PLATE XIII.

Fig. 1. *Frenchia casuarinæ*, insects in tubes on twig: the bark is cut away at *a* to show scar when tube is removed; natural size.
Fig. 2. " tube, showing closed extremity.
Fig. 3. " tube, with both ends open.
Fig. 4. " base of tube with convex extremity of enclosed insect.
Fig. 5. " tube cut open, empty.
Fig. 6. " diagram of female and indusium in tube.
Fig. 7. " adult female, side view.
Fig. 8. " abdominal extremity of female.
Fig. 9. " extreme tip of abdomen with anal orifice.
Fig. 10. " female of second stage (diagram).
Fig. 11. " antenna of female, second stage.
Fig. 12. " spinnerets of female, second stage.
Fig. 13. " rostrum and mentum of female, second stage.
Fig. 14. " larva, dorsal view.
Fig. 15. " larva (diagram).
Fig. 16. " antenna of larva.
Fig. 17. " foot of larva.

ART. II.—*Notes and Observations on New Zealand Birds.*

By Sir WALTER L. BULLER, K.C.M.G., F.R.S.

[*Read before the Wellington Philosophical Society, 9th September, 1891.*]

Plate XIV.

Platycercus unicolor. (The Antipodes Island Parrakeet.)

I have mentioned in "The Birds of New Zealand" (vol. i., pp. 148, 149) the interesting circumstance of the rediscovery of this lost species on Antipodes Island by Captain Fairchild, half a century after the type specimen had been placed on the shelves of the British Museum. On the last visit of the "Hinemoa" to the same island, the crew obtained a number of them, which were brought to New Zealand alive. They bear confinement well, and soon become tame and tractable. The male bird has a conspicuously larger bill than the female. The irides are cherry-brown in colour, and the feet are dull-grey.

On Antipodes Island these birds were found frequenting the grass tussocks, and were easily run down and caught by the hand or by means of a neck-snare.

Sir James Hector records his belief (*l.c.*, p. 149) that this Parrakeet resembles a Kakapo, being "a ground Parrakeet, which flies feebly, does not care to perch, climbs with its beak and feet, and walks in the same waddle-and-intoed

fashion as the Kakapo;" and a scientific correspondent in England, to whom I sent a pair of live ones, writes me that it seems "far more like a *Conurus* than a *Platycercus*." But, although I have made a careful comparison between the bones of the two species, I cannot find that the sternum of *Platycercus unicolor* differs in any respect from that of *P. novæ-zealandiæ*, except as to size.

Antipodes Island—a mere rock in the ocean, 640 miles from Port Chalmers in a southerly direction—is the only known spot on the face of our globe inhabited by this Parrakeet. One can understand how, under the laws of evolution, isolation for perhaps many centuries has enabled this bird to develope its specific characters of form and colour. But how about *Platycercus erythrotis*, living alongside of it in the same island-home, and so slightly differentiated from *P. novæ-zealandiæ* that some ornithologists regard them as one and the same species? The only explanation I can offer is in a theory of colonisation at a later period of time, but sufficiently remote to account for a certain amount of divergence from the parent stock. The differences consist in an appreciably larger size, with paler irides, and a colder shade of green throughout the plumage, in having the red patch on the vertex much reduced in extent and mixed with the green, the line of red from the bill to the eye narrower, and the extension beyond reduced to a mere point. These are just such changes and modifications as would naturally mark the gradual transition from *Platycercus novæ-zealandiæ* to *P. unicolor*.

Owing to the uniform colour of the plumage, and the delicate shades through which the green passes, being lightest and brightest on the forehead, *Platycercus unicolor* is, to my mind, the prettiest of the whole group. I remember being struck many years ago with the portrait of the then unique specimen in the British Museum, in an illustrated folio monograph of Parrots, as being one of the handsomest plates in the book.

The species appears to have no note but a low chatter, except when fighting, when this is prolonged into a little scream like the cry of a Tern (*Sterna frontalis*).

My captive birds seemed perfectly happy, although caged as adults. They partook freely of maize and oats, also of apples, grapes, figs, and, indeed, ripe fruit of any kind. They could bite severely, as I soon learned to my cost.

Platycercus erythrotis. (The Auckland Island Parrakeet.)

