is very short. The teeth are those of a *Carnivore,* four or six incisors above, and two or four below, the canines pointed, and the molars 20, 22, or 24, all cutting or conical. In colour, except the common seal, *Phoca vitulina,* which is generally gray, and sometimes white, the other species are usually dark brown, appearing almost black when wet. The valuable dark fur of commerce is only the soft under-fur, all the long coarse hairs having been removed. The young and females produce the finest furs.

These animals are all aquatic, and pass most of their time in the water, and obtain their food in that element. It consists chiefly of fish, of which they can devour a large quantity at a time.

They attain a length of about six feet, sometimes more, especially the males, which are always much larger than the females.

Intermediate between the Eared and True Seals is the Walrus, or Morse, *Trichechus rosmarus.* It is remarkable for its one or two long canine teeth, or tusks, in the upper jaw, while the lower one has neither incisors or canines. These tusks are used for fighting, for climbing from the water on the ice, and for digging on the sea bottom for the molluscæ and crustaceæ, on which it feeds. It is a large animal from ten to twenty feet in length. It is rather a fearless animal, but harmless, unless attacked. Great numbers are killed for the sake of their tusks, the ivory of which is very valuable. The oil they yield is more valued than that of the whale, and the skin is made use of for carriage braces, wheel-ropes, etc.

The seals were known to the ancients from the remotest antiquity, and authors have made them the subjects of many legends. The names of *tritons, syrens, nereides, mermaids, etc.,* have all originated from these animals, and even now some fishermen are still embued with superstitious ideas about them. They can be domesticated, and are very much attached to their masters, whom they obey with alacrity.

Many of them have been brought to Europe, and have contributed to the delight of the visitors to the Zoological Gardens, especially at feeding hours; but, unfortunately, they cannot live very long when taken away from their native countries.

They are always found on rocky shores of uninhabited coasts or islands, and may be seen creeping up on the rocks to feed their young and bask themselves in the sun. They never eat their food on land, but always in the water. They are splendid swimmers, and no fish can escape them.

In the arctic regions, in fine weather, they prefer the ice to the water, and vast herds of them are frequently found lying on the field-ice. Here is where these poor animals are attacked by the sealers and killed in vast numbers. They are polygamous animals, each male having three or four females. They generally have a layer of fat which affords a good deal of oil, with which the Esquimaux delect themselves. In fact this animal is of the utmost importance to these people, it gives them light, food, and clothing. They make bags with the skins of the larger species, which they sew well all around and distend with air. Half a dozen of these bags they lay upon rushes of straw, attach them with ropes, and make them into small rafts, upon which they embark for long voyages. Arranged in that way they never sink. The flesh is used by them as food, the fat is partly dressed for eating and partly consumed in their lamps, and the liver fried is considered by them as a very agreeable dish. The skin is dressed by a process peculiar to them, so as to be waterproof. With the hair off, it is used as coverings for their boats and as outer garments. So equipped they can invert themselves and their canoes in the water without getting their bodies wet.

As everyone knows, the seal fishery is of considerable importance to all the world, and more especially to Russia, England, and the United States, and lately special measures have been taken by these countries for the protection of these valuable animals. The actual value of a fine skin is about £20. After the silvery fox, which fetches as much as £80 per skin, it is the most valuable fur, and it is of the utmost importance to edict stringent rules for its preservation.

At 10 p.m., on the 15th of August, which was a Friday, and the day of the Assumption, we sighted the bay of San Francisco. Another twelve sails of distinct nationalities were also on their route for that port. In entering the mouth of the harbour which is rather narrow, we saw several wrecks,

and we were glad that the pilot did not try to get in the day before. It is a dangerous entrance, and especially so when foggy.

As soon as we had passed the mouth of the harbour, we enjoyed one of the most magnificent views to be seen. The bay of San Francisco has no rival in the world. It is about thirty miles long, and six miles wide, with several islands. All the vessels of the world could easily anchor there, and many more besides. It is perfectly safe, being sheltered by hills from all sides. Occasionally, in consequence of its large size, the strong winds are felt more or less in the bay, the waves are agitated, but there is no danger, excepting for small canoes.

At twelve, we anchored close to *Yerba Buena Island,* opposite San Francisco, but we could not land that day, the wind blowing too hard for small boats. More than 500 vessels were anchored in the port.

At last we had arrived at the end of our voyage, after 209 days of navigation.

On the 16th, after affectionate farewells between passengers, officers, and sailors, we embarked in the small boats with our luggage, and landed in the celebrated town of *San Francisco.*

CHAPTER IV.

CALIFORNIA.

San Francisco in 1851—Population—Frequent Fires—Summary Justice—Abundance of Rats—Commerce—Desertion of Sailors—Gold Placers—Exorbitant Prices of Certain Commodities—Gambling Hells in San Francisco—Free Fights—Murder of Successful Miners—Expeditions of Marquis de Pindray and Count Raousset Boulbon in Sonora—Death of Marquis de Pindray—Capture of Hermosillo—Death of Garnier—Battle of Guaymas—Execution of Raousset Boulbon—Magnanimity of General Yanez.

SAN FRANCISCO.

WHEN I landed in San Francisco, California had belonged to the United States for three years only, and a considerable change had taken place in that country, inhabited only by a few scattered missions during the domination of the Spaniards, San Francisco was at that time a city of 80,000 inhabitants, living in about 10,000 houses, nearly all of them built of wood. Hence the frequency of destructive fires. About three weeks before our arrival, one of them, the fiercest of all, had destroyed about one-third of the buildings, and workmen were seen everywhere building new ones. Shortly after our arrival all of them were rebuilt. Cases of goods were to be seen everywhere in the streets, also pieces of furniture, in fact everything bulky, and with all that robberies were very scarce. It is true that justice was very prompt and effectual. Once I assisted at the catching of a thief, and in less than an hour he was condemned and hanged from the balcony of the house where the theft was committed. This summary justice was executed by a few citizens who had united together and formed a Committee of Public Safety.

I remained in San Francisco from the 15th of August, 1851, to the end of August, 1852, and during that time I saw many fires; but the burning of twenty to thirty houses was considered as of no consequence. From August to the end of December I lived at the small bay, about one mile and a half

from the town. The rent of the house was sixty dollars monthly, equivalent to £12. It was a place considered to be more secure and more healthy than the town, and it was inhabited by many merchants.

It was a pleasant walk from the bay to San Francisco, but at night, the roads were invaded by a prodigious quantity of fearless rats, and it was nearly impossible to walk without treading upon some of them. I believe they were the common European rat *(Mus decumanus),* imported by ships; but here it is about three or four times larger. Besides these animals, the streets and roads were always encumbered with all sorts of clothes, pants, shirts, etc. The reason of this was that it was cheaper to buy these articles of apparel new, than to have them washed. The usual prices of washing were four shillings for a shirt, and sixpence for a handkerchief, and so on in proportion. In consequence of large arrivals of goods of that description, you could buy them new, cheaper than the cost of washing.

Life at home was not very expensive, if you chose to live on fishes, game, beef, vegetables, and fruits, but other commodities, as fresh eggs and chickens fetched extraordinary prices, such as two shillings for an egg, and £1 for a chicken. In dry goods, wines, and conserves, there was a great fluctuation in prices, varying one hundred per cent. or more in the week. Sometimes you could buy them cheaper than in the European ports, and at other times you had to pay very high prices for them. All depended upon the arrival of ships carrying the same provisions, so that the market was often overstocked with some sorts of goods, meanwhile others were scarcely to be had at any price. During my stay, I have seen good claret and other wines sold as low as tenpence per bottle, and at another time, at four shillings a bottle, and so on with all sorts of goods. Paper for the printing of journals cost occasionally as much as one shilling per sheet. Several sorts of fruit and vegetables also fetched good prices. But, as I said before, if you contented yourself with buying what was abundant in the market, you could live tolerably well and cheaply. Salmon of superior quality and many other good fishes, elks, and even bears, were common enough, and cheap at times. Eggs of Guillemots were always excessively abundant during the season, and could be had at two shillings per dozen. Although very different in taste to hens' eggs, they are very palatable and much larger. I have eaten them prepared in all manners, hard boiled, fried, in omelettes, and

otherwise; but found them best made into omelettes. They keep good for a long time, so you can have some nearly all the year round.

The population of San Francisco was very changeable in consequence of the new arrivals. Every day, ships of all nationalities arrived in San Francisco bringing passengers. Few remained in town, the majority of them were bound for the *gold placers*, which were all the rage at the time. There was such a run for them, that very often all the sailors deserted their ships, and it was impossible to find new hands, so the ships had to remain in San Francisco for several months. Nearly all the passengers of our ship did like the others, but I am sorry to say that very few of them did well. One of them, Mr. Garnier, a non-commissioned officer who had been through the African campaigns, and whom I saw several months after my arrival in California, was partly successful, and showed me some fine specimens of gold nuggets; but he said that it was very hard work, scarcely worth the trouble. It is a fact that very few of the diggers return with a fortune, a great many of them dying in the placers. Many others who are successful only come back to San Francisco to spend their money in all sorts of ways, and more especially in the magnificent gambling saloons which are abundant in the town, and where they leave the whole, or the better part of their gold.

Many of these houses were flourishing at that time, and they offered all sorts of attractions to allure the miners; drink, women, concerts, etc. With good reason they were called GAMBLING HELLS. Scarcely a day passed without murders being committed in these infernal abodes, the place of resort of all that was bad. Pistols were taken out from their cases, and shots freely fired for nothing at all, and unfortunately sometimes missed their aim, and inoffensive lookers-on were murdered. The body was carried away immediately, and left in the street, and five minutes after the gambling was resumed as if nothing had happened. Occasionally, there was a free fight, everybody shooting one another, until several were killed or wounded.

Another enemy of the miners was the decoying shark, who waited for them on the quays, and after making friends, as compatriots or something else, drugged and murdered them. So that after all, with few exceptions, the only ones which I heard of having made a fortune in the placers were the hotel and bar keepers, and others of the same category, who established themselves at the diggings, exchanging their

commodities for gold dust or nuggets; but even these were liable to be murdered by the suspicious and lazy characters which always abound in such places.

Add to that, the insalubrity of the country where the placers are, especially the intermittent fever reigning during the rainy season, the exorbitant prices paid for everything, such as one dollar for a fresh egg, or for a glass of brandy, and everyone will be convinced that the profession of miner in California, in the year 1851, was not such a Paradise as many thought.

About the time when Garnier came back from the placers, there were two French celebrities residing in San Francisco, where I had the opportunity of seeing them. One was the *Marquis de Pindray,* the other *Count Raousset de Boulbon.* The last one was young, active, and ambitious. He was of a good French family. Young and rich, but eager of emotions, he engaged as a volunteer in the African army in which he served as attaché to the Duke d'Aumale. Later on, being nearly ruined, he went to California with the hope of remaking his fortune; but when I saw him he was far from it. In fact, he had to work at everything to make a living. For a time he subsisted by hunting elks and bears; but naturally no fortune could be made that way. At that time rumours circulated in San Francisco that very rich gold placers had been found in the Sonora. The Marquis de Pindray and Count Raousset Boulbon were very anxious to go there with a number of followers. Meetings were called to that effect, and Count Raousset, who was a good talker, convinced many of the unfortunate and unsuccessful miners who were in town at that time, to accompany them. Garnier, who had known Count Raousset in Africa, was one of the first to enlist as an officer. About two hundred, chiefly French, were willing to go with them. Shortly after, they embarked and sailed for Guaymas. I do not know exactly what happened there between Count Raousset and the Marquis de Pindray, but there must have been some misunderstanding between them, as they separated. The Marquis de Pindray went with his followers in the Alta Sonora, and Count Raousset, accompanied by Garnier went to Mexico, and soon after returned to San Francisco.

Some days after his return, he convoked several meetings asking 200 followers to go with him, to work the gold mines of the Upper Sonora. Six hundred replied to his call. On the 1st of June, 1852, they arrived at Guaymas. His troop

was militarily organized. Garnier was his first lieutenant. The population of Guaymas made them quite welcome, but not so the authorities, who were not reassured at seeing so many strangers well armed, and having two pieces of field artillery with them.

Governor-General Blanco, who resided at *Hermosillo,* close to Guaymas, was not pleased with their arrival, and tried all that he could to oppose their march into the interior, but ultimately permission was accorded to them to go to the mines; but they were scarcely gone when General Blanco regretted his former decision, and sent an order to Count Raousset to come back and confer with him.

Things had reached the point wished for by Count Raousset. Although he went away, exasperated by the tardiness of attention given to his solicitations by the Mexican General, the losses which these delays caused to the Company, and the contrarieties of which his troop were the victims—in his own mind he was glad of it—all these annoyances giving him a show of reason for the aggression which he meditated, and the spirit of his soldiers, cleverly managed by him and the officers who were in his confidence, was so exalted already, that Count Raousset in taking the offensive seemed to obey the general suffrage.

He refused to go to the conference proposed by General Blanco, to whom he sent one of his officers, Garnier, who came back with the following propositions made by the General.

The French could continue their route on the condition of losing their nationality and becoming Mexican soldiers, with Count Raousset as their captain, or reducing their number to fifty, or lastly, waiting until their security cards had come from Mexico.

The last of these conditions was the only one acceptable, but as they had already lost over two months in parleys and would probably have to lose as much more until the arrival of the cards, there was unanimity in the camp to reject the ultimatum of General Blanco.

In the meanwhile, forty men of the French Colony, *Coscopera,* founded a few months before, in the Upper Sonora, by Marquis de Pindray, who died soon after, and whose death brought about desertion amongst the colonists, under the leadership of Mr. de la Chapelle, joined the volunteers of Count Raousset.

The latter, who thought that he had a sufficient force for

the success of his plans, took the war-path, and visited all the villages in the neighbourhoods, inviting the inhabitants to declare their independence from Mexico. Several influential Mexicans made appointments with Count Raousset, offering their co-operation, with the result that several villages took part in his favour.

But money was scarce, the soldiers were destitute of clothes and shoes, the armament alone was complete. In consequence of his contests with the Mexican General, he could not discount a draft of 10,000 dollars, even for 6,000. Pressed by necessity, he seized a convoy of thirteen mules loaded with victuals for the soldiers of General Blanco. War was declared. His soldiers thought they defended a good cause and were full of spirit. The Sonorienses admiring their intrepidity proclaimed them *heroes*. Raousset gave them a French standard with this inscription, "*Independence of Sonora*." The French had only 184 infantry soldiers, 50 horsemen, 25 artillery men, and 4 field pieces. With this small force, they attacked an enemy four times more numerous, and entrenched behind walls.

On the 14th of October, they were close to *Hermosillo*, when a deputation of merchants came to the camp and offered to Raousset the sum of 60,000 dollars if they consented to abandon the attack of the town. This offer was refused, and immediately after they entered the town, but scarcely had they passed the first houses of the suburbs when they were fired upon from an isolated house. They deployed as skirmishers, surrounded the house, and took it by assault.

In the public garden, 500 National Guards detained them for a quarter of an hour; the impetuosity of the two first sections well maintained their fire until the artillery took part in the action and obliged the National Guards to evacuate the place. The fight continued street by street, ending in the complete defeat of the troops of General Blanco, who had to retreat in the direction of Guaymas. During this action, two casualties worth recording, took place. The first was that of a volunteer named Hill who came to close quarters with General Blanco. He shot at him, but missed; he then ran upon him, bayonet in hand, but before reaching him, he was made a prisoner and shot on the spot. The other casualty was that of poor Garnier, a brave fellow, who secured a small howitzer, at the cost of his life.

In half an hour Raousset conquered the town, at the cost of seventeen killed, and twenty-three wounded, seven of which died several days after.

Although complete order reigned after the action, the inhabitants fled in all directions, carrying their valuables with them. The volunteers only laughed at them, and although the men composing their troop contained many of the worst characters, without clothes or money, they were satisfied with the glory of triumph, and no excesses were committed. Mr. de Raousset thought that the influential merchants, who had promised their co-operation, would hasten to meet him, but in that he was deceived. No one appeared, and all his hopes of conquest vanished. He sent several of his officers to the State Governor, Mr. Gandara, offering him all sorts of things if he supported him, but the only reply sent was to evacuate the town, and to submit to the laws of the country. Now his soldiers began to complain of his inactivity, and he was taken very ill. Seeing that his position was getting worse every day, he gave the order to retreat on Guaymas.

They left *Hermosillo* twelve days after the capture of that town. Their retreat was only opposed by a few bands of peasants who were afraid to approach, firing upon them from such a distance that no casualties occurred. They stopped at nine miles from Guaymas, and decided to enter that city on the morning. But the same night, some emissaries of General Blanco were sent to Raousset, inviting him to come and see him. This he did, escorted by Blanco's soldiers, and was received in Guaymas with all the honours accorded to a Chief Commandant.

However, his illness did not permit him to negotiate with Blanco as soon as convenient, and his volunteers, anxious to learn their fate, sent two of their officers to negotiate directly with General Blanco, if Raousset was not able to do so. Not hearing from these officers, the troops deputed a sailor and another illiterate volunteer to negotiate directly with Blanco. These delegates first went to Raousset, who refused to receive them. Offended at this, and proud of their mission, they went to Blanco, who received them well, and passed a treaty with them, by which they acknowledged in the name of all that they had been deluded and abandoned by their chief, and agreed to leave the country, and deliver to the General their arms, amunitions, cannons, etc., provided that a sum of 11,000 dollars should be paid to them. In fact it was a sale of their armaments, enabling them to return to California. These conditions were executed on both sides, and so ended the first part of what is known as the Guaymas drama.

Recovered from his illness, Count Raousset, to whom life and liberty had been granted by General Blanco, returned to San Francisco. Unfortunately for him, instead of desisting from his projects, which were scarcely reliable, and profiting by the experience acquired in his former venture, he convoked what remained of his old confidants, and told them that he was determined to pursue his projects on Sonora. He opened some offices for enlistments; but this time he asked not less than 1,200 to 1,500 men. The renown of his exploits in *Hermosillo* had acquired him many sympathisers, his brilliant combinations and his eloquence seduced a rich banker of San Francisco, who put his fortune at his disposition. At the same epoch he received a letter from Mr. Levasseur, French Minister at Mexico, inviting him to come to that capital to confer with *Santa Anna*. Raousset asked for a safe-conduct, which was forthwith sent to him. He went to Mexico, had several interviews with the President, but the offers made to him did not satisfy his ambition. After a sojourn of four months in Mexico, tired of conferences without issue, he suddenly departed.

Having returned to San Francisco, he tried to renew the affair with the banker; but the latter, who had had time to reconsider the scheme and its probable success, retired from it altogether. Raousset was sorry to have left San Francisco four months before, and said that his calling to Mexico, by Santa Anna, had been made with the sole object to miscarry his projects.

Count Raousset made an appeal to all those who wished to enrich themselves quickly. "*Arm yourselves and go to Guaymas, and I will join and guide you in the Sonora, I will make you landlords of large properties, and you will become the nobility of the Mexican Province.*" This brilliant perspective fascinated many, and they volunteered to go with him. Already the *Challenge,* a small brig, was ready, and the armament was prepared slowly, and at night, to evade the watch of the American police. At the same time the Mexican Consul in San Francisco, Mr. del Valle, received instructions from his Government to send to Sonora the same men that Raousset had engaged, offering, after one year of military service, to distribute to them portions of land corresponding in size, to the rank that each one should occupy in the army, that those who had had high grades in their country should enjoy a corresponding grade in the colony, and lastly that the immigrants would not lose their nationality.

On learning that the Consul, Mr. del Valle asked for 1,000 immigrants, Count Raousset rejoiced, thinking that the Mexican Government would soon tire of supplying the necessary funds for the maintenance of so many immigrants, and the dissatisfaction produced amongst these men would facilitate the success of his projects. But things did not take the course he thought. Mr. del Valle sent only 300 immigrants of all nationalities; although the French were still in the majority. Count Raousset not considering this number as sufficient and not being able to depend upon all of them, relinquished for a short time his projects against the Sonora, but a casual circumstance compelled him to leave San Francisco.

An American colonel of the name of Walker, had also attempted the conquest of Sonora and Lower California, but beaten by the Californians, he had been obliged to return to the United States and to appear before the authorities of his country. His deposition incriminated Count Raousset as an accomplice of the Colonel, engaged to act in accord with him. Warned in time, Raousset fled to escape arrest, and perhaps condemnation.

At that time, many of his former followers who had gone to Sonora, trusting in the promise he made that he should meet them there, wrote to him to come. He bought a schooner and left San Francisco at night. The 1st of July he arrived in Guaymas.

On landing, he learned that the new Governor was a good and generous man, who had won the affection of the French, and that his influence with them was such, that for a moment he was disconcerted, but he quickly rallied, and went directly to see the Governor, Mr. Yanez, and told him that he had come to avenge himself on the Mexicans; but that he had been so noble in his conduct respecting his compatriots, that he renounced his designs, and offered him his spade and services. Governor Yanez, well aware of the services that such a man could render to his country, if it was possible to gain him over, praised him for his good resolve, and told him that he was going to ask instructions from his Government. The volunteers of the foreign regiment, who did not know the character of the new comer who posed himself as their chief, distrusted him at first, but soon rallied entirely round him, convinced that he desired peace, which gave them all that which the conquest could procure, but a minority, composed of bad characters, ambitious, and illiterate, were hostile to Yanez and so arrogant towards the Mexicans, that

the last, in a moment of exasperation, fired several shots at them.

Immediately after, the French assembled; they had smelt powder, and they claimed vengeance. This incident was the cause of the events of the 13th of July.

From that time, the two chiefs knew that the projected alliance was impossible, the spirits of the men were too much irritated against one another. However negotiations took place. Mr. de Raousset acting in the name of all, wrote to General Yanez, complaining of the aggression made the day before, and asking for the safety of the men whom he commanded, that the General should deliver to him two cannons, and that the National Guard should be disarmed. Yanez, who was expecting reinforcements from Hermosillo, lengthened the negotiations as much as he could, and although he acquiesced to the demand of cannons, he refused to disarm the National Guard. Notwithstanding the irritation of the men's spirit, he replied to the daring visit of Count Raousset by another more audacious. He went alone to the French quarters, informing them beforehand of his projected visit. They decided to keep him as a prisoner. In so doing, Guaymas was bound to fall into their hands without fighting.

Arrived at the French quarters, Yanez gave orders to the troops to form themselves into a square. He reminded them of all the kindness he had bestowed upon them, and implored them to give up their rebellion, and to abstain from shedding blood, and that he should treat them in the future as he had done in the past. He told them that they had been treated by him as his children, that they were ungrateful, that God would know how to punish them, and so forth. His speech was delivered with such spirit and tenderness that it overcame the ill-feeling of the men, who replied with hurrahs. Yanez making a good use of the enthusiasm which his speech had produced, ordered Captain Desmarais to open the files, and he went away free, to the great astonishment of Raousset and his followers.

It has been affirmed that the subsequent victory he gained over the French, was partly due to that bold deed. From that time discord prevailed among them, some inclining for peace, others for an immediate declaration of war. A commission was appointed to confer with the Governor.

The conference took place on the 13th of July. Yanez was well willing on many points, except that of the disarming of the National Guard. The delegates, in favour of war,

made a very poor appearance before Yanez; they hastily concluded the conference, and gave a wrong account of what had taken place between them and the General. Count Raousset was undecided what to do when the sudden query from one of his followers, "YOU ARE NOT WHAT YOU WERE?" made him start, and rising his head he only said, EN AVANT.

Yanez with 300 men shut himself up in the barracks. The National Guard occupied the neighbouring houses and four cannons were placed in such a way that they could fire effectually on all sides. To the watchword of Raousset, many volunteers at first refused to march, but they were won over, took their arms and followed him, many against their will. The advance was made in three different directions. Raousset at the head of the two first companies marched in the principal street, and went straight to the cannons, but the firing of two case shots caused great havoc among his men. None the less, with thirty men, they slowly advanced, and disabled all the artillerymen; the least assistance would have secured the victory. But the two other columns had not executed their plan of attack, besides which Yanez was there, and being short of men, he loaded one of the guns himself, fired it, and left only ten valid men to Raousset, who tried to escalade the barracks, but his efforts were useless. He sought for death but found it not.

At the same time the dispersed French thought less of fighting than to beg for mercy; downcast and repentant, they took refuge in the house of the French Vice-Consul, imploring his protection. Raousset left almost alone, returned to the sea shore with the hope of finding his schooner there, but those who had charge of it were gone.

He went to the house of the Vice-Consul, tried to persuade his men to renew the fighting, did not succeed, gave up his sword, and waited. Yanez came out with his men and attacked the Sonora Hotel, still occupied by the French. They forced an entrance, and the slaughter began. Every one of them would have perished if the Vice-Consul, Mr. Calvo, an influential man, had not interfered in their favour. They were all made prisoners. Pistols were left to Raousset with the hope that he would kill himself, but he did not do so, and from that moment the intrepid adventurer became a mild and peaceful Christian. He felt what he owed to his name and to himself, and disdaining to defend his own life, he only thought of his honour, and declared that all his acts were

political, having no other aim than the civilization of the people and the welfare of humanity. He was sentenced to be shot. From that moment he was very quiet, and the Mexican priest was very much surprised to find in him an eloquent Christian, speaking of religion with the profound respect that only true faith imparts. He came to comfort him, but the words expired on his lips, dominated by a great emotion. It was Mr. de Raousset who comforted the priest. He spoke of the vanities of the earth with the accent of the soul, free from delusion, and when speaking of the other world, he did so in such brilliant expressions of hope, blessedness, and divine misericord, that the good ecclesiastic listened to him in estacy, and after the last kiss, he went out from the chapel, exclaiming, "*This man is a Saint.*"

Mr. de Raousset went to the place of execution without showing any emotion. On the way he took his hat to protect his head from the sun, and when he arrived at the fatal spot, he indicated his heart to the soldiers, and placing his hands behind him he looked upwards and fell . . . .

The noble character of General Yanez appeared again after the battle of the 13th of July. It was due to his magnanimity that the lives of all the prisoners were safe. Yanez followed the impulse of his heart to the cost of his interests. He was relieved of his functions, and brought up for trial by Santa Anna in consequence of his generosity. Part of the rebels were sent to Mexico, and from there directed to Vera-Cruz and embarked for France. The name of Yanez will always be recorded by them as one of the best of men. Before leaving Mexico, officers and soldiers sent him farewell letters, in which they expressed their most eager feelings of gratitude for his admirable conduct towards them.

The idea of Count Raousset Boulbon was to conquer the Upper Sonora, to declare its independence, and place himself at the head of the Government of that Republic.

For a while, it seemed as if this audacious plan of his would succeed and probably it would have come to that, if money had been coming in, and if the population had helped him; but unfortunately for him, it did not, hence the drama!

It is a great pity that such an active and able bodied man, did not content himself with being a subordinate of the Mexican Government. I have no doubt, that if he had accepted a command from the Mexicans he could have achieved great renown in the war against the wild and ferocious Indians of Sonora.

CHAPTER V.

CALIFORNIA.

Principal Buildings of San Francisco—Iron House—Chinese Consulate — Immigration of Chinese — Derbec — Collecting Objects of Natural History—Humming-Birds—Remarkable Animals peculiar to California—The Californian Vulture—Elks—Bears—Californian Salmon—Insects peculiar to California—Giant Trees—Climate—Aspect of the Country.

SAN FRANCISCO.

PRINCIPAL BUILDINGS.

THE principal buildings which existed in San Francisco in 1851, were the Town Hall, the ancient theatre, a large and fine building, the frontage being of white marble. The Government had just bought it for the sum of 500,000 dollars. The Custom House, which was not quite finished, a very large brick building, erected at a cost of 300,000 dollars, two play-houses, the Jenny Lind, and another in which French companies were usually playing, many music halls, and a large number of gambling houses, some of which were sumptuously furnished, the California Exchange, several banks, one of which was entirely constructed of iron sheets, sent from New York. A heavy rent was charged in that bank for the keeping of valuables, documents, and the like, and I have no doubt that it paid well; fifteen Catholic and Protestant churches, several colleges and schools, hotels, nearly all of which were built of wood, a private Museum, containing a fine collection of minerals, chiefly specimens of auriferous quartz, gold nuggets, and gold dust. There was also a collection of Californian birds and mammals, especially rich in Anatidae, or Ducks. Specimens of cereals, vegetables and fruits were also exhibited, and I was much impressed with the beauty and size of some of them. I saw there a specimen of potatoe weighing fifteen pounds. The entrance fee was one dollar. In consequence of the frequent fires, they were beginning to build

houses of bricks and mortar. During my stay in San Francisco, about two hundred of them were built. But the principal curiosity amongst the useful and important buildings was the great Wharf, at the end of Montgomery Street. It was the widest and longest of all, over one mile in length, and they were still adding to it. I think it was the longest wharf known. Hundreds of ships were constantly waiting their turn to discharge their cargoes or take in fresh ones, although a great many of them were obliged to sail without any return freight, as the commerce of exportation was nearly nil at that time. The said wharf was built on the sea for the most part, and they were gradually filling the sea with the detritus of the town. Very often I went fishing from that wharf, and I caught large quantities of fish belonging to many different species.

At the end of December, I removed from the small bay to another part of the town, at the top of Stockton Street, close to the Chinese Consulate. There were only two other houses in that part of the suburbs. In fact we were quite in the country. The small Villa, built entirely of wood, was divided into three fine rooms on the ground floor, and a very large room above. The cost was twenty-five dollars monthly. There was a front and a back garden. I remained in this house eight months. The Chinese Consulate, which was also a museum and a bond house, where the goods of many Chinese merchants were kept, being near, I went there very often, and made friends with the inmates. I received many Chinese curiosities from them in exchange for fish which I usually caught from the great Wharf. I remember particularly a species of *Siluridae,* or Cat-fish, which I caught abundantly. I did not care for them, so I always gave them away to my friends of the Consulate, who were very fond of that fish. On these occasions they took me in their store-rooms, which were crowded with all sorts of goods—umbrellas, fans, pipes, beautifully lacquered chests of all sizes, straw hats, crackers, idols, etc., etc. In fact, to me it was like a museum of Chinese curiosities, and I found great pleasure in looking at all these pretty things, and they always gave me something, so that little by little I made a small collection of them, some of which are still in my possession.

Chinese immigrants were very numerous at that time, and they had already their own district, the centre of which is Sacramento Street, occupied with hotels, boarding houses, opium dens, gambling houses, shops, playhouses, temples,

etc. It was a most interesting sight for an European, although I must confess that their district was the most crowded and dirty. Chinese women were scarcely to be seen, and the very few residing in San Francisco were exhibited as great curiosities. Not so with the men, of whom there were about ten thousand, all of them finding occupation soon after their arrival. Servants were so scarce, and so dear at that time, that there were no end of applications to the Consulate for Chinese servants and cooks, and I really believe that they contributed in some way to the rapid prosperity of San Francisco.

From the intercourse that I had with them, I consider this Asiatic race very enterprising, willing, easily contented, patient, good workers, and even affectionate to those who treat them well. In all these respects they resemble extraordinarily the American Indians. Anyone who has studied the two races cannot believe otherwise that they belong to the same race of men, the only differences existing between the two being the result of a long separation and I should not be much surprised if one of these days a good linguist will find analogies between their languages. In 1851 and 1852, the Chinese were welcomed to San Francisco, because, as I said before, servants, male or female, were not to be had easily, and the price of all the indispensable necessities of life was excessive. As soon as the Chinese arrived in numbers, an immediate change took place. The price of servants dropped from 50 to 75 per cent, and became accessible to many; the same with the washing, which the Chinese understood and did well. They were employed for all purposes, and usually gave general satisfaction. Those who were not employed as servants, established themselves as merchants or traders. In their special district all kinds of merchandize were offered for sale. Close to the merchants of dry-goods were barbers, laundries, coffee houses, bathing establishments, restaurants, opium houses, and even a theatre was built by them. Many made a living that way, others went to the gold placers, and as a rule were more successful than the Europeans, because they contented themselves with less, were more patient, more tenacious in their purpose, and more moderate in their wants. They did not drink, they ate sparingly, and at a small cost, and they gambled only between themselves. Their compatriots who had also gone to the placers and established themselves there as hotel keepers, charged them

moderate prices for their food and lodgings. Hence their better success, even at the placers.

It was a well-known fact that many of them had successfully worked diggings abandoned by European miners. But there was a dark side, that of the hatred which the Europeans had against them, and in these out-of-the-way places it was considered of very little consequence to murder a Chinaman for nothing at all, or to rob him of his gold. Nevertheless, many were lucky, either as miners or merchants, and traders, and returned to their country with sums of money which were considered fortunes there.

This excited the covetousness of their countrymen to a high degree. Hence the constant departure of new immigrants from China to California.

In this they were helped by their countrymen residing in San Francisco, who advanced them money for the payment of the passage. For the very low sum of five to ten dollars they were transported from China to San Francisco. The ships on which they embarked were literally crowded with human lives, and for months they were scarcely able to move about; but nothing intimidated them. Many died during the passage, but it made no difference to them, although the wish of a Chinaman is to be buried in his own country.

This Chinese custom gave the idea to enterprising Americans to start agencies for the transport of corpses from California to China, and many were the ships which were freighted exclusively for that purpose.

I witnessed several Chinese burials, the Chinese cemetery being on the road from San Francisco to the Mission of Dolores, not far from my house. During the whole distance from the house of the dead to the cemetery they fired crackers, burned odoriferous papers, and usually the mourners were numerous.

About that time I made the acquaintance of Mr. Derbec, a clever man, who, after trying his luck with the placers like so many others, came back to San Francisco and started the newspaper *l'Echo du Pacifique*. He was the proprietor and the editor of that journal, one of the best French newspapers ever published in San Francisco. He was a learned and modest man, and of agreeable society. We were good friends, and when I left San Francisco I regretted parting from him much. He was then publishing his journal and doing fairly well. It was from him that I learned that paper became so scarce for a few days that one shilling per

sheet had to be paid, and I remember that many times he had to print his newspaper on all sorts of coloured papers, light brown, blue, or any other light colour.

From March to August, I collected specimens of Natural History. Many were the species of beetles and butterflies that I collected in the suburbs of San Francisco. During my rambles I very often met another Frenchman, the well-known collector Lorquin, who was chiefly searching for insects. Lorquin was an enthusiastic collector, who had already done good work in Philippines, Celèbes, and New Guinea. I also collected many species of birds, and more particularly Humming-birds. Two species were abundant, *Calypte annae* and *Selasphorus rufus*. I found many nests of these two species during the months of March and April, and at one time I had as many as sixty of them alive, all taken from the nests. I fed them with fresh flowers and small insects. Some of them lived four months. At first I had them all together in a large cage made on purpose, but as soon as they were grown up, they began to fight so much that I was obliged to put them in separate cages. I put one pair in each, and I succeeded in keeping them alive and well for a long time. My intention was to send them alive to Europe, but even the most robust died at sea, and it was a complete failure.

Nevertheless, I think if the same experiment was repeated in Florida, New Orleans, or New York, with *Trochilus colubris*, there are many probabilities that they would arrive alive in Europe; but, of course, they could not live long there. Since 1852, I think one experiment of that sort has been made with the Columbian species, and many of them arrived safely in Paris; but they died soon after their arrival. There is more chance with the northern species.

