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P R E F A C E.

OUR contributors may justly feel satisfied with the present volume, for they have considerably increased our knowledge of British Zoology, and have kept up the reputation of 'THE ZOOLOGIST' as the storehouse of bionomical and observational record.

Ornithology has been even more than usually to the fore. If we instance the excellent paper on the Birds of Scilly, it is to recognize how readily these records can be written in a narrative form without any loss to scientific reference. Mr. Warde Fowler's detailed observations for fourteen years on the breeding of *Acrocephalus palustris* is a piece of work not likely to be forgotten in the annals of British Ornithology. The Rev. F. C. R. Jourdain has focused our knowledge on the hybrids which have occurred in Great Britain between Black-game and Pheasant, and Mr. M. J. Nicoll has done a similar service in bringing together what is known of *Anthus spipoletta* as a visitor to England.

In Pisces, the discussion on the Loch Broom Sea Monster is notable by the unanimity of opinion that the animal seen was a Basking Shark (*Selache maxima*); it is also illustrative of the good results arising from submitting such questions to competent opinion. A similar procedure with the reports on "Great Sea Serpents" might result in a considerable loss of myth, and a guidance to probability. Mr. Patterson's energy at Yarmouth has resulted in the record of a new fish to our

British list in *Scomber thunnina*, Cuv. The same contributor has referred to an old report of a Flying Fish caught on the Norfolk coast, while Dr. Murie has drawn attention to a similar record of the Flying Fish being taken near Ramsgate.

Professor McIntosh's memoir on Photogenic Marine Animals takes us to a subject too little represented in our pages, and is written by a great authority on these creatures. Mr. A. H. Waters's notes on Marine Crustacea in confinement are a direct incentive to other marine zoologists.

The aim of 'THE ZOOLOGIST' is a lofty one. But, to use the words of Goethe, "Nature understands no jesting; she is always true, always serious, always severe; she is always right, and the errors and faults are always those of man. Him, who is incapable of appreciating her, she despises; and only to the apt, the pure, and the true does she resign herself, and reveal her secrets."

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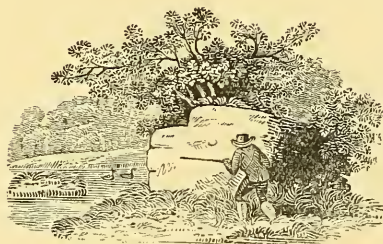
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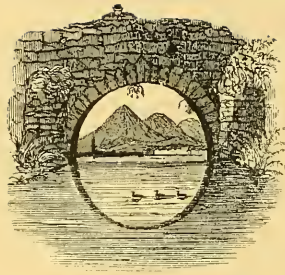


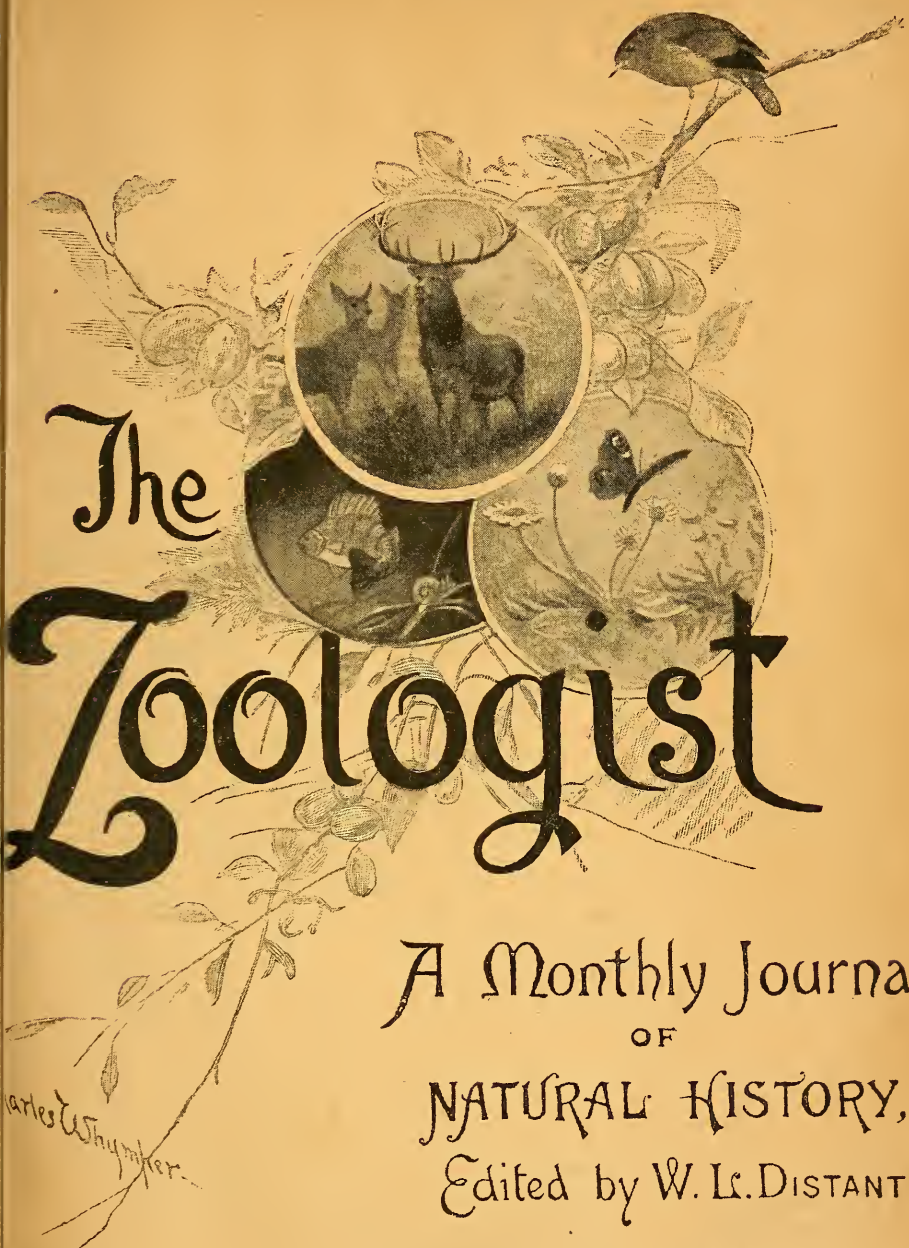
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phosphorescent gases. The photogenic properties of various substances and gases discovered by Sir James Dewar in his remarkable experiments with liquid air still further enlarge the field. Mr. Herbert Jackson, from whose lecture* part of the foregoing is quoted, considers that these phenomena may be looked upon as outward evidences of response on the part of the substances to rapid oscillations, whether these oscillations have their origin in chemical combustion—in what is commonly spoken of as light—or in electrical discharge. The nature of that response may in some cases be of a direct character, but when account is taken of the many degrees of persistence of phosphorescence it seems in many cases first to assume the form of a statical change. The release of this condition of strain is accompanied by oscillations which give rise to the visible undulations of phosphorescent light.†

Since the discovery of phosphorescence in the garden *Nasturtium* by a daughter of Linnæus—the same who delighted herself, as Arago also did, by setting fire to the inflammable atmosphere surrounding the oil-glands of certain species of Dittany (*Fraxinella*)—this phenomenon has likewise been known to the botanist. Phosphoric light is emitted by various plants, such as the sun-flower, marigold, orange lily, certain Fungi, and Bacteria.

Placed as we are on the shores of the North Sea, this striking phenomenon must be familiar to most of us—even those who do not go down to the sea in ships—for it is but necessary to stir the stranded seaweeds at night on the east or the west sands after a storm to find every blade sparkling with brilliant points, which glimmer and twinkle like miniature stars. In the sea itself, however, the phenomenon is seen in great beauty, for, leaning over the side of a boat in July or August, the wavelets are seen to gleam with phosphorescent points; whilst behind a ship the brightly sparkling and seething mass—here and there with circles of fire at the screw—merges into a long trail of luminous

* Lecture to the British Association, 'Nature,' Oct. 6th, 1898.

† Physicists state that when the wave-length is greater than 812 millionths of a millimetre no luminous effect is produced on the eye, though the effect on the thermometer may be great. When the length is 650 millionths the ray is visible as red light, and when 500 millionths of a millimetre it is brilliant green, but has much less heating effect than either of the foregoing.

water stretching far into the darkness. Every stroke of the oar causes a luminous eddy, and minute forms are lifted by the blade, and scintillate brightly as they roll into the water. Nor is the phosphorescence limited to surface-forms, for many luminous types of great interest and beauty are brought up by dredge and trawl, even from great depths.