Curiously enough, associated with *Platycercus unicolor* on Antipodes Island, as already stated, is a form more nearly allied to our Red-fronted Parrakeet. This is *Platycercus ery-*

throtis, of which several living examples were brought by the "Hinemoa." The Parrakeet from the Auckland Islands of which I exhibited a pair at a former meeting of this Society is no doubt referable to the same species. The Parrakeet from Macaulay Island (Kermadec group), of which several were brought by the "Hinemoa," is undoubtedly the same as our *Platycercus novæ-zealandiæ*, which enjoys a wide geographic range.

I had one of these birds caged for some time. Its irides were of a clear pink colour when in health, but they became paler when the bird sickened and died.

Platycercus novæ-zealandiæ. (The Red-fronted Parrakeet.)

Specimens brought from Macaulay Island, in the Kermadec group, do not differ in any respect from the New Zealand bird. An example of the latter has lately come into my possession in which the entire abdomen is greenish-yellow, whilst there is a narrow halo of the same colour around the frontal spot of crimson.

Nestor notabilis. (The Kea Parrot.)

In vol. ix. of our "Transactions" I have recorded some curious instances of deformity in the bill of *Nestor meridionalis*. I have lately received from Dunedin a specimen of *Nestor notabilis* in which the upper mandible presents a very strange malformation, as shown in the accompanying sketch (Plate XIV., fig. 1).

Ocydromus earli. (The Brown Woodhen.)

Captain Fairchild brought to me from the Macquarie Islands a live female Weka. It undoubtedly belongs to the above species, the irides being bright chestnut-red, and the legs of a beautiful lake-red colour. Seeing that the range of this species in New Zealand is, so far as we at present know, restricted to a portion of the west coast of the South Island, its occurrence on Macquarie Islands, about five hundred and fifty miles to the south-south-west of New Zealand, is a very curious fact in geographical distribution.

Ocydromus greyi. (The North Island Woodhen.)

To the numerous instances of albinism in New Zealand birds I have now to add another. A specimen of the above species from Hawke's Bay presents a singular piebald character: The forehead, fore part of crown, sides of head, throat, foreneck, and all the under-parts are pure white; the normal colour appearing in a small patch in the middle of the breast, behind the thighs, and under the tail. The plumage of

the upper parts is normal, except that on the left side of the head the white extends half round the nape. In both wings some of the secondaries and primaries and a few of the large coverts are pure white, and there is likewise one white tail-feather. Bill whitish horn-colour. Legs pale-brown; claws yellow horn-colour.

Diomedea cauta. (The Shy Albatros.)

I have received four eggs of the Shy Albatros from the Snares, where Captain Fairchild discovered its breeding-place. They differ slightly in size, the largest measuring 4in. in length by 2·6in. in breadth, and the smallest 3·75in. by 2·3in. They are broadly ovoido-elliptical in shape, and the shell is finely granulated. Two of them are creamy-white, with the larger end thickly splashed with umber-brown, the colouring in one of them being almost as rich as in a merlin's egg, with a few rounded spots at the smaller end. The other two eggs have only a faint wash of brown at the larger end, with widely-scattered blots (some of them with open centres) all over the surface.

I lately obtained a live bird of this species which was captured at Island Bay. What struck me most was the beautiful appearance of the head—"quite a model," as the intelligent cabman who brought it to me observed. It has a perfectly rotund appearance—most noticeable in a front view—owing to the feathers being puffed out. This character is lost in the dead bird, and necessarily so in the ordinary cabinet skin, but it could easily be represented in the mounted bird. I think this species is without question the most beautiful of the group, as to form and colour, although *Diomedea regia* for size and snowy whiteness takes the palm. In life, the bare membrane down the base of the lower mandible, and the moustachial membrane on the cheeks (usually hidden by the feathers), are of a rich orange-yellow. The black line along the base of both mandibles (outside the yellow membrane on the lower) and from the root of the forehead to the nostrils is far more conspicuous in the living bird than in dried specimens. The ridge or space between these lines, as well as the whole of the culmen, is of a very delicate lemon-yellow, changing to light horn-colour on the hook. The sides of both mandibles are dull olive-grey, changing to dull pinky-yellow along the rami of the lower mandible, which has its terminal expansion uniform slaty-black. The sides of the mouth, upper and lower, are fringed with a yellow membrane, which, from the junction at the gape, extends obliquely upwards and outwards for the space of an inch, forming the peculiar feature already described in my account of this species ("Birds of New Zealand," vol. ii., p. 203). The irides are of

a lustrous coal-black, and are wonderfully expressive in their dark facial setting, with a white eyelid underneath. The legs and feet are greenish-grey with flesh-coloured webs, shaded with brown towards the outer edges.