Calypte annae, and *Selasphorus rufus* are two very fine species. *C. annae* has the head and throat of the most beautiful metallic crimson; the upper surface is golden-green, the breast and abdomen gray, and the flanks washed with green. *Selasphorus rufus* has the upper surface bronzy-green, the throat metallic coppery red, very brilliant, and the undersurface white. They have the same habits as the other species. They breed in California. I think that *Calypte annae* is a species peculiar to California and the surrounding countries; but not so with *Selasphorus rufus,* or the Flame bearer. The latter migrates as far south as the State of Oaxaca, (Mexico), where I collected many specimens. They are also found abundantly in the Rocky Mountains and

Colorado; but the bulk of them go to Mexico. In Mexico, the capital, they are very abundant in the months of July and August, and they arrive in South Mexico at the end of October, at which time there is an abundance of flowers in the mountains. They are found at high altitudes and it is probable that they follow the slopes of the Cordilleras, as I have never seen the bird in the valley of Oaxaca, or in any other valley, excepting the table lands of Mexico, which altitude is about 7,500 feet above the level of the sea.

My friend, *Léon Laglaize,* grandson of Lorquin, also well known as a successful collector in West Africa, Philippines, and New Guinea, has witnessed the departure of these birds from California to Mexico (?) He told me that one day in August, when collecting insects in the neighbourhood of San Francisco, he saw thousands of these birds assemble on a large oak tree and depart together in a southerly direction. This being the period of their migration, it is very possible that he witnessed that rare and extraordinary sight. My favourite excursions were from San Francisco to the Mission of Dolores, a hilly country, destitute of forests and rivers. There was not much vegetation, only shrubs and small trees scattered amongst small plants, the soil being rocky and particularly favourable to insects, especially *Carabidæ, Tenebrionidae,* and *Curculionidae,* and to rabbits and partridges. Of the last, *Ortyx californicus* was very abundant.

The climate of San Francisco is mild and healthy, but northerns are very frequent. The rainy season lasts from December to March, and during these months some of the streets were sometimes impassable. On the other side of the bay, where I made several excursions, the aspect of the country is more picturesque. Many rivers have their outlets into the bay, and forests of pine and oak trees are conspicuous.

Animal life is abundant on both water and land. Many species of Geese and Ducks are extremely abundant. I collected twenty different species: *Anser hutchinsi, Chen hyperboreus, Aix sponsa, Mareca americana, Dafila acuta, Querquedula carolinensis, Chaulelasmus strepera, Spatula clypeata, Aythya wallisneria, Bucephala americana albeola* and *histrionica, Oidemia americana, perspicillata,* and *deglandei, Querquedula discors,* and *cyanoptera, Mergus æthiops* and *serrator* and *Lophodytes cucullatus.* Pelicans were also abundant. On land, *Lophortyx californicus,* and *gambeli* and *Oreortyx picta* were also plentiful. Of the first, *L. californicus,* large quantities are brought to the markets,

and sell at a moderate price. It is a pretty bird, and easily domesticated. There are also a large quantity of songsters, finches, sparrows, etc.

Among the RAPTORES, *Aquila chrysætos Buteo borealis, lineatus* and *swainsoni, Cathartes aura, Falco peregrinus, Tinnunculus sparverius, Strix pratincola, Bubo subarticus, Speotypo cunicularia,* and many others were occasionally found; but the rarest of all, the Californian Vulture, *Pseudogryphus californicus,* was seldom seen. It is a very rare bird, peculiar to California. It is the largest of the North American species, rivalling the Condor. It is dark brown, with the head and neck naked. It is very voracious, and when many are together the carcase of a horse or cow is devoured in a very short space of time. The smaller species, *Cathartes aura,* does not dare to approach them. It is not uncommon to see them assemble with the gulls, and greedily devour the carcase of a whale which has been cast ashore, and they will even pursue weak and wounded game. Among Mammals, squirrels and rabbits were the most abundant, but occasionally deer or bears were seen. The Wapiti deer, *Cervus canadensis* (?), could be bought in the market nearly every day. It is a large animal measuring four to five feet at the shoulders. It is red-brown, the tail is short, and the horns are round and erect, branching in serpentine curves, measuring six feet and weighing about thirty pounds. They live in small families of six or seven individuals, inhabiting clumps of woods, and feeding upon grass and young shoots of trees. The flesh is coarse; but if left for a few days to mature good roasts can be made with it.

The bears are not so common, but nevertheless many were sent to the market, and the meat fetched a good price. A bear-steak was considered a great delicacy by connoisseurs. Occasionally a grizzly bear, *Ursus ferox,* was also to be seen. It is a large species measuring nine feet in length, and weighing sometimes 800 pounds. It is the most ferocious species of bear, very powerful, and extremely dangerous to approach when wounded. It feeds sometimes upon fruits and roots, but at others it preys upon animals. The bison is said to be no match for this ferocious animal. After killing it, it will drag the carcase to some retired place where it digs a pit for its reception, and returns to feed upon it till the supply is exhausted. Probably, like the other species of *Ursidae,* they lay in caves during the winter, which they pass in a dormant state, and without food.

Many are the tales of narrow escapes of hunters from falling a prey to these ferocious animals.

Fishes are also very abundant in California, but the most valuable is the Californian Salmon, which is now acclimatized in many European rivers. A good friend of mine, the late Professor Baird, of the Smithsonian Institution, Washington, sent fecundated ovæ of that and other species to all the European Aquariums.

Like all the other species of salmon, they grow to a large size, weighing sometimes forty pounds. In entering the mouth of the rivers in order to spawn, the females are always observed to precede the males, depositing their ova in little holes or nests, which they form in the sand, at the bottom, for the males to fecundate. The young grow very rapidly. When first hatched they are about an inch in length, and during the first year are called *parr*. When they remove to the sea they assume a more brilliant dress, and then become the *smelt,* varying from four to six inches in length. After a residence in the sea, from two months to ten weeks, they revisit the fresh waters, and weigh then from two-and-a-half to four pounds, and are called *grilses*. During the ensuing winter they spawn, and are then known as *salmon*.

Many species are found both in Europe and America. Trout and Char, of which many species are known, belong to this family. Some are migratory, others are not. It is one of the most valuable fish. Many valuable fisheries exist in Europe and America. The Scotch fisheries are the most important, giving employment to many thousands of people.

Among the Californian Insects the most remarkable forms are those of the Tiger beetles, or *Cicindelidae,* which are represented by various species of *Omus,* peculiar to California. Several species are known, *Omus californicus, dejeani, audouini,* and others. Among the Carnivorous beetles, or *Carabidae,* several genera are peculiar to California: *Opistus richardsoni, Metrius contractus, Callisthenes discors, breviusculum, reticulatum,* and others; but the European genera *Carabus, Calosoma,* and *Cychrus,* are also well represented. Of the last many fine species, are peculiar to California, *Cychrus interruptus, ventricosus, alternatus,* and *punctatus,* are abundant. Another species, the smallest of all, *Cychrus mimus,* is still a rare species. In the *Staphylinidae, Thinopinus pictus* is a very curious species, peculiar to the country.

Among the Lamellicorns, or *Scarabaeidae,* many curious

species of *Lachnosterna* are abundant. *Macranoxia,* a genus peculiar to California and Mexico, is represented by one species, *M. crenita,* but the rarest are *Pleocoma,* a genus peculiar to California, and still very rare, and *Megasoma thersites,* the smallest species of that genus. The *Tenebrionidae* are represented by many species of *Eleodes,* a genus peculiar to California and Mexico. The *Curculionidae,* or Weaver beetles, are represented by many small and obscure species belonging to interesting genera. Among the *Cerambycidae,* or Longicorns, I found several species of *Prionus,* a genus found also in Europe, and many small species of *Acmaeops, Leptura, Tetraopes, Monilema,* and others, but the rarest was a species of ROSALIA, *R. funebris,* of which genus one species, *R. alpina,* is found in Europe. Of *Chrysomelidae* there was a large number of species, usually abundant on shrubs and leguminous plants.

Minerals I shall not mention, as everyone knows that California is a Paradise for the mineralogist. There is such an abundance of them that a mere list would fill several pages of this book.

In the Vegetable Kingdom it will suffice to mention the celebrated colossal specimens of *Wellingtonia gigantea,* so abundant in the Yo-Senite Valley, which tourists never fail to visit. There are over six hundred of them, close one to another, forming one of the most imposing forests of the world.

The *Grizzly,* the finest of the lot, has a diameter of twelve yards, and attains the height of 120 yards. The first branch spreads at eighty yards from the soil. All those surrounding it are nearly of the same size. Several of them have been cut or have fallen. The inside of one of them is burnt, and in the tunnel formed by the bark, which still remains, horsemen can pass through easily, and cannot reach the top with uplifted hand. On the trunk of another, four men abreast can walk easily to a distance of seventy yards. Banquets and balls have been given in the interior of another, and several hundred people found ample accommodation. How many thousand years old are they? It is one of the most extraordinary sights to be seen in California.

On the fourth of July, I witnessed the rejoicings held in honour of the Independence of the United States. Flags and banners were conspicuous on all sides, and thousands of spectators were on the balconies and windows, witnessing the immense procession which paraded through all the

principal streets, and also taking part in the festivities by firing shots and crackers at random.

Many thousands of people joined the procession, and it was a grand sight to see all the different banners carried by representatives of all nationalities. The Chinese looked extremely curious and gaudy, and were numerous. Many were the barrels filled up with crackers and fired by the shopkeepers. What with the gun and the pistol shots, and the uproar of the people, it was an infernal noise; but fortunately there were no accidents nor fires, a fact which can be considered as remarkable in a town built of wooden houses.

At night there was a general illumination, which was also well worth seeing. The effect was magnificent.

CHAPTER VI.

CALIFORNIA—(*continued*)

History of California — Its Discovery by the Europeans — Several Expeditions to California—Spanish Missions—Extraordinary Size of Plants—Pearls—Russian Colony—Captain Sutter—His Biography and his Extraordinary Adventures.

CALIFORNIA, which was for a long time thought to be an island, was discovered in 1532 by *Diego Hurtado de Mendoza, Diego Becerra,* and *Hernando de Grijalva,* sent especially for that purpose by *Hernan Cortez.* Cortez, not being quite satisfied with the result of these expeditions, started himself for these regions, and explored the coast and the Gulf of California, which has been known since as *Cortez Sea.* For want of provisions he soon returned, and very little more was heard of that country until 1539, when a rich Spaniard, of the name of *Francisco Ulloa,* set out at his own expense, and explored the eastern and western coasts. He landed at last, but not without opposition from the natives, who with much clamour and gestures set upon him and his followers with stones and arrows with such fury, that they would have met with a serious repulse had it not been for the valour of the mastiff dogs which he carried along with him. At last, he got such a good footing, that he was able to take possession of the country in the name of the King of Spain, with the usual formalities, setting up a cross as a memorial and a testimony of his having been there. Ulloa, during his expedition, which lasted two years, went as far as the mouth of the *Rio Colorado.* The map published in Mexico by the pilot Castillo, in 1541, represents the outlines of the coasts of California, nearly the same as we know them to-day.

About the same time, *Marco de Nizza,* or *Niña,* a Franciscan, who visited that country, on his return reported the wonders that he had seen. Stately cities with magnificent buildings, the very gates of which were enriched with turquoises and other precious stones, and whose in-

habitants went glittering in gold and mother of pearl, rich mines, and the flourishing condition of the kingdoms of *Acu, Tonteac,* and *Mareta;* whereupon the Governor of New Gallicia was sent by the Viceroy of Mexico, with great hopes of receiving a confirmation of these reports; but either out of spite, or because he had real cause to do so, he represented all things as mean and despicable.

The next expedition was made by *Ferdinando de Alarcon,* who is reported to have sailed many leagues up a river called *Buena Guia,* and there to have received homage of *Naucagatus,* one of the chiefs of the Californian tribes.

In 1542, the intrepid *Juan Rodriguez Cabrillo,* to whom the conquest of California has been attributed, explored the Californian coasts, and discovered the Island of *San Lucas,* and another called the Island of *Possession.*

Thirty-five years later, in 1577, Sir Francis Drake* landed in Upper California, in a region considered to be situated north of San Francisco, which he called *New Albion,* and took possession of it in the name of QUEEN ELIZABETH. Here is the description which he gave of that country.

"The country is well stored with deer, grazing up the hills by thousands in a company; the men generally went naked all over, the women using only a piece of mat, or some such thing, instead of an apron; their houses were built only of turf and osier, yet so wrought together that they served very well to keep out the cold. In the midst of it was their hearth, where they made their fire and lay all round about it together upon several beds of bull-bushes. What their towns were, or whether they had any, is altogether unknown."

This description applies well enough to the northern parts of San Francisco, known formally under the name of QUIVIRA.

Since the Jesuits established themselves in that country, in 1683, it has been better known, and it was considered as an arid country, and poor in precious metals. In fact, it was thought that the Jesuits concealed what they knew about the riches of the country. These considerations decided the enterprising Visitador, Don José de Galvez, to go to California. He found arid mountains, water scarce, the vegetation chiefly consisting of Mimosae, and no traces of gold or silver. But he saw what good work the Jesuits had done since their establishment in the country.

---

*See Humming Bird, Vol. 2, p. 113.

In this expedition he was accompanied by a talented and remarkable man, *Chevalier d'Asanza,* his secretary. This last stated freely what they had seen, and dared to speak of the Viceroy as a visionary, the result of which was his arrest, and his incarceration in the village of Tepozotlan, where thirty years after he made a solemn entry as Viceroy of New Spain. The Jesuits are the first who have thoroughly explored the Gulf of California. Father Kin, in 1701, attained the junction of the large rivers, Gila and Colorado. He fixed its latitude to 35^0 $30'$. In 1769, very little remained of the establishments of the Jesuits, and the Franciscans established themselves in the country. Under the direction of Father *Junipero Serra,* they laid the foundation of the mission of San Diego. One year after, the same missionary took possession of Monterey. During the next three years Father Serra laid the foundations of seven more missions. All of them were successful at the time of his death, which took place in 1784. His successors continued his good work, with the result that in 1822 twenty-one of them had been established, amongst them that of Dolores, established in 1776, close to the actual San Francisco which existed in 1851, but was no longer inhabited by the friars since their secularisation by the Mexican Government in 1831. The buildings were still there, but they will be soon lost to view among the numerous villas and cottages that they are fast building.

The peninsula of California, which occupies a surface of land of the same size as England, was sparingly populated during the domination of the Spaniards. In fact, the whole population of that country was scarcely that of Ipswich in England. The centre of the peninsula is traversed by a long ridge of mountains, the highest of which is the *Cerro de los Gigantes,* or Giant's Mountain, about 5,000 feet high.

The soil is usually sandy and devoid of vegetation. Cactuses and mimosae are conspicuous. Water is scarce. When it is present, the fertility of the soil is prodigious. All the graniferous plants and fruit bearing trees produce abundantly, and give large returns. Onions have attained twenty-one pounds in weight. Cabbages have reached a diameter of thirteen feet. Turnips of one hundred pounds have been raised; but of course these are exceptions. Vines prosper, and a very good wine is made with them. Everyone is aware of the well-known size of one plant of vine at Sacramento, which gave ten thousand bunches at a time. It is now dead, but is replaced by some of its sprouts, which are

already producing a large number of bunches. The stem of the mother plant was exhibited in Philadelphia in 1876.

Of all the natural productions of the peninsula, or old California, the pearls are the most valuable, and have attracted many merchants to that country; but now it is chiefly restricted to Mazatlan, in Mexico. The oyster which produces the pearls has been chiefly found in the bay of Ceralvo, and close to the islands of Santa Cruz and San José. During the visit of Galvez in the gulf, 1768-1769, a soldier of the presidio of Loreto, made a rapid fortune by fishing for pearls on the coasts of Ceralvo. Since 1827, the population of old California decreased to about 5,000, and so it remained until 1850.

It was the same in Upper California until the time of the taking of that country by the North Americans in 1848. In that year the population of Upper California consisted only of 7,000 inhabitants of Spanish origin and several thousand Indians. They lived in the villages of *Los Angeles, San José de Guadalupe, Santa Barbara, Monterey,* and *San Francisco.*

North of San Francisco, a Russian colony of about 600 individuals lived entirely by themselves. They argued that they had an authorisation from the Spanish government to occupy the harbour of Bodega, the Ross's fortress, and thirty square miles of arable land. They remained there from 1814 to 1842, and it was vainly that the Mexicans tried to retake possession of the land. But what the Mexican government could not effectuate was brought about by the intrigues of the Hudson Bay Company. When leaving, the Russian sold to Captain Sutter their houses, cattle, and cultures for 30.000 dollars, although they had no legal title, the concession of the Spanish government having never been ratified or confirmed by the Mexican Republic.

This Captain Sutter had himself established a sort of independent dominion in California. The history of this enterprising pioneer, whose name is associated with the discovery of gold in California, is extremely curious and interesting.

John A. Sutter was born in Switzerland. Like many of his countrymen, a military career was his sole means of existence. He soon volunteered in the Swiss regiment that Charles X. in 1830 raised against the wrath of the French. He conducted himself with the characteristic loyalty of the Swiss. During the revolution of July he served as a lieutenant, and was wounded in the face.

Discharged with his comrades by the victorious nation, the young officer went to seek his fortune in the New World. First he resided in the State of Missouri (United States), and adopted the American nationality. Then he went west, traversed the American Continent to Oregon, and from there to Sitka, from which place he embarked for the Sandwich Islands. In 1839 he came back to California, and with the permission of the Government of that territory he settled there.

For several days he explored the bay of San Francisco, searching for the mouth of Sacramento River. Having found it and explored the course of that river, and its two affluents known now-a-days as Feather and American Rivers, he built a farm at the junction of Sacramento and American Rivers. What amount of resolution, perseverance, and daring he must have had to accomplish this, with a small number of followers, cannot be easily conceived when we think of the difficulties standing in his way, against making a permanent establishment in the midst of the hostile Indians, with whom he had to fight; but he was more than equal to this arduous task, and not only was he successful in repelling successfully the unremitting attacks of the Indians, but he subjugated them entirely, and after this he never had better and more peaceful labourers than these same Indians. The narration of all the perils to which he was exposed daily would fill a volume, and no one better than himself could write it, and that was what he was doing when I lived in California, but I do not know if it has appeared in print. At one time he was constantly fighting against the Indians, at another, scarcity or provisions compelled him and his followers to feed on wild roots. What energy and capability he must have possessed to escape from all these dangers is one of those problems which are not easy to solve, and which look more like fictions than realities. Around his farm he built a high and thick wall with *adobes* (very large dried mud bricks), which made it impregnable to the military art of the wild Indians. He named it in memory of his native country, *New Helvetia*. Of the Indians whom he subjugated, partly by might, partly by persuasion, some he made labourers, others he educated and disciplined as soldiers. He cultivated immense tracts of land, and soon acquired thousands of horses and cattle. To avoid attacks from the Indians, he made now and then military expeditions against the hostile Indians, and made himself feared and respected among all the neighbouring tribes. On one occasion he shot nine Indians who had

rebelled, and had their scalps put on the frontage of his fort. To the right of life and death over his people he added that of coining money. He paid his men with tin coins, exchangeable in his stores for clothes, kitchen utensils, eatables, and the like.

The Mexican Government acted with Captain Sutter as the Turkish Government with the revolted and redoubtable Pachas. They confirmed his authority by appointing him Commandant of the frontier. But an American emigration developing itself around New Helvetia, the Mexican Government, remembering the annexion of Texas, and fearing the same fate for New Helvetia, propositions were made to Captain Sutter to exchange New Helvetia for the mission of San José, and 50,000 dollars cash. But Sutter, who was fond of his establishment, rejected these advantageous terms.

The brilliant epoch of the existence of Captain Sutter continued until the arrival of the North Americans. His power was not able to resist this invasion. Everyone would suppose that wealth should have been the compensation of a power destroyed by the transformation of a semi-wild society to that of a civilized one. In his position of first pioneer of the country, owner of a vast territory and of thousands of heads of cattle and horses, how to believe that Sutter was not placed better than anyone else on the road to wealth, especially when, by the construction of his saw mill, gold was discovered. But it did not come to pass so. Thousands of individuals invaded his territory in search of the subterranean treasures before he had time to take his share; the frequent robberies of his animals during the first invasions, reduced considerably the number of his cattle and horses, as also the size of his domain, occupation being the only title of that epoch. The Indians also deserted him, or wanted to impose unacceptable conditions. Captain Sutter could have acquired a high position among the North Americans if from the beginning he had been in favour of them by giving the signal of insurrection, but instead of that, the faithful Swiss of Charles X. repudiated all idea of a revolutionary initiative, and with a certain number of his faithful followers and Indians, all well armed, he tried to repulse the Americans; but he did not succeed, and he remembered only too late that he had been a naturalized American before coming to Mexico.

Nevertheless, the conquerors admitted him into their army, and treated him with great respect. Dazzled by such a generous reception, Sutter, although a bad scholar in the

English language, offered himself as a candidate for the post of Governor of California. His candidature, which was unsuccessful, took a great part of his time, and all his affairs were partly abandoned, with great loss to himself, so that his situation of a rich landlord was reduced to that of a modest farmer.

Meanwhile, the well-known name of Captain Sutter will remain inseparable from that of California and of the discovery of gold in that country, a circumstance which has completely transformed that part of the world, and if it is not done yet, a statue of this celebrated man ought to be made and placed in the most conspicuous part of San Francisco.

Jean A. Sutter, familiarly called the old Captain, left New Helvetia in 1847. It was then a town of 15,000 inhabitants. He retired to Hock Farm, a property situated on the confine of *Rio de las Plumas,* Feather's River, near Marysville. In 1852, Captain Sutter was a fine man still, with hairs just commencing to turn gray. In spirit he was quite young, and very hospitable. Travellers in these parts were always cordially welcomed.

About 150 Indians of different sexes and ages resided on his farm. His wife, a son, and a daughter, were with him at the time.

CHAPTER VII.

Battles between Mexicans and North Americans—Declaration of Independence of California—Colonel Fremont—Annexation of California by United States—Discovery of Gold—Sacramento—Gold Diggings—Modes of Extraction of the Mineral.

THE annexation of the rich country known as California was expected a long time before it took place. The maritime voyage of Captain Wilkes and the bold expedition of Colonel Fremont, contributed much to that result.

The debates of the Federal Congress, in respect to the frontier of Oregon, called the attention to that part of the New World, of which General Cass in his speeches indicated San Francisco as the most important place on the Pacific Ocean. The conquest of that country was not the pretext but the real object of the Mexican campaign.

As to the colonists of Spanish nationality, in the midst of which lived several North Americans, for years back they were prepared for a change of domination, which nearly took place in 1836. Inspired by the example of Texas, Isaac Graham, a North American citizen, commanding thirty of his countrymen and sixty Mexicans, took possession of Monterey and proclaimed the Independence of California. A civil war was the result, and Commandant Alvarado, reinforced with troops, sent from Mexico, routed the enterprising Graham. Since that epoch, the native population expected every day the renewal of another such attempt. A revolution headed by General Miguel Orena, which brought about the expulsion of the Mexican Governor, preceded the declaration of war between the United States and Mexico.

Amongst the principal movers of this local revolution, M. M. José Castro and Pio-Pico manifested their intention to put their country under the protectorate of France or of England; but General Guadalupe Vallejo, the most influential of them, declared himself in favour of an immediate annexation to the United States, but not being able to gain his point, retired to his property near San Francisco. Francisco Castro and Pio-Pico, the first as Commandant General, the second

as Civil Governor, ordered the North Americans to evacuate the country during the next forty days under penalty of death.

In reply, a certain number of North Americans took possession of Sononia, and hoisted a flag with the following inscription : *Republic of California.* This revolution, known afterwards as the Bear's Revolution, coincided with the arrival of the celebrated Colonel Fremont, who took the command of his countrymen. Castro, at the head of a numerous force, came to oppose him, but dared not attack him. Joined by Pio-Pico they retreated to Los Angeles, where they contented themselves by issuing martial proclamations.

At the same time Commodore Sloat arrived at Monterey on the frigate, *Savannah,* hoisted the American flag, and informed the inhabitants that their territory was going to be annexed to the United States. Commodore Stockton, who succeeded to Commodore Sloat, landed his sailors, and with Colonel Fremont, marched against Castro and his troops. Without even trying to defend Los Angeles, Castro and his followers fled to Sonora. By mistake, General Guadalupe Vallejo, the partisan of the annexation, was made prisoner by the North Americans, but was soon released.

After this, a Mexican named Flores, at the head of 600 men and four cannons, attacked the Americans near los Angeles ; but he was completely defeated, leaving a large number of killed and wounded on the field of battle.

After several other encounters of little consequence the Mexicans capitulated, the campaign ended, and soon after they assisted with the Americans at a popular assembly convoked in Monterey for the making of a Constitution for California. The first Governor of California was Colonel Fremont, nominated by Commodore Stockton. No one could fill better this exalted position than the Colonel, to whom the conquest of that magnificent country was chiefly due. But for all that, although all the life of Colonel Fremont had been devoted to public utility and to his country, after a series of altercations with Colonel Kearny, he was arrested and sentenced by a council of war. The new state of California shortly after avenged him by sending him as Senator to the Federal Congress.

John Charles Fremont, was born January, 1813, in South Carolina. He was the son of a Frenchman and a Virginian mother. Although his parents were poor, he received an excellent education in the college of Charleston.

For a time he was a professor of Mathematics. After that he was nominated in Washington, Officer of Engineers, and entrusted with the making of geographical maps. It was he who suggested to the American Government to send a commission of exploration through the Rocky Mountains to the Pacific Ocean. He was entrusted and appointed Chief of the Commission. With less than one hundred men, chiefly French, born in Canada, he successfully accomplished his first expedition in 1842. Two more successful expeditions followed the first. If it had not been for him, it is probable that the annexation of California would have been not only delayed, but possibly would not have taken place at all. Soon after the annexation gold placers, silver, and quicksilver mines were found, from the Sierra Nevada to the Pacific, and from Oregon to los Angeles; but Sacramento and San Joaquin were the first countries explored. It is between these two rivers that most of the gold has been found. Sacramento is the route to the northern mines. San Joaquin that of the southern ones. Sacramento River is navigable to a distance of ninety miles up to the new town of Sacramento, built on the precise site where Captain Sutter had formed his establishment called New Helvetia. By its commercial activity, its population of 15,000 inhabitants, and its marvellous prosperity, Sacramento was considered in 1851, as the second city of California. Ships went direct from Europe or United States to Sacramento. Several steamers ply daily between that town and San Francisco. Others run from Sacramento to Marysville by Feather's River. Stage coaches run between Sacramento aud the neighbouring places, pertaining to its territory. Hotels, Theatres, Gambling Houses, Concert Rooms, etc., are nearly as abundant as in San Francisco.

Sacramento, by its peculiar and favourable position on the route from San Francisco to New York, is the centre of the gold placers, and has in perspective a great future, as also has San Joaquin, with its river, navigable for about 120 miles up to Stockton. On a length of 400 to 500 miles, gold is found everywhere, either as dust nuggets, or contained in quartz. All the tributaries of Sacramento and San Joaquin contain gold, and great finds have been made where the course of the river suddenly change its direction, forming a curve. Gravel, lime, clay, all of them contain gold. In fact, it is found more or less everywhere, even close to the sea shore. How all that gold has come there is a problem which has not been satisfactorily solved yet. It is only by the

stubbornness of the chief of the Russian Colony that all this wealth has not been acquired by Russia.

As I related before, between 1814 and 1842 a Russian colony, the same which sold its houses, cattle, etc., to Captain Sutter, had been formed in California. It was despotically ruled by Commandants appointed by the Russo-American Company.

One day one of the colonists appeared before his Commandant, and told him that he had seen in a rivulet close by, some brilliant grains, looking like gold.

"*Nonsense,*" replied the Commandant, who did not think that such a thing was possible. "*Go on with your work, and don't occupy yourself with what is not business of yours.*"

If that Commandant was alive when the first discovery of gold in California was reported to all the world, and exactly on the site of the colony, what remorse he must have felt at his own foolishness!!

That discovery came as a truly unexpected event, and took the world by surprise.

The scientific explorations formerly made in California by the celebrated geologist, Mr. Dana, Attaché to the expedition commanded by Captain Wilkes, did not ascertain the presence of gold in that country. He only remarks that the rocks of the districts *Uruqua* and *Shasté* resemble in many respects the auriferous rocks of the other regions, concluding with: "*But gold, if it exists, remains to be discovered.*" It is not a positive affirmation, but the indication of a possibility. Mr. Dana had, however, studied with much care the mineralogic character of the country from the river Columbia to San Francisco, through the valley of Sacramento, at about 40 miles from the place where an accident brought about the discovery which has had such an influence on the destinies of the whole world.

This great discovery took place in January, 1848. Two workmen, Messrs. Marshall and Bennett, were working at the construction of a saw mill for Captain Sutter, in the meridianal branch of the American River *(Rio de los Americanos),* about fifty miles from New Helvetia, now Sacramento. The place was covered with oaks, pines and cedar trees. The saw-mill being concluded, it was found necessary to widen the space required for the wheel. Amongst a lot of accumulated mud, Marshall saw something brilliant.

"It is gold," said he, and in a short space of time, he and his fellow workman collected one hundred and fifty dollars

(£30) worth of this metallic dust. An assayer from San Francisco confirmed the opinion that the two workmen had made of their find.

Vainly Captain Sutter tried, in accord with his workmen, to keep this secret. The news was propagated with rapidity from one to another. A gold fever took possession of all the inhabitants of California, who abandoned their houses and families, and invaded the beautiful valley *Coluna,* as it was called by the Indians. Shopkeepers deserted their shops, doctors abandoned their patients, sailors their ships, soldiers their flag, farmers their farms and cattle. It was nothing less than madness amongst all classes of society. The Governor himself, Colonel Mason abandoned San Francisco, accompanied by his staff, and all of them worked the placers. Seven inhabitants in all remained in the abandoned town.

At first they were very successful, and the daily average of the god-send for each was about £20. A few of them made a large fortune in a very short time, such was the abundance of the metal which had never before been touched since its formation.

Soon after, many of the most enterprising miners explored the tributary streams of Sacramento and San Joaquin Rivers, and found also a large quantity of gold, but this did not occur without many extraordinary events taking place, such as disputes of possession, settled by the murdering of one of the two engaged in litigation, and sometimes the death of both. When the Indian in his turn protested against the violation of his land with his arrows, the miner replied with a rifle shot, and carried away the bloody scalp.

The passion of getting much gold had arrived at such a paroxysm of madness, that life was accounted as of no value, and many were the atrocious murders committed for the sake of GOLD. Some, in the anxiety of gathering as much as they could when they found a good place, forgot to make the necessary provision of food, and died of hunger close to their treasure.

The forsaking of all occupations for the finding of gold was followed by the scarcity of victuals, and all necessaries of life fetched a fabulous price. Four pounds sterling were paid for an ordinary breakfast consisting of sardines, bread, butter, cheese, and one pint of ale; beef fetched eight shilling per pound, eggs four shillings each, coffee sixteen shillings per pound. A bottle of brandy £10, one barrel of flour £5, one

drop of laudanum four shillings, etc., etc. In consequence of bad and salted food, scurvy and dysentery prevailed in the miners' encampment, and many died from these diseases.

In 1851, all this was altered. There were hotels everywhere, and a miner could lodge and board for about twelve shillings a day. Strong boots, for which he paid £10 before, could be had at about the same price as in New York. So many were the goods exported from all countries to California, that sometimes the price of some of them was even lower than the cost price, and many were the speculators who ruined themselves. Others became rich in a short time.

Immigrants from all countries were arriving every day, and I do not think that in the history of the world, such an immigration has ever taken place before. Every nation, every creed, every class were represented more or less, and for once harmonized together. Ignorance and education, nobles and plebeians, all mingled and worked together, and the lower classes accustomed to work and privations, succeeded better than the upper ones. At that time carmen were paid £2 per day, cooks £30 weekly, washerwomen were thought much of and gentlemen were anxious to marry them and so forth. It was the golden age for many.

One year after the discovery of gold, there were over 50,000 artisans in the mines. In 1851, they reached 150,000. Such an affluence of people in a few months made a large town of San Francisco. The lots of land which had been sold in the beginning at £2 10s., soon reached from £500 to £1,000. Houses were rapidly built and let at high prices. *Parker House,* the hotel situated in the Square was let at £40,000 yearly. The same rise in the value of land took place in Sacramento also.

The principal mines were soon transformed into towns, and Nevada City, Grass-valley, Rough and Ready, Coloma, Sonora, Mariposa, had, in 1851, between three and five thousand inhabitants each. Now that the gold dust and nuggets are getting more scarce, mines of auriferous quartz are worked with machines, mills, etc., galleries and wells are dug, and everything is done on scientific principles, canals for the washing of gravels containing gold are constructed, activity reigns supreme, and the works will soon reach the bowels of the earth and extract from it a large quantity of the precious metal. Many are the companies which have been formed for that purpose. The mines are divided in two categories, the wet-diggings and the dry-diggings. In the

wet-diggings gold is collected in the slime of torrents, rivers, and brooks, the gold is distributed equally, and the result is certain. They are worked in a very simple manner, and require very few apparatus. One tin basin is all that is necessary.

As much auriferous earth is put in the basin as it will contain, and sunk in the water, being shaken about with the hand. All pebbles are taken away by hand, and by moving the basin in a semi-circular way, the light earth is gradually carried away. Gold, being heavier than the earth, has a a tendency to remain at the bottom, where it lays mixed with black sand. This is easily disposed of by blowing upon, and the gold dust is put away in a leather bag which the miner always carries in his belt, along with his revolver and bowie knife.

As can be seen, it is very primitive, and much gold is lost by such a process. That is the reason why several companies have been formed for the washing of the refuse of the first miners with mercury, and have been doing well.

In the dry-diggings it is only a matter of looking for the nuggets in the interstices of rocks. Sometimes much gold is found, and at others none at all. It depends entirely on chance, although there are some miners called *buscones* (searchers), who have had great experience, and know more or less where to look for the metal. Some large nuggets of pure gold, weighing several pounds, have been found in that way.

From 1848 to the middle of 1852, 174 millions, 780 thousand, 877 dollars are said to have been extracted from the mines of California; but it is probable that it is under-estimated, because a large quantity of gold must have been found in the years 1848-49 on which no report has ever been made. It is estimated that the extraction of 1852 alone reached the fabulous amount of sixty millions of dollars, or £12,000,000. All the other mines of the world did not produce half that sum during the same year. The ordinary pay for miners when working for companies was £1 per day for outdoor work, and £1 10s. for underground work.

In the dry-diggings, the work can be done profitably only during six months, March to July. In the other months, the scarcity of water makes them unprofitable. The best season for working the wet-diggings is during the fall of water from June to November. During the remainder of the year, less profit is made, and the melting of snow in the spring stops all the works.

To be a good miner requires strength and moral energy. One must know a little of several handicrafts, such as digger, stone-cutter, ploughman, bricklayer and wood-cutter, be able to resist the intensity of the sun's rays, the humidity of the dew and rain, and so forth. In fact it requires a fine constitution and the habit of hard working, as well as to be able to fight against the Indian or others, for the preservation of one's property.