Sixteen years ago I gave an address on the subject of the phosphorescence of marine animals to the Biological Section of the British Association at Aberdeen. Since that date noteworthy progress has been made only in two departments, *viz.* (1) in that of photogenic Bacteria, those minute plant-organisms which play so important a part in causing dead food-fishes, for instance, to gleam in the dark; and (2) in the extension of our knowledge of luminous fishes.

As a general rule phosphorescence in marine animals shows itself under four conditions, three of which are connected with structure:—

(1) The animals present special cells which, under certain circumstances, secrete a phosphorescent mucus.

(2) The special cells produce light without mucus or other visible secretion.

(3) The animals emit light under the action of the nervous system without special differentiation of the tissues.

(4) Their phosphorescence is due to photogenic Bacteria.

In the first three the light is emitted on the slightest touch, or, in some cases, by simply blowing on the animal producing it. It varies in colour from pale lambent light through several shades of pink, red, green, lilac, and blue; while Huxley found that *Pyrosoma* at its brightest was red, but in fading it passed through shades of orange, green, and blue. Further, the light disappears on the death of the animal. In the fourth group, on the other hand, the luminosity occurs about a day after the death of the fish.

Phosphorescence is found in almost all the great subdivisions of marine animals up to and including fishes, *viz.* in the simplest forms, *viz.* Protozoa, in Cœlenterates, Worms, Rotifers, Crabs, Shell-fishes, and Fishes. Moreover, every variety of marine life is represented, such as pelagic (or swimming and floating), sedentary, and reptant. Some of the phosphorescent animals

inhabit tubes, and it was the brilliant luminosity of these that led, in 1870, to doubts as to the correctness of the views entertained by the distinguished naturalists of the 'Porcupine' Expeditions, and especially by the late Sir Wyville Thomson, *viz.* that this attribute served the two diverse purposes of attracting prey or of alluring enemies. The naturalists of the 'Porcupine' were struck by the phosphorescence of many of the forms living at great depths in the Atlantic, such as Alcyonarians, Brittle-stars, and Annelids. In some places the mud itself was full of luminous specks. Accordingly, they broached the idea that the abyssal regions might depend for light solely on their phosphorescent inhabitants. Moreover, since the young of certain Star-fishes are more luminous than the adults, it is probable that this is part of the general plan which provides an enormous excess of the young of many species, apparently as a supply of food, their wholesale destruction being necessary for the due restriction of the multiplication of the species, while the breeding individuals are provided with special appliances for escape or defence. For example, a young *Hyas araneus*, having dense tufts of a phosphorescent zoophyte waving from its shell and limbs, must, on the one hand, like an Indian beauty with her fireflies, be the cynosure of all (predatory) eyes; and, on the other, be enabled to throw such a flood of light on the food-question as to distance many rivals. This view, however, had long been known to naturalists. Thus Dr. Coldstream, in Todd's 'Cyclopædia,' observes:—"Considering that in the ocean there is absolute darkness at 800 or 1000 feet (133 to 166 fathoms), at least that at such depths the light of the sun ceases to be transmitted, Macculloch has suggested that, in marine animals, their luminousness may be a substitute for the light of the sun, and may be the means of enabling them to discover one another, as well as their prey. It seems to be particularly brilliant in those inferior animals which from their astonishing powers of reproduction, and from a state of feeling apparently little superior to that of vegetables, appear to have been in a great measure created for the supply and food of the more perfect kinds."

If, as the 'Porcupine' naturalists say, luminosity subserves the purpose of guiding animals to their prey, or of causing them to be preyed upon (an unfortunate result), or even of illuminating

the abysses of the ocean, it might be supposed that traces of a general resemblance in habits, structure, or physiology would be found, and which would at least indicate the bearings of a provision so important. Thus, for instance, a similar state of matters might be expected in the dark caverns of Illyria and Dalmatia, or in those of the mammoth caves of Kentucky.

On surveying the marine animals possessed of this property of phosphorescence, however, they are found to live under circumstances so diverse that it is truly difficult, not to say hazardous, to promulgate any theory of the foregoing kind in connection with this manifestation.

The lowest forms (Protozoa) which show emissions of light are certain Infusoria, e.g. *Ceratium* (considered by some to be an alga) and *Porocentrum*. Our waters teem with multitudes of these, the tow-net in July and August being coated with them, *Peridinium*, and others; and if, on removing it from the water at night, it is suddenly jerked, the whole interior is lit up with a luminous lining, which glows brightly for a few seconds and then fades. The same forms cause the crest of each wave as it curls from the sides of the boat to sparkle vividly. Other phosphorescent Protozoa are the Radiolarians—*Collozoum*, *Sphærozoum*, and *Thalassicolla*—which Giglioli found to shine with an intermittent greenish light in the Pacific. No member of the group, however, is so well known for its photogenic properties as *Noctiluca*, a minute, transparent, gelatinous sphere, which is very widely distributed throughout the warmer seas. Its minute size and vast abundance probably gave rise to the old notion that the luminosity of the sea was due to the water itself, and not to any visible organism. Thus an ecclesiastic named Tachard (1686) considered that the water absorbed the light of the sun by day and emitted it at night; whilst Robert Boyle attributed the phosphorescence of the waves to friction with the air.* To M. Rigaut, an acute French surgeon, belongs the credit of being one of the earliest observers to prove that the phosphorescence of the sea off the French coast and off the Antilles was due to this organism, which he called a little spherical polyp. It occurs in vast swarms in most of the great oceans, and even off the southern and western shores of Britain, and is the cause of that

* Phipson, 'Phosphorescence,' p. 174, 1862.

diffused silvery phosphorescence so familiar to voyagers. De Quatrefages attributes the emission of the clear bluish light of this species in quiet water, or the white light with greenish or bluish touches in broken water, to any physical agent which produces contraction, the large number of minute scintillations arising from the rupture and rapid contraction of the protoplasmic filaments in the interior.

In this connection Watasé has recently made some interesting remarks on the relationship of protoplasmic contractility and phosphorescence. The physicists have shown that heat and light are simply variations of the same radiant energy. The heat-producing particles and the light-producing particles, objectively considered, may not be very different from each other. "They may be variations of similar chemical substances, as the resulting energies, the products of their oxidation, are the variations of the same radiant energy. The stimuli, therefore, which induce combustion of the thermogenic molecules may also be presumed to incite combustion of the photogenic molecules. The luminosity is due to the metabolism of the definite tissue-cells and the subsequent oxidation of the metabolic product, resulting in the emission of light." The luminous tissue gives out carbon dioxide.

In the open sea the naturalists of the 'Challenger' found *Pyrocystis*,* a form closely allied to *Noctiluca*, the light from which is stated to proceed from the nucleus. Sir Wyville Thomson observed that when shaken in a glass it gave out the uniform soft light of an illuminated ground-glass globe.

Several authors have mentioned phosphorescent sponges, but there is considerable dubiety. Parasitic luminous forms are numerous in sponges, and in some cases misinterpretation may have occurred.

In no group has phosphorescence been longer known, is more general in its distribution, or more beautiful in its manifestations than in the Cœlenterates, comprising Zoophytes, Jelly-fishes, Sea-pens, and Sea-fans. On our own shores the tidal region, the laminarian zone, the coralline, and deep sea areas are equally the home of luminous representatives.

The Hydroids (or Zoophytes, as they are often called) are

* As described by Sir John Murray.

familiar examples, and it is only necessary to lift a handful of such as are captured by the deep-sea liners or trawlers at night to see the whole mass glittering with a hundred stars. None, indeed, as the late able and conscientious observer, Mr. Hincks, says, excels the common *Obelia geniculata*, which forms pigmy forests on the broad blades of the tangles. In the fresh specimens a touch during July causes a large number of luminous points to appear, the stems most irritated exhibiting beautiful flashes, which glitter like faintly dotted lines of fire, the points not being boldly separated, but blending into each other; whilst the shock imparted by the instrument detaches the minute Medusa-buds, which scintillate from the parent stem upwards to the surface of the water. By blowing on the surface where tangles abound the pelagic buds at once emit light. Moreover, these minute bodies, along with various species of *Ceratium*, are sometimes swept by gales landward, and cause luminosity in unwonted quarters. Thus the late Dr. Cowie, of Lerwick, when riding at night along Deal or Dale's Voe, in Shetland, during the presence of a south-westerly gale, happened to touch his beard, when it and his hand gleamed with phosphorescent points, a feature akin to the old experiment of Pliny, *viz.* rubbing Medusæ on a plank of wood. The gale had swept the spray and its minute inhabitants on the person of the rider. In the same way Vaughan Thompson found luminous patches on the masts and windward yardarms on board ship, and they gradually mounted upward as the gale increased. Many of the free Medusa-buds are as luminous as the polyps, and the light (*e. g.* in *Thaumantias*) gleams round the margin of the disc and along the four radii.