Diomedea fuliginosa. (The Sooty Albatros.)

At a former meeting of this Society I exhibited a down-covered nestling of this species, received from the Auckland Islands. The carpenter on board the "Hinemoa," who is a very intelligent man and has collected many good specimens at the Islands, informs me that this species of Albatros—unlike the others, which place their nests on the ground within easy reach—selects for nesting purposes the ledges of rocks on the face of the cliffs, and often in the most inaccessible places.

Diomedea culminata. (The Grey-headed Albatros.)

This species, I am credibly assured, breeds on the Snares. My informant has supplied me with a number of eggs. They are very elliptical in form, and vary slightly in size, an average one measuring 4in. in length by 2·5in. in breadth. Some are uniform creamy-white; others have the larger end more or less splashed with extremely fine dots of reddish-brown, becoming confluent in some places and forming an indistinct zone.

Diomedea regia. (The Royal Albatros.)

Since writing my paper on this new species of Wandering Albatros, I have had an opportunity of comparing its nestling with that of *Diomedea exulans*. The former, as already recorded, is entirely covered with down of the purest white; the nestling of *Diomedea exulans*, on the other hand, has a covering of light-grey down, changing to white on the head.

The distribution of these Albatroses on their breeding-grounds is very curious. Although Mollymawks are plentiful on the Snares and on the Bounty Islands, neither *Diomedea regia* nor *D. exulans* is to be found there. On Campbell Island, where *D. regia* reigns supreme, *D. exulans* is never seen. On the Auckland Islands, with the exception of the small colony of *D. regia* mentioned in a former paper, all the breeding birds belong to *D. exulans*. On the Antipodes Island, again, there are no *Diomedea regia*, and the breeding birds of the other species are, for the most part, in the dark-grey plumage with white face and throat. One of the officers of the "Hinemoa" told me that he turned many of these dark-coloured birds off the nest, and always found an egg, which seemed to him far more elliptical in form than the ordinary albatros's egg. He noticed moreover that sometimes a very dark bird was paired with a much lighter one.

Diomedea exulans. (The Wandering Albatros.)

Captain Fairchild brought in from near the Chatham Islands (early in September) two birds, apparently male and female, in both of which the blood-red mark first described by Professor Hutton was visible on the sides of the neck. This character cannot therefore be a sexual one, although it may be peculiar to the breeding-season.

Adamastor cinereus. (The Brown Petrel.)

Captain Fairchild has brought me a pair of this comparatively-rare species of Petrel, shot by him, a few days ago, halfway between Wellington and the Chatham Islands. One of them being in the flesh, I am able to supply the actual measurements, hitherto known only from the skin.

Female.—Extreme length, 22in.; extent of wings, 51in.; wing from flexure, 15in.; tail, 5in.; bill, along the ridge 2·2in., along the edge of lower mandible 2·3in.; tarsus, 2in.; middle toe and claw, 3·25in. The bill is perfectly black on the ridge, but changes to horn-colour on the hook; the sides of both mandibles are bluish-grey, but a black line extends down the middle of the lower mandible and widens out on meeting the unguis, which is dull horn-colour. The irides are very dark brown, almost black. The legs and feet are greyish flesh-colour, shaded with slaty grey on the heel and on the outer side of tarsus and toe; interdigital webs yellowish with grey edges.

This is the first time Captain Fairchild has obtained specimens of this Petrel during the many years he has been navigating the "Hinemoa." It cannot therefore be very plentiful. But it appears to enjoy a wide oceanic range, for I have in my collection an example taken at sea not far from the Cape of Good Hope.

Aptenodytes longirostris. (The King Penguin.)