No other title is required than possession. Everyone has a right to forty five feet in length on the bank of the river or elsewhere with the power to follow the gold vein as far as it goes in the adjacent hills. For a larger site, it requires the association of several individuals. In the quartz mines, no special rule is fixed about the size of the claim for each individual. Property exists as long as work is resumed. But if work is entirely abandoned during ten days, anyone can take possession of it. To this simple and rational system is due the extraordinary extent of the excavations on all sides.

Soon after the discovery of gold, all sorts of bad characters from all countries invaded the mines. Robberies and murders were very frequent, in consequence of which committees of public safety were formed and the *Lynch Law* was applied with excessive severity. In a very short time, judgment and execution were carried out.

But as a rule a cordial understanding existed between all the miners. Close together you found representatives of all countries, American, Indian, German, Russian, French, English, Spanish, Italian, Chinese, etc. The latter is the most patient, the French the gayest, the German, American and English the most industrious and obstinate. Never before has such a cosmopolitan work as that of the Californian mines ever been seen, and there is no doubt that the discovery of gold in California opened a new era in the history of the world.

As I shall have to write again about California in describing my second voyage to that country, in 1877, I shall leave it for the present, and continue the relation of my travels.

CHAPTER VIII.

Departure from San Francisco — At Sea — Arrival at Acapulco — Acapulco—Its Population — Department of Guerrero — Principal Rivers—Pearl Fisheries — Chilpancingo—Ruins of Xochicalco—Quetzalcoatl—Expeditions of Cortez—General Alvarez—Pintos—Mineral Wealth.

ON the 18th of August, 1852, I embarked on the ship Heva, Captain Magne, bound for *San Juan del Sur.* At first, we had very bad weather and contrary winds, and made little progress. After that, we had some calms, which were very trying, although fish was very abundant. We caught doradoes, bonitas and another called *black-fish,* or Sea Perch. These fishes were in such plenty that we caught over two hundred of them in a few hours. It was a welcome addition to our diet, which was very limited, and consisted chiefly of preserves, salt meat and pork.

Although its flesh is rather tough, we liked it, and we ate them fried, boiled in bouillabaise, and in matelotes.

Every day it rained at certain hours, and in such abundance that it was scarcely credible.

When in the latitude of Acapulco, and very near that port, where we had to call in order to renew our provisions, the wind abated suddenly, and for eight days we experienced, in a certain way, the torment of Tantalus, that of seeing the harbour without being able to effect an entrance. There are only two channels to effect an entrance in the harbour, one wide, but very dangerous on account of the many rocks with which it is strewed; the other safe, but so narrow that scarcely two ships can pass at a time.

Every day we came close to that pass but could not get in, and we were obliged to go at large again.

After eight days of these manœuvres we were at last successful, and entered the bay of Acapulco on the 10th of October. This bay is very fine, and about six miles in circumference. It is sheltered from all sides, which makes it very safe, but very warm. It looks more like a lake than

anything else. The water is always calm and fish is extremely abundant.

The town is small and built at the foot of the hills which surround the bay. Excepting the military residence and churches, very few good houses were to be seen, the bulk of them being more like Indian huts than anything else, the best made of adobes and covered with palm leaves. In 1852, its population was about 3,000, but it had been rapidly increasing for the last few years, in consequence of its having been selected as a port to put into, by the American company of steamers plying between San Francisco, Nicaragua, and Panama.

During the domination of the Spaniards this port was celebrated as the one from which all the Spanish galleons went to, or returned from Mexico to the Philippine Islands. It was also an important military station and the centre of the pearl fisheries. Its population was composed of four classes of inhabitants, white, black, Indian and Chinese, with all their varieties. The blacks are robust, but very indolent, and the others more so. There were four large American hotels receiving the passengers, who were constantly passing through. Gambling houses were also conspicuous.

In the rainy season it is considered unhealthy, in consequence of the marshes which surround the town. Fevers are of a bad character and common; but I did not hear that the vomito, or yellow fever had ever made an appearance. In the dry season it is healthy enough, but always very warm. Close to the town is a mountain called the Telegraph, in consequence of one of those establishments built on the top of it. It is a fine walk, and there is a splendid sea view from its summit. This mountain has been partly cut by the Spaniards. If the work had been completed, it is certain that the salubrity of Acapulco would have greatly benefited by it, as it would have been the means to bring over sea breeze to the town. Even what has been done by the Spaniards is remarkable, and has done some good.

There is another fine walk, that of the town to the fort which defends the entry of the harbour. It is planted with fine trees and is a great resort for the population.

Indian women have drinking stalls placed along this walk and supply lemonade and other refreshing drinks at a moderate price

The market is well supplied with provisions, especially chickens, eggs, and fruit of all descriptions. Plantains,

oranges, and cocoanuts are abundant, and can be had at a nominal price. The Indians who sell these commodities are very interesting to look at.

The aspect of the country is pleasant, and in the dry season many pleasant excursions can be made in the suburbs.

That part of the town inhabited by the Indians is spangled with rocks and stones, as if it had been destroyed one time or other by earthquakes. Besides the steamers plying between Nicaragua. Panama, and San Francisco, there was a line of small steamers plying between Acapulco, San Blas and Mazatlan. This gave a certain animation to the place.

From Acapulco to Mexico there is 340 miles. It can be done in eight days on horseback, but the road is rather bad in the rainy season, although safe enough, excepting near Mexico. They are actually building a railway between the two cities. The principal towns between Acapulco and Mexico are Chilpancingo, Iguala and Cuernavaca. Several villages and haciendas are also met with ; the principal are : Hacienda de Buena Vista, Mescala, Tepecoalcuilco, Hacienda del Platanillo, Puente de Ixtla, Alpuyeca, Huitzilac, Cruz del Marqués, Topilejo and Tepepa.

Acapulco belongs now to the State of Guerrero. Formerly it formed part of that of Mexico. As I shall not have to speak again of that country, I shall give a history of it now.

The State or Department of Guerrero occupies in latitude from 16° 36′ S.E., to 17° 6′ N.O. ; in longitude, 98° 37′ to 100° 22′ of the meridian of Greenwich, forming a direct line of 400 coast miles.

Its limits are, on the north, the Departments of Michoacan, Mexico and Puebla ; on the east, the Department of Oaxaca. Its coasts, which comprise about 400 miles in a north-western to a south-eastern direction, are washed by the Pacific Ocean. Its superficial area is about 17,724 square miles, attaining the length of 330 miles and a width of 159 miles in its wider parts. Its actual population is about 350,000 and Chilpancingo is the capital of the Department.

Its principal rivers are *Sabana, Papagayo, San Marcos,* and *Coyuca*. The first has its source in the mountain of *Brea,* and empties itself into the lake of Naguala. The Papagayo springs from the mountain of Jaliaca, in the district of Acapulco, and falls into the Pacific. It is the most important, and in the rainy season it can only be crossed in boats. During the domination of Spain a bridge was begun

at the Peregrino passage, but it has remained so until the present time, and the materials are scattered in all directions. Being on the route to the Capital, it would be very important to have it built, this being a dangerous passage for travellers.

San Marcos river, which is only 21 miles long, springs from the mountain of Santa Elena and empties itself into the Pacific. *Coyuca River* springs from the Sierra and falls into the Pacific. There are three lakes in the district, that of *Naguala, San Marcos* and *Coyuca*. Fish are abundant, and a large quantity are caught and sent in the interior.

The only port of importance is Acapulco. The pearl fisheries, which scarcely exist now, were at a time one of the principal industries of the district. They are of good water, and many splendid specimens have been gathered at different times. Some years later, south of Acapulco, between that port and Tehuantepec, I have seen many heaps of shells, which proves that pearl fisheries of consequence exist all along the Pacific Coast. I don't know if they are there still, but if such is the case, it would be worth sending a vessel there and pick them up, these shells having a good market value in Europe.

The chief market for pearls on the Pacific is Mazatlan, a port north of Acapulco. Large quantities are annually gathered in the coasts surrounding that port, but the bulk of them are small and called *Mostacilla,* or mustard seed. The large and perfect round ones are scarce and valuable, even there.

The shell found on the Pacific Coasts which produces pearls appear to me to be a species of Oyster, *Ostrea,* and not a *Meleagrina,* or *Avicula,* as in the Indian Seas.

It is said that all shells containing pearls are easy of detection, having external excrescences corresponding to the internal cavities containing the pearls. Smooth and perfect shells do not contain pearls according to the fishermen.

If this is true, and I am of that opinion, much time would be spared in the gathering of them, as also a great many could be returned to their element for future use, as explained under.

It is a well-known fact that pearls are the product of a secretion of the animal, which is produced by irritation. When the shell opens its valves, if by accident sand or such-like finds its entrance inside, the animal is so much irritated by it, that it begins to secrete mother of pearl and covers the

foreign matter with it. *Hence the pearl!* This is so well-known in China, Japan, and other Asiatic countries, that the natives gather oysters, open them, and introduce round shots or beads, or such-like, for the animals to cover them with mother of pearl.

After a certain time, they gather the shells, destroy them, and take out the pearls obtained by that process, which could be applied also to the Pacific oysters, and I have no doubt that the industrious, who should undertake to create pearls by the Asiatic process, on more scientific principles, would reap a good and valuable harvest.

Pearl fisheries, as they are conducted at the present, are like a lottery. It may pay, or it may not. The fishermen sell the shells without knowing if they contain pearls, and the speculator buys them also without knowing what they contain. But if what I said above, about the exterior deformities to be seen on the shells containing pearls is true, with proper care it would be easy to distinguish at once the shells containing the pearls, and probably the best of them would be found in the shells most deformed. It is a very interesting study to make, and I call the attention of scientists and merchants to it.

The boats used for the fishing of pearls are about ten to twelve yards in length and having from four to six oars a side. A sufficient store of water and provisions for eight or ten days is carried.

They start for the pearl banks from the beginning of June to the end of September, the usual time for fishing these molluscs. As many expert divers are taken as the boat can accommodate. They are under the command of the *Armador* or chief, who is generally well paid. He is responsible for everything. It is he who advances money to the divers, and who buys pearls from others, if he has the opportunity. He selects the banks to be worked, supplies food to all his men, and in fact is the representative of the merchant who employs him. When on the bank, he supplies the divers with victuals, a knife, and a quarter-of-a-yard of blue cloth or baize. He remains on the bank until the loading of the boat is completed. After deducting a fifth of the whole of the shells raised for the Government, two heaps are made with the remainder, the Armador selects the one he pleases, the other belongs to the merchant who supplied the money.

Of late, I think that the Mexican Government has given

up its share of the shells, and replaced it with a small tax of eight shillings for each diver employed.

The divers are provided with two meals a day. The diving begins about eleven a.m. and ends at two in the afternoon. The depth of the banks varies from three to twelve fathoms. The quantity of pearls procured by six boats is evaluate to four or five pounds weight, worth from £1500 to £2000.

There are many places where the divers are afraid of going down on account of the sharks and *mantas,* or large poulps. They are more afraid of these last than of sharks. It is very seldom that the sharks have the upper-hand of them. They keep them away with a small stick, and if necessary they make a good use of their knife. Opposite the *Island of Tiburon,* situated in la Paz, (Lower California) it has always been considered a good place for the fishing of pearl oysters. This island is inhabited by the *Ceris* Indians. These Indians guard jealously that part of their territory, and occasionally they bring pearls and careys (tortoise shells) to la Paz for sale.

The capital of this department is Chilpancingo, nine miles from Guerrero, the former capital. It has a population of about 4,000 inhabitants, but the port of Acapulco, although with a less population, is the most important city of the Department. It is the residence of a chief magistrate, the Captain of the Port, a municipal council, and several judges. The Custom House gives employment to about fifty persons. The fort has a garrison consisting of one company of infantry and one company of artillery.

The chapel of *Nuetra Señora da la Soledad* is used as the parish church, since the destruction of the latter, by an earthquake in 1790.

The principal articles of exportation were cattle, sheep, pigs, fowls, turtles, eggs, beans, rice, sugar, vegetables, and fruits, amounting to about £5000 in 1852. Those of importation were flour, spirits and wines, conserves, furniture, and all sorts of European fancy articles, but the demand was limited.

It is in this department that the celebrated ruins of *Xochicalco* are situated at 60 miles from Mexico and 271 miles from Acapulco. It is one of the most important and finest ruins of the primitive inhabitants of that country.

Xochicalco, in Mexican, means flower's house. It is thought that it was dedicated to *Quetzalcoatl,* the white bearded man supposed by some to be *Saint Thomas.*

Here is a revised and enlarged description of that which I gave of this ruin in the Etnographical Review of Paris, in 1887.

The hill on which the palace or temple of Xochicalco was built is the work of men, or at least it looks so ; because it is entirely covered with stones, so that if the centre contains natural earth or rocks, it is impossible to know it from the outside. It occupies about three miles in circumference.

It is surrounded with a wide and deep ditch. In form, it is conical and divided into five strata or terraces of different heights plastered with large stones. It is about 330 yards high.

The said terraces are not horizontal, but inclined to the south-east. On the summit, there is an oblong platform, which from the north to the south is 92 yards wide against 98 from east to west. This platform is circummured to a height of over two yards, but, unfortunately, little remains of of these walls, the stones having been carried away and made use of in the building of their *haciendas* (large farms) by the landlords of the neighbouring lands, and not only they have taken away the stones of the walls, but also many remarkable carved stones which adorned the walls of the temple.

In the middle of the platform is the temple of *Xochicalco,* a very old ruin supposed to have been built by the *Toltecs,* the first inhabitants of Mexico, of which a record exists. This temple, which was probably also a fortress, is still called, *the Castillo,* or fortress.

Alzate, the well-known Mexican historian, says : that the temple was five storeys high, but according to Nebel, who says that he has seen the ruins of three portals on the second storey, it is supposed that it was only two storeys high, these portals, or doors, indicating that they were the entrances of the temple in which their religious exercises took place. To-day only part of the first storey exists, the south corner of the second storey was still in existence in 1877.

In the principal room existed a *Chimotatle,* or throne, cut in one single stone, well polished and covered with hiero-glyphics. No one knows what has become of it. Probably it will be found one day in an Indian hut, in the surrounding districts.

It is admirable to see how the mason's work has been done. All the stones used in the construction of the temple have been well polished, and so well joined together, without any apparent use of mortar, that it is almost impossible to see the joints. When finished, it has been covered with hiero-

glyphics and figures, among which the most conspicuous are those of the corners representing dragoons ejecting water from their mouth, and all along the building, figures of warriors seated with their legs across one another, and with their heads covered with helmets adorned with long plumes of green feathers and the head of a snake. Other remains of small animals, flowers, etc., are also to be seen, but it is difficult to make out some of them.

It is a wonder how these Indians could build such a fine and solid building, if we consider that a prodigious quantity of large stones was required for it, and no quarry of the same stone as used, has yet been found in the neighbourhood. From whence they came, how they managed to carry them there, and heave them up to the summit of the hill, is a matter of amazement, when we consider that machines were unknown.

Another remarkable fact which this temple has in common with all similar Mexican antiquities, is that the four frontages correspond exactly with the four cardinal points of north, south, east, and west, as it is also the case with the Egyptian pyramids, which clearly show that they were experts in astronomy. The first story is twelve yards high, including the cornices, and sculptured all along. Some of the figures occupy two or three stones, showing that they have been done after the completion of the temple. From what remains of the second story it must have been of the same height. Some remains of vermilion can still be seen, and it is probable that all the temple was painted of that colour.

In the neighbouring hill of *Tepeyoculco* exists a mine of cinnabar, which has probably supplied the colour.

The quality of the stone of this valuable architecture is a sort of pale gray stone, like that employed in the millstones of Europe, and this is the reason why it has been so much sought after by the farmers, for the construction of ovens and such like. Each stone is two yards long, one yard wide, and one yard thick. Those of the corners are still larger.

The ditch, which surrounds the hill, the covering of the terraces, the wall which protects the platform, all tend to show that it must have been built for the purpose of a fortress, as well as that of a temple.

The hill presents the aspect of a large snail.

As it was impossible to climb over the wall, from one terrace to the other, it was necessary to walk a distance of about six miles before reaching the platform.

This shows that the Indians of that epoch were experts in the military art, as nothing better for defensive purposes could be done, even at the present time.

All the platform was surrounded with a thick wall, two yards high, from which they could successfully defend its entrance.

On the north side, at the foot of the first terrace, is the entrance of a cave or subterraneous place, giving access to several passages, the principal of which ends in a large room, fourteen yards long and twelve wide. Remains of the stone pillars could still be seen. The floor was covered with lime painted red, the same as the walls.

In one corner exists an opening of conical form, by which air and light entered in the room.

It is said that communication existed between this room and the temple above.

If the Indian who acted as *alcade* (mayor) in 1877 is to be trusted, another subterraneous passage considerably greater, existed between the hill and the suburbs, having an exit several miles away. I should not be at all surprised at this, as the same exists in other ancient Mexican fortresses which I have visited.

These subterraneous places were made for the purpose of supplying the fortress with victuals and water, and also as a way of escape in case of emergency.

In 1769 a large sculptured stone, representing an Indian devoured by an eagle, could be seen west of the hill, on the road to *Miacatlan*. It was a fine work of art. In 1877, when Alzate visited the ruins, he found only some fragments of it on which he perceived traces of the eagle.

From the hill, four roads went north, south, east and west. One of them leads to the town of *Xochicalco,* which must have been a place of importance at one time or another. The actual village of Xochicalco stands south of the ruin at a short distance.

I am of opinion that this temple was built in honour of *Quetzalcoatl,* who was considered to be a god by the Indians.

The word *Quetzalcoatl* signifies green feathered snake, from *quetzal,* green feathers and *coatl* snake.

The warrior who is constantly sculptured on the walls of the temple has his helmet adorned with plumes of long green feathers, in the centre of which is the head of a snake. It is a representation of the green feathered snake, or *Quetzalcoatl.*

The feathers are those of the bird known as *Quetzal*, by the Indians of Quetzaltenango, and those of Central America, where the bird is rather common. It is the **Pharomacrus Mocinæ of la Llave*, or *Long-tailed Trogon*, in English, *Couroucou* in French, the finest bird of America.

It has two long golden-green middle tail feathers about one yard long.

The helmet has the shape of a mitre, and corresponds exactly with what the historians Clavijero, Sahagun, Solis and others say about Cholula, another temple, not very far off, built also in honour of *Quetzalcoatl*.

Quetzalcoatl, the Mexican god, is supposed to be the founder of the celebrated *Tullan* or *Tula*. When that town was deserted by his order, he came to *Cholula*, but this emigration took a long time and it is reasonable to suppose that he stopped and remained some time in *Xochicalco*. From Cholula it is supposed that he went to Goatzacualco where he embarked. But I think that if he really went there, he passed first to Oaxaca, near which city, he built the now famous ruins of *Mitla*, and from there, went to Quetzaltenango and Central America, or possibly, from the latter place to *Guatzacualco*. Lastly the name of *Xochicalco*, or House of Flowers, is also in favour of my opinion; as it is a well known fact in the ancient history of Mexico that *Quetzalcoatl* is the one, who first abolished human sacrifices among these people, and replaced them with sacrifices of animals and flowers. Now it only remains to say that the first inhabitants of that department must have been *Toltecs*, afterwards Chichimecs, and it is not certain that they were under the dependence of *Moctezuma*, when Mexico was conquered by Fernando Cortez. It is more probable that like their neighbours, the Indians of *Mechoacan*, they were independent from the Mexicans.

The resume of all this is, that when Cortez conquered Mexico it was not until later on, about 1522, that he heard from *Sincicha*, the King of *Mechoacan*, who submitted peacefully to his authority, about the countries, whose coasts are washed by the Pacific Ocean. Cortez sent several expeditions to explore these countries, which resulted in the discovery of the Pacific Coast, from Tehuantepec to the Gulf of California. Meanwhile, he retired for a time from Mexico, and built a fine residence in *Cuernavaca*.

---

*See Humming Bird, 1891, Vol. 1, pp. 6, 18, 19.

It was in the course of these expeditions that Hernando de Grixalva discovered the coasts of California in 1534; but Acapulco was already known to Cortez, as in some of the letters which he wrote to *Charles Quint* he mentions the pearls found on the coasts of Acapulco. In 1535 he embarked with 400 Spaniards and 300 slaves, and explored the Gulf of California, known afterwards as Sea of Cortez. It was during this voyage that the new Vice-King, *Antonio de Mendoza,* was sent to Mexico.

Nevertheless, Cortez proceeded with his voyages of discoveries in California, and for a long time nothing was heard of him. News of his death reached Mexico. His wife, Juana de Zuñiga, sent an expedition for the purpose of ascertaining what truth there was in that report, which turned out to be false. Cortez, after many perils, reached safely the port of ACAPULCO. This is the first time that the name of *Acapulco* is mentioned in the history of the conquest of Mexico. *Francisco de Ulloa,* with instructions from Cortez and at the expense of the latter, continued the voyage of discovery, so well inaugurated by Cortez, and during a navigation of two years, explored the coasts of the Gulf of California up to *Rio Colorado.*

As I said before Acapulco was a very important port and remained so during the Spanish dominion, and is now quickly recovering its importance.

When the railway, in course of construction from Acapulco to Mexico, will be concluded, it is probable that a large traffic will take place between the two cities, and will greatly increase the prosperity of the first.

The State of Guerrero has given birth to the celebrated General, Don Juan Alvarez, who entered Mexico with his troops on the 15th of November, 1855, and occupied the Presidential chair until the 11th of December of the same year, when he renounced it, in favour of General Comonfort. On the 19th of December, General Juan Alvarez retired for the south with his troops.

Alvarez, a native of the State of Guerrero, and Comonfort, pronounced against the government of Santa Anna on the 21st of July, and contributed greatly to the fall of the latter. He was victorious in many battles, and the end of it was his entry in the capital, and his proclamation as President of the Republic. But unaccustomed to the court, he soon had enough of it, and returned with his followers, all volunteers, to his farm house.

A peculiarity of some of the inhabitants of the State of Guerrero, but which is sometimes seen in other tropical countries, is the sight of the *Pintos* (spotted Indians).

The inhabitants, to which the name of Pintos is applied, have certain parts of their body spotted with white stains about the size of a sixpence. It does not matter what is the colour of the person who is so spotted, black, yellow, or white, the white stain is lustrous and conspicuous, and gives them a curious appearance, especially to the blacks. The effect of these white stains on their black skin is rather ludicrous. It is a cutaneous malady of which very little is known. Entire villages are affected with that malady, and I confess that I had some hesitation in eating *tortillas,* (a sort of pancake made of maize, the bread of the country), cooked and manipulated by the hands of stained women ; but it seems that there is no risk in doing so. This curious malady is only catching by inoculation and cohabitation of the sexes.

I have known a rich Spaniard willing to pay a large sum to anyone able to cure him ; but I really do not know whether it is curable. If it is, I am afraid that it would require a long time.

Those who are so affected, feel a great itching in these parts, and are constantly seen scratching themselves, and taking of their skin, a sort of scaly skin powder, quite visible to the eye. Besides they smell badly. In the *tierras calientes* (hot countries) few are the inhabitants of the State of Guerrero who are not affected by this malady, to which I call the attention of the medical profession.

I will conclude my narrative about the State of *Guerrero,* by calling the attention of enterprising miners to the various metals and precious stones found in that State. Rich placers of gold have been found in *San-José—Piedras-blancas,* and many more are said to exist. Silver, which is found abundantly and nearly pure, is worked in the mines of *Tasco, Tehuilotepec,* and *Juliantla.* Silver and gold mixed, in *Tepautitlan,* Cinnabria or Quick-silver, is abundant in all the State, as are also copper, lead and iron. Coal has also been found in several places. Sulphur and saltpêtre are abundant. In precious stones, amethyst is very common, and I have been told that rubies, topazes, emeralds, and even diamonds are to be found. During the War of Independence, some white crystals of a good size, were given to General Guerrero, by one of his soldiers, as having been found in the State, and when presented to a lapidary in Mexico, he declared that

they were most valuable diamonds! Therefore, I believe that enterprising parties with capital, could not do better than to explore the State of Guerrero for its mines, and probably the result will be very satisfactory.

CHAPTER IX.

Sailing from Acapulco — At Sea — Arrival at Nicaragua — San Juan del Sur—Its Climate—Population — Tropical Forests — Luxuriant Vegetation — Animal Life — Birds and Butterflies— Transformation of Species — la Virgen — Lake of Nicaragua— Mountains of Ometepeque and Madera.

ON the 18th of October, after having made a large provision of cocoanuts, plantains, oranges and lemons, we went on board our ship and sailed from Acapulco, en route to *San Juan del Sur.*

Up to the 5th of November, the day of our arrival to that bay, we experienced changeable weather, tempests, calms, and good breezes, accompanied with warm weather; but this second part of our voyage was not so unpleasant as the first, as we were always at a seeing distance off the coasts of Mexico and Central America.

Many were the beautiful sun-sets seen, and we were never tired of such magnificent spectacles. We also saw a prodigious number of fish, sharks, porpoises, dolphins, bonitos, doradoes, etc., and fortunately for us we took a good many, which helped us considerably in our diet, the Captain having been very parsimonious in his purchases, and treating us very poorly in that respect. Our ship was also visited by a considerable number of birds, especially some called *fools,* or *fous* in French, *(Sula bassana ?),* gulls, sterns, peterhills, and others. We took a good many and made some fine skins with them. These birds were easily caught. They perched on the yards, and at night, some of the sailors went up with a bag, caught them by the legs, and put them in the bag. The ship's cat caught also a good many of the smaller ones. Cephalopods, of the genus *Nautilus,* were also seen in great abundance, with their sail opened and floating on the sea. Many were caught to experience with, the electric shock which is one of their means of defence, but we returned them to their element soon after.

On the 5th of November, we arrived at *San Juan del*

Sur, a miserable bay opened on all sides, and in which ships and steamers are obliged to anchor at a good distance from land.

We had been eighty days, including our stay of eight days at Acapulco, on our way from San Francisco to San Juan. A very long time for a distance of 3,800 miles, but this was partly due to the bad weather, contrary winds, calms, and also the bad condition of our ship. So it is easy to conceive our joy on that day. We had quite enough of the bad living and incommodities of this voyage.

San Juan del Sur, in 1852, was a very small place, consisting of Indian huts, hidden in the greenness of a tropical vegetation, and several hotels hastily built, to supply the wants of the numerous passengers passing constantly through, from New York to San Francisco and vice-versa. In the American hotel, the charges were twelve shillings a day, and in the French, from eight to ten shillings. I went in the last.

I remained five weeks in San Juan, and the rainy season being not quite over yet, I was able to collect a good many insects, chiefly *Coleoptera* (beetles) and *Lepidoptera* (butterflies).

During that month, I saw several large arrivals of passengers going to, or returning from San Francisco.

As a rule, those coming from North America, or from Europe were in better health and spirit than those returning home. Many of the latter fell sick at San Juan, and could not continue their voyage. Some died and were buried forthwith. I heard that hotel keepers and others had something to do in the matter, being the natural heirs of the dead. I cannot say that this rumour was false or true, but what I can certify is that the climate of this miserable place is very unhealthy during the rainy season, which lasts from May to December, and even more sometimes. All passengers passing through the isthmus should select the months of January to May. The inhabitants of the place consisted of a mixture of black, white and Indians, with a few Americans and other strangers.

The Indians and blacks suffered as much from the fevers as the others, and were poor representatives of their respective races. The vegetation of the neighbourhood of San Juan was quite remarkable and magnificent. It was my first sight of a tropical country and its forests. Nothing can compare with the magnificence of a tropical forest. It is so sublime and

imposing that the first impression felt is that of melancholy, and the sad feeling of how little we are in this world in comparison with the works of the Creator. Each time that I have entered a virgin tropical forest, that I have ascended the summit of a large mountain, that I have been facing the Ocean, or even the immense Mexican prairies, I have felt the same impression, that of our insignificance in regard of such magnitude.

It is quite impossible for those who have not travelled, to have an idea of that sensation, although it may be felt even by them if they are of a contemplative mood. The study of astronomy, the contemplation of the sky, of high mountains, of the sea, of vast horizons, will produce the same effect to those of a sensitive mind.

I really do not know which sight is more effective. Although all of them point to the same end, that of our insignificance, the emotions are quite distinct one from another.

In putting foot in a virgin forest you feel melancholy. In attaining the summit of a high mountain, or in discovering the wide horizon of the sea, or prairies, you may feel the same impression; but it is mitigated by the magnificent sceneries displayed to your view, and you cannot do less than remain in contemplation before them.

In the tropical forests, where the sun never penetrates among the thick foliage of the trees, shady even at noonday, rich in the beauty and the variety of their luxuriant foliage, the immense variety of trees and creepers hanging from bough to bough, you feel more than anywhere else your loneliness. At every pace, you expect the sudden meeting of jaguars, pumas, or other ferocious animals, but you seldom see any. One would think that a large number of animals must exist in these forests, but it is not so. It is only on the banks of rivers, or in the openings, that life is abundant. Possibly the interior of the forest is inhabited, but its inhabitants are so scattered that they are hardly seen at all. It seems as if all that luxuriant vegetation had no other purpose than to be the sleeping resort of birds and animals.

As soon as the day appears or disappears, it is a perfect cacophony. Wild screams of animals and birds are heard in all directions. The roaring of the jaguars and pumas, the howling of the monkeys, the discordant shrieks of the parrots, the screaming and chirping of birds, are all heard at one and the same time. IT IS INDESCRIBABLE !

The whole of them are looking for a resting place, or are starting in search of their daily food.

In the middle of a fine day, when everything is in a state of repose, no sound is to be heard; the fall of a single leaf, the sudden rising of a bird, the flying or the sing of insects, make you start and look around. On the contrary, when the wind is blowing with impetuosity, the cracking of the trees, the fall of trees and branches, and the frightened animals seeking for a place of safety, produce a terrific noise, and you feel a sort of terror.

In the tropics, there is no winter, the trees are always adorned with their leaves, flowers, or seeds. Numerous trees, among which the beautiful palms, the gracious fern trees, the majestic bombax, cedar, mahogany, syphonia, and other large trees elevating their heads above all the others, are conspicuous. Creepers and climbing plants descend in all directions from the tops of the trees to the soil, reascending again and intermixing one with another in an inextricable confusion. Large quantities of parasitical plants, flowering orchids, bromelaciae and others, are seen in all nooks and corners, and cover entirely the trunks of the giants of the forest, perfuming the air with their sweet aroma. On the soil, fallen seeds have developed into young plants and another vegetation invades all available spaces, struggling for the mastership one against another. Large rotten trunks of trees, the remains of veterans of the forest are scattered on the ground, and falling to pieces, contributing with the dry leaves and the humidity, to the formation of a rich and fertile soil, in which ferns, begonias, small palms of the genus *Chamaerops*, and others are growing fast and occupying what remains of available space; but some of the most curious are the climbing palms, which stem is generally well protected with long and sharp points. In search of air, by means of the hooked form of their leaves, they reach the top of the highest trees, above which, they expand their foliage and flowers.

Next to the climbing palms are the great variety of climbers of all sizes and shapes. Some are very thick, attaining about one yard in circumference, others are slender. They twist around the slender stems, they drop from the branches, they grow along the trunks, they stretch between the trees, forming bridges, much used by monkeys for passing from one tree to another; in fact, they seem to have come into existence there, for the sole benefit of these animals, as nothing can give a better idea of the aspect of

these plants than by comparing them to the numerous cordages of ships, or to gigantic gymnastic ropes.

Some of them are of the greatest use to the traveller, as I have experienced many times. It is to supply drink when water is nowhere to be had, which is a common occurrence in the large tracts of the primeval forests. The way to obtain it, is as follows:—Having selected a good sized climber, with the *machete,* (a large knife something like a cavalry sabre), you cut a piece about one yard long, and by keeping it upright, a liquid, something like sweet water, will trickle from it, enough to fill a large wine glass with. If more is required, the natural fountain is close by. By repeating the process, with time, you can fill as many glasses as you like. I learned this from the Indians, and it has been of much use to me at different times.

Where roads or footpaths have been opened, or openings for plantations made, mammals, birds, insects, and land shells, are sure to be seen, and sometimes in quantity. *Peccary* (a sort of wild pig), many species of monkeys, squirrels, rats, other animals are seen feeding on the maize. In fact, they are a pest to the Indians, who kill them whenever they have a chance.

Many birds are also seen feeding on the maize, conspicuous among them, are the macaws and parrots, tanagers, sparrows, and others. On the trees bordering the openings, toucans and caciques are also abundant. The *Caciques* (Cassicus) are very numerous, and live in society. They select one or two of the highest trees and form a sort of cacique's rookery, hanging their long purse-shaped nests close to one another, the whole of which makes a curious sight. I think that this habit of uniting together at the breeding season has for its object the safety of the young. These birds, having the custom of assembling together, fight bravely and pursue any intruder approaching their nests.

In the roads and foot-paths, insects of all descriptions are met with, but the most conspicuous are the butterflies belonging to the families *Heliconidae, Papilionidae,* and *Morphidae.* The family *Heliconidae,* which contains a large number of genera and species, is peculiar to the warm countries of America. These butterflies are very abundant. Some have long black narrow wings, spotted with crimson, green or yellow; others are yellow and black; others have

transparent wings. Their elegant shape, showy colours, and their slow way of flying, form quite a special feature of the tropical forests. So also, the beautifully coloured Morphos, the largest diurnal butterflies of America. The larger species are about five inches wide, all of them brilliantly coloured black and blue, sky blue all over, or opaline blue, so brilliant that when lighted by the sun, their appearance is dazzling, surpassing in beauty all other living animals. They have also a slow way of flying, and they are as easily caught as the *Heliconi,* but they are uncommon.

One of the peculiarities attributed to the *Heliconi* is that they are no food for birds. Why? I have not been able to ascertain; but the fact remains that birds do not touch them, contrary to their usual habit with all other species, of which they are very fond. The consequence is that other butterflies, especially *Papilios,* are met with, resembling so much to *Heliconi* in shape, colour, and other respects, that it is supposed to serve them as a protection for life.

Another interesting observation which I have made with respect to the Heliconi is that various coloured varieties of one and the same species are always met with typical specimens. These may suddenly disappear and are replaced by a large quantity of one of the varieties.

Years after, this variety may disappear also and be replaced by another variety. The deduction to be inferred from this is that when a species is represented by a large quantity of specimens, Nature produces the same changes that mankind have done with several domesticated animals, such as fowls, pigeons, dogs, horses, cattle, etc.

Therefore it tends to prove that Nature is always at work, and making continual changes in what we call species. Some disappear and are replaced by new ones. It has been always the same from the beginning of the world, and will continue so to the end.

Now-a-days we know with certainty that emigration or transportation of animals and plants from one climate to another, in the course of more or less time, will modify their forms and their colours, for better or for worse, to such a degree that they will be hardly recognisable. This is partly due to the climate, and partly to change of food.

On the 15th of December, I left San Juan, and with several others, I started for *la Virgen* (the Virgin), the new station built on the banks of the Lake of Nicaragua, where small steamers wait for the passengers crossing the Isthmus.

It is a ride of about twelve miles. It was the first time that I rode. At first I enjoyed it immensely, but before arriving at la Virgen, I was excessively tired and bruised. The road undulated amongst hills, and was very bad, but quite picturesque all the time and in the midst of primeval forests. If I had been a better rider it would have been a grand treat. We were six hours on the road, from San Juan to *la Virgen*. This route had a very bad reputation. Robberies and murders were frequent. We saw the blood of a stranger murdered a few days before, and we also met with some bad looking faces on the road, but we reached the station safely at half-past five p.m. We went to the American hotel, a new wood building, where we took our quarters for the night; but before dinner we went to see the celebrated *Lake of Nicaragua*.