Giglioli mentions that certain oceanic forms, *viz.* Siphonophora, are likewise characterized by phosphorescence. Dr. Bennett and the same author also found the coralligenous Actinozoa and Madreporæ luminous, the light in the latter being greenish and lasting some minutes. The Acraspedote Medusæ show many luminous species (*e. g.* *Pelagia*, *Rhizostoma*), though neither of the common forms on our coasts (*Aurelia* and *Cyanea*) present this feature. In the luminous Medusæ the presence of certain cells containing highly refractive granules akin to fatty cells has been demonstrated.* On stimulation the

* Watasé.

light is emitted (in *Pelagia*), and conveyed to the whole external epithelium.

Many of the Ctenophores are luminous, and in our own seas *Beroë* at various stages is one of the most prominent. Their enormous numbers in quiet seas like Bressay Sound and the Firth of Forth make the effects more striking, though the intensity of the phosphorescence is less than in the Medusæ. The photogenic material is distributed along the gastro-vascular tracts of *Beroë*. *Lesueuria*, again, which is met with in multitudes in St. Andrews Bay, has a bright bluish (steel-blue) light. Moreover, as Prof. Alex. Agassiz observes, the phosphorescence is equally brilliant in the egg, even in its earliest stages (as in *Lampyrus*). It is only necessary to give the jar a shock, when each egg of *Pleurobrachia* becomes brilliantly luminous. There can be no special glands (as Panceri describes in other forms) in such a case, but the protoplasm of the egg, as Watasé supposes, probably contracts and emits the light.

The Sea-pens amongst the Alcyonarians are perhaps the best known and most beautifully phosphorescent forms, especially the common species so abundant off the Firth of Forth. Panceri found that the light proceeded from eight white cords adhering to the outer surface of the alimentary canal of each polyp, and that the cells of these contained a substance of a fatty nature, the oxidation of which caused the light, and there were also multipolar cells containing albuminous granules. On irritation the light, after a brief interval (four-fifths of a second—Panceri), flashes along the rows of polyps in a somewhat irregular manner. The larger *Funiculina* and *Umbellularia* are equally phosphorescent; the former, according to Sir Wyville Thomson, is resplendent with a steady pale lilac phosphorescence like the flame of cyanogen, and always sufficiently bright to make every part of a stem caught in the tangles distinctly visible. He mentions also that *Umbellularia* is so brightly phosphorescent that it is easy to determine the character of the light; while, with respect to the Corals, *Isis* and *Gorgonia*, he conjures up a Gorgonian forest at a depth of six hundred fathoms off the Spanish coast as like an animated corn-field waving gently in the slow tidal current, and glowing with a soft diffused phosphorescence, scintillating and sparkling on the slightest touch,

and now and again breaking into long avenues of vivid light, indicating the paths of fishes and other wandering denizens of these enchanted regions.

There are comparatively few luminous members of the group of Echinoderms, the most conspicuous being the common Brittle-star (*Ophiothrix*), and one or two allied genera, besides the curious *Brisinga*. Sir Wyville Thomson describes the light of *Ophiacantha* as of a brilliant green, coruscating from the centre of the disc along the rays, and illuminating the whole outline of the Star-fish. The common Brittle-star from deep water gleams all over the trawl-net with a pale greenish light, but the adults between tide-marks show no trace of luminosity. The light from a hundred examples of *Brisinga* is very brilliant. The naturalists of the 'Porcupine' were of opinion that the young stages of certain Star-fishes were more luminous than the adults in order to act as a check on their increase, but the condition in non-luminous Star-fishes and in other young invertebrates would seem to throw doubt on this view. There are no data, indeed, to show that a luminous form is more eagerly preyed on than one which is not.

Phosphorescence is stated to occur in certain Planarians and Rotifers, and a species of *Sagitta*; but it does not appear to be a common manifestation in the lower worms. On the other hand, the luminosity of the Annelids is brilliant, and has been noted from early times. The representatives of five families of Annelids possess this property, yet there is nothing specially different in the habits of these from those in which this feature is absent. In the family of the *Polynoidæ* no less than six or seven British species are phosphorescent. One of the most abundant between tide-marks is *Polynoë floccosa*, which emits greenish scintillations from the point of attachment of the scales, and in a double moniliform line along the ventral surface. It lives under stones. Others, such as *Gattyana cirrosa* and *Polynoë scolopendrina*, frequent the tubes of Terebellids, whilst *Achloë* haunts the ambulacral grooves of Star-fishes (*Astropecten*). Though Dr. Jourdan is of opinion that in *Polynoë torquata* the luminosity is produced by cells secreting mucus, it would appear that in the majority of the *Polynoidæ* no secretion of mucus is present. It may be that, as Watasé observes, the light-giving

material is formed by the secretory process of the protoplasm, accumulates along the course of the muscle-fibres, and manifests itself in sparks or scintillations in the line of the ventral longitudinal muscles.

In the *Syllidæ* the widely distributed *Eusyllis tubifex*, so abundant in transparent tubes on tangle-blades, is one of the most conspicuous examples. Under irritation a fine green light is emitted from the ventral aspect of each foot, and the scintillations seem to issue from many minute points at each area, flash along both sides of the worm posterior to the point of stimulation, and then disappear. Under severe irritation the animal remains luminous behind the injured part for nearly half a minute, while the surface of granular light in each segment is larger than usual, and in some instances the areas of opposite sides are connected on the ventral aspect by a few phosphorescent points. The body behind the irritated region has a pale pinkish hue immediately after the emission of light, showing that the luminosity is diffused. In this family the emission of light seems to be due to the same physiological process as in the *Polynoidæ*—no mucus being secreted.

In the family of the *Chaetopteridæ*, as in the common species in the South of England and the Channel Islands, the phosphorescence is very beautiful, bright flashes being emitted by the posterior feet. The most vivid luminosity, however, is at a point between the lateral wings of the tenth segment, where a quantity of mucus is secreted, and which can be drawn out as bluish purple fire of great intensity, the light gleaming now and then along the edges of the wing-like processes—at once illuminating the surrounding water, and eliciting the admiration of the observer. In all probability, in this case, the oxidation of the secretion by the oxygen in the water suffices for the production of light. A very characteristic odour similar to that of phosphorus in combustion is given out by the animal during such experiments, and Quoy and Gaimard formerly observed that an odour resembling that around an electric machine is emitted by luminous marine animals.

Our patient and laborious countryman, Sir John Graham Dalzell, noticed that when irritated *Terebella figulus* gives out a copious blue refulgence intermingled with a reddish flame.

Grube subsequently found that *Polycirrus* likewise excels in the brightness of its phosphorescence, and the ease with which it is elicited. Mere blowing on the water of the dissecting-trough suffices to produce it in the British species—the most vivid pale bluish luminosity gleaming for a moment along every one of the mobile tentacles, often elegantly disposed in a stellate manner. *Thelepus*, another example of the group, is only faintly phosphorescent during life, but when decomposition has advanced it shines in the water with a pale lambent light, somewhat like phosphorus in air. The transparent pelagic *Tomopteridæ* present on the feet certain peculiar structures which were formerly supposed to be eyes or simply glandular organs. Greef found these to be luminous.

So far as can be observed in this group, *viz.* the Annelids, there is little in the habits or surroundings of the phosphorescent species to explain the occurrence of the phenomenon. The most diverse conditions prevail. Thus *Tomopteris* is pelagic throughout its entire existence. *Polynoë floccosa* lives in the free condition under stones between tide-marks, while those of the same genus are commensalistic with the *Terebellidæ* in tubes. The phosphorescent species of Terebellids are tubicolar, or occur in fissures of rocks. *Chaopterus* dwells in tough tubes of a parchment-like secretion covered with pebbles, stones, shells, and seaweeds. To suppose that the Polynoids attract prey for the benefit of the Terebellæ or themselves is to endow them with properties analogous to those the older naturalists ascribed to the Pea-crabs in the Horse-mussel. It is unlikely that they are furnished with light to attract marauding fishes or Crabs, for they are in tubes immersed in sand, beneath stones, or in obscure chinks and fissures of muddy rocks, boulders, and old shells. It can hardly be affirmed that they are protected because they are luminous, since many species which are not so have exactly the same habits and shelter; while other phosphorescent forms are either pelagic or devoid of such a safeguard. No reliable deduction can be made as to the function of this endowment.

