

ABSTRACT OF PROCEEDINGS, JUNE, 1905.

AN INTERESTING EVENING.

At the monthly meeting of the Royal Society on Tuesday evening, His Excellency Sir Gerald Strickland, president of the society, occupied the chair, supported by members of the council, and there was a fairly good attendance, especially considering the wet and wintry state of the weather.

New Members.

Messrs. St. Michael M. Podmore, F.R.G.S., F.Z.S., M.A. (Camb.), and W. Heyn were balloted for and elected corresponding members, and Mr. C. W. Grant was unanimously elected a Fellow of the Society.

Birds of the Pacific.

The secretary (Mr. Alex. Morton) read a paper prepared by Mr. J. R. McClymont, M.A., entitled "Notes on certain birds met with by Crozet, one of the very early navigators." The voyage of Marion du Fresne, with whom Crozet sailed as second in command of the *Mascarin*, was undertaken in order to restore to his native island a Tahitian, whom De Bougainville had taken to France, and also in order to discover on the way a continent or islands in the Southern Ocean from which useful products might be obtained. Crozet, who writes in a simple and unassuming manner, expressly disclaims a scientific knowledge of natural history. But his observations have an interest and importance of their own from an historical standpoint, because they are those of one of the discoverers of Marion and the Crozet Islands, and of one of the first Europeans to land in New Zealand and in Tasmania. The narrative of Crozet is contained in a volume which is somewhat scarce, but it has lately appeared in an English translation. Crozet's observations on birds begin on January 8, 1772—twelve days after he had sailed from the roadstead at the Cape of Good Hope. Terns are the first birds noted, and terns and gulls (*Poules mauves*) were seen frequently from the 8th until the 13th day of January. The ships were then near Marion Island, and the discoverers observed auks and divers for the first time. On January 24, Crozet landed on one of the islands of the group, which is now known as the Crozet Islands, naming it *Ile de la Prise de Possession*. The sea-birds, which were nesting on the island, continued to sit on their eggs or to feed their young undeterred by the approach of the explorers. Amongst these birds, Crozet enumerates ducks, divers, Cape fulmars, cormorants, and "envergures." The auks, or "pingoins," to use Crozet's name, were doubtless penguins, which

are generally called "manchots," although the name "penguin manchots" also occurs. The divers, or plongeons, are supposed to have been diving petrels; the Cape fulmar is called "le damier." "Envergure" does not appear in dictionaries as the name of a bird. It signifies "length of ship's yards," "breadth of sail," and, by extension of meaning, "expanse of wings." It is, perhaps, the trivial name of an albatross, analogous to the Portuguese name "antennal." If we examine these data by the light of modern exploration we find that at least four penguins have been obtained in the region of the ocean contiguous to the Crozet Islands, or on the islands. These are *Aptenodytes patagonica*, *Pygoscelis papua*, *Catarrhactes chrysolomus*, and *C. chrysolophus*, but of only one of these—*C. chrysolophus*—can the lecturer find that the eggs have been obtained on Crozet Island. The diving petrel, *Pelecanoides exsul*, is known to frequent the Crozet Islands, but its eggs appear to be undescribed. The Cape fulmar (*Daption capensis*) is widely distributed over the Southern Ocean, but there are few records of its eggs being found, and these few relate to Kerguelen Island. The white winged (*Diomedea chionoptera*) is the albatross, which makes these islands its nesting home. Cormorants cannot with certainty be included amongst the avian inhabitants of the Crozet Islands. Their nearest known place of resort is Kerguelen Island, between 1,390 and 1,400 miles distant, where *Phalacrocorax verrucosus* is resident, and where its eggs have been obtained. Finally, a bird which was mistaken for a white pigeon was probably a sheath-bill (*Chionarchus crozetensis*). From the presence of this bird, Crozet naively argued that a country producing seeds adapted for the sustenance of the pigeons could not be far distant. The duration of Crozet's sojourn in New Zealand was about four months—from March 24 to July 14, 1772. He presents us with a goodly array of the names of birds which he saw in that country, but to seek equivalents for the wheatears, the wagtails, the starlings, and larks, the ousels and thrushes of his narrative would be unprofitable labour. One exception may be made in respect of a black thrush with white tufts by which the *tui* (*Prosthemadura novæ Zealandiæ*) is evidently meant. Crozet divides in a primitive way the New Zealand birds which he saw into birds of the forest, of the swamps, of the open country, and of the coast. In the forests were wood pigeons as large as chickens, in colour blue, with metallic reflections. The description, though scant, is sufficient. There is only one pigeon in New Zealand, and no remarkably pigeon-like bird not