Nothing finer can be seen. This magnificent lake, one of the largest in Central America, is 150 miles long and 90 miles broad, with many islands, two of them, the largest, *Ometepeque,* and *Madera,* stand opposite la Virgen. On these islands, which have a circumference of about 24 miles, are two high mountains, 5,100 and 4,000 feet in height, which present an imposing aspect. From la Virgen they are distinctly visible, from their base to their summit, and they appear with more effect than many other larger mountains that I have visited. This is due to their position in the middle of the lake. They overlook all the surrounding country.

The islands of Ometepeque and Madera are inhabited. Several villages of Indians exist there. . The inhabitants cultivate large plantations of *bananas* (plantains), Cacao and Cocoanut trees, vegetables, etc. The fertility of the soil is remarkable in some parts. Three harvests of maize are gathered yearly.

The population of these islands descends from the Aztecs or Mexicans, and is exclusively Indian. A few white men have inhabited these islands at different times. They were chiefly German. The family of the first was murdered, and his house burned, and shortly after he was also murdered. Another German who had properties on the islands abandoned them, and went to live at Granada. A third one was more successful, and was much respected by the Indians.

Many antiquities exist on these islands, and the Indians still worship their idols. Animal life is plentiful, and fishes are abundant in the lake.

On the 16th of December, I took passage in a small

schooner, and after fourteen hours' navigation we arrived opposite the landing place of *Granada*. In consequence of a high wind the waves were rather agitated, and some of the passengers were sea-sick during the voyage.

CHAPTER X.

Granada—The French Consul, M. Rouhaud—Nicaragua in 1852-1853—Intermittent Fevers—How to Cure Them—Natural History of Nicaragua — Remarkable Animals found in Nicaragua — Howling Monkey—Humming Birds—Manakins—Rare Insects peculiar to Nicaragua—Vegetable Kingdom—Cacao and Siphonia Trees—Commerce—Mines—Climate — Volcanoes—Rivers—Lakes—Principal Towns—Population.

GRANADA.

GRANADA is a fine town, the principal of the Republic of Nicaragua. It is situated at about one mile and a half from the lake.

Not knowing where to go, I went to the house of the French consul, M. Rouhaud, who received me most hospitably. I remained eight days in his comfortable house, and during all the time M. Rouhaud and his charming wife were kindness itself, and I shall always remember with pleasure the time spent in their agreeable society.

I had caught the fever on my way, from San Juan to la Virgen, and I suffered greatly from it, but thanks to the excellent attendance bestowed on me, by Madam Rouhaud, it soon passed away.

The intermittent fevers, which are one of the drawbacks of tropical countries, are not very dangerous if properly attended, but are very troublesome. During the rainy season, which usually lasts from the end of May to December, the least imprudence is dangerous; but the worst of them is getting wet through. Fever is sure to follow. The first sensation is that of feeling extremely cold. It lasts for one or two hours, then the reaction comes and you feel feverish. This lasts until abundant perspiration is produced, then the fever gradually disappears, and does not come again until the second or third day at about the same hour. Usually it comes every two days. After an attack of fever, you loose your complexion and take the usual yellowish colour peculiar to the inhabitants of tropical countries.

The best remedy I know for combating this malady, and which has always proved successful with me, is the following:—The day after the first attack, take a medicine, castor oil or seidlitz powder, and immediately after, when the medicine has produced its effect, about 12 grains of sulphate of quinine in three times, several hours before the next attack of fever, so as to take the last dose one hour before the attack.

On that day the fever is more strongly felt, but one need not be afraid of that, as it is the effect of the quinine absorbed. Eight grains are taken in the same manner before the third attack, which is already less. Six grains are again taken before the fourth visitation, which is usually so feeble that it can be considered as gone. You continue to take four grains when the fifth attack ought to have come, but it seldom comes at all, and lastly you take the two remaining grains two days later. In all 32 grains.

If you have been careful to commit no imprudence meanwhile, and kept a sort of semi-diet, the fever is gone for good.

If you like you may continue for a time, say for about two or three weeks, to take one grain every day, this will be quite sufficient to keep the fever away. But it is prudent not to expose oneself to the rain, or else the fever will come again with certainty. The usual things to avoid in tropical countries are —rain, sun, fruits, and spirits.

Americans usually take 32 grains of quinine at one gulp. Truly in some cases, the fever disappears almost immediately, but it produces such an irritation to the intestines that the remedy is worse than the malady. Besides the recovery is not so certain as with my method.

By taking one grain of quinine every day, from the day of your arrival in the tropics, you may escape altogether the infection.

The quinine may be taken in two different ways. The first is to dissolve 32 or more grains of quinine in a bottle of orange, claret, or sherry wines, as many grains as the bottle contains of small liquor glasses, so as to keep the proportion of one grain of quinine for each glass, taking care to shake the bottle each time that you make use of it.

The second method, that which I have always used, is to weigh 32 grains of quinine, and to put it in a saucer with about the same quantity of flour. In the middle of it, pour six or eight drops of water, and with a knife, mix the whole gradually and well until it has the firmness of paste,

work it well with your fingers and extend it in length as macaroni paste, then divide it in 32 small pieces, which you detach separately and roll between your fingers, making them into pills. Each pill will contain about one grain of quinine, and will be easily swallowed, the flour having taken away a great part of the bitterness.

Taken with wine it is a preventive, one glass being taken every day before breakfast. The pills are better fit for curative purposes.

Kind Mr. Rouhaud found a house for me, where I made myself at home. I took a female cook at a cost of ten shillings monthly, with board and lodging. I remained in Grenada from the 16th of December, 1852, to the end of May, 1853.

Grenada, as I said before, is the most important city of Nicaragua. It lies on the north west of the lake. In 1852 its pupulation was about 15,000. Like all the Spanish cities it was built in squares, the streets crossing each other at right angles. The houses are usually one story high, very few have a first floor. This is chiefly due to the frequent earthquakes. All the rooms are on the ground floor. They are large and the ceilings high. All of them look on a *patio* (yard), in the middle of which it is not unusual to see a fountain. In the best ones, covered galleries surround the *patio,* and are used as reception rooms during the summer. In fact it is more agreeable to sit and work there than inside the rooms which are badly lighted. On the wall supporting the galleries it is the custom to have all sorts of flowering plants placed upon it, which give a charming aspect to that part of the house.

The rooms fronting the street have large, low windows, enclosed with iron railings, which are sometimes beautifully carved, and which gives them the appearance of gaols. In the afternoon and at night, it is the custom to stand or sit inside these windows, and to converse with the friends passing by in the street. When they have a first floor, there is also a gallery above surrounding the patio, and balconies facing the streets.

During my stay, I remarked that many of the best houses were in a very bad condition, some completely ruined. Few were the monuments, several churches more or less damaged, the municipal Palace, the gaol built much the same as the private houses, so that it is quite easy to speak with the prisoners from the outside, several hotels, and

the remainder shops or private houses. Living was cheap and regular. In the American hotel, which was a large building, the fare was six shillings daily, for board and lodging. In the French hotel four shillings. Besides these, they were *mesons* (native inns) where you could rent one room for one shilling a day, getting your food where you liked. Meat, fish, pork, fowls and eggs were always plentiful in the market, where you could buy also many sorts of vegetables and fruits, brought over by Indians from the interior. Plantains were very abundant and cheap. For sixpence you could buy an entire bunch containing from 60 to 100 fruits. Many sorts were seen, Guinea, Manilla, Santo Domingo, and others, but the most abundant were *Platanos machos* (Male Plantains) a very large one, eaten by all, instead of tortillas of maize, or bread. This last commodity could be had good and at a fair price.

In Nicaragua, the plantain is the most important article of food. It is eaten raw, baked, roasted, or made into sweets.

At first it is well liked, but it would never be supposed that the time would come when you could scarcely do without them, but it is a fact. The more you eat them. the more you like them. Excepting the large ones, all the other sorts are eaten raw, or made into sweets, but it is dangerous to eat too many. It is said that they contribute to engender fevers. I do not know how far this is true.

The *platano macho* is eaten green, or half ripe, or quite ripe. In this last stage it is good, but not so much as the smaller sorts. Fried it is delicious. When green, they are boiled and have a very unsavoury taste, but they are farinaceous and replace bread advantageously. The natives usually eat them so. Half ripe they are roasted upon hot cinders, and they are exqusiite, when well done. They are then slightly sweet and farinaceous. I was never tired of them, when prepared in this manner. Boiled, one is enough for one meal. Roasted, two are the utmost which you can eat.

The plantain belongs to the family of the *Musacae*. It is found in all tropical countries. These plants have scarcely any aerial stem, but shoots from subterraneous root stocks, from which emerge stems composed of sheathing leaf stalks. The leaves are flat and traversed throughout by a thick median rib, with simple veins running directly towards it from the margin. The general aspect of the plant is somewhat like that of a palm tree. The genus, *Musa,* is the type of the family.

The *Platano macho (Musa sapientum)*, is the largest of the species. It has a fruit which grows sometimes to the length of twelve inches or more. Each plant produces a bunch containing from twenty to sixty fruits closely grouped together. It weighs from thirty to one hundred pounds.

Another common species is *Musa paradisiana*, so called from an allusion to an old notion of being the forbidden fruit of Scripture.

The fruits of this species are small, only about three inches long. When ripe, they are very delicate eating.

Many other species are known, and all of them are used for food. All animals are fond of them. When over ripe, I have seen hundreds of beetles and butterflies feeding upon them, and some of the rarest species which I have collected were caught when feeding upon these fruits. I believe the fermented juice of the over ripe fruits intoxicate them, as I have always seen them more or less stupefied when feeding on plantains, to the point of allowing one to catch them easily with the hand. During the last few years, a large trade in these fruits has developed between the United States and the Atlantic ports of America and West Indies. In 1892, in the months of August and September, seventy-eight thousand tons have been imported to the United States, the result of which has been, that the culture of this fruit is increasing to a remarkable degree.

A good many tons have also been imported to several parts of Europe, especially to England, but it is quite insignificant compared with the importations to the United States.

It is the most nutritious and the most prolific of all known plants. It requires very little labour, and a mere patch of ground, say of one hundred yards square, will suffice to sustain a whole family. Not only the fruit, but every part of the plant is useful. The leaves make a good shelter, and are employed by the Indians to cover their huts; and its fibres can compete with the best qualities of cotton or flax.

Lately, a very good quality of paper has been made with the fibres, and at a very small cost. The supply of this material being unlimited, it is probable that it will greatly reduce the cost of paper. The sap of the stem and the skin enveloping the fruit contain a very strong acid, which blackens hands and clothes, and is not easily disposed of. I believe that no one has ever studied its properties, but it is probable that a good ink can be obtained from it, and no doubt many other uses will be found for it.

An intoxicating liquor is made with the fruit. It is rather pleasant and has a peculiar taste.

Sugar can be extracted from the fruit.

I have also seen parcels of dried fruits sent to Europe, and we had a fair sample of them in the Guatemala Pavilion, at the Paris International Exhibition of 1889; but it was not much appreciated by the Visitors.

With a little care, the plants may be made to bear fruits all the year round, and it is estimated that an acre planted with bananas will produce forty times more in weight than potatoes, and one hundred and thirty times more than wheat. It has also been calculated that the produce of one acre, planted in *bananas,* will yield a yearly income of four thousand pounds sterling.

It is very easy to set out a plantation of bananas. The stems are annual and usually die after the exhaustive process of fruiting has been completed, new ones being produced from the root-stock. It is by planting these buds that the banana is propagated, and a new plantation made. These stems being numerous round the dead plant, the task is easy. In about ten months, the new plants will bear fruit. It requires scarcely any work at all in the way of weeding, these plants being so perennial that they do not leave room for any other plants to grow between them.

To the fertility and large productive power of these plants is partly due the laziness of the Negroes and Indians inhabiting the tropical countries of America, and this is more especially seen in Nicaragua, where these fruits are the principal food of the inhabitants.

To that fact, I have attributed the difficulty I experienced in getting men to help me in my researches. As soon as they had earned a few shillings, it was quite impossible to make them work. So long as they had a little money for drink, they lazily remained for hours and days' warming themselves in the sun, like lizards, or bathing in the lake for hours at a time.

From the town to the lake, the route was always crowded with people, some going, others returning. In fact it was a curious and interesting sight to see these people bathing, both sexes together. It is true that a bath in the lake was delightful, and I enjoyed many; but I never remained in the water for hours as the natives did.

They were not at all afraid of crocodiles, which were abundant at certain places, and which from time to time

caught one of the legs or arms of the bathers to feed with. It is true that these casualties were rare, but nevertheless it occurred several times during my stay in Granada. When it occurred, they frightened the animal with their discordant cries, and several times the monster was caught, and paid the penalty of death for its audacity.

I believe that the Indians of Nicaragua are as much at home in the water as on land. They are truly amphibious. From the time of their birth, we may say that they go in the water, and when they are full grown, it seems to be their natural element. They swim splendidly.

At the beginning of March birds appeared in large quantities, and I made some fine hunting expeditions in the neighbouring primeval forests bordering the lake. In one of them, I killed a fine specimen of the Howling monkey *(Mycetes palliatus)*. Their native name is *Congo*, probably in honour of their black colour, alike that of the inhabitants of that African country. Two species of this genus are known, one peculiar to South America, and this one peculiar to Central America. They are the largest American species known, measuring about four feet, exclusive of the tail. They are remarkable for the great development of the organ of their voice, which consists of a peculiar kind of bony drum, formed by a convexity of the hybroidal bones and communicating with the larynx. The noise produced by these howlers, at day-break, at sun-set, and sometimes during the night, is perfectly appalling. It is more like the roaring of jaguars than any thing else. I was a long time before ascertaining that such an infernal noise was produced by this monkey. Many are the nights which I passed sleeplessly, when encamped in the forest, fearing an attack of jaguars or other ferocious animals, and all this, due to the vociferous cries of these monkeys.

It was a great satisfaction to me when I discovered it, because these animals are quite harmless, and I cannot conceive what can be the meaning of their noisy howls.

They are sociable animals, and live in troops in the deep forests. As many as forty of them are sometimes seen together. They are fond of their offspring, and very active, and it is a grand sight to see a troop of these monkeys running away with their young, firmly attached to their backs, or gambolling among the creepers. The male is rather dangerous to approach when wounded, but it never attacks man.

They are great enemies of the Indians in consequence of

their devastating propensities. Scarcely are maize or fruit ripe when these monkeys invade the plantations and carry away the ears of maize or the fruit. Unfortunately for the owners it is very difficult to surprise and kill them as they leave scouts all round during their plundering expeditions, and when the Indians arrive on the scene, not one is to be seen. It is is only by surprise that they can be killed.

Although I was very fond of eating the flesh of most of the mammals and birds which I killed in my expeditions, I did not taste that of this animal, so I cannot say what it is like, but I have been told that the Indians and hunters consider it a great delicacy, roasted.

I also procured some other species of monkeys, but they were very small. One of them, a sort of *Ouistiti* (Jacalus). was a very pretty creature, and is often domesticated.

Among the birds, one called *Mot-mot (Eumonota superciliaris),* was very abundant, and I secured many specimens. Its native name, *Mot-mot,* comes from its cry, which sounds exactly as the pronunciation of that word in a deep, low voice, and which it repeats frequently, when perched in the interior of the forest, one of its peculiar habits. Sometimes it will remain for hours on the same branch repeating now and then its curious cry, and at the same time moving its tail up and down. The two central feathers of the tail are very long and bare in the middle, terminating with a sort of round spot similar to an eye. They are quite visible when he moves its tail. It is said that the bird itself, with its bill, lays bare that part of the median feathers by plucking one by one the feathers of the quill, so as to make it more ornamental. It is possible, but I am not certain, that it has been proved. It is true that in the young birds these feathers, excepting in their length, are like the others, and do not show any bare place ; but this may be produced by some other means than by the plucking of them.

It would be necessary to know how and where they nest, a fact which I have never been able to find out, but which would throw some light on the matter, if what I have been told is true, that they nest in the cavities of trees and holes in the ground, where they may loose their quill feathers in entering and getting out of their nests. I say this because I have killed many specimens which not only had the middle, but also the extremity of the quill, bare of feathers and very much worn.

These birds are always seen in pairs ; but several pairs

may be seen at a very short distance from each other. It is a very pretty bird, grass olive-green above, the tail feathers blue with black shafts and tips, the two central produced into a long bare shaft with a broad blue racket, the terminal half black. The crown is grass-green with a broad supercillery band commencing at the base of the nostril, first silvery white, shading into silvery cobalt, the lores and ear coverts black as well as the feathers below the eye, the latter spangled with a few silvery blue spots. The undersurface is olive yellowish-green, becoming grass-green on the fore neck and breast.

The centre of throat is black, forming a broad streak, bordered by a band of elongated blue-silvery feathers, the sides of the body, abdomen, undertail and wing-coverts are ferruginious. Many species are known, all from America. They are all coloured more or less alike.

They belong to the order COCCYGES, sub-order *Anisodactylæ*, and family *Momotidæ*. They are characterized by having a long, strong and thick bill, a little compressed, laterally inflated at the point, and having the edges crenulated. Their tongue is long, narrow, and barbed on the edges, the wings are short, and their tails have always the two central feathers two or three times longer than the others.

They are sometimes called *Bobo,* or Simpleton, by the natives, because they are very familiar, the presence of man does not frighten them, and are easily caught. They are about the size of a starling, and have strong feet. The egg is round and pure white.

Another species, *Momotus Lessoni,* is also found in Nicaragua. It is slightly larger, but not so brilliantly coloured. Another beautiful bird, also abundant in Nicaragua, was the Long-tailed Manakin, *(Chiroxyphia linearis.)* It is a charming little creature, adorned with the most brilliant colours, red, blue, and black, with two very long and narrow central tail feathers.

These beautiful birds belong to the PASSERES, sub-order *Oligomyodae,* and family *Pipridae.* About 70 species are known, all of them from America. They are about the size of a canary, and have a very short bill, slender feet, short wings and very short tails in general, but in the genus Chiroxyphia all the species have two very long and narrow central tail feathers, but this peculiarity exists only in the males. It inhabits small woods, is very active, has a short

flight, and utters a sharp piping note. They live in pairs, but many pairs may be seen at a short distance from each other. They feed on insects.

Some species of Pipridae make a great deal of noise with their wings, when flying from one branch to another, but I never heard it from this species.

Among the other remarkable species of birds met with in Nicaragua, I shall mention several species of Tanagers, among which, *Ramphocelus passerini and icterontus,* several species of *Calandra* (Icterus) remarkable for their long purse shaped nests, built near one another at the top of high trees. These birds usually yellow and black, are very fond of plantains. The curious Fly-catchers (Milvulus *tyrannus and forficatus),* two fine species with long tails, always found in the *savannas* (plains) chasing all sorts of insects, and having the habit of selecting a special branch as a post of observation, to which they always return. Two species of Jacamar, *Galbula melanogenia,* and *Jacamerops grandis,* two very fine birds, metallic golden-green, chiefly seen singly, in the small forests; several species of Trogons, also brilliantly coloured, metallic golden-green above and on the neck and breast, with the rest of the under-surface usually crimson or yellow, several species of *Pico Canoas,* or Toucans. The native name is derived from the form of its brilliantly coloured bill, which is extremely large, each mandible having somewhat the shape of a *canoa* (boat.)

They are remarkable birds, and only found in America. They belong to the family of *Ramphastidæ,* and about sixty species are known. The true *Ramphastos* are the largest and most brilliantly coloured, with patches of bright yellow and crimson on the breast. They are much killed for the sake of these bright feathers, which are greatly prized by some Indians, who make curious head-dresses with them. The yellow feathers are also much used in England for the manufacture of flies, for trout and salmon fishing.

Although their bill is very large compared to the size of the birds, it is in reality very light, its interior consisting of a maze of delicate cells, throughout which, the ramifications of the olfactory nerves are multitudiously distributed. The use of this extraordinary bill is not satisfactorily known Their long, slender, pointed tongues are horny, and fringed or feathered on each side. The tail is peculiar for the facility with which it can be turned up, so as to lie on the back.

They have a short flight, and hop and flit from branch to branch with graceful ease. They live in families, and build their nests in the hollows of trees.

They feed chiefly on fruit, and it is very amusing to see how they seize and swallow them. First they lay hold of the fruit with the extremity of their long bill, then they throw it upwards into the air, catch it in their open bill and swallow it. When searching for fruit, they have the habit of placing sentinels in different parts, and if there is any cause of alarm, they begin to scream in such a noisy way that they are heard miles off.

I also collected several species of Humming Birds, *Pyrrhophaena cyanura, Lamporuis prevosti, Sancerottia sophiae,* and *Chrysuronia eliciae.* This last species was only found in the forests. It is a beautiful bird, with a blue throat and the tail entirely metallic golden.

In Insects, I collected many species of butterflies and moths, some of which were very fine. My principal hunting grounds were the *Barrancas,* deep narrow ravines which surround the town, and which are rather dangerous at times, because they are used by the natives for conveying cattle from one place to another. The sides of these ravines being very steep in places, it was not always an easy matter to find a place of shelter until the cattle had passed. Otherwise they were delightful, cool, and green, the sides being covered with small trees, bushes, and plants of all descriptions. These ravines are sometimes many miles long, and many were the species of *Papilios, Morphos, Heliconi* and others, which I caught there.

Another good collecting ground was on the road from Granada to the lake, or on the margin of the last. In the dry season, at all wet spots on the road, or on the margin of the lake, hundreds of species of butterflies used to assemble together to drink. They were scrambling one upon another, and it was an easy task to gather as many as one choose, or even to select the species wanted, as they never fled away. Every wet spot was invaded by hundreds of them, which took no notice of the collector. It was an extraordinary sight indeed to see these patches where all colours imaginable were mixed together.

Lastly, I collected some rare and fine species in the *hacienda* (farm) of the French Consul, my friend Mr. Rouhaud, now known, as *Valle Menier,* the property of the celebrated Parisian chocolale manufacturers.

In that hacienda, there were large plantations of cacao trees and plantains. On the ripe fruit of the last plants, and on the mangoes, I collected many fine and rare species of insects.

It was delightful to ramble about the plantations of this fine property. All kinds of fruit-trees were to be seen, *Orange, Lemon, Mango, Plantain,* several species of *Sapote* and others, but the most interesting was the *Cacao tree (Theobroma),* or God-food. The Cacao tree *(Theobroma cacao)*, belongs to the genus of dicotyledonous plants of the order BYTHNERIACEAE. The tree somewhat resembles the cherry, and is found in all tropical America, and has been imported to other countries. Several species are known.

The fruit is contained in a ligneous casing, usually five to eight inches long, and of a bright yellow or scarlet colour, when fresh and ripe. It turns to a dark brown after being cut. The seeds are about the size of a large bean, rufous and enveloped in a pulp of the consistence of butter. Dried they are, consumed in the country or sent to Europe for the manufacture of the well-known chocolate. It is one of the principal articles of exportation of America. The well-known Parisian firm of Menier consumes daily 40,000 pound which means a yearly average of FOURTEEN MILLIONS OF POUNDS!! Its actual value being about two shillings per pounds, it represents the enormous total of *one million, four hundred, and fourty-four thousand pounds sterling!* And yet four hundred years ago, it was quite unknown to Europeans. Long before the discovery of America by Columbus, the Indians cultivated the trees which produce this fruit.

Mexican tradition mentions *Quetzalcoatl* as the introducer of the tree in that country, from where it was successively exported to Central and South America.

The tree was called by the Mexicans *Cacaboaquaitl* and the fruit *Cacahoatl.* With the seeds they made a beverage called *Chocolatl* from which the name of Chocolate is derived.

This beverage was universally used by the Mexicans, but the best sorts of seeds were reserved for their kings, princes, and celebrated warriors. In many countries, the seeds were, and are still, the current money, and are received in payment for other commodities. In Mexico the taxes were usually paid with these seeds, and it has been written that when Fernand Cortez entered that city, he found in one storehouse, forty thousand large baskets of cacao seeds.

For a long time, the Spaniards did nothing with them, and even in Spain, up to 1728, it was scarcely known.

In 1728, Philippe V. sold the monopoly of that commerce to a company of Spanish merchants, with the faculty to ship for Vera Cruz (Mexico) all the seeds which could not be imported to Spain.

After this, Cacao was imported to Italy and in France, but in the last country its use was very limited until the marriage of Louis XIII. with Anne of Austria. The Spanish Infanta was very fond of chocolate, and continued to have it at breakfast. Soon after this, all the Court ladies copied her, and enjoyed this beverage.

During the reign of Louis XIV., its use had made such progress that this King, in 1692, gave the monopoly of its sale to one of his favourites. A tax of about seven pence per pound was imposed on all seeds imported, and the price of chocolate was fixed at six francs per pound, a little less than four shillings and tenpence.

Under the reign of Louis XV. the custom of drinking chocolate progressed considerably, and the annual consumption reached the large total of 300,000 pounds; but this is nothing compared to the quantity manufactured by the first French Company, which made use of steam engines, for the first time.

About 1820, this company required annually about six millions of pounds of cacao-seeds, and manufactured twenty millions of pounds of chocolate, which is still nothing, compared with the quantity required for the actual fabrication of that commodity.

Now large plantations of cacao trees exist, not only in all the tropical countries of America, but also in Java, and many other Asiatic countries. The countries which produce the best qualities are *Soconusco,* and several other places in the Department of Oaxaca (Mexico), *Mazatenango,* and other places in the Department of Juchitepec (Guatemala), *Granada* in *Nicaragua, Caracas* in Venezuela, and many other places in South America; but the large plantations near Guayaquil, in Ecuador, produce more than any other, but the quality is much inferior. The seeds are larger, more flattened, and blackish; meanwhile those of the other countries mentioned, are smaller, somewhat rounded, and of a beautiful pale rufous colour.

The Guayaquil, as it is commercially called, has less value; but, nevertheless, it is bought in large quantities in America and in Europe for mixing with the other qualities.

The usual height of the Cacao tree is from twenty to thirty

yards, and sometimes more. It is always green, the lanceolated leaves are smooth, about eight to twelve inches long, of a dark green colour, and attached to the branches by large petioles. The flowers, which are small and abundant, appear on the trunk and branches. Many of them fall to the ground, and the few which are productive are soon replaced by green rounded fruits, which lengthen as they ripen, and become brownish red. The capsule is divided internally in five cells, containing from twenty-five to forty seeds, enveloped in a rosy pulp acid, agreeable to eat, when the fruit is ripe.

The best ground for a plantation of Cacao trees is the virgin soil of the tropical forests, in warm and moist climates, never higher than 2,000 yards above the sea; the lower the altitude, the better it is. It requires to be well sheltered, and to obtain this, openings are made in the primeval forests, leaving high trees at intervals of about twenty-five to thirty feet apart, to shelter the Cacao trees.

The nurseries, like those for the coffee trees, are also made under the shelter of large trees, which completely shelter the young plants from the rays of the sun.

A selection is made of the best seeds, and these are placed, one by one, in furrows, two inches deep, covered with a light bed of earth, on which plantain leaves are spread. Two weeks after, these leaves are removed with great care, the seeds have germinated, and it is important to pull up as often as necessary all weeds, so as to keep the young plants always free of them. In three or four months the plants are about one yard high. Then it is time to transplant them. This delicate operation is done by special workmen. One of them raises the young plant with the greatest precaution with a good ball of earth around the roots, another transfers it at once to the hole prepared beforehand for that purpose, and a third one buries it with care, keeping the stem upright, and filling up the hole. A distance of twelve to fifteen feet is required between each plant. When the plantation cannot be made in the forest, it is important to prepare several years before, a piece of ground in which, orange, lemon, plantain, or other suitable trees have been planted from distance to distance to shelter the cacao plants.

Water is also indispensable to engender the necessary humidity. For that purpose many canals are dug up in the plantations. With a thick hedge to protect the plants from the animals, the work is concluded. It only remains to keep away the weeds, and to replace the dead plants if there are

any. Two years after flowers begin to appear, but it is only in the fourth or fifth year that the first gathering is made. If well cared for, the trees will bear fruit during twenty-five to thirty years, and every day, a harvest will be reaped.

Besides these every-day harvests, there are two principal ones, from November to January, and from May to July. This last one is the best, because it takes place at a good time of the year; the fruits are larger, weigh more, and the quality of the seeds is better.

The fruits are heaped under sheds for two or three days, then broken, and the seeds taken out and deposited in closed rooms where they remain two or three days, or less, then they are dried in the sun for one day. They are stored again, and soon they begin to ferment, and a large quantity of sugar exudes from them.

This fermentation is a very important operation. If it is carried out properly, the cacao will be of superior quality. It lasts from two to five days, then it is dried again in the sun or in heated drying rooms. When well dried, it is put into bags and ready for use.

A very good method for drying coffee, or cacao, is to build a moveable roof, on wheels, permitting the seeds to be covered or uncovered as necessary.

Among the enemies of the Cacao plant are the ants and the *Coccidae,* or Mealy bugs. The ants destroy the leaves, but at the same time also destroy the bugs. The monkeys, squirrels, parrots and other birds and animals, fond of the fruits are also the enemies of these plants. If proper care is not taken at the time of the gatherings, in a few hours they will be destroyed by these animals.

From the seeds, in late years, an alcoholic essence, named *Caféine,* has been extracted. It is said that it possesses the same properties as the *Coca* from Peru, and that life can be maintained for many days without any other food. One fact is certain that it acts considerably on the nervous system, and that under its influence, man is able to do a greater amount of work than otherwise. Cocoa butter is also extracted from the seeds. In fact they contain about $52^0/_0$ of it. It is much employed as a medicine, or in the manufacture of refined soaps, oils, &c. Naturally it could also be made into candles. As a medicine, it is efficacious against chaps, chilblains, and the like. I think that it can also be effectually used as ointment for sore throats and colds. At least I have tried it successfully on myself.

Actually, 25% of this oily substance is extracted from the seeds and sold for certain purposes. It is considered that chocolate containing as little as possible of this oil is more wholesome and agrees better with debilitated delicate constitutions. The different sorts of cacaos are commercially known as Caracas, Maracaibo, Guayaquil, Trinidad, Maragnan, Para, Cayenne and Cacao of the Islands, according to the country where they come from. Under the last named category are known the Cacaos, grown in the Antillae. In 1889, at the Paris International Exhibition, I saw some samples of a very good cacao from Java; but it was scarcely known in the trade.

Besides these sorts, there is in Mexico a superior quality of cacao known as *Soconusco*, from the province where it grows, but it is very scarce and is not raised in sufficient quantity to supply the Mexican markets. When I visited that country, the usual price of this Cacao was four shillings per pound.

To make a good chocolate, cacao and sugar are all that are wanted Sometimes a small quantity of cinnamon bark, reduced to powder, or vanilla is added to give it flavour, but many add flour and other farinaceous powders. These additions augment the quantity, but spoil the quality.

In Nicaragua the chocolate is done on your own premises. There are women specialists, who never do anything else. For about one shilling, or one shilling and sixpence, and food, one of these women will make from five to ten pounds of chocolate in one day.

You give them two pounds of sugar to every pound of cacao. First of all, they slightly burn the almonds on a slow fire, then they take off the skin and bruise them on the same stone which they use for the bruising of maize, when making *tortillas*. This stone is called *metate*. It is made of a porous granitic stone, about half a yard long and from twelve to sixteen inches wide, bent upwards at the extremities and supported on four low legs carved in the stone. With this goes the *mano* (hand) of the same width as the metate, or slightly longer, made of the same stone and rounded. With it, they bruise the seeds on the metate, until it is quite liquid, then little by little, they mix the sugar, bruising all the time until the whole is well mixed together and has acquired the consistence of paste. Then they add the cinnamon or vanilla, and with their hands roll the paste in pieces of a certain length, cut it in small round pieces and let them dry. It is hard work, but the result is very satisfactory. Each

piece makes a small cup of splendid rich chocolate, costing about one penny.

Very good chocolate can also be made by mixing several sorts together, but is is very important to reject all the rotten seeds.

Pure chocolate is considered as one of the most nutritive and wholesome foods. With bread and chocolate alone, life can be sustained for a long while, or for ever. Its aromatic principles stimulate the most debilitated or delicate temperaments without tiring them. It is easily digested and suits everyone. It is more nourishing and less exciting than coffee or tea. It has the property of fattening those who drink much of it.

In Mexico, Central and South America, as well as in Spain and Portugal, it is usually drunk pure. Before serving it, they bring the froth to the top by placing in the pot what they call the *molinillo,* a wooden instrument, like a wheel attached to a long stick, and twisting it round with rapidity.

In America, chocolate replaces the tea of the Chinese and Japanese. The first things which are always brought to visitors, at any time of the day or night, are cups of chocolate and cigarettes. This reminds me of a good story of an incident which occurred in one of the *mesons*, or native inns. A German asked for something to eat. He was told that there was only chocolate in the house. So he asked for some. A little while after, they brought him a cup. The German took it and swallowed it in one draught, returned the cup, said it was very good and asked them to bring him some. Another cup was brought, and was drunk in the same manner. He asked again for some more. When the third cup was brought to him he was quite furious, and told the waitress to stop this mockery, that twice he had told her that he liked the drink very much, and to bring him a cup, instead of which they only brought him samples. Explanations followed, and it was with the greatest difficulty that they convinced him that chocolate was always served up in small cups, and that no one had tried to fool him. He was quite surprised when he had to pay about one shilling for what he had taken.

The German knew perfectly well what chocolate was, but he was accustomed to drink it with milk in his own country, where it is served in large bowls. It is the usual manner of taking chocolate in Europe, and it is also the best, pure chocolate being rather difficult of digestion for certain delicate constitutions, especially if taken in large quantity.

The Mexicans used to mix the cacao with different farinaceous substances, mixing a small quantity of capsicum with it; but the chocolate as it was made in the time of *Moctezuma* was very simple. They rasped the seeds and diluted the powder in boiling water. Sometimes they added to it an aromatic substance. It was also drunk cold as a refreshing beverage.

Indians have given me some, prepared in that manner, and with sugar, I have found it excellent. As everyone knows, it is much used for all sorts of creams, ices, sweets, &c., and there are few ladies, who are not fond of chocolate.

Some fermented drinks are also made with the pods, and the well-known drink Baravoise is also made with the seeds.

The Hacienda belonging to Monsieur Rouhaud, where I collected some of my best species of Insects, was partly planted with Cacao trees. Soon after my departure from Nicaragua it was sold to Mr. Menier, of Paris, and is known now as *Valle Menier*. It is the finest plantation of Cacao trees in Nicaragua. It provides occupation for thousands of people.

Another valuable tree, abundant in the primeval forests of Nicaragua, is the *Hule tree* or India-rubber tree (*Siphonia elastica*). It is a dicotyledonous plant, belonging to the order *Euphorbiaceae*.

This fine and valuable tree grows to a height of fifty to eighty feet. It is getting scarce, because at first they used to cut the trees to get the india-rubber; but now it is done on more scientific principles, and some intelligent persons have made plantations of these trees which are succeeding well. In the Paris International Exhibition of 1889, some fine samples of india-rubber were exhibited in the Nicaragua Pavilion. The exhibits of Messrs. Menier Brothers were remarkable.