Amongst the lower marine Arthropods one of the most interesting examples occurs in a gigantic Pycnogonid (*Colossendeis gigas*), recently dredged by Dr. Alcock at 922 fathoms near the Andaman Islands. It is blind, and appears to feed on oceanic

mud, so that its luminosity is useless to itself in procuring food; and, since the animal is, as it were, all slender legs, with a span of nearly twenty inches, it would not form a tempting bait for any fish. Dr. Alcock* placed it ventral surface upward in a dark cabin, where it shone like a star, the body and all the legs except the egg-bearing pair showing as lines of persistent blue-green light. This gradually died away, but remained for a long time illuminating the long fifth and sixth segments of all but the first pair of legs. The theory of the 'Porcupine' naturalists gains little support from this form.

Occupying a similar position to the myriads of other Arthropoda, such as insects, spiders, and centipedes on land, the group of marine crustaceans rivals them in the enormous numbers of its representatives. Amongst these luminosity occurs in the minute Copepods (whose vast numbers and ubiquitous distribution make them so important in connection with the nourishment of young fishes and even of Whales), in *Sapphirina*, a member of the same group, in various Schizopods, and in the higher or decapod crustaceans. In some of the minute types, such as the Copepods, the phosphorescence has been attributed to the food in the interior. In a similar way the luminous Sandhopper (*Talitrus*) was found by Giard to have photogenic Bacteria parasitic in its abdominal cavity, and they by and by entered the organs, causing its death. During the disease the animal emitted a green light, which ceased a few hours after death. In the Schizopods the Opossum Shrimps (*Mysidæ*), *Euphansia*, and *Lophogaster* (*Gnathophansia*) have luminous organs, which have often been regarded as eyes. They have bright red pigment, and are situated on the thorax and abdomen. Sarst† describes the essential part as the fibrous fascicle lying in the centre of the globular corpuscle. The lenticular corpuscle placed just in front of this acts as a condenser, and a glistening ring round the lens resembles an iris. Muscles, moreover, move the organ. The diaphanous front and the red pigment of the posterior part also lead to the assumption of the close resemblance to a vertebrate eye. He, however, found, on experimenting with the living animal, that they had nothing to do with vision. Perrier, on the

* 'Zoological Gleanings,' 1901, p. 74.

† 'Challenger,' vol. xiii.

other hand, thinks they have. Flashes of light proceed from these organs, and when dying the whole body is frequently diffusely luminous. Similar organs are found in *Nyctiphanes norvegica*, the phosphorescence of which was observed by Sars, and afterwards by G. J. Murray, in the Faroë Channel. This species often appears in vast numbers on the east and west sands, St. Andrews, where their stranded multitudes resemble chaff, and along with them is *Thysanoessa*, the luminous globules of which agree in structure with the foregoing.

In certain crustaceans (*Leucifer*, *Aristæus*, and probably in *Munida* and *Dorynchus*) the eyes are brilliantly phosphorescent. In species of *Aristæus*, *Heterocarpus*, and *Pentacheles*, recently dredged by Dr. Alcock* off the Andaman Islands, luminosity also occurred. In the two former the light appeared to come as a secretion near the openings of the green glands. *Heterocarpus* (both male and female), as it floated in a dark cabin, emitted clouds of light, which at last lit up the bucket, so that all its contents were visible in the clearest detail; but the luminous secretion of a female *Aristæus* was neither so bright nor so lasting. In *Pentacheles* (female) the light was confined to two points near the openings of the ducts for the eggs.

The majority of the luminous crustaceans are either pelagic or abyssal, and the habits of those endowed with this property do not appear to differ from those which are not.

It has been asserted that some of the Bryozoa (Molluscoida), e. g. *Scrupocellaria reptans*, *Membranipora pilosa*, and *M. membranacea*, are luminous, but such has not been observed here. They may, however, owe this property to luminous Bacteria.

The phosphorescent mollusks are represented by bivalves and univalves, and some have been known for a very long time. Thus Pliny mentions *Pholas dactylus*, which Panceri found to have a luminous border to the mantle, two patches and two long ridges in the branchial siphon. The special epithelium of these parts secretes a phosphorescent substance—soluble in ether and alcohol—which illuminates the excurrent water and the lips of those who eat them. The light is also maintained for a long time during putrefaction, as in the annelid *Thelepus*. The French chemist, Dubois, separated two substances from the light-producing tissues of *Pholas*—one crystalline which is soluble

* 'Challenger,' vol. xiii. p. 74.

in alcohol, essence of petroleum, benzine, and ether, which he called luciferine; the other albuminoid, which he termed luciferase. As this mollusk—the “Pierce Stone” of Petiver—inhabits the holes it bores in rocks, and lives on minute forms carried in by the branchial current, it would be difficult to frame any theory—on the basis proposed by the naturalists of the ‘Porcupine’—which could be adapted to it.

Several Pteropods are likewise luminous, according to Giglioli, *viz.* a *Cleodora*, which gives out a vivid reddish light, a *Creseis*, and a *Hyalæa*, which are phosphorescent at the base of the shell. An unknown Heteropod in the Indian Ocean also glowed with a reddish phosphorescence. The curious *Phyllirhoë*, a pelagic Opisthobranch, which is found in the Atlantic, in the Pacific, and in the Mediterranean, presents (in *P. bucephala* of the latter sea) a vivid azure luminosity, chiefly at the superior and inferior borders of the body, but no luminous mucus is exuded. Panceri considered that the contents of certain cells (cells of Müller) placed in the vicinity of fine nerves produced the light under the action of a stimulus.

In the highest group of mollusks, *viz.* the Cuttle-fishes, phosphorescence occasionally occurs. Giglioli observed that *Loligo sagittatus* and a small *Octopus* gleamed all over with a whitish luminosity. The same has been noticed in *Cranchia scabra*, Leach.

The Tunicates or Urochordates show several striking examples of luminosity. Thus Agassiz and Giglioli found the notochord of an Appendicularian glow with a rich red, then azure, and finally with green. No luminous British form has yet been observed. One of the best known, however, is *Pyrosoma* from the warmer seas, so graphically described by Péron, Huxley, Panceri, and others, and one gigantic example of which was found by the ‘Challenger’ four feet in length. This colonial yellowish-white form, under irritation, glows with red, golden, orange-green, and blue, the light proceeding in each member of the organism from two small oval patches of cells at the base of each inhalent tube. These cells contain substances resembling fat and albumen, and their membranous sheath is bathed by the blood of the lacuna. The luminosity ceases with the life of the colony. *Salpa*, also, is usually classed amongst the luminous

types, especially those in tropical and subtropical waters. Certain species are stated to give out a bright red light from the nucleus, the photogenic granules formed in the blood-corpuseles being oxidized by the oxygen dissolved in the blood-plasma. Amongst the multitudes of *Salpæ* (*S. runcinata* and *S. spinosa*) examined for some weeks in the Outer Hebrides, no clear case of luminosity was seen. A spark occasionally appeared in the nucleus of some specimens, probably from the food. *Doliolum*, on the other hand, is described by Giglioli as shining with a greenish luminosity over the whole surface.

So far as can be observed, there is nothing in the habits of the luminous Tunicates to distinguish them from those of the non-luminous.

The literature of the so-called phosphorescent fishes extends from the days of Aristotle and Pliny to modern times, Ehrenberg, for instance, giving a list of about fifty fishes stated to be luminous, though a considerable number are doubtful. Our knowledge of the photogenic properties of living fishes, on the other hand, is for the most part comparatively recent—in fact, is mainly due to the voyage of the 'Challenger.' These luminous fishes divide themselves into two groups, *viz.* pelagic fishes and deep sea or abyssal fishes (below one thousand fathoms). So far as known, no littoral fish and few gregarious food-fishes (Teleosteans) show this property in any marked degree during life.

In many of these luminous forms the mucous canal-system of the head and body is largely developed, and the mucus which it secretes is phosphorescent; but in others special photogenic organs are present, the distribution of which is subject to great variety. De Kerville* has collected no less than nine modifications of the disposition and structure of those special organs of luminosity. In the first or primitive condition they appear as numerous minute tubercles scattered over the skin, and covering the sides of the body (Ex. *Pachystomias*). 2nd. Larger but less numerous nodules on the skin of the head and body (*Xenodermichthys*). 3rd. Two rows of reddish or green eye-spots ranged at regular intervals on the sides inferiorly, on the head, at the base of the branchiostegal rays and the operculum

* 'Challenger,' vol. xiii. p. 162.