The Penguins as a family are noted for their ferocity, snapping and biting in a very determined manner when interfered with or handled. The King Penguin, however, notwithstanding its great size and its power of muscle, is one of the gentlest of birds. On being captured they naturally struggle to escape, and sometimes utter a peculiar guttural cry; but in confinement they immediately become quite tame and tractable. Although armed with a powerful bill they never use it for offensive purposes. They submit to being stroked on the head and back without showing even a sign of impatience, and when an attempt is made to handle them they merely parry the intrusive hand with their long flippers, and in the gentlest manner. Captain Fairchild brought me four

fine adult birds and a nestling from the Macquarie Islands. One of the former went immediately to the dissecting-room. The others I turned loose in the garden, together with a large contingent of *Eudyptes sclateri* and *Eudyptes schlegeli*. The latter scuttled off and took refuge in the shrubbery; but the three King Penguins remained on the grass slope, and made themselves perfectly at home at once. Owing to their peculiar conformation they do not rest in a squatting attitude like the other Penguins, but either sit bolt upright, resting the whole weight of the body on the heel of the foot, or lie full length on the ground. In the early morning I found them lying prone on the belly, with their heads meeting and crossing one another. They remained in this position and perfectly motionless till the sun was well up in the heavens. On two of these birds being removed the remaining one appeared quite disconsolate, and wandered over the place a whole morning looking for his mates. He stalked about in the drollest manner, walking perfectly upright and swaying his outstretched flippers for the purpose of steadying the body. Having failed to find his companions, he settled down in the most philosophic fashion, and never left that corner of the garden where he had taken up his abode. He would not take food when offered, but on my forcing open his mandibles and placing minced raw meat in his mouth he swallowed it with avidity.

The nestling is covered with thick woolly down of a uniform sooty colour. It is a voracious feeder, uttering all day long a shrill squirling cry and opening its beak to be fed. Its appetite appears to have no limit, for no sooner has it swallowed one handful of minced meat than it stretches up its neck and clamours for more. When calling for food it sways its neck to and fro, after the manner of a young Cormorant, as if to give greater emphasis to its demands. When alarmed the King Penguin utters a low cry like that of a domestic goose.

The nearest point at which it can be obtained is Macquarie Island, lying about lat. 55° S. There is a tradition, however, on board the "Hinemoa," of one having been seen, among a group of Crested Penguins, on Campbell Island. It was made out with the glass long before the ship came alongside. It is not unlikely, however, that this was a bird that had made its escape from one of the sealing ships on its way from Macquarie Island.

The bird of the first year is covered with a shaggy, hair-like down of a yellowish-brown colour. This is gradually replaced by short plumage, presenting the colours of the adult, but much duller. The spatulate marks on the side of the head are of a pale greenish-yellow colour, and on the breast

there is at first only a tinge of yellow, where in later life this colour becomes so rich. The young birds are phenomenally fat.

Eudyptes chrysolophus. (The Royal Penguin.)

By the courtesy of Captain Fairchild I received several living birds, both old and young, of this species. It is evident that *Eudyptes chrysolophus*, Brandt (described at page 297 of "The Birds of New Zealand," 2nd ed., vol. ii.), and *Eudyptes schlegeli* are one and the same bird. The Penguin with the grey throat and scant crest is the young of the Royal Penguin; but, as *Eudyptes chrysolophus* is the older name, it must take precedence of *Eudyptes schlegeli*. In disposition and character this bird differs entirely from the ordinary Crested Penguin (*E. pachyrhynchus*). It is naturally one of the tamest and boldest of birds. It was quite amusing to notice the behaviour of the four I turned loose in my garden. They always kept in close company and acted together, as it were, automatically. They sometimes walked up and down the garden paths Indian file, at other times they walked abreast, but always in unison. Where one went the others would go; and, if interrupted, or crossed in their path, they would attack savagely with their powerful beaks and endeavour to turn the flank of the intruders, instead of turning back. They were more noisy than the other species, especially at night and during the early morning, uttering at intervals a cry like that of the domestic gander, and at other times a sound strangely like the bleating of a sheep—such as one hears at intervals from the pen at shearing-time. Their ordinary cry, frequently repeated, is not unlike the cawing of Rooks. They selected a favourite resting-ground, and, although they wandered freely over an acre of garden, they always came back to it. They seemed never tired of dipping in the water and preening their feathers. When brought to me they were undergoing their annual moult, and presented a singular appearance with the old plumage hanging about them and peeling off in strips. By the end of July they had completed their moult, and were in bright plumage, although their crests were only half developed, and their tail-feathers only just appearing. This species has a bare flesh-coloured membrane round the angles of the mouth, which imparts a very peculiar expression to the face, and admits of a wide expansion of the mandibles. It has bright red irides, and feet of a dull gamboge-yellow colour.