The gathering of india-rubber is done by all the worst characters. All the runaways from Nicaragua and Costa Rica turn gatherers of india-rubber. They live for years in the primeval forests searching for these trees. When found, they climb upon them and make small incisions in the bark at a distance of several yards from each other. From these incisions, the sap or resin which is milky white, slowly comes out and drops to the foot of the tree, where it is gathered in due time. After a time it turns black, as sold in the European markets. The gatherers say that it is very hard work; nevertheless, they make a good living by it, the price of the resin rising gradually and constantly.

Several always associate together for the gathering of

the resin, and when they have a certain quantity they carry it in boats to San Juan del Norte, or *Greytown,* where it is easily disposed of. The annual exportation at the present time is worth about £40,000. All the forests bordering the banks of San Juan and San Carlos rivers are those where the india-rubber trees are abundant. One of their enemies is the well-known beetle, vulgarly called *Harlequin, (Acrocinus longimanus,)* a very large insect belonging to the family of Longicorns, or *Cerambycidæ.* It is about three to four inches long and one inch wide, with antennæ and legs five inches long. Its name, *Harlequin,* has been given to it in consequence of the colour of its elytræ, streaked with various colours, gray, black, and red being prominent. It feeds on the sap of the Siphonia, and deposits its eggs in the incisions made, to extract the gum. Later on, the larvæ bore for themselves great holes right through the stem. These larvæ boiled are considered as delicacies by the Indians.

So we see that Nicaragua produces three very important articles of commerce—plantains, cacao, and india-rubber, but this is not all. Very good coffee is also cultivated in that country. Vanilla is also found, and many are the cereals, fruits and vegetables grown. The principal are maize, beans, rice, capsicum, among cereals; orange, lemon, mango, sapote, guavas, among fruit-trees; and many sorts of vegetables, capsicum, tomato, radish, cabbage, potato, &c., &c.

To give an idea of the commerce done in that country in 1852, I submit the list of several goods exported from *Realejo* in that year.

Cedar, 20,000 square yards; *Mahogany,* 21,000 square yards; *Boards,* 71,764; *Brazil Wood,* 22,845 hundredweight; *Hides,* 12,870; *Cotton,* 1,000 hundredweight; *Maize,* 16,155 bags; *Rice,* 7,627 hundredweight; *Sugar,* 1,664 quintals; *Cigars,* 120,000; *Coyol Oil,* 615 gallons; *Honey,* 11,000 gallons; *Beans,* 100 quintals; *Lemons,* 50,000; *Eggs,* 600 dozen; and a quantity of mules, pigs, indigo, fruits, hammocks, shoes, and other manufactured articles, &c., &c. Besides cattle, horses and mules are reared in the plains, and many haciendas possess several thousand heads of them, which produce a good yearly income to their owners. They are exported to the neighbouring Republics, where they fetch a good price.

There are also rich mines of gold and silver. The principal are those of *Chontales,* on the Atlantic Coast. The late Mr. Thomas Belt, who published in 1874, a very interesting book

on that country, *The Naturalist in Nicaragua,* was the manager of the Chontales Gold Mines, and worked them successfully for several years. The Chontales Mines are situated nearly midway between the two oceans, at an altitude of about 2,000 feet. The gold is confined almost entirely to auriferous quartz lodes. The stones are crushed by machinery, and the gold extracted with quicksilver. It is not very rich in gold as a rule, but occasionally *bolsas* or patches of ore of great richness are found and pay well. About sixteen different veins were worked in 1874, by different companies.

The aspect of the country in the Chontales district is mountainous, intersected with valleys well timbered. The climate is hot and damp, as in Granada. The dry season is very short, scarcely four months, from February to May. But on the west side, it is quite different. The dry season lasts from November to May, almost without rain.

The sky is cloudless, the heat is less, the nights are cool, and the winds occasionally chilling. It is the healthiest season of the year.

The temperature of Nicaragua in general is equable. The extreme variation recorded at the head of the San Juan River was 23^0. It rarely rises above 90^0 Fahr., or falls below 70^0 Fahr.

The consequence is that the products of Nicaragua are greatly varied in spite of the fact that the greater part of the country is not as yet entirely developed.

Animal life is very abundant and varied. During his stay in the country, Mr. Belt made a remarkable collection of beetles and butterflies containing many new species, especially in the family of Longicorns. One of the finest insects which he discovered of that family, was *Belt's Mallaspis, (Mallaspis belti)*, which his friend Mr. Bates dedicated to him. It is about two inches long, varying greatly in colour from golden bronze to golden-green or golden-red. Many other fine and new species were collected by him.

He also succeeded in procuring the very rare and beautiful Humming-bird, *Microchera parvirostris,* described by the well-known American Ornithologist, Mr. Lawrence, from one single specimen found in Costa Rica. This beautiful creature, belonging to the group of *Snow Caps* of Gould, of which only two species are known, is about three times the size of a drone, dark rosy-purple all over, with the head snow white. It was unknown to European Ornithologists, and is still excessively rare. The fine male specimen which I have

in my collection, is one of the very few specimens collected by Mr. Belt.

Nicaragua, like nearly all the other Republics of Mexico, Central and South America, can be divided in three distinct zones, that of *tierras calientes* (hot countries), *tierras templadas* (temperate countries) and *tierras frias* (cold countries) according to their altitude above the sea. All the lowlands up to 1,000 feet, belong to the first zone, those from 1,000 to 3,000 feet, belong to the second zone and the remainder belongs to the third zone. Plantain, Cocoa, Palm, Siphonia, Cedar, Cotton and other trees and plants are found in the first zone. The best coffee is cultivated in the second zone, where the plantains, maize, beans, &c., also do well. In the third zone wheat, barley, vines and other European fruit trees are cultivated.

From the first to the third zone, the climate varies according to the altitude. In some parts of the country, in one day, you can pass from a tropical climate to that of a semi-arctic region. The higher you ascend, the healthier is the climate, but as a whole, excepting fevers, the climate of Nicaragua may be considered as healthy.

The principal rivers of Nicaragua are the *San Juan River,* which flows from the south-eastern extremity of the Lake of Nicaragua to *San Juan del Norte,* which course is very changeable. Since 1853, when I travelled the whole length of this river in a small American steamer, a large proportion of the water has been carried away by the Rio Colorado, which flows through the Costa Rica territory, and at the present moment, navigation for steamers is impracticable.

Many are the rivers flowing into the lake; but they are not of much consequence, the Rio Frio and Rio Acoyapo are the principals. Another large river, the source of which is not very far from Segovia, is Rio Escondido, which empties itself on the Atlantic, in the bay of Bluefields, the capital of the Mosquito Indians.

On the Pacific, there is a small river emptying in the Bay of Salinas, the place chosen by various engineers as the terminus of the Nicaragua Inter-oceanic Canal.

Two important lakes exist in the Republic of Nicaragua. The first and most important is the celebrated Lake of Nicaragua, with its many islands, standing at an elevation of 128 feet above the sea. The second is the Lake of Managua, close to the town of Managua, the actual capital of the

Republic. It is at a distance of about ten miles from the Lake of Nicaragua, with which, it communicates by the Tipitapa River. It is a fine lake also, but only about twenty miles in circumference. About ten miles from Granada there is another lake called Massaya, but it is very small. It looks like the mouth of an extinct crater, and probably it is one. It is enclosed on all sides with steepy rocky walls. Close by, lies the town of Massaya, with about 15,000 inhabitants, nearly all Indians. It is very large, each house having a garden attached to it. The streets have the appearance of a picturesque promenade among fruit trees. Their only supply of water is that of the lake close by, about 300 feet deep, from which they draw water, by means of buckets attached to long ropes. This lake is called in the country *Infierno de Massaya* (Hell of Massaya). All its surroundings are of volcanic origin, flanked on its western side by the active Volcano of Massaya, whose lava streams have covered the sides of the lake and all adjacent grounds.

From Massaya to Leon, a distance of 70 miles, nearly all of which consists of barren plains, is called the *Malpais,* or bad country. As many as fourteen distinct volcanoes are scattered from place to place in that short space.

At night the whole of it is lit up by bluish flames, flashing across the land or leaping like columns of fire, appearing and disappearing in succession. It is called by the Indians *el baile de los demonios,* or the devil's dance.

The principal towns of the Republic of Nicaragua are *Managua,* the actual capital of the Republic, 10,000 inhabitants; *Leon,* the capital, when I visited that country, 30,000 inhabitants; *Grenada,* 12,000 inhabitants; *Rivas,* south of Granada, at a short distance from the Lake of Nicaragua, 8,000 inhabitants; *Massaya,* already cited; *Segovia,* the capital of that district; *Matagalpa,* the capital of the district; *San Juan del Norte,* the principal port on the Atlantic; *Bluefields,* the capital of the Mosquito Indians; *San Juan del Sur,* one of the Pacific ports, and *Realejo,* close to the port of that name, on the Pacific.

The area of the Republic embraces 51,600 square miles. Its actual population exceeds 600,000 inhabitants, and in consequence of the variety and fertility of its soil and its admirable position, a great future can easily be predicted for that country.

CHAPTER XI.

HISTORY OF NICARAGUA.

History of Nicaragua—Its Discovery by the Spaniards—Their Expeditions—Gonzalez de Avila—Hernandez de Contreras—Wholesale Slaughter of the Natives—Oviedo—Pedro de Alvarado—History of the Independence of Central America—Morazan—Presidents of Nicaragua—Civil Wars—Expedition of Walker—Walker—His Fall and Execution in Honduras—The Mosquito Kingdom.

IT is quite impossible to say, with any degree of certainty, which were the first inhabitants of that country, but there is no doubt that the Toltecs invaded that country in the sixth century, headed by their Cazic, *Nimaquiché,* and were probably the first who civilized the inhabitants of the western and southern parts of that territory. Afterwards the Aztecs replaced the Toltecs, and maintained communications with that country up to the time of the Conquest.

Before the invasion of that country, it is probable that several different nations inhabited Nicaragua, the principal being the Caribs, who certainly occupied, and still occupy, the coasts of the Atlantic Ocean. Nothing whatever was known of these people until the magnificent discoveries of Christopher Colombus.

The discovery of Nicaragua is attributed to Christopher Colombus, on his fourth and last voyage to America in the year 1503, and that he passed the place known now-a-days as *San Juan del Norte*, when he discovered the Cape named by him, *Gracias à Dios*, which name it bears to this day, and then coasted south to *Nombre de Dios*, the actual Chagres, north of Colon.

But there are some probabilities that Pedro Alfonso Niño had already visited that coast during his voyage to *Curiana* and *Paria* in 1500.

It is also probable that about the year 1514, Vasco Nuñez landed in that country, when Chief Governor of Uraba or Darien.

It is a fact that when Gonzalez de Avila embarked from Panama to the Gulf of Nicaya about the year 1522, the Pacific Ocean had been known to Nuñez for ten years at least.

In one of his expeditions in 1514, he came upon some high mountains which he ascended, and from its summit, he was the first who saw the two Oceans. Soon after he reached a large bay, which he called *San Miguel*. This bay was sprinkled with islands and treacherous rocks.

It lays south of Panama. From there, he made several expeditions of discovery, and found great treasures of gold and pearls, the last being very abundant. In the province of *Bononiama*, perhaps Panama? the Spaniards enriched themselves with chains and breastplates of gold, which in great plenty hung on the walls of the houses.

About that time *Pedrarias Davila,* a knight, accompanied by his wife, *Elizabeth Boadilla,* sailed from Spain to New Andalusia. He had fifteen ships and fifteen hundred men under his command. He first landed at River *Daria,* or Darien, where he built three forts to secure the passage to the Pacific. He was cheerfully received by Nuñez. Not being satisfied with the place called *Maria Antigua,* the town built by the Spaniards in a deep valley, too hot and unhealthy, he sent several expeditions to survey the neighbouring countries. Amongst others, *Gaspar Morales* was sent to explore the Pacific Coasts; it was he, who found such a treasure in pearls that *Pope Leo X.* gave forty-four thousand ducats to a Venetian merchant for one of them. *Gonzalez Badajoz,* also went to the Pacific later on, and explored the coasts for a distance of about 180 miles. Soon after, he was joined by Commander *Luis Mercado.* At first they were very successful, and raised a large qauntity of gold from the different Kings and *Cazics* or Governors of the countries where they passed; but the end of their expedition was disastrous. Excepting a few of them, amongst whom was one named *Francisco de la Puente,* who escaped and returned to Darian, the others were killed by King Panza, who, with his troops surrounded and massacred them. This disaster was partly due to their avarice, each soldier at the time, carrying a full load of gold, which prevented them defending themselves as they could have done, had they not been so burdened with treasure.

About the same time there was a clash between Nuñez and Pedrarias, who had the former imprisoned and beheaded. Not long after, Lobo Sosa, Governor of the Canary Islands, was sent as Governor of New Andalusia, to replace *Pedrarias*

Davila. But it is time to come back to Gonzalez de Avila, who is supposed to be the discoverer of Nicaragua.

Gonzalez de Avila is supposed to have sailed from Panama in the year 1522. He embarked in that port with one hundred men and four horses in several small schooners, and went north. The first place where he is supposed to have landed is at *Nicoya,* governed by a Cazic of that name, who received him with the greatest regard, and offered him a quantity of gold and gold idols in exchange for trifles. This Cazic and some of his followers were baptised.

From there, he penetrated into the territories governed by a powerful Cazic, named *Nicaragua.* The Capital of the Cazic, was situated where now stands *Rivas.*

Nicaragua received Gonzalez and his followers well, and exchanges were soon made with the natives, who gave them a large quantity of gold for trifles. In the relations of the first historians on the conquests of the Spaniards in America, it is mentioned that this Cazic was a man of great intelligence and that Gonzalez was very much puzzled to give satisfactory replies to his questions. It is more by fear of the devil, than otherwise, that he obtained the conversion of Nicaragua and nine thousand of his subjects. Gonzalez passed through six large Indian towns, each containing about two thousand well-built houses. Crowds of people came to see them and were never tired of looking at their beards, clothes, and horses, all of which were novelties to these natives.

In the middle of his excursion, *Cazic Diriangan* presented himself before Gonzalez. He was accompanied by five hundred men and several young women; each of the men carrying a couple of turkeys, and the women gold, all of which was duly offered to Gonzalez.

Gonzalez did all what he could to convert Cazic *Diriangan* to Catholicism, but did not succeed. Diriangan replied that it was imperative that he should consult his priests and women before.

Some days after, he returned, not to be converted, but with a troop, several thousand strong, armed with wooden swords, arrows, and other primitive weapons and covered with cotton cuirasses and strange helmets.

The Spaniards defeated them easily; but Gonzalez, fearing that he could not resist successfully many more such attacks with such a small troop as he had, resolved to return to Panama. During his retreat he met his old friend, *Nicaragua,* but this last had become hostile to Gonzalez, who

had to fight in order to effect his passage through that territory.

In Panama, he related to the Governor all that he had seen and done, and spoke highly of the country which he had visited. But *Pedrarias,* who was a jealous man, and who had shortly before passed sentence of death against Nuñez, took umbrage at Gonzalez, and sent a new expedition to Nicaragua, headed by *Hernandez de Cordoba,* who was successful, and founded the towns of Granada and Leon without much opposition from the Indians.

Gonzalez returned to Spain, called some followers and came back, on his own account, to Nicaragua, via Honduras. A civil war began between Gonzalez and Cordoba for the possession of that country, and continued for a long time.

Several years after, *Hernandez de Contreras,* who lived in Nicaragua, for some reason or other, revolted against Spain. At the head of many Spaniards, who agreed with his ideas, he took possession of Nicaragua and Panama; and it was said that he had the intention to conquer Peru also, and to make an independent kingdom of the whole; but it came to naught in consequence of his death, which took place soon after an attack made by him on *Nombre de Dios,* or Chagres.

According to the celebrated historian and Bishop, *Bartolomé de las Casas,* 60,000 Indians perished during the first year of the wars fought against them by Gonzalez, Hernandez de Cordoba and others. Here is what he says :—

"The Indians of Nicaragua were very sociable, gentle and peaceable. Nevertheless the Governor, or better say the tyrant, and the ministers of his cruelty, treated them as badly as in the other kingdoms. They murdered and robbed them wholesale. Under the least pretext, they killed the inhabitants without regard of sex or condition. They exacted from them tribute of all sorts, and death was the penalty for those who did not comply at once. Nobles, women and children were obliged to work day and night. These poor people were obliged to carry on their shoulders, at long distances, trunks of trees or boards for the construction of ships. Thousands of them were sent to Panama and in Peru to be sold there as *slaves.* Over 500,000 of them were disposed of in that manner, and banished from their country."

Another ocular witness, *Oviedo,* in his History of America also said that the treatment of the Indians was so barbarous, that in 1528, when the treasurer, *Alonzo de Peralta,* another nobleman called *Zurita,* and the brothers

Ballas, started from Leon to visit the villages, and the Indians belonging to them, but they never came back.

Pedrarias sent a small troop to arrest the supposed murderers. Seventeen or eighteen were arrested and strangled by dogs.

The execution took place on the public square of Leon on the 16th of June, 1528, in the following manner:— A stick was given to each, and was told to defend himself against the dogs. Five or six young dogs, which their masters wanted to train, to Indian hunting, were set loose against each Indian. These young, inexperienced animals, barking all the time, ran round the Indian, who easily kept them at bay; but when believing to be victorious, two of the old trained dogs were loosened, and in an instant threw the Indian down, the other dogs flew at him, strangled and devoured his bowels. It was a most cruel and disgusting scene. The seventeen prisoners, which were from the valley of *Olocaton,* were killed in the same manner, the bodies remaining there, by order of the authority, threatening that the same should be done to those who tried to take them away; but on the second day the smell of these corpses was so intolerable that the Governor gave orders to carry them away.

Oviedo adds that as soon as the order was given, some Indians came, cut the bodies to pieces, carried them into their houses and feasted upon them; but I doubt the veracity of this author very much, and I think that he spoke of things which he did not see.

From that time up to 1821, Spain retained possession of Nicaragua, but never conquered completely the mountainous Indians of *Chontales,* nor the Mosquito Indians. They built several towns; one of the principal is Realejo, close to the Pacific, where the Kings of Spain had many of their ships built. In that time, it was a port of great importance. In 1524, *Pedro de Alvarado,* instructed by Cortez, took possession of Guatemala, and received from the Emperor, Charles-Quint, the title of Captain-General of Guatemala, which he kept up to the time of his death, which took place in 1545.

At that time, Guatemala was the Capital of that Captaincy. It included what we know now-a-days as the five central American Republics of *Guatemala, Honduras, Salvador, Nicaragua* and *Costa Rica.* It remained so during three centuries until the 15th of September, 1821, when the provinces of Central

America separated themselves from Spain, and declared their Independence. Some of the royalists seeing that resistance was impossible left the country, others adhered to the party of Independence, with the hope of establishing a Central American Kingdom. After the separation with Spain, two parties were formed, the Republican, under the name of Liberals, the other formed by the Royalists and called by the Liberals, *Serviles*. From that time to now, desperate contests under various names have taken place and are not yet quite concluded ; but the Liberals seem to have the upper hand.

The Liberals decided in favour of a Federative Republic, taking as a model that of the United States, and established under the name of the Central American Republic, a Federation comprising the five provinces of *Guatemula, Honduras, San Salvador, Nicaragua* and *Costa Rica*, the same which formed the Captaincy of Pedro de Alvarado. They made a Constitution, were among the first, who abolished slavery, introduced a system of universal religious tolerance, built new schools, ameliorated the old ones, and did all they could to attract foreign colonists, and aid to their establishment in their country.

When the *Royalists* saw that a Central American Kingdom had no chance of being established, they applied to the Mexican Emperor, Iturbide to annex Guatemala. The Republican Congress replied by decreeing the annexion of Guatemala to the United States.

The short duration of the Empire of Iturbide dispelled the alternative of an adjunction to the Mexican Empire, or to the Union of the United States. Nevertheless, Iturbide sent Mexican troops, commanded by General Filisola, who occupied Guatemala in 1822, but this short domination ended with the fall of Iturbide. General Filisola with his army returned to Mexico, but before going, he convoked a National Assembly, with the idea of establishing the Government of the country.

This assembly met the 24th June, 1823, and on the 1st of July following, they issued a decree, which to this date, is considered as the solemn and fundamental act of the emancipation of Central America. On the 22nd November, 1824, this same assembly proclaimed a federal Constitution establishing the Republic of Central America as a popular and representative government.

On the 29th of April, 1825, General *Manuel José Arce,* was elected President of the Republic of Central America.

He was succeeded by General Francisco Morazan, who,

with the exception of a short interval, during which the Republic was administered by. Licenciado José del Valle, remained in power until 1839, when the Federation came to an end, and the five States, one by one, separated and resumed their autonomy. Since then, they have kept separate under the names of Republics of *Guatemala, Honduras, Salvador, Nicaragua and Costa Rica.*

When the Royalists saw that they were completely beaten by the Liberals, with the clergy they plotted against the last, but with no other result than the sending in exile of the bishops. They then entered into treaty with England for the sale of their country to that power, but under the energy and perseverance of General Morazan, the Confederation, although wavering, was still keeping a good front to the attacks of the Royalists, when the cholera made a sudden appearance in the country. In some way the Royalists availed themselves of this disastrous event to induce the Indians to a revolt. They put an Indian, the celebrated *Carrera,* at the head of the Indians, and in 1837, he declared war to General Morazan. Beaten several times by Morazan, he was at last victorious, and captured Guatemala, the capital, on the 19th of March, 1840, and proclaimed himself President of the Republic, the 11th of December, 1844.

Several attempts have been made by several Presidents to form again a federation between the five Republics; but nothing has come out of them.

Nicaragua proclaimed its independence on the 30th of April, 1838, and from that time to now, has been directed by various Presidents under the names of Directors of the Government.

Here is the list of all the Directors and Presidents, since 1825, to date. It has been made out by by my esteemable friend, Mr. *Désiré Pector,* Consul of the Republic of Nicaragua, in Paris.

1825—1828—*Manuel Antonio de la Cerda.*
1826—*Pedro P. Pineda,* Provisional.
1826—1827—*Juan Arguello.*
1829—1833—*Dionisio Herrera.*
1830—*Juan Espinosa,* Provisional.
1833—*Benito Morales.*
1834—*José Nuñez.*
1835—1837—*José Zepeta.*
1837—1838—*Jose Nuñez.*
1840—*Tomas Valladares.*

1841—*Pablo Buitrago.*
1843—*Manuel Perez.*
1844—*Fruto Chamorro.*
1845—*Sandoval.*
1847—1849—*José Guerrero.*
1849—*Teran.*
1849—*Rosales.*
1849—1850—*Norberto Ramirez.*
1850—*Justo Abaunza.*
1851—*Laureano Pineda.*
1851—*José del Montenegro.*
1851—*José Jesus Alfaro.*
1851—*Fulgencio Vega.*
1853—*Fruto Chamorro.*
1854—1855—*Licenciado Franciseo Castellon.*
1855—*Nazario Escoto.*
1856—*Patricio Rivas.*
1856—*José Maria Colzada.*
1857—*General Martinez.*
1857—*Agustin Aviles.*
1859—1867—*General Martinez.*
1867—1871—*General Fernando Guzman.*
1871—1875—*Quadra.*
1875—1878—*Joaquin Chamorro.*
1878—1883—*General Zavala*
1883—1887—*Doctor Adam Cardenas*
1887—1891—*Evaristo Carazo.*
1891—*General Ignacio Chavez,* Provisional.
1891—1893—*Doctor Roberto Sacasa.*

Many have been the civil wars from which this Republic has suffered from time to time. In 1849 *Samoza*, a chief of robbers, tried to do with the Republic of Nicaragua what *Carrera* did with Guatemala, but he was defeated by General Muñoz, who made him prisoner and sentenced him to be shot. In 1851, *Mr. Pineda*, a modest but meritorious man, was elected Director of the Government. But soon after war was resumed between the different parties, fomented by the English, who wanted to take possession of San Juan del Norte. Muñoz at that time, who was hostile to the English, was considered by them as their principal antagonist, and they did all they could to put him out of the way. The result of all this was that Muñoz resigned his command.

Pineda and his Ministers who wanted to arrest him were apprehended themselves, and conducted to the frontier. Muñoz resumed the command of the troops and *Mr. Justo Abaunza* was elected Provisional Director of the Government. When the Parliament heard the news, they also elected a Provisional Director, *Mr. José del Montenegro,* and transferred the seat of the Government to *Granada.* Each of the Provisional Directors composed a Ministry. So it came to pass that Nicaragua had at the same time two Governments, one in Leon, the other in *Granada.*

On the 20th August, 1851, *Montenegro* died. *Granada* fearing to be attacked by Muñoz sent 200 men to occupy *Managua,* and barricaded streets, waiting future events.

Meanwhile a project of a federal Constitution, prepared by the plenipotentiaries of the three States, *Honduras, Nicaragua,* and *Salvador,* was concluded and signed on the 8th of November, 1849, and communicated to the States which they represented for its ratification. It was accepted by *Honduras, Nicaragua,* and *Salvador,* and the adherance of Costa Rica and Guatemala to it was solicited.

The federal Government having for first president *Mr. José Barrundia,* was installed on the 9th of January, 1851, and notification of it was sent to all the diplomatical agents. The Government of Nicaragua was the first who notified the fact to all the governments with which they had diplomatic relations, and appointed *Mr. Marcoleta* as the representative of the Confederation at Washington. From 1851 to 1854, a sort of peace reigned in the country, and during that time *Mr. Fruto Chamorro,* was appointed Director of the Confederation, and Muñoz, who had been exiled, was recalled and appointed Commander in Chief of the troops; but in the beginning of 1854, when the inhabitants of Leon rose in insurrection in favour of *Castellon,* who was elected Director of the Provisional Government, Muñoz answered to the call of the celebrated *Walker,* and when the last, on his first attack on Rivas, was abandoned by the native troops commanded by Muñoz, this General was charged with treachery towards the North Americans.

At the same time the Government of Leon was attacked by troops from Honduras, commanded by General Guardiola. Muñoz marched upon the enemy and routed them completely, but this was done at the cost of his life.

In 1855, Walker disembarked for the second time at *San Juan del Sur,* and gained several victories over the troops of

the Government at *la Virgen,* and about the month of October of that year, he captured the city of *Granada,* and established a Government in that town. Successively he conquered all Nicaragua, and was appointed Director of the Government. He retained office for some time; but at last was obliged to leave the country with the remainder of his followers.

This is the same Colonel Walker which I have mentioned in my narrative of Count Raousset Boulbon's Expeditions to Sonora. He was the model type of the true freebooter.

If he had been successful, it is probable that Nicaragua and the other Central American Republics, would have been the centre of a large American and European emigration, and the future of that country quite changed; but it is impossible to say if for better or worse, but certainly the change would have been considerable. Walker made a third attempt to reconquer Nicaragua, which he considered as his personal property. Although thrown down from the Presidential chair by a revolution, he never renounced his determination of reconquering it. There was a party in Nicaragua which was in his favour, and if his first intentions were to conquer that country for the United States, he soon changed his mind. What he wanted was to conquer it for himself by all means. From Protestant he turned to Catholic, this being imperative if he wanted to make himself popular with the Nicaraguans.

Walker was very popular in the United States, principally in the South, having resided a long time in New Orleans. In matters of discipline he was inflexible, and for that reason, liked and respected by his officers and soldiers.

In 1860, when he prepared his last expedition, recruiting followers, so many offered to accompany him that he had only to choose amongst them.

This was done with much secrecy, Leagued with an ex-President of Honduras, *General Cabanas,* they resolved to put down President *Guardiola,* and replace him with *Cabanas.*

The occupation of *Truxillo,* a small town situated on the coast of Honduras, opposite Ruatan Island, was his first exploit.

Walker presented himself before the town, at four in the morning, with one hundred and ten men, well armed with Minié rifles. He divided them in two columns. In the fort, there were about one hundred soldiers and three hundred volunteers. The two columns of Walker advanced, one by

land, the other in boats. At about half a mile from the fort, those on land fell into an ambuscade, but they defended themselves so well that the enemy took to flight, and the Americans captured the fort easily.

In it, they found a large store of provisions and arms, among which sixteen cannons. The population seemed to accept the accomplished fact.

The project of Walker was to reinstate Cabanas as President of Honduras, and with his help, to re-enter Nicaragua, and to form a new federation between the five Republics of Central America, but his first success came quickly to an end.

On the 20th of August, 1860, the English steamer, *Icarus*, appeared before *Truxillo,* and its commandant summoned Walker to evacuate the town. This evacuation took place the next day. His army was reduced to eighty men well equipped.

After leaving *Truxillo,* Walker and his men advanced in the direction of Cape *Gratias,* where they were attacked by Honduras troops, which obliged them to retreat. They camped on the margins of *Rio Negro.* Some English boats landed at that place some troops commanded by Alvarez, who captured Walker and some of his men. They were taken back to Truxillo and delivered to the authorities, *to be treated as the circumstances required.* It was immediately decided to put him on his trial and he was sentenced to be shot.

His faithful companion, Colonel Ruddler, was sentenced to four years' confinement, and the men to be sent back to the United States, at the expense of the American Government.

Before being delivered into the hands of the Hondurian authorities by Captain Shannon, Commandant of the Icarus, Walker signed a protestation as under :—

PROTESTATION OF GENERAL WALKER.

"By the present, I protest, before the civilized world, "that when I surrendered to the Captain of the steamer "Icarus, this officer has declared to receive my sword and "pistols, as also those of Colonel Ruddler, and that my "surrender has been made expressly to him as a repre- "sentative of her Majesty.

WILLIAM WALKER."

"On board the steamer Icarus, this 5th of September, "1860."

Immediately after the sentence Walker was put in prison, and when asked if he wanted anything he replied that he

wished to see a priest protesting of his faith in the precepts of the Catholic religion. He said to his guardian :—

I am resigned to death, my political career is ended.

On the 12th, he was taken out of the prison and conducted to the place of execution, assisted by a priest. When in thesquare of the troops, he made the following discourse :—

I am a Roman Catholic. The war that I have made upon Honduras, at the instigation of another, was unjust, my followers are not to blame. I ask pardon of the people, and I hope that my death will benefit society.

After this, he was shot, and so ended the career of this extraordinary man. His body was buried by direction of two American citizens inhabiting Truxillo. Little was said of him after his death, and some papers hinted that the American Government was glad to be rid of him.

His body was claimed by two of his faithful officers and taken back to his native country (Tennessee), where he was buried in a family vault. Several friends accompanied his remains with the honours due to his rank as General and ex-President of Nicaragua.

The same may be said of Walker as of Raousset Boulbon, that very little prevented him from being a hero ; but he was more fortunate than Raousset, having enjoyed for a time all the glory and honours attached to power.

It is time now to say a few words about the English doings in that part of the world.

Shortly after the conquest of *Jamaica* by the expedition sent by Cromwell in 1656, the King of Mosquito asked for the protectorate of Charles II., King of England. The Governor of Jamaica, acting for his Sovereign, accepted, promising the Royal protection. The Mosquitos kept faithful to this agreement, and each time that England was at war with Spain, they acted as allies, and fought with valour and success against the common enemy.

But this nation, if it can be called by that name, was only composed of a few tribes of Caribs, mixed with whites and blacks.

These tribes occupied the lagoons of *Blue-fields,* nothing more, and it was only an act of justice when the English gave back that territory to the Republic of Nicaragua ; but up to that time they were in possession of Blue-fields and all the adjoining territories, and in 1780, the celebrated *Nelson* was sent to Nicaragua to take possession of San Juan del Norte, but nothing came of it.

Soon after the conquest of California by the North Americans in 1848, Lord Palmerston made another attempt on that country, and succeeded. *San Juan del Norte* and part of the river San Juan were taken possession of, by the English, who changed the name of San Juan del Norte into that of *Greytown*.

In the name of the King of Mosquito, they administered it for several years ; but ultimately, in 1850 and 1854, it was occupied for a while by the North Americans, and lastly returned to Nicaragua.

In 1851, an Englishman called Samuel Shepherd was still living in Greytown. He was one of the two brothers with whom Robert Charles Frederick, the third Mosquito King, had exchanged a considerable extent of land for brandy. But part of that land belonging to Nicaragua, this Republic protested.

The real or imaginary acquisition of title deeds confirming that purchase was the base of the speculations of Colonel Kinley, who wished to annex the Kingdom of Mosquito to the United States. Several members of that Republic were at first in favour of the scheme, but they changed their mind soon afterwards. Colonel Kinley took part in the successive events of Nicaragua as the rival of Walker, but his attempt failed.

In 1851 Samuel Shepherd was about 80 years old, a fine robust and active man yet, he had lived on the Mosquito Coasts since his youth, and considered that country as one of the finest and healthiest of all America. When speaking of Mosquito, he used to say, *That country is all mine.* He was certainly a man of character.

But the fact remains that the Mosquito Kingdom has always been a very poor one, scarcely inhabited, and far from being healthy. Its capital, Blue-fields, consists of miserable huts, inhabited by several hundreds of Indians. The best of it consists in its central position with the river Escondido and its tributaries, partly navigable, and giving access to the rich provinces of *Matagalpa* and *Chontales*.

CHAPTER XII.

Projects for opening Interoceanic Canals by Nicaragua, Panama, Darien and Tehuantepec—Manuel Alfonso de la Cerda—John Bailly—Pierre Rouhaud—Napoleon Garella—Napoleon Bonaparte—Vanderbilt Company—What the South American Republics ought to do—Felix Belly—The Maritime Canal Company of Nicaragua—My Opinion about the Cost of Opening a Canal—Certainty of the Opening of the Panama and Nicaragua Canals in the Future.

THE idea of an Interoceanic Canal in the Isthmus of Nicaragua is not a new one. We may say that since the discovery of America by *Christopher Colombus*, the Emperor, *Charles Quint*, recommended to Cortez not to lose sight of *el secreto del estrecho* (the secret of the Straits), and the discovery of the Straits of Magellan in 1519, was hailed with much satisfaction, and contributed to the belief that another strait, somewhere in the Isthmus of Panama and Nicaragua could exist. Many were the expeditions sent into these countries with this object; but an exact knowledge of the Continent shewed that no such thing existed.

From that moment arose the idea of establishing a communication beween the two Oceans by a canal.

Gomara, in his history of the Indies says:—"The voyage between Spain and the Philippines, by the Straits of Magellan, is so long and dangerous, that, having spoken many times with illustrious travellers, historians, and navigators, I heard from them about the possibility of opening other passages much shorter, and very profitable to the trade and to enterprisers.

The first could avail itself of the Lagartos River, which source is about sixteen miles from *Panama,* and would terminate at *Nombre de Dios* (Chagres). The second could make use of the river San Juan, which joins the Nicaragua Lake with the Atlantic Ocean. By both these rivers the passage is already half done. The third would be from the river Vera Cruz *(he meant the river Goatzacualco)* to *Tecoantepec* (Tehuantepec), where the inhabitants of New Spain carried boats from one sea to the other. *It is a fact that*

GENUS XXVII. **Abeillia**, Bon. Consp. Gen. Av., 1850, p. 79.

Baucis, Reich, Aufz. der Col., 1853, p. 13.

Myiabeillia, Bon., Rev. and Mag. Zool., 1854, p. 253.

TYPE: *O. Abeillei*, Delattre et Lesson.