(Ex. *Stomias*). 4th. Large, rounded, and flattened perlaceous organs distributed on the sides of the body inferiorly, on the head, operculum, and sides of the base of the tail (*Argyropelecus*). 5th. Spots of a white glandular substance, which may be, in the various species, on the sides of the body, on the dorsal or ventral surface of the tail-peduncle, near the clavicles on the branchial cavities, on the infra-orbital region of the maxillaries, on the summit of the muzzle in front of the eyes, on the barbels, and on the fin-rays. 6th. In this group the associated glands form bands in the infra-orbital region (*Idiacanthus*). 7th. The photogenic apparatus of the dorsal fin is differentiated, having the form of a cavity with an orifice and a filament (*Ceratias*). 8th. The diamond-shaped organs form a single row on the scales of the lateral line, and on the inferior branches of the muciparous canals of the head. They are situated beneath the semitransparent integument, but are independent of it (*Halosaurus*). 9th. Two symmetrical photogenic organs lie on the snout to the right and left of the median line—from the nasal cavities to the posterior of the cranial cavity (*Inops*).

Like some previous authors, De Kerville is of opinion that such fishes play a considerable part in the illumination of the abysses of the ocean, and that the varied distribution of the photogenic organs proves that the production of the light is dependent on the uses to which it is applied. Thus he makes two groups:—*a*. Those which have the general luminosity for pointing them out to others which seek them as prey, the light probably ceasing during repose. Those with brightly luminous organs on the head near the eyes use it, he thinks, for searching out their prey. *b*. The second group includes those in which the photogenic organs are situated on fin-rays or tentacles, apparently for the purpose of attracting animals to serve as food, since it is well known that marine animals are attracted by light. Moreover, this arrangement occurs in certain fishes with the eyes little developed. When the organs are on the tail they also attract prey, which is thus brought within reach of the agile possessors (such as the *Scopelidæ* and *Sternoptychidæ*). It can hardly be urged that these luminous organs intimidate their enemies. The notion of Perrier that the eyes of certain abyssal fishes are phosphorescent he regards as doubtful.

Though it is many years (1840) since Dr. Bennett captured, at the surface of the sea during a whaling voyage, a small Shark which emitted spontaneously a general and vivid greenish luminosity—with the exception of a ring round the throat—as it swam at night, and for some hours after death, it is only recently that the labours of Johann* and Burckhardt have made us acquainted with the remarkable prevalence of luminosity in the Selachians. No less than eleven species, besides Bennett's form, have this property. The distribution of the luminous organs varies in almost every species; in some occurring on the ventral surface, in others along the trunk, on the bases of the fins, on the gill region, and on the head. These organs consist of small epidermal elevations, which present externally layers of epidermal cells, some of the lower containing a prismatic corpuscle, pigment, a basal strand of fibrous tissue, and a nerve. The whole surface supplied with these structures is lit up in the dark. Thus Beer, who examined *Spinax*, states that the entire ventral surface from the snout to the root of the tail glowed with a feebly shining greenish lustre, as if it had been impregnated with phosphorus, or had been coated with luminous paint—with this difference, however, that the luminosity appeared and disappeared at short intervals, but invariably increased in intensity before it vanished. It was vivid enough to enable him to see it at a distance of from three to four metres, equalling three to four yards (upwards). During life, therefore, the nervous system appears to control the emissions of light; and the glow after death is probably due to the loss of the inhibitory power permitting the continuous but final luminosity, arising from the oxidation of the cell-contents.

The varied distribution of these photogenic organs in both Teleosteans and Selachians would not seem to point to any definite purpose of allurement. The active habits of the Sharks, besides, would negative such a proposition. Their pelagic life, moreover, from the surface downwards, lends little support to the view which would illuminate the abysses of the ocean by such a provision in the fishes found only there. The splendour of the spectral colours of such as *Læmargus rostratus* during

* Zeitsch. f. w. Zool., Bd. lxvi. 1899.

daylight in the Mediterranean may be cited as a source of allure-ment with as much reason as its luminosity.

Besides the phosphorescence of living fishes there is another and even more familiar manifestation of this property in fishes within twenty-four hours after death, and which has given rise to many interesting experiments, such as those of Robert Boyle on dead Whitings,* and of Dr. Hulme on Herrings.† This is now known to be due to the presence of photogenic Bacteria which occur exclusively in sea-water. In the paper just quoted Robert Boyle mentions that he placed a luminous Whiting in the receiver of an air-pump, and found that it shone less on extracting the air. On being replaced in air it shone brightly. Dr. Nathaniel Hulme, again, demonstrated that the luminous condition of the Herring and the Mackerel disappeared on putrescence. He made a luminous solution from the fishes composed of two ounces of Epsom salts or "vitriolated" magnesia in two ounces of cold spring water. He extinguished the light of the luminous Herring by freezing, but it returned on thawing. Roasting and boiling extinguished the light, which did not return. It is curious to find that he regarded the light as a constituent principle of marine fishes, and that it is separated by the menstrum fitted to decompose it. He was further of opinion that no offensive putrefaction takes place in the sea, and that the flesh of marine fishes remains sweet for some time, and provides nourishment for other forms—an evident instance, he thought, of the wisdom of the Creator. Dr. Hulme apparently never had the opportunity of coming in contact with a mass of putrescent herrings drawn up by a trawl from the bottom of the sea.

These early experiments are quite consistent with what is now known, *viz.* that the luminosity of fishes after death is due to photogenic Bacteria. One of the best known and most widely distributed forms is a short thick bacillus (*Photobacterium phosphorescens*), an excellent account of which, with others, is given by Mr. J. E. Barnard.‡ These Bacteria are marked by a tendency to undergo involution and by polymorphism, some

* Philos. Trans. 1667, pp. 591-93.

† *Ibid.*, 1800, p. 161.

‡ Jenner Instit. Prev. Med., 2nd ser., August, 1899, pp. 81-112. Two plates.

presenting at one time a rod-shape, at others a spirillum, whilst mixed forms are not infrequent. They are readily developed in ordinary peptone beef-broth gelatine, and no medium is favourable to their growth that does not contain soluble chlorides, or solutions resembling sea-water, *e. g.* sodic chloride, 26·5 grammes; potassic chloride, ·75 grammes; magnesia chloride, 3·25 grammes. They develop rapidly on the recently dead fishes, and cause them to be luminous. They take no part in the decomposition of fishes, and appear to be non-pathogenic, except in the instance already referred to, *viz.* Giard's Sandhopper. A supply of oxygen is necessary for the exhibition of their phosphorescence, and when grown in an atmosphere of oxygen the light is brilliant. When the production of light is hindered the amount of oxygen absorbed is less. All agents which affect the life of the organism also affect the production of light. The phosphorescent principle does not pass through a Berkefield filter.

In conclusion, few subjects are more striking than this light-producing property of animals, and hence such forms on land have always received much attention. Some have even been used by man for purposes of ornament, or, as the French authors call it, "charming caprice"—for instance, the fireflies in the dark hair of the Mexican ladies, occasionally as miniature lamps, or as a lure in fishing; whilst the Baya-bird of India fixes them (*Lampyrus*) to mud to illuminate its nest—it may be for purposes of warning and protection.

As regards the photogenic marine forms no special utility has been found, though it is long since the Abbé Dicquemare proposed to utilize certain species for determining the position where they were found; and more recently Decharme thought *Noctiluca* might be made available for prognosticating storms.

Moreover, the observer is struck by the simplicity of the light-producing mechanism, and by the absence of heat. Thus the light of a firefly, or a *Pholas*, has no sensible heat, whereas a temperature approaching 2000° Fahr. would be necessary to make it by the usual processes, except the Geissler tube. So impressed were Prof. Langley and Mr. Vesey* with this feature

* "On the Cheapest Forms of Light," *Americ. Journ. Sc.*, 3rd ser. xi. No. 236. August, 1890. Quoted also by Watasé in one of his able lectures on the Physical Basis of Animal Phosphorescence. Boston, 1896.

that they contrast it with the enormous waste in all industrial methods of producing light. This waste in candle, lamp, or even gas-illumination generally exceeds ninety-nine parts in one hundred. It is least in sources of high temperature, like the incandescent light and electric arc, yet it amounts to the larger part. The authors, in view of this remarkable light without heat of the animals just considered, are of opinion that there is yet hope of obtaining an enormously greater result than we now do in the production of light.