a pigeon, so that we cannot err in believing *Hemiphaga novæ Zealandiæ* to be the pigeon "ramier" of Crozet. The genus *Hemiphaga* is represented in Celebes and the Phillipine Islands as well as in New Zealand. In the beginning of March, Crozet had become acquainted with a Tasmanian parakeet with a white (or light-coloured) bill, the plumage of which resembled that of an "Amazon" parrot. The common Amazon parrot (*Chrysotis amazonica*) is green, and has an orange-red speculum and a blue forehead. It was represented by D'Aubenton, and may be the parrot to which Crozet refers in the expression, "Perroquet des Amazones." There is no Tasmanian psittacian, which greatly resembles it; perhaps the blue-banded grass parakeet (*Neophema venusta*) resembles it the most. In New Zealand two other parrots were observed—a very large parrot, in colour black (or dusky), diversified with red and blue, and a small lory, the plumage of which resembled that of the lorries of the Island of Gold. Red and blue enter into the plumage of the red only of large New Zealand parrots. The red (*Nester notabilis*), however, is restricted at the present day to Stewart's Island and the South Island, so that we must suppose either that a change has taken place in the distribution of this parrot since the time of Crozet's visit to New Zealand, or that Crozet has erred in the description of it. In the latter case the bird intended to be described is probably the kaka (*Nester meridionalis*). The smaller New Zealand Psittaci are not lorries in the general acceptation of that name, but *Platyercinæ* of the genus *Cyanoramphus*, a widely-distributed genus containing some fourteen species, of which New Zealand has at least four. The best known is *C. novæ Zealandiæ*, a green parakeet with a crimson sinitiput. In the open country were the smaller passerine birds already mentioned, to which Crozet gives the names of Europeans with which he was familiar. There was also a quail similar to the quail in France, but larger, *Coturnix novæ Zealandiæ*, which is now extinct. In the swamps wild duck and teal were abundant, and a blue hen, similar to the blue hens in Madagascar, India, and China. This blue hen is evidently the swamp hen (*Porhyio melanotus*), which inhabits Tasmania and the eastern part of Australia as well as New Zealand. The other blue hens to which Crozet likens it are probably porphyrio, which is found in Madagascar, poliocephalus and Indian, and edwardsi, an Indo-Chinese species. On the seashore were curlew, cormorants, and black and white egrets. The curlew may have been of the species *Numenius cyanopus*, which visit New Zealand in summer, and which remain in small numbers through the winter. A

pied egret is suggested by the phrase, "aigrettes blanches et noires." But there is no pied egret in New Zealand, and we are forced to suppose that the bird in question is the white-headed stilt (*Himantopus picatus*), which has been found nesting in New Zealand. A black bird with bright red bill, and feet of the size of an oyster-catcher, also frequented the beaches. Evidently this was the sooty oyster-catcher (*Hæmatopus unicolor*), which is resident. Of birds which frequent the open sea as well as the coast, Crozet enumerates grey terns, white terns, "envergures," and gannets, with white bodies and dark wings. These birds, he adds, were of the kind called "Manche de velours" by sailors. The "Manche de velours" is the Cape gannet (*Dysporus capensis*), which has black primaries, as also has *S. serrator* of Australian and New Zealand seas. *S. cyanops* has both primaries and secondaries, dark in colour, and might, with greater propriety, be called a black-winged bird than *S. serrator*. It is, however, not common in extra tropical areas.

Species and Hybridisation.