Observations on caged birds, or those kept in close captivity, are not perhaps of very much value from a scientific point of view; but, when (as in the present case) the birds have the freedom of a garden and shrubbery, with access

to water, they may be studied with almost as much advantage as in their native habitat. Having several species of Penguin associated together in this way, I was much struck with the wide difference in their natural disposition and habits of life. Even individuals exhibit differences of character; but as between the species these differences are very marked.

The ordinary attitude of the Royal Penguin is half upright, sometimes with both flippers extended, then one depressed, then both, just as if the bird was signalling to his fellows by semaphore.

Eudyptes pachyrhynchus. (The Victoria Penguin.)

The name of Rock-hopper, by which *Pygoscelis tæniatus* is known, might well be applied to this species. It moves along the ground with great celerity, and generally surmounts small bushes and other obstacles in its way by jumping clean over them. I have known one voluntarily enter a house and ascend the back staircase, right to the landing, hopping up step by step. It moves about through the scrub very deftly, picking its steps in a very cautious catlike manner.

Unlike *Eudyptes chrysolophus*, this species is naturally wild in disposition and habitually silent. On turning out half a dozen of them in my garden, they all scuttled rapidly away into the shrubbery, and when fairly out of sight one of them indulged in a vociferous chatter for some time, as if addressing his fellows and proposing some plan for their mutual safety. This reminded me of an amusing circumstance Captain Fairchild had mentioned. His practice when he gets a lot of live Penguins on board the "Hinemoa" is to secure them in separate pens according to the species. He told me that on one occasion, in the pen occupied by the Victoria Penguins, one of the birds, on gaining a higher foothold than the rest, vociferated loudly, whilst the others kept quiet and appeared to listen. So, to accommodate the birds, he had what he termed a little pulpit erected in the midst of the pen. He says it was most ludicrous to see one of the Penguins, like a member of the French Senate, sedately mount this rostrum and address his fellows for several minutes at a time in the most energetic manner, the other Penguins keeping perfectly silent. Then an impatient auditor would waddle up alongside, turn the speaker out of the chair, mount into position, and have his say to the crowd, and so on, the audience being perfectly quiet and orderly.

This species bites fiercely, and I saw one fairly run after and attack the hands of a man who had been attempting to capture it.

One of the birds brought by Captain Fairchild from the Snares was saved when the others were converted into speci-

mens. Originally very savage and pugnacious, this bird became quite tame and docile. He would follow the gardener about in the most persistent manner to be fed. After he had settled down to the new conditions of things he took up his quarters in the kennel with a young Gordon setter. During the heat of the day he would take refuge in the kennel, coming abroad in the cool of the evening and during the early morning. He lived on terms of perfect amity with the dog, for whom at times he testified his affection by gently pecking him all over the body with his bill, an attention which the sagacious animal seemed quite to appreciate.

Eudyptes sclateri. (Sclater's Penguin.)

The local distribution of the Penguins, like that of the Petrels, as determined by their breeding-grounds, is very curious. So far as I can make out at present, *Eudyptes chrysocome* is found exclusively on Antipodes Island, *E. pachyrhynchus* on the Snares, and occasionally on the New Zealand coast, *E. sclateri* on the Auckland Islands and also on Antipodes Island. *Aptenodytes longirostris* and *Eudyptes chrysolophus* appear to be confined to the Macquarie Islands, where *Pygoscelis tæniatus* is also to be found.

This Penguin is conspicuously larger than *E. pachyrhynchus*. The golden facial streak commences near the angle of the mouth, which is surrounded with a bare membrane as in *E. chrysolophus*, although not to the same extent. The irides are reddish-brown, and the legs and feet flesh-white.

Eudyptes chrysocome. (The Tufted Penguin.)