NOTES ON THE NESTING OF *TRINGA ALPINA*.

BY ALFRED JACKSON.

ON the Lancashire side of the Mersey, to the south-west of Warrington, lies a strip of marsh, so low that the high tides of winter often flood a great portion of it to a depth of over two feet. Upon a piece of slightly rising ground amid such a damp situation I have for the past three years found Dunlins nesting, but it was not till 1904 that I knew the nest of four eggs, discovered the previous year, belonged to that species.

On May 22nd, 1904, while patiently watching a pair of Red-shanks that had a nest somewhere near, I heard a series of unfamiliar low notes—"wote, wote, wote, wote, wote"—and was quick enough to see a male Dunlin, in full summer plumage, alight. As the notes were repeated, I saw plainly, from the movements of his mandibles, that they came from the Dunlin. Presently he got up, flew in a perfect circle round me, while I, fearing to lose sight of him, watched closely, and was pleased to see him alight again not far from where he started. This flight around me (low over the grass) was repeated no fewer than seven times—evidently intended to entice me away—each time the bird alighting near the one particular spot where I began to suspect a nest. All the time, either flying or resting, he gave utterance at intervals to the low note, while his circular flight was never more than twenty yards from me. Twice he sprang up immediately after alighting, dropping down again near a clump of grass ten yards away, the second time disappearing into it. I had almost expected this, and, treading softly towards the spot, he rose out of the long grass at my feet, where I was delighted to find two newly-hatched young and two eggs. The two eggs were fertile, for I heard, on placing them to my ear, the chirping of the chicks inside, and their tapping the sides of the shells. The parent, on leaving the nest, flew low and rather awkwardly in getting away. The nest—just a hay-lined hollow—was little

larger than a Sky-Lark's, though more hidden among the grass. There were other Dunlins bleating over the marsh, but I found no more nests that year.

In 1905, intending to make further observations on the species, I frequently visited the marsh. As early as April 24th, while still in flock, an odd Dunlin among them gave vent to the breeding "bleating" sounds. On May 6th the bleating was more pronounced. The Dunlin's "bleating, buzzing whistle" is usually uttered while descending—on motionless outspread wings—at an angle of about twenty-five degrees, and when the bleating ceases the wing-flappings are resumed. This bleating sound is a string of notes—"whiz-whiz-whiz-whiz-whiz-whiz"—following in quick succession, commencing high in the musical scale, and gradually descending; seeming to be within the compass of four notes, including all the intermediate intonations. They may be imitated by whistling with the point of the tongue, using the vocal organs to produce the "whiz," &c. With the Dunlin the sound is undoubtedly produced by the vocal organs, for once during the day we were some time before we could locate the bird uttering the sounds. Not a Dunlin could we see against the sky, and, the bleating recurring exactly from the same locality, our eyes were instantly directed to a Dunlin down among the marsh-grass, not twenty yards away, quite near enough to see the motion of his throat and mandibles in expressing the sounds. Finding he was being watched, he with two others of which we were unaware flew towards the river. Afterwards we many times heard Dunlins bleating from the ground, and sometimes while gliding through the air on quite a horizontal plane. On May 14th, before being long on the marsh, we felt sure there were two pairs of these birds with nests, and, after a long vigil, the low "wote, wote, wote" of a Dunlin reached our ears. (Though these low notes are usually uttered while either standing or in skimming flight low over the grass, it is more rarely given from a height in the air.) "What's that?" inquired my companion. "That," I replied, "is the breeding note of the Dunlin when they have eggs or young"; and after a while, fancying that it may have come from an unobserved passing bird, and hearing bleating further to the north-east, we resolved to go and investigate it. My friend had

travelled but a short distance, when he called out—just as I saw a Dunlin rise before him—announcing four eggs. Now, this was the direction from which the low notes had issued, and the bird may have been calling while sitting. I hastened to get a glimpse of the beautifully-marked treasures, which lay in a tuft of springing grass, big ends upwards and outwards, in the form of a cross, completely hidden save from immediately above; (all the nests we have found were so hidden.) I proposed to retire sufficiently to allow of her return, just to make quite certain of its being a Dunlin, and, after a lapse of thirty minutes, a pair of these birds passed low over the nest, wheeling, and then over it again, finally settling by a marsh-pool. Tiring of our watch, we left to stretch our legs, and, returning some time later, flushed the bird from the nest; and, seeing the black patch on one side of the breast, we were satisfied as to its identity.

On May 21st, we had been on the marsh some time when I heard a sudden loud squealing, accompanied by the excited cries of Redshanks, coming from the direction of my friend two hundred yards away. At that moment I discovered a Dunlin's nest with two eggs, while my friend excitedly beckoned me to come and see his find—for he, too, had found a Dunlin's nest, with four lovely eggs on the point of hatching; we had found them simultaneously! The noisy "squealing" was the distressful cries of the retreating pair of Dunlins as they left the nest, and we had never heard the note before from the throat of this bird. Why were the Redshanks so alarmed? We suspect it was this unusual startling cry of the Dunlins, and they had chimed in on the impulse of the moment, scarcely knowing what had caused it.

June 11th saw me alone—from 9.30 a.m. to 8.30 p.m.—watching the habits of *Tringa alpina* in particular. Near one of the marsh-brooks I flushed a female Dunlin, which flew about me in such a manner that I suspected still another nest. Many a time she alighted within fourteen feet of me, at short intervals uttering the nesting "wote, wote," and occasionally, on springing up from the grass, the usual Dunlin whistle. The male joined her later, bleating as he came from a distant portion of the marsh. I discovered, this day, that when bleating and descending the bird's progress through the air is slackened,

and after that performance the speed is resumed. Sometimes when gliding down to alight—even when dropping his legs to do so—this bird began with the bleating “buzz,” ending with the low “wote, wote”; so that I feel certain the bleating is a combination of the ordinary Dunlin whistle prolonged and the low “wote, wote,” and, so far as I have observed, is only uttered by the male—one of these two, at any rate—the one with the richer and darker back. For five hours I kept a strict eye on the lighter bird, and she never once attempted the bleating; and, while the darker one took frequent excursions over the marsh, the light one was almost constant about the spot where I first flushed it. She was there in attendance when I left the marsh, and I concluded that the eggs had not yet commenced incubation.

During a storm of thunder, lightning, and rain (June 18th) I was attended by the Dunlins of last week, on the self-same spot. They seemed more excited, which I took as a good sign. At intervals I missed one or other of them, for they wandered far over the marsh. I watched them as far as I could see, and I more than half suspected that the missing bird doubled back and returned to the nest, while the other one that stayed bluffed me with his presence. Even during the heavy downpour the bleating came from a height in the air, where the male was flying.

Beginning to feel the dampness, and having accepted the conjecture that I was being outwitted by the strategy of the Dunlins, and that the nest was on some other portion of the marsh, I left her to search a piece of ground two furlongs away, over which I had detected the missing Dunlin flying. The female followed me in this direction, becoming more excited, and I was soon aware of a second Dunlin, calling low in passing me. I at once felt certain I had found the breeding-ground. There were other Dunlins on the marsh, but these passed in hurried flight, piping out the ordinary note. Occasionally, for a distance, they were accompanied by the breeding pair, giving the low notes. Taking up a post that overlooked this last position frequented by the uneasy pair, I was soon convinced that the nest was on the old breeding-ground. Determined to proceed with a method I had formed of quartering the ground, I began striding, while the Dunlins flew anxiously around me, calling all the time. In my very first crossing I was rewarded by finding four baby Dunlins,

all huddled together on the wet grass, though they appeared to be only just hatched. They uttered a faint "wee-wee" when I touched them, though they did not gape for food, which partly proved they had recently left the shell. They were shivering, for the air was chill. Not wishing to keep the warmth of the parents from them, I made a hurried survey of the youngsters. They had black legs and bill, and were covered with a fluffy down of black, browns, white, and buffs—a treat to see. Portions of the down on the back and sides of the hinder parts had fan-shaped white tips, which gave such portions a very pretty speckled appearance. On leaving them I came upon a lovely blotched portion of the smaller end of an egg, which I placed in my botanical box, to prove to others the success of my expedition. The fact of finding shells away from the nest suggests that the young are able to use their legs as soon as hatched.