Bill minute, straight, shorter than the head. Wings long, pointed, reaching the end of tail. Tail very slightly forked. Rectrices wide, and of even size, excepting the medians, which are slightly shorter. Size small. Sexes unlike.

Habitat.—Mexico and Central America.

79. ABEILLIA TYPICA, Bon., Consp. Gen. Av., 1850, vol. i., p. 79.

Ornismya abeillei, Less et Del., Rev. Zool., 1839, p. 16.

Mellisuga abeillei, Gray, Gen. Birds, vol. i., p. 112.

Ramphomicron abeillei, Bonaparte, Consp. Av., vol. i., p. 79.

Basalimna abeillei, Reich, Aufz. der Col., 1853, p. 13.

Myabeillea typica, Bon., Rev. et Mag. Zool., 1854, p. 253.

Baucis abeillei, Reich, Troch. Enum., 1855, p. 11.

Abeillé's Flutterer, Gould, Mon. Troch, vol. iv., p. 211.

Le Baucis d'Abeillé, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 144.

Habitat.—Mexico, Guatemala.

Male.—Upperside shining green. Throat luminous emerald green. Breast black, washed with green on the sides. Abdomen, flanks, and undertail-coverts pale green, with a grayish appearance, in consequence of the grayish base of feathers. A tuft of white on each side of vent. Median rectrices shining green, lateral bluish-black on internal edges, green on external for two-thirds of their length, then bluish-black with gray tips. Wings purplish brown. Bill black.

Total length, $3\frac{1}{8}$in. Wing, 2. Tail, $1\frac{1}{2}$. Culmen, $\frac{3}{8}$.

Female.—Upperside bronzy-green. Underside ashy-gray, washed with some few green feathers on flanks. Tail like that of male with larger gray tips on lateral feathers. Slightly smaller in size.

This species was discovered by Delattre, near Jalapa, Mexico, and dedicated by him, to his friend, Doctor Abeillé.

Some of my specimens I collected in Mexico, others came from Coban, Alta Vera-Paz, Guatemala.

With *Patagona gigas*, they are the only two species without crest or crown.

GENUS XXVIII. **Chrysolampis,** Boié. Isis, 1831, p. 546.

TYPE: *T. moschitus,* Linné.

Bill straight, long as the head. Feathers of the forehead projecting on the culmen and hinding the nostrils. Wings long nearly reaching the end of tail. Tail rounded. Rectrices of even size. Feet small. Tarsi bare. Head, throat and upper part of breast brilliantly coloured. Sexes unlike.

Habitat. — Brazil, Trinidad, Venezuela, Columbia and Guiana.

80. CHRYSOLAMPIS MOSCHITUS, L. Syst. Nat., 1766, vol. i., p. 192.

Trochilus carbunculus, Gmel. Syst. Nat., 1788, t. i., p. 498.

Ornismya moschitus, Less, Ois. Mou., 1829, p. 166.

Mellisuga moschita, Steph. Shaw. Gen. Zool., vol. xiv., p. 253.

Chrysolampis giglioli, Oustalet., le Naturaliste, 1885, p. 3.

Chrysolampis infumatus, Berl.

Chrysolampis moschitus Var., Boucard. H. Bird. vol. i., p. 26.

Ruby and Topaz, Gould, Mon. Troch., vol. iv., p. 204.

Le Chysolampe Rubis-Topaze, Muls., Hist. Nat. Ois. Mou., 1876, vol. ii., p. 255.

Habitat.—Brazil, Trinidad, Venezuela, Guiana and Columbia.

Male.—Head metallic ruby-red. Upperside bronzy-brown, appearing black on sides of neck and upper part of back. Chin, throat and upper part of breast metallic topaz. Abdomen and flanks dark brown, nearly black round the breast. A line of white feathers on sides of flanks, and a tuft of white feathers on each side under the vent. Undertail-coverts rufous. Tail rufous with brownish-black tips. Bill and feet black.

Total length, $3\frac{3}{4}$in. Wings, $2\frac{1}{4}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{1}{2}$.

Female.—Upperside golden green. Underside grayish-white, washed with golden feathers on sides of breast and flanks.

Median rectrices bronzy-green, lateral gray at base, then purplish-brown with white tips. Bill and feet black.

This species is very abundant in Brazil, Trinidad, Guiana, and Columbia.

Chrysolampis giglioli, Oustalet, was a made up bird fabricated in Colombia with half a specimen of *C. moschitus*, and the other half of *Florisuga mellivora*.

Chrysolampis infumatus, Berlepsch, can only be a dark coloured bird of *C. mochitus*, and I don't think it can stand as a species.

GENUS XXIX. **Eustephanus,** Reich. Syst. Av. Nat., 1849, pl. 40.

Sephianoides, Less, Int. Gen. et Syn. Gen. Av., 1832, p. 29.

Sephanoides, Bon. Consp. Gen. Av., 1850, p. 82.

Thaumaste, Reich, Aufz. der Colib., 1853, p. 14.

Stokosiella, Reich, Bon. Ann. Sc. nat., 1854, p. 38.

TYPE: *T. galeritus,* Molina.

Bill short, straight, rather stout, subcylindrical, pointed, shorter than the head. Nostrils covered with feathers. Wings long, nearly reaching the end of tail. Median rectrices shortest, remainder very slightly and gradually longer. Tarsi clothed. Sexes unlike.

Habitat.—Chili and Islands of Juan Fernandez.

81. EUSTEPHANUS GALERITUS, Mol. Hist. Chili, p. 219.

Colibri du Chili, Aud and Vieill, Ois. Dor., t. i., p. 125.

Mellisuga kingi, Vig. Zool. Journ., vol. iii., p. 432.

Mellisuga galerita, Gray, Gen. Birds, vol. i., p. 113.

Orthorhynchus sephanoides, Less and Garn. Voy. Coquille, pl. 31.

Ornysmia sephanoides, d'Orb. and Lafr. Syn. Av., t. ii., p. 29.

Trochilus ferficatus, Gould, Voy. Beagle. 1841, pl. iii., p. 110.

Sephanoides kingi, Gray, List Gen. Birds, p. 19.

Chilian Fire Crown, Gould, Mon. Troch., vol. iv., p. 265.

Eustephane coiffé, Muls., Hist. Nat. Ois. Mou., 1876, t. ii., p. 247.

Habitat.—Chili and Islands of Juan Fernandez.

Male.—Head metallic fiery-red. Upperside dark bronzy-green, appearing black on neck in certain lights. Tail bronze-green. Throat white, spotted with green. Tuft on thighs white. Undertail-coverts pale bronze-green edged with buffy-white. Wings purplish. Bill black.

Total length, $4\frac{3}{8}$in. Wings, $2\frac{1}{2}$. Tail, $1\frac{3}{4}$. Culmen, $\frac{1}{2}$.

Female.—Upperside bronze-green, passing to shining green on uppertail-coverts. Four median rectrices bronze-green, the two next with subterminal blackish bar and gray tips, outermost bronze-green at base passing to blackish on internal web, and gray on external web, tips gray. Underside like the male.

Total length, $4\frac{1}{4}$in. Wings, $2\frac{1}{2}$. Tail, $1\frac{3}{4}$. Culmen, $\frac{1}{2}$.

I have also a young male of this species with metallic silvery-green feathers on top of head.

My specimens of this species were collected near Valparaiso by Mr. Reed.

82. EUSTEPHANUS BURTONI, Boucard, H. Bird, 1891, vol. i., p. 18.

Burton's Golden Crown.

l'Eustephane de Burton.

Habitat.—Chili.

Male.—Closely allied to the preceding species from which it differs by the brilliant golden crown of the head, and the dark shining green of the upperside, with bluish reflections.

Total length, $4\frac{1}{2}$in. Wing, $2\frac{1}{2}$. Tail, $1\frac{5}{8}$. Culmen, $\frac{5}{8}$.

Female.—Unknown.

Type unique in my collection.

83. EUSTEPHANUS FERNANDENSIS, King, Proceed, Com. and Corr., Zool. Soc., pt. i., p. 30.

Ornismya cinnamomea, Gerv. Mag. Zool., 1835, p. 43.

Ornismya robinson, Delatt & Less, Rev. Zool., 1839, p. 18.

Trochilus stokesi, King, Proceed. Com. and Corr. Zool. Soc., pt. i., p. 30.

Mellisuga fernandensis, Gray, Gen. Birds, vol i., p. 113.

Mellisuga stokesi, Gray, Gen. Birds, vol. i., p. 113.

Sephanoides fernandensis, Bon. Consp. Gen. Av., 1850, vol. i., p. 82.

Thaumaste stokesii, Reich, Aufz. der Colib, 1853, p. 14.

Eustephanes stokesii, Cab and Heine, Mus. Hein, 1860, t. iii., p. 75.

Stoke's Humming Bird, Gould, Mon. Troch, vol. iv., p. 266.

Cinnamon Fire Crown, Gould, Mon. Troch, vol. iv., p. 267.

l'Eustephane de Robinson, Muls., Hist. Nat. Ois. Mou., 1876, t. ii., p. 249.

Habitat.—Island of Juan Fernandez.

Male.—Top of head metallic fiery-red. Upper and underside including the tail, dark cinnamon-red. Vent buff. Wings purple. Bill black.

Total length, $5\frac{1}{8}$in. Wing, $3\frac{1}{4}$. Tail, $2\frac{3}{8}$. Culmen, $\frac{5}{8}$.

Female.—Top of head metallic bluish-green. Upperside and wing-coverts shining bronze-green passing to green, with bluish reflections on rump and uppertail-coverts, feathers of rump edged with white. Median rectrices and outer webs of lateral dark bronze-green with bluish reflections, inner webs white, outermost nearly all white, excepting a narrow margin and tip on outer web, bronze-green. Underside white, spotted profusely on throat with shining green, and sparingly on sides of breast, and flanks with minute greenish spots. Wings purplish. Bill black.

Total length, $4\frac{1}{2}$in. Wing, $2\frac{3}{4}$. Tail, 2. Culmen, $\frac{5}{8}$.

This fine species was discovered in the island of Juan Fernandez, by Captain King, who collected the two sexes. For many years they were considered as two species, and the female described by Capt. King under the name of *Trochilus stokesi*.

Mr. Bridges is the first one who mentioned to Parzudaki that they were only sexes of one same species. This has been confirmed afterwards by Mr. Landbeck, sub-Director of the Museum of Santiago, and lately Mr. Reed, who collected and dissected a fine series of this species on the Island of Juan Fernandez, confirmed what was already accepted by all the leading Ornithologists.

My specimens were collected by Mr. Reed.

84* EUSTEPHANUS LEYBOLDI, Gould, Ann. Mag. Nat. Hist., 1870, p. 406.

Leybold's Cinnamon Fire Crown, Gould.

l'Eustéphane de Leybold, Muls., Hist. Nat. Ois. Mou., 1876, t. ii., p. 252.

Habitat.—Island of Mas-à-fuera.

Male.—Exactly like the preceding species, with the exception that the metallic fiery-red of the crown extends over the occiput.

Total length, $5\frac{1}{4}$in. Wing, $3\frac{3}{16}$. Tail, $2\frac{5}{8}$. Culmen, $\frac{5}{8}$.

Female.—Similar to the female of *E. fernandensis*, but differs chiefly in the tail feathers which have the basal portion of the inner webs and all the outer webs green, having only the apical part of the inner ones white. The spots on the throat are bronzy and disposed in lines, and not generally dispersed, as in the female of *E. fernandensis*. "Elliot's, Syn. H. Birds, p. 94."

I am in doubt about the validity of this species, which is one of my desiderata.

GENUS XXX. **Patagona**, Gray, List. Gen. Birds, 1840, p. 18.

Cynanthus, Less, Tabl. Esp. Ois. Mou., 1829, p. 12.

Hylocharis, Gray, Gen. Birds, 1848, Vol. 1, p. 114.

Hypermetra, Cab and Hein, Mus. Hein., 1860, t. iii, p. 80.

TYPE: *T. gigas*, Vieillot.

Size very large. Bill stout, straight, longer than the head. Feathers of the forehead projecting slightly upon the culmen, hiding the nostrils. Wings very long, reaching nearly the end of tail. Tail long, forked, median rectrices broad, long, and shortest, lateral and outermost ones slightly and gradually longer. Feet large and stout, tarsi clothed to the toes. Sexes alike.

Habitat.—Ecuador, Peru, Bolivia, and Chili.

85. PATAGONA GIGAS, Vieill, Gal. Ois., 1834, t. i., p. 296.

Cynanthus tristis, Less, Ois. Mou., 1829, p. 43.

Ornismya gigantea, d'Orb and Lafr. Syn. Av., 1838, p. 26.

Hylocharis gigas, Gray, Gen. Birds, vol. 1, p. 114.

Hypermetra gigas, Cab. and Hein., Mus. Hein, 1860, t. iii, p. 80.

Giant Humming Bird, Gould, Mon. Troch., vol. iv, p. 232.

le Patagon géant, Muls., Hist. Nat. Ois. Mou., 1876, t. ii, p. 195.

Habitat.—Ecuador, Peru, Bolivia, and Chili.

Male.—Upperside pale greenish-bronze, greener on head. Patch of white on rump. Uppertail coverts greenish-bronze, margined with white. Tail brownish bronzy-green. Shafts of outermost and two lateral next to it white, except at tips. Outermost rectrice grayish-white with tips brownish-green. A buff spot behind the eye. Throat and abdomen rusty red, the feathers of the former with a blackish-brown spot in the centre of each feather. Breast and flanks pale brown, margined with rufous. Vent, tuft on side of flanks, and under-tail coverts white. Wings purplish-brown. Bill black.

Total length, $8\frac{1}{8}$in. Wing, $5\frac{1}{4}$. Tail, $3\frac{3}{4}$. Culmen, $1\frac{1}{4}$.

Female.—Coloured like the male, but paler on underside, and smaller.

Total length, $7\frac{1}{2}$in. Wing, 5. Tail, $3\frac{5}{8}$. Culmen, $1\frac{1}{4}$.

I have in my collection what I consider as the type of Vieillot "Ex Coll Riocour." My other specimens were collected in Chili by Reed. I have also three specimens collected by Whitely in Peru, and in Bolivia by Buckley. They are different in their coloration.

The specimens from Peru have the upper part of the throat black, margined with buff, and the lower part rusty red, all the underside slaty-gray, with the abdomen buffy-white.

The specimen from Bolivia has the upperside more bronzy with a rufous tinge on neck, the patch on rump buffy-white, all the underside deep buff, and the wings shining purple with bluish reflections, each feather, excepting the two longest tipped white.

If they should prove distinct species, I propose the names of *Patagona peruviana* and *Patagona boliviana* for them.

I have put this genus here considering that it is more nearly related to *Eustephanus* than to any other genus.

FAMILY IV. METALLURIDAE,

OR FAMILY OF THORN-BILLS.

Body moderate or large. Bill straight and slender, moderate or very small as in the genera, *Oxypogon* and *Ramphomicron*. Feathers projecting on the culmen, especially so in *Oxypogon* and *Ramphomicron*. Throat brilliantly coloured in the males, excepting in the genus *Avocettinus*. In the genera *Chalcostigma, Eupogonus,* and *Oxypogon* the brilliant feathers of the throat are more or less elongated, reaching about the middle of the breast. In the two last genera the forehead is also ornamented with long feathers forming a crest. Rectrices of tail broad, slightly or greatly forked, as in the genus *Ramphomicron*, and generally brilliantly coloured. Sexes unlike.

TYPE : *Metallura,* Gould, P.Z.S., 1847, p. 94.

GENUS XXXI. **Oreonympha,** Gould, P.Z.S., 1869, p. 295.

TYPE : *O. nobilis,* Gould.

Bill longer than the head, stout, and with a somewhat downward curvature. Wings large and sickle-shaped. Tail ample and forked. Tarsi clothed nearly to the toes, which are of moderate size, the hinder toe and nail rather shorter than the middle toe and nail " Gould, l.c."

Habitat.—Peru.

86. OREONLYMPHA NOBILIS, Gould, P.Z.S., 1869, p. 295.

Bearded Mountaineer, Gould, Mon. Troch, Suppl. 1886, p. 60.

L'Oréonymphe noble, Muls., Hist. Nat. Ois. Mou., 1876, t. iii, p. 175.

Habitat.—Peru.

Male.—Forehead and centre of crown black, remaining portion of top of head dark blue. Cheeks and sides of throat black. Throat metallic green succeeded by a tuft of lengthened metallic reddish-purple feathers. Upper surface bronzy-brown. Sides of neck and under surface grayish-white, mottled faintly with brown on the abdomen and flanks. Undertail-coverts bronzy-brown. Central rectrices bronze, lateral feathers white at base, rest bronze; the external one all white, excepting a streak of bronze at the tip of the inner web. Bill and feet black.

Total length, 7in. Wings, $3\frac{1}{2}$. Tail, $3\frac{1}{2}$. Culmen, 1.

"Description given by Mr. Elliot, from a very fine male collected at Huatocto (Peru), by H. Whitely."

FEMALE? Centre of crown deep chestnut, rest greenish blue. Sides of face and throat black. Centre of throat metallic green, no pendent tuft. Underpart brownish white. Rest of plumage like that of male.

This magnificent species was discovered by Mr. Henry Whitely during his scientific expedition in Peru.

GENUS XXXII. **Oxypogon**, Gould, P.Z.S. 1848, p. 14.

TYPE: *O. guerini,* Boissoneau.

Head crested. Bill short, straight, and pointed, shorter than the head. Face above and below the bill, ornamented with lengthened feathers. Wings long, reaching nearly the end of tail. Tail long, slightly forked when opened. Median rectrices broad, shorter than the next one and rounded, lateral gradually longer, the two outermost ones of the same length. Feet large. Tarsi naked. Hind toe and nail longer than middle toe and nail.

Habitat.—Venezuela and Columbia.

87. OXYPOGON GUERINI, Boiss., Rev. Zool., 1840, p. 7.

Trochilus parvirostris, Fras., P.Z.S., 1849, p. 18.

Mellisuga guerini, Gray, Gen. Birds, vol. i., p. 112.

Guerin's Helmet-crest, Gould, Mon. Troch., vol. iii, p. 182.

l'Oxypogon de Guérin, Muls., Hist. Nat., Ois. Mou., 1876, t. iii., p. 179.

Habitat.—Columbia.

Male.—Head and crest brownish-black with a central tuft of buffy-white feathers, the two longest nearly reaching the middle of the back. A wide band of buffy-white surrounds the back of the throat and head. Rest of upperside and wing-coverts bronzy-green, median rectrices bronzy-green, with white shafts very apparent. This white shaft is conspicuous over all the rectrices, lateral white margined and tipped with coppery-bronze. Centre of throat metallic green encircled with a tuft of buffy-white feathers, the longest of which reach the centre of breast. Sides of breast, abdomen

and flanks pale brown, washed with bronze feathers. Bill black.

Total length, $4\frac{1}{2}$in. Wing, $2\frac{6}{8}$. Tail, $2\frac{3}{8}$. Culmen, $\frac{3}{8}$.

Female.—Upperside bronzy-green. Tail like that of male; but rectrices narrower. Underside including undertail-coverts pale buff, nearly white, with dark bronzy feathers encircling the throat, the abdomen and flanks washed with bronze feathers. Bill black.

Total length, $3\frac{7}{8}$in. Wing, 2. Tail, $2\frac{2}{8}$. Culmen, $\frac{3}{8}$.

This species was probably discovered by Boissoneau and dedicated by him to Guérin de Méneville, the Editor of the "Revue Zoologique," afterwards called "Revue et Magasin de Zoologie," and the author of many other well-known scientific works.

88. Oxypogon stuebeli, Meg. Madar. Zeitschr ges Ornit, 1884, vol. i, p. 204.

Stuebel's Helmet Crest, Gould, Mon. Troch, Suppl., 1886, p. 59.

l'Oxypogon de Stuebel.

Habitat.—Volcano of Tolima, Columbia.

Female.—Upper surface bronzy-brown. Neck, sides of neck, entire under surface and undertail-coverts brownish cream-colour. Wings, especially towards their distal end, with a vivid purple tinge. The two middle tail feathers, as well as the upper tail-coverts more or less coppery-red, each one with a broad cream coloured shaft stripe which does not reach to the distal end, the latter being lighter. The outermost tail feather cream-coloured, except a coppery patch along the inner web, leaving the terminal spot free. This marking of the tail is the best specific character. Bill black, very slender and hardly larger than that of *Ramphomicron microrhynchus.*

Total length, 3in. Wing, $2\frac{15}{16}$. Middle tail feathers, 1.65, the penultimate and longest, 1.9. "Mey, loc cit."

It was dedicated to Doctor Alphons Stüebel, of Dresden, said to be the first collector in that part of the globe.

This seems to me to be the female of *Oxypogon guerini.* "Edit."

89. OXYPOGON CYANOLAEMUS, Salv. and Godm., Ibis., 1880, p. 172.

Blue-throated Helmet-crest, Gould, Mon. Troch., Suppl., 1886, p. 58.

l'Oxypogon à gorge bleue.

Habitat.—Sierra Nevada, Santa Marta (Columbia).

Male.—This species is closely allied to *O. guerini*. The principal differences are the throat, including its elongated feathers, which are metallic purplish blue, with base of feathers of chin white, followed by a metallic rubi spot, and the outermost rectrices entirely white with bronzy tips. Bill and feet black.

Total length, $4\frac{7}{8}$in. Wing, $2\frac{7}{8}$. Tail, $2\frac{3}{8}$. Culmen, $\frac{3}{8}$.

Female.—Like the male, but without the crest and the ornamental feathers of throat.

It is a very rare species in the collections. It was discovered by the traveller-naturalist, Mr. Simons, in Sierra Nevada of Santa Marta (Columbia).

90. OXYPOGON LINDENI, Parz., Rev. Zool., 1845, p. 253.

Mellisuga lindeni, Gray, Gen. Birds, vol. i., p. 113.

Linden's Helmet-crest, Gould, Mon. Troch, vol. iii., p. 183.

l'Oxypogon de Linden, Muls. Hist. Nat. Ois. Mou., 1876, t. iii., p. 182.

Habitat.—Venezuela.

Male.—Centre of forehead, head and crest velvety black, with two narrow lines of white feathers starting from the bill and uniting quickly with the elongated white feathers of crest. Upperside bronze-green. Chin white, with black spots on the central feathers, and a lengthened tuft of white feathers reaching the lower part of breast. The black part surrounding the chin is encircled by a band of white. All the underside pale bronzy-brown. Anal region and upper part of under-tail coverts bluish-white, remainder of undertail coverts bronzy, edged with white. Median rectrices bronzy-green, lateral coppery-bronze. Shafts of rectrices white for nearly their entire length. Wings purplish-brown. Bill and feet black.

Total length, $4\frac{6}{8}$in. Wing, 3. Tail, $2\frac{3}{8}$. Culmen, $\frac{3}{8}$.

Female.—Upperside bronzy-brown. Underside mottled with white and coppery brown. Flanks coppery brown with a green lustre.

It is still a rare species in the collections. It was discovered in 1842, in the Sierra Nevada of Merida (Venezuela), by Mr. Linden, to whom it was dedicated by Parzudaki.

GENUS XXXIII. **Eupogonus,** Muls and Verr., Class. Troch., 1865, p. 73.

TYPE : *T. herrani,* Delattre and Bourcier.

Bill short, straight, slightly curved at tip. Nostrils hidden by the feathers on forehead. Wings long, not reaching the end of tail. Tail slightly forked. Median rectrices wide, shorter than the three next ones. Outermost ones shorter, but longer than the median, all of them, excepting the two median, largely tipped with white. Tarsi clothed. Sexes unlike.

Habitat.—Ecuador and Columbia.

91. EUPOGONUS HERRANI, Delattre and Bourc., Rev. Zool., 1846, p. 309.

Calothorax herrani, Bon. Consp., Gen. Av., 1852, vol. i., p. 85.

Ramphomicron herrani, Gould, Mon. Troch, vol. iii., p. 187.

Chalcostigma herrani, Reich, Aufz. der Col., 1853, p. 12.

Lampropogon herrani, Bon., Rev. and Mag. Zool., 1856, p. 253.

Herran's Thorn-bill, Gould, Mon. Troch, vol. iii., p 187.

Le Ramphomicron d'Herran, Muls., His. Nat. Ois. Mou., 1876, t. iii., p. 173.

Habitat.—Ecuador and Columbia.

Male.—Forehead and centre of the crown chestnut-red, paler on the long feathers of the crown. Sides of chin, crown and ear-coverts dark bronzy-green, appearing black in certain lights. A small white spot behind the eye. Rest of upper-side shining bronzy-green, becoming red on lower part of back. Upper tail-coverts shining purplish-red. Median rectrices purplish-blue, with a reddish tinge at tips, lateral purplish-blue, largely tipped with white. Chin metallic green, beneath which are elongated feathers forming a narrow band extending to the middle of breast, metallic rubi. Rest of

underside dark bronzy-green, washed with gray-buff. Anal region white. Undertail-coverts bronzy in centre and margined with gray. Wings purplish-brown. Bill black.

Total length, $4\frac{6}{8}$in. Wing, $2\frac{7}{8}$. Tail, $2\frac{2}{8}$. Culmen, $\frac{1}{2}$:

Female.—Forehead chestnut-red. Rest of upperside like the male. Underside like the male, excepting the throat, which is buffy-brown with greenish bronzy spots.

Total length, $4\frac{2}{8}$in. Wing, 2. Tail, $2\frac{2}{8}$. Culmen, $\frac{1}{2}$.

This fine species was discovered, the male in Ecuador, by Mr. Bourcier, the female at Pasto, Columbia, by Delattre.

I have several specimens collected in Ecuador by Buckley.

It was dedicated to General Herran, who was then President of the Republic of Colombia.

Genus XXXIV. **Lampropogon,** Bon. Rev. and Mag. Zool., 1854, p. 252.

Eupogonus, Muls. and Verr., Class. Troch., 1865, p. 73.

Type: *Lampropogon ruficeps,* Bonaparte.

Bill short, acutely pointed, nostrils hidden, Wings long, reaching the end of tail. Tail forked, median rectrices shortest, lateral and outermost ones gradually longer, all of them uniform in colouration. Tarsi clothed. Sexes unlike.

Habitat.—Bolivia.

92. Lampropogon ruficeps, Gould, P.Z.S., 1846, p. 89.

Mellisuga ruficeps, Gray, Gen. Birds, 1844, vol. i., p. 112.

Ramphomicron ruficeps, Bon. Consp. Gen, Av., 1850, vol. i., p. 79.

Lampropogon ruficeps, Bon. Rev. and Mag. Zool., 1854, p. 252.

Red-capped Thorn-bill, Gould, Mon. Troch, vol. iii., p. 188.

Le Ramphomicron à tête rousse, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 171.

Habitat.—Peru and Bolivia.

Male.—Forehead chestnut red. Upperside bronzy-green. Tail bronze. Centre of throat metallic green, terminating with some elongated feathers metallic golden. Sides of throat

dark brownish bronze. Breast, buff, with a bronzy tinge. Abdomen and flanks dark buffy-bronze washed with bronzy feathers. Undertail coverts pale buff. Bill black.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{1}{2}$. Tail, $1\frac{7}{8}$. Culmen, $\frac{1}{2}$.

Female.—Upperside bronzy-green. Underside pale buff, washed with greenish-bronzy feathers. Outermost rectrices tipped pale buff. Bill black.

Total length, $3\frac{2}{8}$in. Wing, 2. Tail, $1\frac{6}{8}$. Culmen, $\frac{1}{2}$.

I have several specimens of this rare species collected in Bolivia, 1876, by Buckley.

GENUS XXXV. **Chalcostigma,** Reich. Aufz der Col. 1853, p. 12.

LAMPROPOGON, Bon. Rev. and Mag. Zool. 1854, p. 252.

TYPE: *O. heteropogon,* Boissoneau.

Bill very small, straight, shorter than the head. Feathers of lower part of throat lengthened, and brilliantly coloured. Wings long, ample, not reaching the end of tail. Tail deeply forked when opened. Rectrices broad, median smaller than the rest, next one longer and gradually so, with the others, outermost ones the longest. Sexes unlike.

Habitat.—Columbia, Ecuador, Peru, and Bolivia.

CHALCOSTIGMA HETEROPOGON, Boiss. Rev. Zool., 1839, p. 355.

Trochilus coruscus, Fras. P.Z.S., 1840, p. 15.

Mellisuga heteropogon, Gray, Gen. Birds, vol. i., p. 112.

Ramphomicron heteropogon, Bon., Consp. Gen. Av., 1850, vol. i., p. 79.

Lampropogon heteropogon, Bon. Rev. and Mag. Zool., 1854, p. 252.

Columbian Thorn-bill, Gould, Mon. Troch., vol. iii., p. 184.

Le Ramphomicron à quene bronzée, Muls. Hist. Nat. Ois. Mou., 1876, t. iii., p. 168.

Habitat.—Columbia.

Male.—Head shining green. Upperside greenish-bronze. Uppertail coverts reddish bronze. Tail shining bronze. Throat

metallic golden-green, followed by a long narrow tuft of metallic rose-lilac. Rest of underside buffy bronze-green. Undertail-coverts buff with bronze in the centre of feathers. Wings purplish-brown. Bill black.

Total length, $4\frac{5}{8}$in. Wing, $2\frac{6}{8}$. Tail, $2\frac{5}{8}$. Culmen, $\frac{1}{2}$.

Female.—Upperside bronze, reddish on forehead, lower part of rump, and uppertail-coverts. Underside uniform grayish-bronze, with the lower part of abdomen and undertail-coverts buff. Tail bronze. Maxilla black. Mandible flesh colour at base, rest black.

Total length, $3\frac{7}{8}$in. Wing, 2. Tail, 2. Culmen, $\frac{1}{2}$.

This species was probably discovered by Mr. Boissoneau.

*94. CHALCOSTIGMA OLIVACEA, Lawr., Ann. N.Y., Lyc., Nat. Hist., 1867, p. 44.

Olivaceous Thorn-bill, Gould., Mon. Troch., Suppl., 1886, p. 62.

Le Ramphomicron d'un pâle olivatre, Muls., Hist. Nat., Ois. Mou., 1876, t. iii., p. 170.

Habitat.—Peru and Bolivia.

Male.—Upper surface and tail dull olive-green. Wings light purplish-brown. Chin and upper part of throat metallic green, ending in a bunch of elongated feathers, metallic crimson, terminating in violet-purple. Undersurface brownish olive. Vent grayish-white. Undertail-coverts olive-green, the feathers margined with pale rufous. Bill and feet black.

Total length, $5\frac{1}{4}$in. Wing, $3\frac{3}{4}$. Tail, $2\frac{7}{8}$. Culmen, $\frac{7}{16}$.

There does not seem to be any difference in the plumage of the sexes. "Elliot, loc. cit."

Surely the plumage of the female must be without any of the metallic feathers on the throat. "Editor."

95. CHALCOSTIGMA STANLEYI, Bourc and Muls., Ann. Soc. Agri., Lyon., 1850, p. 199.

Ramphomicron stanleyi, Gould, Mon. Troch., vol. iii., p. 185.

Ramphomicron vulcani, Gould, Jard., Cont. Ornith., 1852, p. 135.

Lampropogon stanleyi, Bon., Rev. and Mag. Zool., 1854, p. 253.

Stanley's Thorn-bill, Gould, Mon. Troch., vol. iii, p. 185.

Southern Thorn-bill, Gould, Mon. Troch., vol. iii, p. 186.

Le Ramphomicron de Stanley, Muls., Hist. Nat., Ois. Mou., 1876, t. iii, p. 165.

Habitat.—Ecuador, Peru.

Male.—Top of head dark greenish-bronze. Upperside violet-blue. Uppertail-coverts dark shining bronzy-bluish-green. Tail shining bluish-green. Centre of throat metallic green, followed by a narrow band of bright amethyst feathers. Sides of throat brownish black. Underside sooty brown with bronzy reflections. Undertail-coverts dark violet, margined with brownish gray. Wings brown. Bill black.

Total length, $4\frac{5}{8}$in. Wing, $2\frac{6}{8}$. Tail, $2\frac{1}{2}$. Culmen, $\frac{7}{16}$.

Female.—Upperside pale violet-blue, with all the head and upperwing coverts pale bronze-green. Underside sooty brown with a greenish-bronze tinge. Tail shining bluish-green, but not so brilliant as in male. Outermost rectrices margined externally with grayish brown.

Total length, 4in. Wing, $2\frac{5}{8}$. Tail, $2\frac{1}{8}$. Culmen, $\frac{7}{16}$.

Genus XXXVI. **Metallura,** Gould, P.Z.S., 1867, p. 94.

Urolampra, Cab. and Heine, Mus. Heine, 1860, t. iii., p. 68.

Lavania, Muls., Cat. Ois. Mou., 1875, p. 24.

Lavinia, Muls., Hist. Nat. Ois. Mou., 1877, t. iii., p. 106.

Type: *T. opaca,* Lichtensten.

Bill straight, acutely pointed, rather short. Tail long, slightly forked, rectrices wide, brilliantly coloured. Wings long, reaching the end of tail. Feet large. Tarsi bare. Hind toe longer than middle toe. Sexes unlike.

Habitat.—Venezuela, Columbia, Ecuador, Peru and Bolivia.

96. Metallura opaca, Licht., Tsch. Consp., p. 38.

Trochilus cupreicauda, Gould, P.Z.S., 1846, p. 87.

Mellisuga cupreicauda, Gray, Gen. Birds, vol. i., p. 113.

Aglaeactis cupreicauda, Bon. Rev. and Mag. Zool., 1854, p. 253.

Coppery tail, Gould, Mon. Troch, vol. iii., p. 191.

La Metallure à queue cuivreuse, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 111.

Habitat.—Peru and Bolivia.

Male.—Upperside purplish black, with metallic reflections in certain lights. Tail above shining-bronze with metallic reddish purple reflections, beneath fiery-red in certain lights. Throat spotted with a long narrow band, metallic green. All the rest of underside, purplish-black. Wings bronzy-brown. Bill black.

Total length, 5in. Wing, 3. Tail, $2\frac{3}{8}$. Culmen, $\frac{5}{8}$.

Female.—Unknown.

*97. METALLURA JELSKYI, Cab. Journ. fur Ornith., 1874, p. 99.

Metallura cupreicauda, Tacz. P.Z.S., 1874, p. 544.

Jelsky's Copper Tail, Gould, Mon. Troch. Suppl., 1886, p. 63.

La Métallure de Jelsky.

Habitat.—Peru.

Male.—Entire plumage black, of a dull silky texture, presenting under certain lights, when viewed from behind, a slight lustre of bluish or reddish-violet, according to the light. Tail-coverts brownish-black, glossed with bronzy or reddish-copper. Fore part of the throat ornamented with scaley feathers of a dark and brilliant emerald-green. Anal region downy and white. Undertail coverts bronzy, with a violet reflection and bordered with pale reddish. Wing-coverts dull coppery-bronze, taking under certain lights a lustre of reddish-violet, similar to that of the general plumage. Quills brown, glossed with bronzy-olive and violet in their terminal parts. Tail slightly emarginate, the tail feathers broad, the middle ones slightly rounded, the others rather pointed at the extremity, of a dark coppery-bronze, taking a lustre of more reddish or violet, according to the direction of the light, and changing to a fine brilliant greenish-blue; lower part of the tail coppery-red or violet, more brilliant than the upper surface. Bill straight, black; much longer than the head; a little less than half the body. Feet black, with the tarsus entirely bare.