Mr. St. Michael M. Podmore, M.A., F.R.G.S., etc., a visitor from England, read a paper on hybridisation in relation to animals and the definition of species, narrating the result of his own experiments and investigations. In Darwin's "Origin of Species" are these words:—"The only distinction between species and well-marked varieties is, that the latter are known or believed to be connected at the present day by intermediate gradations, whereas species were formerly thus connected." Again:—"The power of remaining for a long time constant I look at as the essence of species." In his subsequent letter to Osa Gray, Darwin wrote:—"I speculated whether a species very liable to repeated and to great changes of conditions might not assume a fluctuating condition, ready to be adapted to either conditions." Mr. Phillips, the palæontologist, arrived at the conclusion that a species represent "any form which has ever had a specific name." This definition, though vague, the lecturer claimed as worthy of acceptance by students, though the words of Sir Wm. Dyer are, perhaps, more explanatory:—"Species is a designation for a totality of individuals differing from all others by marks or characters, which experience shows to be reasonably constituted and trustworthy." Personally, he (the lecturer) was of opinion that Darwin never did believe in the possibility of defining species, and would have preferred the term "fixed variety," had Darwin not been confronted with the difficulty that varieties of a species are invariably prolific inter se, while the offspring of a crossed species, or hybrid, had invariably

proved, in his time, to be barren. It was not his (the lecturer's) intention to enter into controversy on this point, but desired to place information before the meeting of a unique character from his own experiments, observations, and study, in the hope that these investigations and experiments might be continued, thus enlightening the world further on the limits or development of the creation system. Darwin did not believe in a "special creation" with defined and absolutely fixed species, nor can we, if, by their hybridisation, fertile offspring are produced. Every describer of species has made continuity and transition in characters the test of variety, and discontinuity the test of a separate species. Darwin differed sharply from Huxley on the one hand, and Wallace on the other, as to the significance and history of sterility between species, and his conviction appears to have been at the same cause which induces varieties in a domesticated species removes the barrier of natural sterility between two different species, when crossed. He seemed to attribute a mysterious unknown power in domestication, and on these lines he (the lecturer) had carried through another interestingly difficult experiment in hybridisation. Whatever may have been the origin of belief and its present acceptance, the facts of recent experiments prove that species, recognised as fixed, have inter-bred, and healthy, fertile offspring have, in some cases, been the result. Young of wood pigeon hybrids, formerly believed to be impossible of production, he (Mr. Podmore) had had the honour of presenting, for the first time in the history of zoology, to the scientific world. These prolific hybrids are now living in the western aviary of the London Zoological Gardens. During the past 15 years he had reclaimed domesticated and hybridised British wild doves. He then described his method of breeding hybrids. As to pigeons, "it is necessary to procure young wood pigeons before they are fledged. A bird reared from the nest at eight or nine days old will remain tame for life, if proper care and kindness are used. Birds reared by placing wood pigeons' eggs under domestic pigeons are always useless, as they become so wild that, in my case, I have been obliged to destroy them. The same is the result when birds are taken after the feathers have partially developed. They become fairly tame during the process of daily feeding and handling, but as soon as they become independent they revert to their original wild type. To rear young birds a knowledge of pigeon ailments and requirements is necessary. The appearance of the plumage, clearness of the eye, and general activity of the wings and legs, are good guides. They not only require freshly-prepared food daily, but, in