I should have liked one of the eggs to have been addled in my first nest of 1905—the ground colour was such a lovely polished olive, while it is generally greenish blue in these pear-shaped eggs, very glossy, and blotched with different shades of brown and purple. From one of the nests I have a lovely egg, selected to prove my finds, though I remember feeling some qualms of conscience when taking it.

NOTES AND QUERIES.

MAMMALIA.

Notes on the Noctule (*Vesperugo noctula*).—Of the many Great Bats I have measured, the spread of wings varies from $14\frac{1}{8}$ in. to 15 in., but $14\frac{1}{4}$ in. is the usual expanse. On May 10th, 1875, I examined a Woodpecker's old nesting-hole about thirty feet from the ground in a Scotch pine, and took from it three Great Bats, two of which were females, and one a male. Two more Bats, which appeared to be of the same species, flew out of the hole; so there were five, if not more, in it. On June 8th, 1877, in an old nesting-hole of the Nuthatch, I found three male Great Bats; a fourth Bat escaped.—F. NORGATE (20, Anerley Park, S.E.).

Long-eared Bat at Great Yarmouth.—In October last I had a specimen of this Bat (*Plecotus auritus*) brought to me, which had been taken in a house in the town. It soon made itself at home, and two days after would take flies from my fingers. I used to let it fly about the kitchen during the evening. It was fond of hanging by its hind claws to the linen-line, as it looked about for flies, and waving its ears in all directions. Its favourite food was short pieces of small worms, cut up with scissors. I lost it, however, one evening about nine weeks afterwards. — P. E. RUMBELOW (2, Napoleon Place, Great Yarmouth).

The Black Rat at Yarmouth.—The two local races of the Black Rat (*Mus rattus rattus* and *M. r. alexandrinus*) appear to be increasing in numbers, several fresh haunts having been brought to my notice. Some young specimens of *alexandrinus* have been through my hands, and all appear to have darker tails than the adults, apparently due to the black hairs being closer together. I have recently had a fine old male of the *M. r. rattus* variety brought me, which had some time previously lost its left hind foot. The tibia had been broken through at about the middle, and the muscles had healed at the knee, leaving about a quarter of an inch of clean bone projecting. The end of the bone was worn and polished, and the animal bore rather a ludicrous resemblance to a man with a wooden leg. The Rat was in good con-

dition, weighing five ounces full. The following measurements of it were carefully taken in the flesh:—Head and body, $6\frac{3}{4}$ in.; tail, 9 in.; ear, $1\frac{7}{8}$ in.; vibrissæ, $2\frac{5}{8}$ in.; hind foot, $1\frac{7}{8}$ in.—P. E. RUMBELOW (2, Napoleon Place, Great Yarmouth).

A V E S.

Chiffchaff in December.—On Dec. 20th, 1905, I shot a Chiffchaff (*Phylloscopus rufus*) from a hedge at Cullercoats, on the Northumberland coast, about three-quarters of a mile inland. This is interesting not only on account of the date, but also because the Chiffchaff is an unaccountably scarce bird even in the summer months in Northumberland. The specimen is being preserved in the Hancock Museum, Newcastle-on-Tyne.—HUGH V. CHARLTON (Cullercoats, near Newcastle-on-Tyne, Northumberland).

Economical Nesting Habits of the Willow-Warbler (*Phylloscopus trochilus*) and the Wren (*Troglodytes parvulus*).—On June 9th, 1905, I found, built among the grass of a dry ditch, a Willow-Warbler's nest containing six eggs, which appeared to be much incubated. These were subsequently taken. On the 14th, when walking near the place, my eye was attracted by a small bird (a Willow-Warbler as it turned out), carrying in its beak a large white feather. On approaching the spot to which it flew, the bird got up, and disclosed a nest in the course of construction, in a very similar position to that found on the 9th. On the next day the new nest appeared to be finished. I then examined the old nest a few yards further along the ditch, and found that the bird had completely dismantled the interior, taking away all the soft white feathers and hair. I have to record a very similar occurrence in connection with a Wren. The nest was found on June 10th, and was built at the end of an elm-bough about six feet from the ground, and near a pond. It was a large nest, with a great deal of lichen on the exterior. It contained three fresh eggs. It is well known that the Wren is extremely jealous of its nest, the mere touch of the human finger being sufficient to cause instant desertion; but there are exceptions, and some years ago I took the only egg from a Wren's nest in the thatch of a hovel, and on two successive mornings repeated the experiment, when it was at last deserted. The Wren under notice, however, acted according to the rule, and deserted. She was "at home" on the 12th, and flew out as I tapped the bough; but the eggs were gone—in fact, she had turned them out, and they lay broken on the ground. On the 14th I did not see the bird, but found on examining

the nest that the lining materials had disappeared, as with that of the Willow-Warbler. She had, however, gone a step further, for the lichens, dead grasses, mosses, and leaves which formed the walls and roof of the structure were in the process of demolition. I was unable to see whether the whole nest was removed, as I had to leave the locality that evening. Would she, like the Willow-Warbler, economize and use the materials again for another nest? If so, what would she do with the lining materials which she first removed, as it is obvious the lining of a nest cannot be accomplished until the outer structure is complete, and the materials suitable for the constructional part she removed last of all?—E. F. M. ELMS.

Curious Nesting Habit of the Long-tailed Tit (*Acredula caudata*). On June 12th, 1905, I found a Long-tailed Tit's nest in the centre of a very dense hawthorn, the like of which I have never seen before. The sight of it at once brought to my mind a few lines in an old book in my possession on the subject of the Long-tailed Tit's nest. Thus:—"The nest of the Bottle Tit is sometimes found, but not invariably, with two holes or apertures, one of which is intended, according to Mr. Mudie, for the bird's head to come through, and the other for its tail to come through. . . . Surely Mr. Mudie, when writing this, must have been misled by some recollection of Porson's famous description of his Satanic Majesty:—

"His coat was red and his breeches were blue,
With a hole behind for his tail to come through."

My nest, however, had neither one or two holes. It had no dome, and the rim of the nest-cup was ragged, suggesting an untidy Chaffinch's nest, for which I at first mistook it. But with an effort and many lacerations I handled one of the young birds, in order to establish their identity, and at the same time I was scolded very severely by one of the parents. It would appear that as the young grew in bulk, and their tails in length, the old birds had torn off the roof so as to give the occupants more room. Indeed, it is somewhat of a mystery how—say, ten—young Long-tailed Tits can emerge from their tiny nest with as many long unruffled tails.—E. F. M. ELMS.

Double Brood of Great Tits.—Two broods of Great Tits (*Parus major*) were reared in an apple-tree only a few yards from our house this last season; I saw both clutches of eggs—eight and seven respectively—also the first young ones.—STANLEY LEWIS (Wells, Somerset).

Late Martins' Nests.—The latest date that I have known for this bird (*Chelidon urbica*) to have young in the nest is Oct. 11th, and this

was in the year 1888. Here young in the nest in September may be noted every year. I should like to ask if the Sand-Martin (*Cotile riparia*) usually has late broods. There were young in a nest in Flam-borough Cliffs last year on Sept. 2nd.—W. GYNGELL (Scarborough).

The Twite (*Linota flavirostris*).—It seems very strange to me that we never see this bird on our neighbouring moors, which, well covered with heather, might seem to be admirably suited to its habits. My friends and myself, who are especially interested in birds, spend some days every May in tramping over the moors where the Ring-Ouzel, Golden Plover, and Curlew are thoroughly at home, but we never see a Twite.—W. GYNGELL (Scarborough).