Female.—Above dusky-black; brownish below, with the same violet lustre as the male. Forehead pale brownish-gray,

gradually passing into a darker shade on the hind neck. Feathers of the breast and abdomen narrowly fringed with buff, more distinctly in the middle of the belly. Tail-coverts dull bronze. Fore neck ornamented with scaley feathers of a blue colour, broadly edged with violet, the lustre less strongly developed than in the male. Tail not so long, somewhat truncated, similar in colour to the male, but less red and more coppery, with the greenish-blue less brilliant.

This rare species was discovered in Peru by Mr. Jelski, the celebrated Peruvian explorer, and it was dedicated to him by Mr. Cabanis.

By the description and Mulsant's plate, it looks as if it was *M. opaca*. "Edit."

*98. METALLURA CHLOROPOGON, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 68.

White vented Copper Tail, Gould, Mon. Troch, Suppl., 1886, p. 64.

La Metallure à ventre blanc.

Habitat.—?

Mas.—Purpureo-fuscescens nitore quodam metallico virescenti, vertice humeris uropygioque valde, imprimis antem macula gulari splendidissime virescente-fulgentibus ; alis purpureo-fuscis, rectricibus latissimis pulchre purpureo-resplendentibus, crisso albido, tectricibus caudac inferioribus virescenti-nitentibus, margine lutescenti. "Cab. l.c."

By the description it looks as a very allied species to *M. opaca*, if it is not the same. "Edit."

*99. METALLURA EUPOGON, Cab. Journ. fur Ornith, 1874, p. 97.

Metallura hedwigae, Tacz., P.Z.S., 1874, p. 544.

Red throated Copper Tail, Gould, Mon. Troch, Suppl., 1886, p. 64.

La Métallure à gorge rouge.

Habitat.—Peru.

Male.—General plumage bronzy-green. Line down the centre of the throat metallic fiery-red. Tuft of white feathers below the thighs. Wings purple-brown. Tail bronze with blue reflections, beneath luminous grass-green. Bill and feet black.

Total length, $3\frac{3}{4}$in. Wing, $2\frac{1}{2}$. Tail, 2. Culmen, $\frac{1}{2}$.

"Elliot, loc. cit."

Female unknown.

This rare species was discovered by Mr. Jelsky.

100. METALLURA SMARAGDINICOLLIS, D'Orb. and Lafr., Syn. Av., 1838, ii., p. 31.

Mellisuga smaragdinicollis, Gray, Gen. Birds, vol i., p. 112.

Urolampra smaragdinicollis, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 68.

Violet Tail, Gould, Mon. Troch., vol. iii., p. 196.

La Métallure à gorge d'émerande, Muls., Hist., Nat. Ois. Mou., 1876, t. iii., p. 120.

Habitat.—Bolivia, Columbia?

Male.—Upperside shining dark bronzy-green. Tail purple bronze, with shining dark blue reflections in certain lights, beneath reddish purple. Throat luminous dark grass-green. Rest of underside bronzy-green washed with pale buff on breast and middle of abdomen. Undertail coverts brownish bronze edged with pale buff. Bill black.

Total length, $3\frac{2}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{3}{8}$.

Female.—Upperside bronze-green. Underside buff, glossed with green on flanks. Throat and breast spotted with bronzy-green. Anal region white. Undertail coverts buff, with bronzy green in centre. The two outermost rectrices of tail tipped with gray.

This rare species was discovered by D'Orbigny. My specimens were collected in Bolivia by Buckley.

101. METALLURA PERUVIANA. Boucard, H. Bird., 1893, vol. iii., p. 6.

Peruvian Violet Tail.

La Métallure Péruvienne.

Habitat.—Peru.

Male.—Upperside bronzy-green. Median rectrices dark greenish bronze, with bluish purple reflections in certain lights, beneath shining bluish-purple, with reddish-purple reflections. Throat luminous grass-green. Sides of neck and breast

golden-green. Abdomen and flanks bronze-green. Anal region white. Undertail-coverts bronze-green, margined with pale buff. Wings purplish-brown. Bill black.

Total length, $3\frac{7}{8}$in. Wing, $2\frac{2}{8}$. Tail, $1\frac{6}{8}$. Culmen, $\frac{1}{2}$.

Female.—Upperside bronzy-green. Tail like that of male with the two outermost rectrices tipped grayish-white. Underside pale buff, whiter on abdomen and flanks, minutely spotted with golden-green on throat and breast, and bronze-green on flanks and abdomen. Anal region white. Wings purplish-brown. Maxilla black. Mandible flesh colour at base, the rest black. Same size as male.

This new species was discovered in Peru, 1873, by Mr. H. Whitely. It is closely allied to *M. smaragdinicollis,* but is a much larger bird. Besides the size, the principal differences consist in the greenish colour of the tail above, and the more golden tinge of the underside.

Types in Boucard's Museum.

102. METALLURA TYRIANTHINA, Lodd., P.Z.S., 1832, p. 6.

Ornismya allardi, Bourc, Rev. Zool., 1839, p. 294.

Ornismya paulinae, Boiss, Rev. Zool., 1839, p. 354.

Mellisuga tyrianthina, Gray, Gen. Birds, vol. i, p. 112.

Trochilus allardi, Jard., Contr., Ornith., 1850, pp. 81-82.

Urolampra tyrianthina, Cab. and Hein., Mus. Hein., 1866, t. iii, p. 68.

Tyrian Tail, Gould, Mon. Troch., vol. iii, p. 195.

La Métallure d'Allard, Muls., Hist. Nat. Ois. Mou., 1876, t. iii, p. 117.

Habitat.—Columbia, Venezuela.

Male.—Upperside bronzy-green in some specimens, in others golden-green. A small white spot behind the eye. Tail metallic purple-bronze, brighter above than beneath. Throat luminous grass-green. Underside bronzy-green in some specimens, golden-green in others. Buffy on breast. Undertaif coverts, bronzy-green margined with buff.

Wings purplish-brown. Bill black.

Total length, $3\frac{1}{2}$in. Wing, $2\frac{1}{4}$. Tail, $1\frac{7}{8}$. Culmen, $\frac{3}{8}$.

Female.—Upperside bronzy-green. Underside rufous marked with bronze feathers on sides of breast, abdomen and

flanks. Tail above bronzy-purple, beneath reddish-purple, outermost rectrices tipped with buffy-white.

It is a common species.

I have one male specimen, grayish-brown all over, darker on forehead and on tail, with the throat dark metallic blue. If it should prove a distinct species, I propose the name of *Metallura griseo-cyanea* for it.

103. METALLURA QUITENSIS, Gould, Int. Troch., 1861, p. 112.

Quito Tyrian Tail.

La Métallure de Quito, Muls. Hist. Nat. Ois. Mou., 1876, t. iii., p. 116.

Habitat.—Ecuador.

I am not of the same opinion as Mr. Elliot about this species. It is closely allied to *M. tyrianthina,* but is a much larger bird. The principal differences consist in the upper-side, which is more golden, the green of the throat not so dark, the general colour of the underside more buffy-golden, and the colour of tail, which is bronze, with purplish reflections.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{4}{8}$. Tail, $1\frac{7}{8}$. Culmen, $\frac{4}{8}$.

Female.—Upperside golden-green, shining green on forehead. Underside rufous on throat and breast, with small bronze spots on throat. Whitish on abdomen, washed with golden-green. Outermost rectrices with large grayish spots at tips.

104. METALLURA AENEICAUDA, Gould, P.Z.S., 1846, p. 87.

Mellisuga aeneicauda, Gray, Gen. Birds, vol. i., p. 113.

Aglaeactis aeneicauda, Bon. Rev. and Mag. Zool., 1854, p. 253.

Urolampra aeneicauda, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 68.

Brassy Tail, Gould, Mon. Troch., vol. iii., p. 192.

La Métallure à queue d'airain, Muls. Hist. Nat. Ois. Mou., 1876, t. iii., p. 112.

Habitat.—Peru and Bolivia.

Male.—Upperside bronzy-green. Tail metallic bronze above, changing to blue in certain lights, beneath luminous

golden bronze, with reddish-purple reflections on margins. Throat luminous metallic green. Underside bronzy-green marked with buffy-brown. Undertail-coverts pale bronze-green, tipped with rufous. Anal region white. Wings purple brown. Bill black.

Total length, $4\frac{3}{8}$in. Wing, $2\frac{5}{8}$. Tail, 2. Culmen, $\frac{6}{8}$.

Female.—Upperside bronzy-green. Tail metallic bronze, changing to blue. Underside buffy-brown, each feather tipped bronzy-green. Undertail coverts rufous. Lateral and outermost feathers of tail slightly tipped with gray. Bill black. Same size as male.

This is a very rare species. My specimens were collected in Bolivia, by Buckley. Bridges is the discoverer of the species.

To show how specimens of one species differ, I give below the description of one of my male specimens:—Upperside bronzy-green. Tail purplish-bronze, changing into blue in certain lights. Throat luminous metallic gold. Tail beneath, luminous purple-bronze, distinct enough to make a new species with it; but it is not so.

*105. METALLURA PRIMOLINA, Bourc., Rev., and Mag. Zool., 1853, p. 295.

Urolampra primolina, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 68.

Metallura Primolii, Gould, Int. Troch., 1861, p. 112.

Primoli's Humming Bird, Gould, Mon. Troch, vol. iii., p. 194.

Le Métallure de Primoli, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 116.

Habitat.—Ecuador.

Male.—Upper surface dark bronzy-green. Tail luminous bronzy-green, edged with coppery-green on the upper surface. Underside bronzy-green, darker on flanks. Throat luminous green, with base of feathers rufous. Undertail coverts bronzy-green edged with rufous. Anal region pure white. Wings purplish-brown. Bill and feet black.

Total length, $3\frac{9}{16}$. Wing $2\frac{5}{16}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{9}{16}$.

Female (?).—Upper surface bronzy-green. The under surface has the base of the feathers rufous-white, darkest on the throat and abdomen with bronzy-green tips. Wings purplish-

brown. Tail luminous bronzy-green changing to purple in certain lights, on the upper surface, and metallic luminous grass-green on the under surface, the three outermost feathers tipped with brownish-gray. Bill and feet black.

Total length, $3\frac{9}{16}$in. Wing, $2\frac{5}{16}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{9}{16}$.

From Bourcier's Collection. "Elliot, loc. cit."

This rare species which seems to be very closely allied to *M. æneicauda* was discovered in Ecuador, by Mr. Osculati, and was dedicated by Bourcier to Count Primoli, grandson of Prince Canino.

*106. METALLURA WILLIAMI, Bourc and Delatt., Rev. Zool., 1866, p. 308.

Mellisuga Williami, Gray, Gen. Birds, vol. i, p. 112.

Urolampra Williami, Cab. and Hein., Mus. Hein., t. iii., p. 68.

Purple Tail, Gould, Mon. Troch., vol. iii., p. 193.

La Métallure de William, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 115.

Habitat.—Columbia.

Male.—Upper surface dark bronzy-green. Throat and upper part of breast luminous grass-green. Under surface bronzy-green, the base of the feathers buff. Wings purplish-brown. Tail dark green above, with bright purple reflections in certain lights, beneath luminous violet with green reflections. Bill and feet black.

Total length, $3\frac{3}{4}$in. Wing, $2\frac{1}{4}$. Tail, $1\frac{3}{4}$. Culmen, $\frac{1}{2}$.

Type in Elliot's Collection ? "Elliot, loc. cit."

GENUS XXXVII. **Avocettinus,** Bon., Rev. and Mag. Zool., 1854, p. 256.

Opisthoprora, Cab. and Hein., Mus. Hein, 1860, t. iii., p. 76.

TYPE: *T.-eurypterus,* Loddiges.

Bill shorter than the head, maxilla straight until just at the tip, when it turns slightly upwards, mandible straight up to the middle, then turning sharply upwards. Wings long. Tail long, slightly forked, rectrices wide. Feet strong, hind toe of same length as middle toe and nail. Sexes alike.

Habitat.—Columbia.

107. AVOCETTINUS EURYPTERUS, Lodd., P.Z.S., 1832, p. 7.

Trochilus georginae, Bourc., P.Z.S., 1847, p. 48.

Polytmus eurypterus, Gray, Gen. Birds, vol. i., p. 109.

Avocettula eurypterus, Reich, Aufz. der Col:, 1853, p. 6.

Delattria georgina, Bon., Rev. and Mag. Zool., 1854, p. 256.

Opisthoprora eurypterus, Cab. and Hein., Mus. Hein., 1860, t. iii, p. 76.

Purple tailed Avocet, Gould, Mon. Troch., vol. iii., p. 200.

L'Avocettin euryptère, Muls., Hist. Nat. Ois. Mou., 1876, t. ii., p. 265.

Habitat.—Columbia.

Male.—Head bronze, rest of upperside bronzy-green. Median rectrices bronze, lateral bronzy-black with a green gloss, outermost tipped with buffy-white. Throat, breast, and centre of abdomen grayish-white, each feather tipped with green. Sides of neck, breast, abdomen, and flanks, shining green with rufous tinge. Lower part of abdomen, and undertail-coverts rufous, slightly tinged with green. Wings purplish-brown. Bill and feet black.

Total length, 4in. Wing, 2½. Tail, 2 Culmen, ½.

Female (?).—Seems to be coloured exactly as the male, with outermost rectrices tipped white.

It is still a rare species in the collections. The type, which I believe is still in the Loddiges collection, was sent from Popayan.

GENUS XXXVIII. **Adelomyia,** Bonaparte. Rev. and Mag., Zool., 1854, p. 253.

ADELISCA, Cab. and Heine., Mus. Hein., 1860, t. iii., p. 72.

TYPE: *T. melanogenys,* Fraser.

Bill straight, about equal to the length of the head. Tail slightly rounded. Middle rectrices about the same length as the lateral, outermost shortest. Wings long, primaries slightly curved inward near the tips. Tarsi naked. Sexes alike.

Habitat.—Venezuela, Columbia, Ecuador, Peru, and Bolivia.

108. ADELOMYIA MELANOGENYS, Fras., P.Z.S., 1840, p. 18.

Trochilus sabinæ, Bourc. and Muls., Ann. Soc. Agr., Lyon, 1846, p. 323.

Mellisuga sabinæ, Gray, Gen. Birds, vol. i., p. 112.

Ramphomicron sabinæ, Bon. Consp. Gen. Av., 1850, p. 79.

Metallura sabinæ, Reich., Aufz. der Col., 1853, p. 8.

Adelisca melanogenys, Cab. and Heine., Mus. Hein., 1860, t. iii., p. 72.

Adelomyia maculata, Gould, Mon. Troch., p. 199.

Adelomyia cervina, Gould, Ann. Mag. Nat. Hist., 1872, p. 453.

Adelomyia aeneosticta, Simon, Soc. Zool. de France, 1889, p. 223.

Spotted Adelomyia, Gould, Mon. Troch., vol. iii., p. 198, 199.

L'Adélomye de Sabine, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 131.

Habitat.—Venezuela, Columbia, and Ecuador.

Male.—Upperside golden-green. Median rectrices bronzy-brown, lateral of same colour with the basal half of inner webs and tips buffy white. Some specimens have a purple gloss near the tips of lateral rectrices, just below the buffy tips. A white line behind the eye. Ear-coverts brownish-black. Underside pale buff, marked with bronzy spots on neck and breast, and shining golden feathers on sides of breast and flanks. Undertail-coverts pale buff, with a bronzy spot in the centre. Wings purplish-brown. Bill black.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{1}{4}$. Tail, $1\frac{6}{8}$. Culmen, $\frac{5}{8}$.

Female.—Exactly the same, with the rectrices slightly rounded, and the underside of a paler buffy-white.

It is a common species, with a wide range. I have not been able to see any difference between my specimens from Venezuela, Columbia, and Ecuador, and I think that the names of *A. maculata* and *A. cervina,* Gould, cannot be retained as distinct species. It is quite probable that what Gould described as *A. cervina* were very adult males of *A. melanogenys.* I have several specimens, received from Columbia, which correspond exactly to that description.

I have also one specimen with the upperside pale slaty-gray. Tail and wing brownish-gray. All the rectrices, excepting the median, tipped with buffy-white. Underside whitish-gray, spotted with small brown spots on throat and flanks. If it should prove a distinct species, I propose the name of *Adelomya simplex* for it.

109. ADELOMYIA INORNATA, Gould, P.Z.S , 1846, p. 89.

Mellisuga inornata, Gray, Gen. Birds, vol. i., p. 112.

Ramphomicron inornatus, Bon. Consp. Gen. Av., 1850, vol. i., p. 79.

Metallura inornata, Reich., Aufz. der Col., 1853, p. 8.

Adelisca inornata, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 72.

Purple-throated Adelomya, Gould, Mon. Troch., vol. iii., p. 197.

L'Adélomye sans parure, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 127.

Habitat.—Peru and Bolivia.

Male.—Upperside shining golden-green. Tail bronzy-brown, with purplish reflections on lateral feathers, which are widely tipped with buff. A buffy-white stripe behind the eye. Ear-coverts blackish-brown. Underside brown, gradually passing to rufous on lower part of abdomen and flanks, and spotted with bronzy feathers. Centre of throat metallic blue. Wings purple-brown. Bill black.

Total length, $3\frac{2}{8}$in. Wing, 2. Tail, $1\frac{5}{8}$. Culmen, $\frac{1}{2}$.

Female.—Exactly like the male, without any blue on the throat.

It is a rare species. I think it was discovered by Bridges in Bolivia. My specimens were collected in Bolivia, by Buckley.

*110. ADELOMYIA CHLOROSPILA, Gould, Ann. and Mag. Nat. Hist., 1872, p. 452.

Green-spangled Humming-bird, Gould, Mon. Troch., Suppl., 1886, p. 66.

L'Adélomye mouchetée de vert, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 129.

Habitat.—Peru.

Male.—Exactly like the preceding species, excepting the green spots on the throat, which, however, are very small and indistinct. *Possibly the same species.*—"Editor."

GENUS XXXIX. **Urosticte,** Gould, Int. Troch., p. 110.

TYPE: *T. benjamini*, Bourcier.

Bill slender, straight, longer than the head. Nostrils exposed. Wings moderate, pointed, reaching the end of tail. Tail slightly forked. Rectrices narrow, median shortest, next one slightly longer, the remaining three slightly longer, and of same length. Hind toe shorter than the middle one. Sexes unlike.

Habitat.—Ecuador.

111. UROSTICTE BENJAMINI, Bour., Compt. Rend., 1851, vol. xxvii, p. 187.

Urosticte benjamini, Reich., Aufz. der Colib., 1853, p. 13.

Basilinna benjamini, Reich., Troch., Enum., 1855, p. 11.

White tip, Gould, Mon. Troch., vol. iii., p. 190.

L'Urosticte de Benjamin, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 102.

Habitat.—Ecuador.

Male.—Upperside shining green. Four median rectrices purplish bronze, extensively tipped with white, and purplish-bronze at point, lateral, bronze at base of outer webs, rest purplish-bronze, darker at tips. A spot behind the eye white. Throat luminous metallic emerald-green, beneath which is a broad central spot of dark shining violet. Breast, abdomen, and undertail-coverts white, mingled with green. Flanks shining green. Wings purplish. Bill black.

Total length, $3\frac{3}{8}$in. Wing, 2. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female. — Upperside golden-green. Uppertail-coverts shining green. Four median rectrices bronzy-green, coppery at tips, lateral purplish-bronze with white tips. White spot behind the eye. Underside white spangled with green, brilliantly and more profusely spotted on throat. Wings purplish. Bill black.

Total length, $3\frac{1}{2}$in. Wing, 2. Tail, $1\frac{3}{8}$. Culmen, $\frac{6}{8}$.

This species was discovered in Ecuador by Bourcier, and was dedicated by him to Mr. Benjamin Leadbeater.

My specimens were collected in Ecuador by Buckley.

*112. UROSTICTE INTERMEDIA, Tacz., P.Z.S., 1882, p. 36.

Peruvian White-tip, Gould, Mon. Troch., Suppl., 1886, p. 34.

L'Urosticte intermédiaire.

Habitat.—Peru.

Male.—Upperside shining golden-green. Tail deeply forked. Median rectrices green at base, then dark coppery-red with large white tips, with a small brown spot at the extremity, lateral and outermost green at base, passing to dark coppery-red, with white tips on lateral. Chin and throat brilliant metallic green, followed by a jugular spot dark violet. Breast and abdomen green, the central feathers margined with grayish-white. Undertail-coverts rufous and green. Vent white. Wings purplish-brown. Bill black.

Total length, 118 mill. Wing, 58. Tail, 80. Culmen, 22.

Female.—Upperside green, less golden than the male. Underside white spotted with green, more minutely on throat and breast, and more brilliantly than on the abdomen. Undertail-coverts rufous-white. Tail less forked than the male, median rectrices green, lateral and outermost ones green, passing to coppery, with large white tips. This rare species takes its place between *U. benjamini* and *U. ruficrissa*.

*113. UROSTICTE RUFICRISSA, Lawr, Ann., Lyc., Nat. Hist., N.Y., 1864, vol. viii., p. 44.

Red-vented White-tip, Gould, Mon. Troch., Suppl., 1886, p. 33.

L'Urosticte à sous caudales rousses, Muls., Hist. Nat., Ois. Mou., 1876, vol. iii., p. 104.

Habitat.—Ecuador.

Male.—General plumage dark shining green. Throat luminous grass-green. Wings purplish-brown. Undertail-coverts rufous. Tail pale bronze-green with the four median feathers tipped white. Bill black. Feet brown.

Total length, $4\frac{1}{2}$in. Wing, $2\frac{3}{8}$. Tail, $2\frac{1}{8}$. Culmen, $\frac{7}{8}$.

Female.—Exactly like the female of *U. bejamini*, but slightly larger and with a longer bill.

This species is one of my desiderata.

GENUS XL. **Augastes**, Gould, Int. Troch., 1861, p. 123.

LAMPRURUS, Reich., Aufz. der Col., 1853, p. 12.

TYPE: *T. superbus,* Vieillot.

Bill straight, acutely pointed, serrated in the middle. Wings long, reaching the end of tail. Tarsi clothed. Tail rounded, nearly square. Rectrices wide.

Habitat.—Brazil.

114. AUGASTES SUPERBUS, Vieill., Encyel. Méth., t iii., p. 561

Trochilus scutatus, Natt. Temm. Pl. Col., No. 299, Fig. 3.

Ornismya nattereri, Less. Ois. Mou., 1829, p. 75.

Hylocharis superba, Gray, Gen. Birds, vol. i., p. 114.

Natterer's Vizor-bearer, Gould, Mon. Troch., vol. iv., p. 221.

L'Augaste superbe, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 150.

Habitat.—Brazil.

Male.—Forehead and throat metallic emerald-green, with pale golden reflections. Band across the crown, and ear-coverts extending to throat, black. A spot behind the eye white. Upperside sometimes bronzy-green or dark shining green. Uppertail-coverts grayish-bronze. Median rectrices rufous at base, sometimes golden bronze, or golden bronze at base and rest greenish-bronze, lateral varies also from greenish-bronze to bluish-green. Sides of throat and rest of underside shining indigo-blue, with a large buffy-white spot in the middle of the breast. In one of my specimens a wide buffy-white band crosses entirely the middle of chest. Undertail-coverts green, edged with grayish white. Bill and feet black. Wings purplish-brown.

Total length, $3\frac{1}{2}$in. Wing, $2\frac{2}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{11}{16}$.

Female.—Upperside bronzy-green, golden on forehead. Ear-coverts brownish-black. Throat metallic-green, but not so brilliant as in the male. A white band across the breast. Abdomen and flanks greenish-blue. Undertail-coverts gray. Outermost rectrices with gray tips. Bill black,

This beautiful species is rather rare in the collections. My adult specimens differ so much that I really do not know if they are not two species mixed together.

115. AUGASTES LUMACHELLUS, Less., Rev. Zool., 1838, p. 315.

Trochilus lumachellus, Bourc., Rev. Zool., 1846, p. 313.

Hylocharis lumachellus, Gray, Gen. Birds, vol. i., p. 114.

Lamprurus lumachellus, Reich., Aufz. der Col., 1853, p. 12

Hooded Vizor-bearer, Gould, Mon. Troch., vol. iv., p. 221

L'Augaste lumachelle, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 148.

Habitat.—Bahia (Brazil).

Male.—Forehead and throat metallic pale golden-green, bounded beneath by a narrow line of greenish-blue. Forming a point on the throat, a patch of metallic ruby and topaz. Head, ear-coverts, and band round the throat velvety-black. A small white spot behind the eye. Upperside bronzy-green. A narrow white band crossing the breast. Underside golden. Undertail-coverts shining reddish-orange, slightly edged with gray. Tail metallic bronze-red, beneath very brilliant red. Wings purplish-brown, with bronzy reflections. Bill and feet black.

Total length, $3\frac{1}{2}$in. Wing, $2\frac{1}{4}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{11}{16}$.

Female.—Upperside shining bronze-green, greenish on forehead. Ear-coverts and sides of throat brownish black. Throat and rest of underside as male, but less brilliant. Outermost rectrices tipped with gray.

It is a very rare species.

GENUS XLI. **Phlogophilus,** Gould, P.Z.S., 1860, p. 310.

TYPE: *P. hemileucurus,* Gould.

Bill straight, long, and acutely pointed. Wings ample and rather rounded. Tarsi long and bare. Tail long. Rectrices narrow and rounded. Hind toe and nail shorter than middle toe and nail.

Habitat.—Ecuador.

116. PHLOGOPHILUS HEMILEUCURUS, Gould, P.Z.S., 1860, p. 310.

Elvira hemileucura, Muls., Hist. Nat. Ois. Mou., 1874, t. i, p. 264.

Pied-tailed Humming-bird, Gould, Mon. Troch., vol. v., p. 360.

L'Elvire à queue mi-blanche, Muls., Hist. Nat. Ois. Mou., 1874, t. i., p. 265.

Sex (?) Upperside shining grass-green. Median rectrices bronze-green with tips brownish black, lateral white with a wide band of purplish-black in the centre and white tips. Throat white tipped with green. Breast and centre of abdomen white. Flanks white at base, with tips shining green. Outermost rectrices purplish-black at base, the rest white. Bill black. Just under the mandible a rufous spot on chin. A buffy white spot behind the eye. Wings purplish brown. Feet and tarsi yellow, probably flesh colour when alive.

Total length, $3\frac{1}{2}$in. Wing 2. Tail, $1\frac{2}{8}$. Culmen, $\frac{6}{8}$.

I have only one specimen of this peculiar species.

Genus XLII. **Ramphomicron,** Bon. Compt. Rend., 1850, p. 382.

Type: *O. microrhynehus,* Boissoneau.

Bill extremely short, acutely pointed. Wings long. Upper-surface and throat metallic. Tail deeply forked. Sexes unlike.

Habitat.—Columbia, Ecuador, Peru.

This genus forms the natural passage from *Metalluridae* to *Lesbidae.*

117. Ramphomicron microrhynchum, Boiss., Rev. Zool., 1839, p. 354.

Trochilus brachyrhynchus, Fras., P.Z.S., 1840, p. 16.

Mellisuga microrhyncha, Gray, Gen. Birds, vol. i., p. 112.

Thorn-bill, Gould, Mon. Troch., vol. iii., p. 189.

Le Ramphomicron à petit bec, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 163.

Hirondelle,

Habitat.—Columbia, Ecuador, Peru.

Male.—Upperside metallic purple. Throat luminous light grass-green. Underside dark bronzy-green, slightly grayish-buff on the vent. Undertail coverts grayish-buff, greenish in the centre. Tail purple-black, with glossy tips. Wings purplish-brown, Bill black.

Total length, $3\frac{7}{8}$in. Wing, 2. Tail, $2\frac{1}{8}$. Culmen, $\frac{2}{8}$.

Female.—Upperside bronzy-green. Underside white, spotted with green. Undertail-coverts buff. Median rectrices dark-bronze, lateral purplish-black, the two outermost tipped white. Bill and feet black.

Total length, $3\frac{2}{8}$in. Wing, $1\frac{5}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{2}{8}$.

*118. RAMPHOMICRON DORSALE, Salv. and Godm. Ibis., 1880, p 172.

Simon's Thorn-bill, Gould, Mon. Troch. Suppl., 1886, p. 61.

le Ramphomicron de Simons,

Male.—Above black, slightly shaded with greenish, the rump narrowly bronzy-purple. Wings dusky. Tail deeply forked, purplish-black. Sides of the head and neck deep black. Throat very brilliant greenish-golden. Abdomen pale dusky-brown, washed with greenish-golden, especially on the flanks. Vent dull whitish, each feather marked down the middle with a greenish spot. Bill short, a little curved, black. Feet black. Iris dark brown.

Total length, $4\frac{2}{8}$in. Wing, $2\frac{3}{8}$. Tail, $2\frac{5}{8}$. Culmen, $\frac{5}{8}$.

Female.—Above green. Uppertail-coverts purplish-bronze. Tail purplish-black, the outer feathers tipped white. Underneath whitish. Throat and flanks spotted with greenish-gold, the middle of the throat marked with greenish-gold feathers. Outermost rectrices, $1\frac{6}{8}$in. long; median, $1\frac{1}{8}$.

This beautiful second species of Ramphomicron was discovered in the Sierra Nevada of Santa Marta, Columbia, by Mr. Simons.

FAMILY V. LESBIDÆ,

OR FAMILY OF TRAIN-BEARERS.

Bill short, straight, acutely pointed, compressed in the genus *Cyanolesbia*. Head sometimes crested. Wings long. Tail extremely long and deeply forked. Rectrices more or less broad throughout their length and generally brilliantly coloured on the upperside, rounded at tips. Throat of males more or less brilliantly coloured. Tarsi bare. Feet rather large. A patch of white feathers on each side of the lower part of the abdomen. Sexes unlike.

Range.—Venezuela, Columbia, Ecuador, Peru, Bolivia, and Argentine Republic.

TYPE: *Lesbia,* Less, Int. Gen. et Syn. des Ois. du Genre Trochilus, 1832, p. 17.

GENUS XLIII. **Zodalia,** Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 281.

TYPE: *Zodalia ortoni,* Lawrence.

Bill straight, shorter than the head. Tail long, deeply forked, feathers broad throughout their length.

Habitat.—Ecuador.

*119. ZODALIA ORTONI, Lawr., Ann. N.Y. Lyc. Nat. Hist., 1869, Vol. ix., p. 269.

Quito Purpleback, Gould, Mon. Troch., Suppl., p. 54.

La Zodalie d'Orton, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 282.

Habitat.—Quito (Ecuador.)

Male.—Entire upper plumage and wing coverts of a rich glossy purple, the concealed bases of the feathers are green. Uppertail-coverts similar in colour to the back, but marked centrally between the purple and green with crimson. Tail brownish-black except the two central ones which are green; the ends of the eight middle tail feathers are largely marked with a deep vinous bronzy-crimson, most in extent on the short central feathers, the long outer feather on each side ends with obscure bronzy-green; the outer edge of lateral feather is buff for three-quarters of its length from base, this colour occupying only about one third of the web. The undersurface of the tail is steel-blue, bronzy at the ends of the feathers; the shafts of the two long lateral feathers are whitish at base for about half their length. Wings brownish-purple. Throat brilliant metallic pale green. Sides of neck, breast, upper part of abdomen and flanks shining green, lower part of abdomen ashy-buff. Bill and feet black.

Total length, $5\frac{3}{4}$in. Wing, $2\frac{1}{2}$. Tail, $3\frac{7}{16}$. Bill, $\frac{1}{2}$.

Female.—Unknown.

This species was discovered by the well-known collector, Orton, and it was dedicated to him by Mr. Lawrence. The above description was taken from the Annal's New York Lyceum of Natural History.

*120. ZODALIA GLYCERIA, Bon., Rev. and Mag. Zool, 1854, p. 252.

Cometa mossai, Gould, Athen, 1853.

Purple-tailed Comet, Gould, Mon. Troch, Suppl., p. 55.

Sparganura mossai, Cab. and Hein, Mus. Hein, 1860, t. iii., p. 52.

La Zodalie de glycère, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 284.

Habitat.—Columbia.

Male.—Head, back of neck, wing-coverts, back, and tail-coverts shining green. Wings purplish-brown. Chin and throat metallic light olive-green. Sides of neck and under-surface buff with a spot of deep shining green on the tip of each feather. Tail dark reddish-purple, passing into deep bluish-green at the tip, except on the outer feathers where the hue is so faint as to be scarcely perceptible, the outer feathers also have the basal three-fourths of the shaft and the outer webs buffy-white, the base of the shaft paler than the web; basal three-fourths of the shaft of next feather also buffy-white. Undertail-coverts buff with a brown mark in the centre near the tip. (Gould, Monog. Troch.)

Total length, 6 in. Wing, $2\frac{1}{2}$. Tail, $3\frac{1}{4}$. Culmen, $\frac{1}{2}$.

Female.—Unknown.

*121. ZODALIA CAROLI, Bourc., P.Z.S., 1847, p. 48.

Hylocharis caroli, Gray and Mitch, Gen. Birds, vol. i., p. 115.

Calliphlox caroli, Reich., Aufz. der Col., 1853, p. 12.

Avocettinus carolus, Bon., Rev. and Mag. Zool., 1854, p. 256.

Cometes caroli, Gould, Mon. Troch., vol. iii., p. 17.

Polyonymus caroli, Hein. Journ for Ornith, 1863, p. 206.

Leobia caroli, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 298.

Charle's Comet, Gould, Mon. Troch., vol. iii., p. 177

La Léobie de Charles, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 298.

Habitat.—Peru.

Male.—Crown, wing-coverts and uppersurface dull greenish-bronze, becoming of a greener cast on the lower part of back and uppertail-coverts. Wings purplish-brown. Four middle tail feathers bronzy-green, the remainder black, with violet reflections, the outer one with a stripe of dull or buffy-white along the apical portion of the outer web. Behind the eye a small white spot, and a small streak of buff from the angle of the mouth. Throat red. Undersurface pale bronzy-green, each feather slightly fringed with gray. On each flank near the back a tuft of white. Vent and undertail-coverts buffy-white, with a streak of brown down the centre of each feather. Bill black.

Total length, $5\frac{1}{8}$in. Wing, $2\frac{1}{4}$. Tail, 2. Culmen, $\frac{3}{4}$.

"Gould, Mon. Troch."

GENUS XLIV. **Sappho,** Reich., Syst. Av., 1849, p. 40.

Cynanthus, Tschud, Consp., 1844, p. 36.

Cometes, Gould, P.Z.S., 1847, p. 31.

Sappho, Reich., Syst. Av. Natur., 1849, pl. 40.

Sparganura, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 52.

Polyonymus, Heine, Journ for Ornith, 1863, p. 206.

Leobia, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 297.

TYPE: *Sappho sparganura,* Shaw.

Bill longer than the head, slightly arched. Tail brilliantly coloured and deeply forked. Rectrices very wide, round at tips. Throat metallic. Tarsi naked. Hind toe and nail nearly as long as middle toe. Sexes unlike.

Habitat.—Columbia, Peru, Bolivia, and Argentine Republic.