Writing of one of this family Mr. Gould says: "Its powers of progression in the deep are truly astonishing. It bounds through this element like a porpoise, and uses its short fin-like wings as well as its feet to assist it in its progress; its swimming powers are, in fact, so great that it stems the waves of the most turbulent seas with the utmost facility, and during the severest gale descends to the bottom, where, among beautiful beds of coral and forests of seaweed, it paddles about in search of crustaceans, small fish, and marine vegetables, all of which kinds of food were found in the stomachs of those I dissected. A considerable portion of the year is occupied in the process of breeding and rearing the young, in consequence of its being necessary that their progeny should acquire sufficient vigour to resist the raging of that element on which they are destined to dwell, and which I believe *they never again leave till they in turn seek the land for the purpose of reproduction.*"

A singular confirmation of Mr. Gould's view is supplied by

the dried specimen of a Penguin's foot (belonging, I believe, to the above-named species) which I now exhibit. It will be seen that through long-continued immersion in sea-water a number of barnacles have become firmly attached to the end of the toes. The other foot was similarly attacked, but was in a worse condition, the irritation set up by the foreign growth having caused the claws to come off, leaving the extremities sore and diseased. An occasional resort to land, with the incidental friction or wear-and-tear, would of course have rendered such a condition of foot as this impossible. (Plate XIV., fig. 2.)

Eudyptes antipodum. (The Yellow-crowned Penguin.)

The officers of the "Hinemoa" tell me that this is the most delicate of all the Penguins, seldom surviving confinement more than a day or two.

Eudyptula undina. (The Little Blue Penguin.)

Some ornithologists are for uniting this species with *Eudyptula minor;* but, as will be seen by the two specimens now exhibited, they are readily distinguishable from each other. There is a manifest difference in the size of the bill, and *E. undina* is further separable by having the entire under-surface of the flippers white.

I had recently an opportunity of examining a pure albino of this species, obtained last year by Mr. Black at Mercury Bay. The entire plumage was snow-white, with a silky gloss on the under-parts.

Tachypetes aquila. (The Great Frigate-bird.)

I have much pleasure in exhibiting a specimen of the Great Frigate-bird, only the second known example obtained in New Zealand. This bird struck itself against the lantern at the Cape Farewell Lighthouse on the night of the 15th April, and was picked up in an injured state. It was kept alive by the lighthouse-keeper for a few days, but could not be induced to eat anything. It was then killed and converted into the very presentable specimen now on the table.

This is a more mature bird than the one captured at Castle Point in February, 1863, and now with my original collection in the Colonial Museum. (See "Birds of New Zealand," vol. ii., p. 183.)

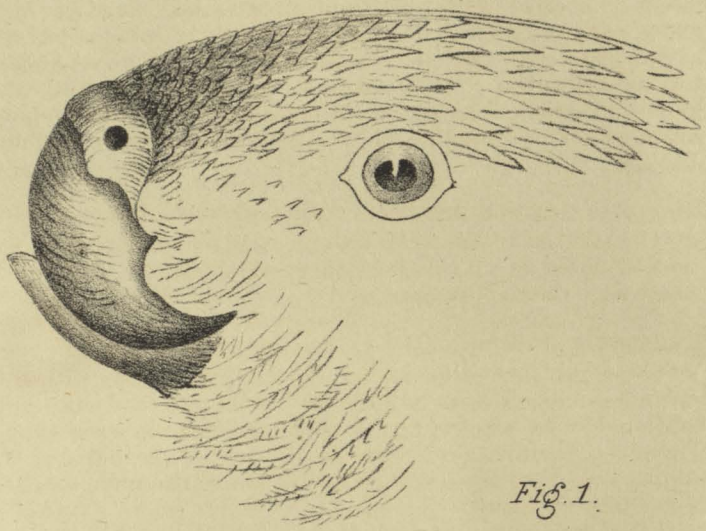

Fig. 1.

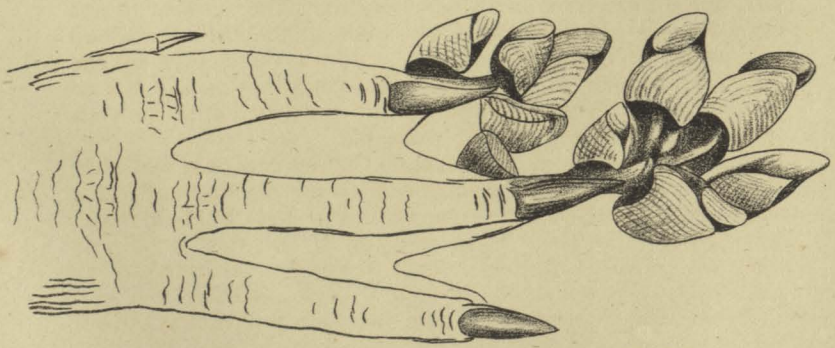

Fig. 2.

To illustrate paper by Sir W. L. Buller.

W. L. B. del. *C. H. P. lith.*