addition to grain, lettuce, chopped meat, Hyde's grit, sulphur, castor-oil, linseed, and chalk, as experience dictates. When the young can fly they should be trained to the sound of the voice. This can easily be done by uttering some familiar words or whistling during feeding time. I have also made use of certain movements of my hand to summon my birds, at first simply snapping the fingers or twisting the hand round in a circle. I have a male hybrid, about six years old, that still remembers and obeys such signs. As to feeding parents and young, plenty of room is necessary for breeding purposes, and each pair must be confined in a separate aviary. The age of the domestic male should be in excess of the female. Hemp seed, dari, and fresh lettuce should be given during mating time, but after incubation has commenced hemp seed should be omitted. When the young are hatched fresh lettuce is most important, together with sound grain, such as wheat and dari (no Indian corn). The aviary must be kept clean, grit sprinkled daily upon the ground, and clean water regularly supplied. If the nest-box has a foundation of soft, elastic material, the birds will probably be reared. In my own case I put paper clippings to a depth of half an inch, and covered the top with straw and fine twigs. In a wild state the nest is composed of materials that give the weight and movements of the young. I found nearly all the young birds that have died suffered from internal complaints, brought about by the heavy pressure of their bodies upon the hard, unresisting surface of the nest-box. I think, however, the wisest course would be to remove the young from the parents after the eighth day, and bring them up by hand. In selecting a mate, I commenced with a pure-bred white Dragon hen mated to a black Dragon cock that had a few white feathers at the side of the neck. After twelve months, one bird was reared with a decided ring, like a dove. This proved to be a male. I now bred with a large blue Carrier, whose plumage contained the greyish-blue feathers, and from his cross I procured the male parent of dove hybrids. During the year 1899 I became decidedly disheartened, having lost, from different pairs, no fewer than forty young birds, from causes what appeared to me at that time unaccountable. On August 2 I wrote to the press:—"Eleven days seem about the extent of life permitted to the young of this curious cross-breeding. The hen generally dies on the fifth day, and the cock on the eleventh." It happened that just at the time when I was about to give up my experiment, success came. In September, 1899, I reared a ring dove hybrid that has proved one of the healthiest and hardiest of the pigeon

family. He has twice crossed the Atlantic, and survived the extremes of heat and cold during exhibition. This bird is now on view at the London Zoological Gardens. This ring-dove hybrid was mated to a blue homer when six months old, but it was not until 1902 that any eggs were fertile. During last year I bred three handsome birds from this cross—one proved to be a hen. The note of the ring-dove hybrids' young is unlike that of any known species, though its gestures when paying court to its mate resemble the British wild dove. Before leaving England the female bird had already laid her second clutch of eggs. In 1898 I reared a healthy hybrid from the wild male stock dove and the wild wood pigeon. In hybridising the African turtle, I mated the female wild bird to a crossbred almond tumbler. Their offspring were fertile inter se. The collared dove reared healthy offspring with the magpie pigeon, and the blue rock produced fertile young with the wild stock dove hen.

His Excellency said Mr. Podmore had laid very carefully before them, in a scientific—and, he would like to add, modest—manner the results of very important experiments that he had carried out with the view of proving the ultimate tendency of the Darwinian theory. Mr. Podmore had also given them an insight into the very broad problems that underlaid the consequences of those experiments if they were proved, and while frankly accepting Mr. Podmore's purely scientific attack upon what he aptly designated the "creative system," he thought there were some considerations which should be laid before the Society in defence of that creative system. Mr. Podmore had pointed out that if there was no such a thing as species, and if every type was a vague transition from one variety to another, then, of course, the descent was very simple between the vague cell of protoplasm and the modern development of the genus homo. Mr. Podmore, however, himself gave them strong openings against his own researches, by indicating doubts whether the experiments he himself had carried out were, in fact, between species, or merely between varieties. If the experiments Mr. Podmore had carried out were merely as between varieties, his theory fell to the ground by the hypothesis upon which it was built. It was well known that among the lower forms of life crosses had been obtained, not merely between what were recognised as species, but even between different genera, especially as between the winged insects and the lower forms of life to be found in water. So there was nothing very new in the class of facts proved by Mr. Podmore's experiments, excepting that he had worked a stage higher, above the

region of botany and that of the lower animals, i.e., among birds. There, however, he was still far below the region or crosses among the higher animals. Where previous crosses had been obtained, they had ceased to be fertile after a few generations. Mr. Podmore was yet unable to tell them the result of his varieties after a certain number of generations. In conclusion, it seemed to him (the speaker) that all these experiments which Mr. Podmore had so ably, scientifically, and disinterestedly carried out, analysed in the manner in which men of eminent genius and scientific research, like Darwin, had already speculated for hundreds and thousands of years—still left us just exactly where we were 2,000 years ago. They had all failed, notwithstanding all researches so far, to put even the thin end of the wedge into the creative system as we had been brought up to believe it. He ventured nevertheless to thank Mr. Podmore for the additional proofs he had offered, as they showed, if anything, the weakness of the attack upon the strength of an impregnable fortress.