122. SAPPHO SPARGANURA, Shaw, Gen. Zool., vol. viii., p. 291.

Trochilus chrysurus, Cuv. Regn. Anim., 1829, t. i., p. 426.

Ornismya sappho, Less, Ois., Mouch., 1829, p. 105.

Orthorhynchus chrysurus, d'Orb. and Lafr., Syn. Av., 1838, p. 26.

Mellisuga sparganura, Gray, Gen. Birds, 1844, vol. i., p. 113.

Cometes sappho, Gould, P.Z.S., 1847, p. 31.

Lesbia sparganura, Bon., Rev. Zool., 1854, p. 252.

Sparganura sappho, Cab. and Hein., Mus. Hein., 1860, t iii., p. 52.

The Sappho Comet, Gould, Mon. Troch., vol. iii., p. 173.

Le Cométès sappho, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 275.

Habitat.—Bolivia, Argentine Republic.

Male.—Head, upper part of back and wing-coverts bronze-green. Back and uppertail-coverts shining purple-crimson. Rectrices dark-brown at base, remaining part metallic fiery-orange, with a large, velvety black spot at tips. Basal half of outer web of external rectrices pale brown. Throat metallic grass-green. Remaining part of underside golden-green. Flanks, and undertail-coverts rufous. A patch of white feathers on each side of lower part of vent. Wings pale brown. Bill and feet black.

Total length, 7in. Wing, $2\frac{6}{8}$. Tail, $4\frac{1}{8}$. Culmen, $\frac{5}{8}$.

Female.—Crown and back golden-green, reddish on rump. Uppertail-coverts shining crimson. Central rectrices metallic fiery-red, with a slight brownish band at tips, lateral brownish at base, remainder fiery-red, outermost brown on inner web, remainder pale buff, nearly white. Throat buffy-white, spotted with green. Breast and flanks white, with large green spots. Abdomen grayish-white. Undertail-coverts pale buff.

Total length, $4\frac{1}{2}$in. Wing, $2\frac{1}{2}$. Tail, $2\frac{1}{2}$. Culmen, $\frac{1}{2}$.

I have several specimens of both sexes of this splendid species. Some were collected in Bolivia many years ago, the others were collected by Mr. White in Argentine Republic.

123. SAPPHO PHAON, Gould, P.Z.S., 1847, p. 31

Ornismya chrysura, Var., d'Orb. and Lafr. Syn. Av., 1838, p. 27.

Cometes phaon, Gould, P.Z.S., 1847, p. 31.

Mellisuga phaon, Gray, Gen. Birds, Vol. 1, p. 113.

Lesbia phaon, Bon. Rev. Zool, 1854, p. 252.

Sparganura phaon, Cab. and Hein., Mus. Hein., 1860, t. iii, p. 52.

The Phaon Comet, Gould, Mon. Troch., Vol. iii., p. 175.

Le Cométès phaon, Muls., Hist. Nat. Ois. Mou., 1876, Vol. iii., p. 279.

Habitat.—Bolivia, Peru.

Male.—Head and neck brownish green. Back and upper tail coverts dark crimson. Tail, basal half blackish-brown, remainder metallic crimson with large velvety black spots at tips. Throat metallic grass-green, remainder of underside brownish-green. Undertail coverts pale buff with a central line bronzy-green. Wings brown. Bill and feet black.

Total length, $6\frac{6}{8}$in. Wing, $2\frac{3}{4}$. Tail, 4. Culmen, $\frac{7}{8}$.

Female.—Like the preceding species, but the tail is dark crimson.

I have a large series of this species collected by Buckley, near to la Paz, Bolivia.

GENUS XLV. **Lesbia,** Lesson, Ind. Gen. et Syn. des Ois. du Genre Trochilus, 1832, p. 17.

Cynanthus, Bon. Consp. Gen. Av., 1850, p. 81.

Agaclyta, Cab. et Hein. Mus. Hein., 1860, t. iii., p. 70.

Psalidoprymna, Cab. et Hein., Mus. Hein., 1860, p. 52.

TYPE: *Lesbia nuna,* Lesson.

Bill short, straight. Tail deeply forked, rectrices broad, the outermost very long. Throat in males brilliantly coloured. Sexes different.

Habitat.—Columbia, Ecuador, Peru and Bolivia.

124. LESBIA NUNA, Less., Suppl. Ois. Mou, p. 169.

Ornismya Gouldi, d'Orb et Laf. Syn. Av., t. ii., p. 27.

Cynanthus bifurcatus, Bon. Consp. Gen. Av., 1850, p. 81.

Psalidoprymna bifurcata, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 53.

Nouna Koali, Gould, Mon. Troch., vol. iii., p. 169.

La Lesbie Nuna, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 291.

Habitat.—Peru.

Male.—Upperside dark bronzy-green. Rectrices black at base, all but the outermost ones with their apical half metallic grass green, the outermost ones black, with a slight metallic green tip. Throat metallic grass green. Sides of neck, breast and flanks bronzy-green, washed with rufous on lower part of abdomen, beneath which is a patch of white feathers.

Undertail-coverts green, margined with buff. Tail purplish-black with the basal half of outer feathers grayish white. Thighs buff. Bill black.

Total length, 7½in. Wing, 1⅝. Tail, 5. Culmen, ⅞.

Female. — Upperside bronzy-green. Underside white, washed with green, sometimes with a few metallic golden spots on the throat. Undertail coverts buffy-white. Tail coloured like that of the male, but much shorter. Bill black.

This fine species was discovered by Delattre, at Mayobamba, Peru.

My specimens were collected by Mr. H. Whitely in Peru.

*125. LESBIA EUCHARIS, Boure, Rev. Zool., 1848, p. 274.

Cynanthus eucharis, Bon., Rev. and Mag. Zool., 1854, p. 252.

Train bearer, Gould, Mon. Troch., vol. iii., p. 171.

La Lesbie eucharis, Muls., Hist. Nat. Ois. Mou., vol. iii. p. 200.

Habitat.—Columbia.

Male.—Entire upper surface, breast, abdomen, and flanks bronzy-green. Throat metallic grass-green. Vent and undertail-coverts buff, the latter with green centres. Wings purplish brown. Rectrices brownish-black, largely tipped with grass-green, except the outermost one, which has a bronze tip. Bill black.

Total length, 7⅝in. Wing, 2¼. Tail, 5⅝. Culmen, $\frac{7}{16}$.

Female.—Above golden-green, beneath buff spangled with green. Tail like that of the male but shorter, and with the outer web of outermost feather grayish-white for three fourths of its length.

The above descriptions were taken from Elliot's Synopsis of the Humming Birds.

126. LESBIA BOLIVIANA, Boucard, H. Bird, 1891, t. i., p. 43.

Bolivian Train-bearer,

La Lesbie bolivienne,

Habitat.—Bolivia.

Male.—Upperside, breast, and flanks golden-green. Throat metallic golden-green. Wings purplish-brown. Vent deep buff. Undertail-coverts buff, with a narrow central line green.

Tail purple-black. The three central rectrices black at base, with their apical half metallic golden-green, the two next purple-black, with metallic golden tip, and the two outermost purple-black, with a scarcely visible golden tip, rufous-gray on the basal outer web for about the third of its length. Bill black.

Total length, $7\frac{3}{4}$in. Wing, $2\frac{1}{8}$. Tail, $5\frac{1}{2}$. Culmen, $\frac{1}{2}$.

Female.—Unknown.

The principal differences between this species and *L. nuna* are the general colouration of its plumage, and the colour of the throat and tips of rectrices, which are golden instead of deep grass-green.

It was discovered by Buckley in Bolivia.

Type in my collection.

127. LESBIA GOULDI, Lodd, P.Z.S., 1832, p. 7.

Ornismya silphia, Less., Rev. Zool., 1840, p. 73.

Mellisuga gouldi, Gray, Gen. Birds, vol. i., p. 113.

Cynanthus gouldi, Bon., Consp. Gen. Av., 1850, vol. i., p. 81.

Agaclyta gouldi, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 70.

Bogota Train-bearer, Gould, Mon. Troch., vol. iii., p. 167.

La Lesbie de Gould, Muls., Hist. Nat., Ois. Mou., 1876, vol. iii., p. 294,

Habitat.—Columbia.

Male.—Upperside, breast, flanks, and abdomen golden-green, a patch of white feathers on each side of lower part of abdomen. Under-tail coverts green, margined with buff. Rectrices brownish-black at base, remaining part metallic green. Outermost one, black with shining green tip, the outer web grayish-buff to half its length, completely hidden by the median rectrices. Wings purplish brown. Bill black.

Total length, $6\frac{1}{8}$in. Wing, 2. Tail, $4\frac{1}{2}$. Culmen, $\frac{3}{8}$.

Female.—Upperside golden-green. Outer rectrices brown, much shorter than those of the male, three fourths of the basal outer web grayish buff, and hidden by the median rectrices, tips grayish buff. Underside grayish, speckled with green. Bill black.

Common in Columbia. It was dedicated by Lesson to the celebrated English Ornithologist, the late Mr. John Gould.

128. LESBIA GRACILIS, Gould, P.Z.S., 1846, p. 86.

Mellisuga gracilis, Gray, Gen. Birds, vol. 1, p. 113.

Cynanthus gracilis, Bon., Consp., Gen., Av., 1850, vol. i., p. 81.

Graceful Train-bearer, Gould, Mon. Troch., vol. iii., p. 168.

La Lesbie déliée, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 296.

Habitat.—Ecuador, Peru.

Male.—The only differences existing between this species and *L. gouldi* are: the length of its tail which is half an inch shorter in all the specimens which I have from Ecuador, the outer grayish buff web which is constantly half an inch longer than the longest median rectrices, the patch of feathers beneath the lower part of the abdomen, and the undertail-coverts which are green, greatly margined with buff.

*129. LESBIA CHLORURA, Gould, P.Z.S., 1871, p. 504.

Green-tailed Train-bearer, Gould, Mon. Troch., Suppl., p. 53.

La Lesbie à queue verte.

Habitat.—Peru?

Male.—Crown of the head and all the upper surface golden green, gorget glittering green, rounded, and well defined as in L. *Gouldi,* abdomen mottled green and buff, its lower portion and the undertail-coverts pure buff. Wings purplish-brown, the eight central feathers entirely light green, the external one on each side olive, finely powdered and tipped with green, and having the outer web buff for more than half its length from the base.

Total length, 6½in. Wing, 2. Tail, $5\frac{3}{8}$. Culmen, $\frac{9}{16}$.

"Gould's Mon. Trochil. Suppl., 1887, p. 53."

According to Elliott, this species is the same as *L. Gouldi.*

130. LESBIA VICTORIAE, Bourc. and Muls. Ann. Soc. Agr. Lyon, 1846, t. ix., p. 312.

Trochillus Amaryllis, Bourc. and Muls., Rev. Zool., 1848, p. 273.

Mellisuga victoriae, Gray, Gen. Birds, vol. i. p. 113.

Cynanthus amaryllis, Bon. Rev. and Mag Zool., 1854, p. 252.

Psalidoprymna amaryllis, Cab. and Hein., Mus. Hein., 1860, t. iii., p. 53.

Train-Bearer, Gould, Mon. Troch., vol. iii., p. 170.

Large Tain-Bearer,

La Lesbie de Victoire, Muls., Hist. Nat. Ois. Mou., t. iii., p. 287.

Habitat.—Columbia, and Ecuador.

Male.—Upperside, breast, upper part of abdomen and flanks golden-green. Throat brilliant metallic golden-green. Lower part of abdomen and undertail-coverts rufous. Tail purplish black, each feather tipped with greenish-bronze, the two outermost, more than twice longer than the longest of the median rectrices. Wings purplish-brown. Bill black.

Total length, 9in. Wing, $2\frac{5}{8}$. Tail, $6\frac{1}{2}$. Culmen, $\frac{1}{2}$.

Female.—Upperside golden-green. Underside white spotted with green, a patch of splendid metallic gold feathers on centre of throat. Undertail-coverts buff. Tail half the length of that of the male, coloured the same, outer web of outermost feather grayish-brown to within an inch-and-a-half of tip.

Dedicated by Mulsant to his mother, Madame Victoire Mulsant.

131. LESBIA AEQUATORIALIS, Boucard, Hum. Bird, 1893, vol. iii., p. 6.

Ecuador Train-Bearer.

La Lesbie de l'Equateur.

Habitat.—Ecuador.

Male.—Upperside, sides of throat and breast, vent and flanks grass-green. Chin and throat metallic grass-green. Lower part of abdomen and undertail-coverts pale rufous. Rest of plumage as *L. victoriae.* Tail longer, with tips of central rectrices greener than in the preceding species.

Total length, $9\frac{1}{2}$in. Wing, $2\frac{5}{8}$. Tail, 7. Culmen, $\frac{1}{2}$.

Female.—Upperside grass-green. Underside pale rufous, washed with green. Throat white, speckled with green. A small patch of pale golden feathers in the centre of throat. Tail, half the length of that of male and coloured similarly.

I have separated this species from *L. Victoriae,* because in the many specimens which I have, (over one hundred), collected

at Rio Napo, by Buckley, the differences in colour mentioned above, are constant, and it is impossible to confound the two species.

Types in Boucard's Museum.

GENUS XLVI. **Cyanolesbia,** Stej. Auk., 1885, t. ii., p. 46.

Cynanthus, Sw. Class. Birds, 1837, vol. ii., p. 330.

Lesbia, Cab. and Hein., Mus. Hein, 1860, t. iii., p. 71.

Cyanolesbia, Berlep, Col. Art. Bog. Coll., 1888, p. 14.

TYPE: *T. forficatus,* Edwards.

Bill shorter than the head, straight, graduating rapidly at tip to a sharp point. Wings long. Crown and head covered with metallic feathers forming a crest. Patch of metallic feathers in the centre of throat. Tail long, deeply forked, brilliantly coloured on the upperside. Tarsi bare. Sexes unlike.

Habitat.—Venezuela, Columbia, Ecuador, Peru and Bolivia.

132. CYANOLESBIA GORGO, Reich., Aufz. der Col., p.p. 8-24.

Cynanthus forficatus, Edw. Birds, Tab. 33, pl. 1763.

Trochilus cyanurus, Steph. Shaw, Gen. Zool., vol. xix., p. 239.

Ornismya kingi, Less. Trochil., 1829, p. 107.

Mellisuga cyanura, Gray, Gen. Birds, vol. i., p. 113.

Lesbia forficata, Reich., Aufz. der Col., 1853, p. 8.

Mellisuga salvadori, Bienvenut, Ann. Zool. Mus. Flor., 1865, p. 204.

Blue-tailed Sylph, Gould, Mon. Troch., vol. iii., p. 172.

Le Cynanthe cyanure, Muls., His. Nat. Ois. Mou., 1876, t. iii., p. 269.

Habitat.—Venezuela, Columbia.

Male.—Crown metallic grass-green, bordered on the sides with a greenish-black line. Upper and underside bronzy-green, darker on back. Upper and undertail-coverts shining-green. Centre of throat metallic purple. Central rectrices black with the outer webs dark shining blue, and the portions that project beyond the tips of one another, metallic light blue.

In some specimens, the blue is replaced by metallic green, the two outermost ones black for half their length, then metallic purple-blue. Underside of tail purplish-blue. Wings dark brown; a white patch on each side of lower part of vent. Bill black.

Total length, 8in. Wing, $2\frac{3}{8}$. Tail, $5\frac{6}{8}$. Culmen, $\frac{11}{16}$.

Female.—Head metallic dark green. Upperside bronzy-green. Throat white spotted with green feathers. Breast abdomen and undertail-coverts buff. Flanks rufous washed with green. Central rectrices shining-green, lateral black, with outer webs and tips blue, outermost black, tipped white. White spots under and behind the eyes. Bill black.

Total length, $4\frac{1}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{5}{8}$.

I have received a number of adult male specimens from Merida (Venezuela), which have the crown of a lighter green, no colour on the throat, and are golden-green. The underside is quite distinct of the colour of *C. gorgo*.

If it should prove a distinct species, I propose the name of *Cyanolesbia meridana* for it.

I have adopted the name *gorgo* for this species because it cannot be relied upon with certainty, on the name of *T. forficatus, L.* for that bird.

133. CYANOLESBIA COELESTIS, Gould, Mon. Troch., Intr. 1861, p. 102.

Ecuador Train-bearer, Gould, Mon. Troch., Suppl., p. 56.

Le Cynanthe bleu celeste,

Habitat.—Ecuador.

This species, which is closely allied to the preceding, can be distinguished by the colour of the underside, which is coppery brown. As it is constant, I think the species is valid. The specimens which I have of this species were collected in Ecuador by Buckley.

134. CYANOLESBIA MOCOA, Delatt. and Bourc., Rev. Zool., 1846, p. 311.

Mellisuga smaragdinis, Gray, Gen. Birds, vol. i., p. 113.

Cynanthus smaragdicaudus, Gould, Mon. Troch., vol. iii., p. 173.

Lesbia mocoa, Reich., Aufz. der Col., 1853, p. 8.

Green-tailed Sylph, Gould, Mon. Troch., vol. iii., p. 172.

Le Cynanthe mocoa, Muls., Hist. Nat., Ois. Mouch., 1876, t. iii., p. 272.

Habitat.—Ecuador, Peru.

Male.—Crown brilliant metallic-green. Upperside shining bronze-green, greenish on lower part. Uppertail-coverts shining green. Basal half of the two median rectrices bluish-black, remaining portion brilliant metallic green, the next two are bluish-black four-fifths of their length, with outer webs and tips metallic green; the outermost ones are black for two-thirds of their length, remaining portion brilliant metallic-green. A metallic blue spot on throat. Wings purplish brown. Bill and feet black.

Total length, $7\frac{1}{4}$in. Wing, $2\frac{3}{4}$. Tail, 5. Culmen, $1\frac{1}{2}$.

Female.—Like the preceding species with throat and breast white, the first spotted with bronze-green feathers, and rest of underside rufous.

This magnificent species was discovered by Delattrè, near Mocoa, Ecuador.

I have several adult specimens received from Bogota, which differ by the colour of the crown, which is golden-green, and the upperside is of a lighter green. The throat is brownish golden-green without any blue at all. If it should prove a distinct species, I propose the name of C *columbiana* for it.

135. CYANOLESBIA BOLIVIANA, Gould, Mon. Troch., Suppl., p. 57.

Bolivian Sylph, Gould, Mon. Troch. Suppl., p. 57.

Le Cynanthe de Bolivie,

Habitat.—Bolivia.

Male.—Crown most brilliant golden-green. Upperside golden-green, with dark reflections. Rump and uppertail-coverts shining green. Tail like C *mocoa*, but shorter, and all the rectrices wider, the metallic green of tips has a bluish reflection on inner webs. Centre of throat metallic steel-blue, with greenish reflections, rest of underside golden. Wings purple-brown. Bill and feet black.

Total length, $6\frac{1}{2}$in. Wing, $2\frac{5}{8}$. Tail, $4\frac{1}{2}$. Culmen, $\frac{3}{8}$.

Female.—Crown shining green. Upperside golden bronze, passing to green on the rump and uppertail-coverts. Throat

white, washed with green. Breast, abdomen, and undertail-coverts rufous. Flanks golden green. Central rectrices shining green; lateral bluish-black on inner webs, the rest and tips shining green, outermost ones, bluish-black tipped white.

Total length, 4in. Wing, 2. Tail, $1\frac{6}{8}$. Culmen, $\frac{1}{2}$.

This beautiful species was discovered in Bolivia, by Buckley in 1874.

*136. CYANOLESBIA GRISEIVENTRIS, Tacz. P.Z.S., 1883, p. 72.

Gray bellied, Train-bearer, Gould, Mon. Troch., Suppl. p. 56.

Le Cynanthe du Pérou.

Habitat.—Peru.

Upperside green, with the forehead scaly for a long distance and very brilliant. Underside entirely pale ashy-gray. Throat bright blue, the feathers white at the base, vent white, wing-coverts uniform with the back, the edge of the wing white, first primary externally margined with white. Tail deeply forked, brilliant green, the median rectrices with a broad apical lustre of reddish copper, outermost bluish-black with green tips. Tail underside bluish-green. Bill black.

Length of wing, 81 mill. Tail, 90. Culmen, 25.

This species was discovered in Peru, by Mr. Jelsky.

GENUS XLVII. **Neolesbia,** Salvin, Cat. Birds, 1892. p. 145.

Cyanolesbia, Berlepsch, J. fur Ornith., 1887, p. 326.

Bill short and straight, slightly decurved. Tail long and deeply forked. Rectrices wide, dark steel blue.

TYPE: *Cyanolesbia nerkhorni,* Berl. J. fur Ornith., 1887, p. 326.

Habitat.—Columbia.

*137. NEOLESBIA NERKHORNI, Berlepsch, Berch, eines, Neuen. Colib., Zeiftr fur Ornith., 1887, p. 178.

Nerkhorn's Blue-tailed Sylph.

le Cynanthe de Nerkhorn.

Habitat.—Columbia.

Male.—Head metallic blue. Upperside shining greenish blue. Throat metallic green with bluish reflections. Breast

golden-green. Abdomen and flanks bluish-brown. Tail shining violet-blue. Undertail-coverts bluish-green, margined with white. Bill and feet black.

Total length, 6in. Wing, $2\frac{1}{2}$. Tail, 3. Culmen, 5.

This very rare species was sent from Columbia to Mr. A. Nerkhorn. He submitted it to Hans von Berlepsch, who dedicated it to his friend.

It forms the passage of Lesbidae to Thaluranidae.

FAMILY VI. THALURANIDAE,

OR FAMILY OF WOOD-NYMPHS.

Bill black, longer than the head, sligtly curved. Body of medium size. Underside, back, and wing-coverts brilliantly coloured. In some species the forehead is also brilliantly coloured. Wings long and narrow. Tail deeply forked. Rectrices wide. Tarsi clothed. Sexes unlike.

TYPE: *Thalurania*, Gould, P.Z.S. 1848, p. 13.

GENUS XLVIII. **Thalurania**, Gould, P.Z.S. 1848, p. 13.

MELLISUGA, Boie. Isis., 1831, p. 545.

GLAUCOPIS, Burm. Th. Braz., 1856, p. 333.

TYPE: *T. furcatus*, Gmelin.

Bill longer than the head, slightly curved. Wings long. Tail forked. Sexes unlike.

Habitat.—Costa - Rica, Veragua, Trinidad, Venezuela, Guiana, Brazil, Colombia, Ecuador, Peru, and Bolivia.

138. THALURANIA GLAUCOPIS, Gmel., Syst. Nat., 1788, vol. i., p. 497.

Trochilus frontalis, Land. Ind. Ornith., 1790, vol. i., p. 318.

Ornismya glaucopis, Less, Ois. Mou., 1829, p. 175.

Polytmus glaucopis, Gray, Gen. Birds, vol. i., p. 108.

Coeligena glaucopis, Reich., Troch., Enum., 1855, p. 3.

Glancopis frontalis, Burm., Th. Braz, 1856, p. 333.

Thalurania luciæ, Lawr., Ann. Lyc. Nat. Hist., N.Y., 1862, vol. vii., p. 2.

Brazilian Wood-Nymph, Gould, Mon. Troch., vol. ii., p. 99.

La Thaluranie glaucope, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 60.

Habitat.—Brazil.

Male.—Crown metallic deep-blue. Upperside dark grass-green. Underside shining green with golden reflections. Undertail-coverts shining green edged with gray. Tail steel-blue. Wings bluish-black. Bill black.

Total length, 4½in. Wing, 2⅜. Tail, 2. Culmen, ⅝.

Female.—Upperside shining green. Underside gray, washed with green on flanks. Median rectrices green, lateral green at base, then bluish-black, tipped white.

Common in Brazil.

I possess one female specimen, from Costa de Beauregard's collection, with the names of *Oiseau Mouche Modeste* and *simplex* upon the ticket.

139. Thalurania Columbica, Bourc and Muls., Rev. Zool., 1843, p. 2.

Polytmus columbicus, Gray, Gen. Birds, vol. i., p. 108.

Coeligena columbica, Reich., Troch., Enum., 1855, p. 3.

Thalurania venusta, Gould, P.Z.S., 1850, p. 163.

Columbian Wood-Nymph, Gould, Mon. Troch., vol. ii., p. 106.

La Thaluranie de Colombie, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 64.

Thalurania columbica, var. nigra, Boucard, H. Bird, vol. i., p. 26.

Habitat.—Costa-Rica, Veragua, Panama, Columbia and Peru.

Male.—Crown of head and a band across the back, wing-coverts and abdomen, metallic ultramarine blue. Nape, back and abdomen, bronze-green. Uppertail-coverts green. Tail bluish-black. Wings purplish brown. Throat and breast shining emerald-green. Feet flesh color. Bill black.

Total length, 4in. Wing, 2⅛. Tail, 2. Culmen, ⅝.

Female.—Upperside golden green, more green on lower part of back, and on undertail-coverts. Underside gray with few green feathers on side of breast and on flanks. Median

rectrices green, lateral green at base, rest steel-blue with white tips.

I have a large series of this species, some collected by myself at Costa-Rica and Panama, others sent from Columbia, and some collected by Hauxwell at Nauta, Peru. The specimens from Costa-Rica, Panama and Peru, are not so bronzy on nape, and have a wide ultramarine-blue band on back; but otherwise they are exactly the same as the Columbian specimens, and I don't think necessary to maintain the name of *T. venusta* for these specimens.

I have also one pair of these birds collected at Valencia, Columbia, in which the shining emerald-green of the throat covers only the throat and upper-part of the breast. The neck, back and rump are all green, without the bronzy tinge constant on all the other specimens which I have under the name of *T. columbica*. The female is also distinct, having the flanks and abdomen green. If it should prove a different species, I propose the name of *Thalurania valenciana* for this bird.

*140. THALURANIA TOWNSENDI, Ridgw., P.U.S.M., 1888, p. 590-591.

Townsend's Wood-Nymph.

La Thaluranie de Townsend.

Habitat.—Segovia River, Honduras.

Male.—Forehead rich metallic royal purple; rest of pileum dull blackish-green, only slightly metallic; hind neck and upper part opaque black; scapulars rich metallic royal purple; lower back, rump, and uppertail-coverts metallic grass-green; tail uniform purplish blue-black; remiges purplish-dusky; wing-coverts metallic bluish-velvet, the larger tipped with metallic green. Chin, throat and chest rich metallic Paris green; median portion of breast metallic emerald-green, changing gradually to more bluish-green on belly; sides of breast metallic blue; sides and flanks greenish-blue. Undertail coverts blue-black edged with grayish-white. Bill black. Feet dusky brownish.

Total length, 3·95. Wing, 2·10. Tail, 1·55. Culmen, 0·71.

Female.—Above metallic-green more yellowish for anterior half, tinged with bluish on uppertail-coverts and lesser wing coverts; middle tail feathers bluish-green, next pair similar,

but terminal portion blue-black, next pair with the blue-black more extended and the extreme tip pale grayish or grayish-white, each succeeding feather with the white tip and sub-terminal blue-black space gradually more extended, until on the exterior feather the basal green is indistinct, and the white terminal spot about 0·20 long. Sides of head below eye, chin, throat, and lower parts generally, except sides and flanks dull grayish white, the sides and flanks metallic grass-green, like the back. Bill black.

Total length, 3·50. Wing, 1·85. Tail, 1·35. Culmen, 0.75.

Similar to *T. columbica*, but much smaller, and male with lower breast emerald-green, the sides, flank and belly, bluish-green, instead of rich purplish-blue.

141. THALURANIA ERYPHILE, Less. Hist. Colib. p. 148.

Polytmus eriphyle, Gray, Gen. Birds, vol. i., p. 108.

Cocligena eriphyle, Reich., Troch., Enum., 1855, p. 3.

Glaucopis eriphile, Burm. Th. Bras., 1856, vol. ii., p. 334.

Brazilian Wood-Nymph, Gould, Mon. Troch., vol. ii., p. 108.

Green Headed Wood-Nymph

La Thaluranie eriphile, Muls. Hist. Nat., Ois. Mou., 1876, vol. iii., p. 68.

Habitat.—Brazil.

Male.—Crown and throat metallic emerald-green. Upperside metallic green. Shoulders, breast, and upper part of abdomen metallic purple-blue. Flanks and lower part of abdomen green, with a large white tuft at base of abdomen. Undertail-coverts shining-green. Tail steel-blue. Wings purple-brown. Bill black.

Total length, 4½in. Wing, 2½. Tail, 2. Culmen, $\frac{11}{16}$.

Female.—Upperside shining-green. Throat, breast and abdomen pale gray, with a few green feathers on sides of breast and flanks. Wing-coverts shining-blue. Tail steel-blue with white tips on outermost rectrices. Bill black. Feet flesh color.

It is a very rare species and quite distinct from *T. verticeps*. My two specimens of this species were collected by Mr. Gounelle in Brazil.

142. THALURANIA FANNIAE, Bourc. and Del., Rev. Zool, 1846, p. 310.

Thalurania verticeps, Gould, Jard. Contr. Ornith., 1851, p. 107.

Ricordia verticeps, Reich., Aufz., der Col., 1853, p. 8.

Chloristes verticeps, Reich., Troch., Enum., 1855, p. 4.

Thalurania eryphile, Elliot. Syn. Hum. Bird, 1879. p. 101.

Green-crowned Wood-Nymph, Gould, Mon. Troch., vol. ii., p. 107.

La Thaluranie eryphile, Muls., Hist. Nat. Ois. Mou., 1876, t. iii., p. 68.

La Thaluranie de Fanny.

Habitat.—Ecuador and Columbia.

Male.—Exactly like the preceding species, excepting the metallic emerald green of throat, which extend over the breast as in *T. Columbica*, the color of the shoulder, abdomen, and flanks which is shining Prussian blue, with greenish reflections, especially in lower part of abdomen, and the undertail-coverts whieh are steel blue, fringed with gray. Bill black, feet flesh color.

Total length, 4in. Wing, $2\frac{2}{8}$. Tail, $1\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female.—Upperside shining green. Throat and breast gray. Flanks and abdomen darkish gray, strongly washed with shining green feathers. Undertail-coverts white. Tail blue with white tips on outermost rectrices.

My specimens of this species were collected by Buckley in Ecuador. It is not common.

143. THALURANIA HYPOCHLORA, Gould, P.Z.S., 1870, p. 104.

Citado Wood-Nymph, Gould, Mon. Troch., Suppl. 1886, p. 38.

La Thaluranie hypochlore, Muls., Hist. Nat. Ois. Mou., 1876, t. iii, p. 66.

Habitat.—Ecuador.

Male.—Head and underside, metallic emerald - green. Upperside shining grass-green. Wing-coverts and shoulders metallic blue. Undertail-coverts white with dark blue in centre and tip. Tail steel-black. Wings bluish-black. Bill black. Feet flesh color.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{6}{8}$. Culmen, $\frac{6}{8}$.

Female.—Upperside shining green. Throat, centre of breast, abdomen and undertail-coverts, pale gray, nearly white. Sides of breast and flanks bronzy-green. Median rectrices grass-green with bluish tips, lateral green at base, then deep blue tipped with white.

This is a very rare species. It was discovered by Buckley in Ecuador. I have only two very fine specimens of both sexes, collected at Chimbo, Ecuador, by Mr. J. de Silmiradzki, and offered to me by Count Berlepsch.

144. THALURANIA WATERTONI, Bourc., P.Z.S., 1847, p. 44.

Polytmus watertoni, Gray, Gen. Birds, vol. i., p. 108.

Calligena whatertoni, Reich., Troch., Enum., 1855, p. 3.

Waterton's Wood-Nymph, Gould, Mon. Troch., vol. 2, p. 103.

La Thaluranie de Watterton, Muls., Hist. Nat. Ois. Mou., 1876, t. iii, p. 78.

Habitat.—Brazil, British Guiana?

Male.—Crown and nape greenish-bronze. Back in its entire length, shoulder, wing-coverts and flanks, metallic blue. Uppertail-coverts green washed with blue. Underside metallic grass-green. Undertail-coverts gray with green in centre. Tail steel-blue. Wings purplish-black. Bill black.

Total length, 5in. Wing, $2\frac{3}{8}$. Tail, $2\frac{1}{2}$. Culmen, $\frac{6}{8}$.

Female.—Upperside dark green. Underside gray.

This is a very rare species. I have only two males, which were found in a collection of Brazilian birds.

145. THALURANIA FURCATA, Gmel. Syst. Nat., 1788, vol. i., p. 486.

Ornismya furcata, Less., Hist., Nat. Ois. Mou., 1829, p. 82.

Polytmus furcatus, Gray, Gen. Birds, vol. i., p. 108.

Coeligena gyrinno, Reich., Enum., p. 3.

Thalurania furcatoides, Gould, Intr. Troch., p. 357.

Cayenne Wood-Nymph, Gould, Mon. Troch., vol. ii., p. 101.

Para Wood-Nymph, Gould, Mon. Troch., Suppl., 1886, p. 35.

La Thaluranie à queue fourchue, Muls., Hist. Nat. Ois. Mou., 1876, vol. iii., p. 72.

Habitat.—Guiana and Upper Amazons.

Male.—Head dull green, black in certain lights. Upper part of back, breast and abdomen brilliant purple, sometimes brilliant blue with purplish reflections. Rest of back grass-green. Uppertail-coverts bronzy-green. Tail blue-black. Throat luminous grass-green. Wings purplish-black. Bill black.

Total length, 4in. Wing, $2\frac{1}{8}$. Tail, $1\frac{6}{8}$. Culmen, $\frac{6}{8}$.

Female.—Upperside grass-green, bronzy on the head. Underside grayish-white. Median rectrices green, lateral gray at base, then bluish-black, tipped white.

Total length, $3\frac{1}{2}$in. Wing, $1\frac{7}{8}$. Tail $1\frac{2}{8}$. Culmen $\frac{6}{8}$.

Rather abundant in Guiana and Upper Amazons. I have put *T. furcatoides* as a synonym, as I cannot see in what they differ.

146. Thalurania refulgens, Gould, P.Z.S., 1852, p. 9.

Refulgent Wood-Nymph, Gould, Mon. Troch., vol. 2, p. 102.

La Thaluranie resplendissante.

Habitat.—Trinidad ?

Male.—Exactly the same as the preceding species, but slightly larger, especially the tail, which is deeply forked. Some are brilliant purple, others are purplish-blue. Wing-coverts metallic purplish-blue.

Total length, $4\frac{2}{8}$in. Wing, $2\frac{1}{8}$. Tail, 2. Culmen, $\frac{6}{8}$.

Female.—Upperside grass-green, bronzy on head. Central rectrices bronze-green with black tips, lateral pale bronze at base, then bluish-black, tipped white.

Total length, $3\frac{6}{8}$in. Wing, $2\frac{1}{8}$. Tail, $1\frac{5}{8}$. Culmen, $\frac{6}{8}$.

Type of female in my collection.

I have received many specimens of this species, said to come from Trinidad; but I am doubtful about the locality.

147. Thalurania nigrofasciata, Gould., P.Z.S., 1846, p. 89.

Polytmus nigrofasciatus, Gray, Gen. Birds, vol. i., p. 108.

Saucerottia viridipectus, Reich., Aufz. der Col., 1853, p. 7.

Coeligena nigrofasciata, Reich., Troch., Enum., 1855, p. 3.

Thalurania tschudii, Gould, P.Z.S., 1860, p. 312.