Mr. Podmore disclaimed any intention of attacking the creative system, and thought he had clearly explained that; he must have been misunderstood. His work tended in no way to upset the creative system; but everybody who had studied zoology understood the muddle and confusion of classifications, and what was attempted was to try and prove what was especially fixed variety, so that there might be uniformity throughout the scientific world, and muddle cease. The great thing was to try to find truths recognising that, in doing so, there was a power above us Who would reward us with new light. (Applause.)

Mr. R. M. Johnston and Mr. A. O. Green warmly commended Mr. Podmore's paper and his work.

Army Signalling.

Major F. T. Hayter, R.A.A., D.A.A.G., gave an exceedingly interesting and instructive address on army signalling, with the aid of diagrams explanatory of various methods of army organisation, and a fine lot of army apparatus belonging to the Defence Department, and of the very latest make and efficiency. He was assisted in his demonstrations by Master Gunner O'Rourke, who is accounted an exceedingly smart and efficient officer at this kind of work (having been trained with the Royal Field Artillery). Major Hayter explained how the intelligence and other army departments are worked. Without accurate and speedy circulation of orders and information in an army during war there must be disaster. For instance, the Japanese in

their advance on Mukden had half a million of men with a front extending about 100 miles. The whole of those 500,000 men must have operated on a concerted plan; every section of that army had to be at the right place at the right time, and then do the right thing, to which end a system of telegraphing and army signalling must have been brought into requisition with great efficiency. The telegraph stood head and shoulders above everything where it could be used. It was largely called into requisition along the lines of communication. But telegraphs and telephones needed to be guarded, which took a lot of men. Wireless telegraphy could not, at present, be used by the army in the field, because it required too much apparatus, and was, therefore, cumbersome. The Morse lettering system was adopted in all army signalling, excepting in the semaphore system. He then demonstrated the Morse flag signalling, in which smaller flags are used for short distances, and larger ones for longer distances. There are also two colours used, white for use on a dark ground, and blue for a light ground. The message is spelled out by a system of waving the flag (long and short waves and combinations) on the Morse alphabet plan. Diagrams were shown of the Morse dot and dash lettering, short waves of the flag representing dots, and long sweeping waves, dashes. In tolerably clear weather signalling can be carried on in this way over a distance of seven miles with the aid of telescopes. The semaphore flag signalling, which Hobart people daily observed in use between the warships and the shore during the stay of the Australian squadron in the harbour. This system differs from the Morse one, in that each letter has a separate and distinct symbol by the use of two flags at once. It is a simpler, therefore more easily learnt, and a more rapid means of signalling messages; but it is only practical over short distances up to 800 to 1,000 yards, and it is very readily forgotten, the angles having to be

so accurate. The heliograph system was next explained, and the instrument exhibited, its working being made clear and extremely interesting. This signalling arrangement is carried on by mirrors on a tripod, reflecting the light of the sun in a series of flashes, on the Morse alphabet principle. By these means messages can be sent over distances up to 70 miles, provided, at the latter range, the apparatus can be mounted high enough to compensate for the "dip" in the earth's circumference. The atmosphere is a little bit dull for this instrument in Tasmania. In India it may be worked with much better results. The signalling lamp, for night use, was shown at work on the Morse flashes principle, and is good for seven miles, according to the state of the atmosphere. This lamp is a recent invention of a very smart British army officer named Begbie. Another more powerful lamp, but not so portable, Major Hayter explained, was the limelight lamp. It required more apparatus, but it was very powerful. With this it is possible to signal over 15 miles in the night time.

A signalling party belonging to Capt. A. C. Parker's Engineer Corps gave a demonstration in the working of a terminal signalling station in the field.

His Excellency expressed his pleasure to notice that the scientific side of army training was being so well developed among the Commonwealth forces.

Capt. Dormer, A.D.C., said Major Hayter and the Master Gunner had given them very interesting and correct demonstrations in army signalling. Such signalling had now become of immense importance with armies operating on such a wide front. In the South African war it proved extremely useful. (Applause.)

The meeting then terminated with votes of thanks to the readers of papers and to Major Hayter and his party.