The Breeding Haunts of the Twite.—I have been greatly interested by the correspondence called forth by my remarks on "The Cuckoo and Twite" (Zool. 1905, p. 389). I would like also to thank the correspondents who have written to me privately for their very interesting communications. However, I cannot see any ground for the surprise expressed by Mr. Parkin at my statement that the Twite "breeds in most parts of the British Islands where moors, mountains, and exposed heathy places are found, being by no means confined to the northern parts." Mr. Parkin will find that practically the same is stated in Seebohm's 'British Birds.' It does, indeed, seem probable that the Twite is absent from Wales in the nesting season (Zool. 1902, pp. 5, 6), but this will appear to be the exception which proves the rule when we consider the wide distribution of this bird in Ireland, Scotland, and the North of England. In Ireland it is known to breed regularly in at least twenty-one out of the thirty-two counties, including practically all the counties bordering the coast, and there is reason to believe that it breeds in several others where the fact has not been definitely established. Indeed, in some of the most southern counties—as, for instance, Waterford—it nests abundantly, and its nests have been found even on the remote islands of Kerry. A point, however, which escapes the notice of those whose observation of the breeding habits of the Twite is confined to England, is its preference for the neighbourhood of lofty coasts, especially those which are exposed to the Atlantic. Hence it is much commoner on the western side of our islands than on the eastern. As the bird is said to be especially common on the islands off the coast of Scotland, the Hebrides, the Orkneys, and Shetlands, and outside the British Islands is not known to breed at all except in Norway, where it also chiefly frequents the coasts and islands, we have here a possible explanation why it breeds in the North of England as far south as Derbyshire, but does not breed

in Wales. Probably the original breeding habitat of the Twite is in the hilly coast districts bordering the North Atlantic in Ireland, Scotland, and Norway. From Scotland it seems to have spread southwards into England as far as the Pennine Chain extends, these hills being continuous with the Southern Highlands of Scotland; but it has not yet reached Wales, which is an isolated mountain region, the level country between Liverpool and Stafford being a barrier which it has not passed. A glance at the map of the British Islands will show the force of this theory. The keenness of "collectors" in obtaining the eggs is easily understood when we remember that the Twite is, as to its breeding range, one of the most limited of Palæartic species, as I have above indicated. Probably the greater part of the eggs found in collections have been obtained in the British Islands, where the Yorkshire and Lancashire moors are its most accessible breeding haunt, and a happy hunting-ground of "collectors," who can always get a price for the eggs. The fact that the Twite occasionally places a conspicuous feather in the inside of its nest is mentioned by Mr. Ussher (*Birds of Ireland*, p. 68). Many interesting observations are recorded in that book with regard to species which, like the Twite, are more common in Ireland than in England.—ALLAN ELLISON (Watton-at-Stone, Herts).

Late Stay of Swift, and Notes on the Species.—On Aug. 25th, 1905, I watched a Swift feeding young under the roof of a house in this town, the bird flying up continually. The one young fledged bird was, together with a broken egg, in a House-Sparrow's nest. On Sept. 3rd I saw one Swift flying about midway between Wells and Shepton Mallett; this observation was on a Sunday. The Swift, in its breeding quarters, appears to be an indolent and very disagreeable bird. The House-Sparrows are driven out of their nests, if they chance to be in the way, as soon as the Swifts arrive in the first few days of May; then the two and very often three eggs, rather long and dead white in colour, are deposited about May 24th, after the eggs of the House-Sparrow have been thrown out on the ground, where they lie smashed. It is not uncommon to find two Swifts sitting on the same nest, and many times I have found such a nest to contain three eggs. Through their clumsiness in flying in and out many eggs are perforated by the birds' claws, and lie cracked or broken on the stone, mortar, or board on which the nests are placed; they seem to hold the eggs in their claws while incubating, for I invariably lift the bird sideways with the finger-tips, and when there are eggs it seems to grip them, and on one occasion last summer a bird flew off with an egg on its claw. It is very noticeable, when searching through a colony, how

indifferent they are to the human hand; they will not budge from the nest when the tile overhead has been removed, and the only concern they seem to show is when one after the other they are thrown into the air—they generally go off screeching.—STANLEY LEWIS (Wells, Somerset).

Late Stay of Swift.—On Sept. 16th of last year, with a naturalist friend, I had one of my most interesting experiences of bird migration. Successive flocks of Martins (*Chelidon urbica*) were steadily flying low down over this town, or rather, I should say, past the sea-front of the town, for they flew not over but in front of the tallest buildings. The Martins passed southwards in successive companies, like soldiers on the march, and with them were several Swifts flying with but not amongst the Martins, suggesting the fancy that they (the Swifts) were acting as officers.—W. GYNGELL (Scarborough).

Lesser Spotted Woodpecker and Whinchat in Herts, &c.—Both these species appear to be increasing in this district, and the Whinchat nested within five minutes' walk of my house, which is in a fairly populated neighbourhood. Last spring, when I rambled through the woodland in the early morning, I saw and heard daily a great number of Lesser Spotted Woodpeckers. All three British nesting species breed in the woods here—Great and Lesser Spotted and Green species. I also saw a pair of Wheatears here on April 2nd last, which may be considered rare visitors with us, and knew of young Ring-Doves out of the nest as early as April 5th.—W. PERCIVAL WESTELL (5, Glenfernie Road, St. Albans, Herts).

Cuckoo's Egg in Nest of Twite.—In 'The Zoologist' (1904, p. 315) mention is made by my father of a Cuckoo's egg being found in the nest of a Twite by one of my younger brothers. Mr. Allan Ellison (1905, p. 391), in referring to this record, says: "The instance mentioned by Mr. Butterfield can hardly be substantiated"; and Mr. W. H. Parkin (1905, p. 348) also says, in referring to the same instance: "We received a report by a younger brother, . . . but we failed to locate it." Both these references can only be interpreted as throwing some doubt on the record, or, at any rate, that it is not satisfactorily confirmed. I well remember the circumstance, as I saw the Cuckoo's egg, which was incubated, the same day. The locality where the Twite's nest was found containing the Cuckoo's egg was the very "colony" with which Mr. Parkin is familiar, and I understood that he knew the particular circumstances under which it was visited at the time. That my brother was familiar with the egg of the Twite is

beyond question. The point at issue hangs, then, on the veracity of his statement. I have no reason whatever to doubt that. The evidence is precisely of the same nature as that of Mr. Ellison (1905, p. 391), when he says "he found Cuckoos' eggs in the nest of Chaffinch," &c. ; or when Mr. Parkin says (1905, p. 348) he found, in 1899, a Cuckoo's egg in the nest of a Pied Wagtail. I am not surprised at such a capricious bird as the Cuckoo exceptionally depositing its egg in the nest of the Twite. Such occurrences are, of course, rare. Ignoring the testimony of Mr. Wilson, it is sufficiently established that such instances have occurred. I can quite confirm the veracity of Mr. James Ellison's statement, mentioned by Mr. H. B. Booth. No man in the North of England has taken more eggs of the Twite in past years than he has, though it is a pity the egg of the Cuckoo was not actually seen *in situ*. The Twite is a bird that I have been interested in now for some years, especially as regards its distribution in England, and I should like to see its status properly worked out. I am afraid Mr. Allan Ellison's definition (1905, p. 390) of its distribution is open to criticism. I should be very glad if he could give us properly authenticated instances of the Twite breeding in England south of Derbyshire. So far as my own experience and knowledge goes, the Twite in Yorkshire is mainly confined to the hills forming the Pennines; I say mainly, because there are exceptions, a notable one being Thorne Waste, a flat part on the border of the West Riding. Most of the nests are built in ling (*Calluna*), occasionally among the heaths (*Erica* spp.), and exceptionally among grass (*Nardus*). The "colony" referred to by Mr. Parkin among bracken is an exception. I have never known the Twite to nest on carboniferous limestone moors in the West Riding of Yorkshire, nor have I ever heard of an instance. Ling and the heaths are absent on these moors, but the slopes are often covered with bracken. The colony mentioned above in the bracken marks, so far as my knowledge goes, the eastern limit in that direction of the Twite in Yorks. The site chosen is a bracken zone separating, in this case, a grass summit and a wood near the bottom. I should say the colony is at an altitude of from 700 ft. to 800 ft. Whenever I have seen the nests they have been built in the previous year's dead bracken. On the moors to the west of this place, right away across the Pennines to the borders of Lancashire, the Twite breeds in more or less numbers. On the immediate adjoining heather moors to the north I can testify to the breeding of the Twite, though not, as Mr. Parkin says, on "adjoining moors similarly placed," if they be not heather-clad. Although the Twite frequently breeds in colonies, this habit is to some degree dependent on local peculiarities. On long stretches of

pretty uniform moorland my experience is that it nests somewhat in scattered numbers; yet, where there are isolated patches of suitable cover and intervening stretches of unsuitable places, they then congregate, and form colonies to meet such contingencies. Two years ago, when I was accumulating evidence on the distribution of this species, Mr. J. A. Harvie-Brown informed me (*in lit.*) that in the Outer Hebrides it nests among marram grass. Mr. Allan Ellison (1905, p. 390) says: "I have . . . found the nest on a small patch of bog-land in Co. Down, under a tuft of rushes on a dry spot where there was no heath, a place remote from any hill." So that the Twite evidently selects its breeding-site to suit local conditions. With regard to the conspicuous feather-adornment of the nest which Mr. Parkin mentions (1905, p. 432), I am sure that this habit is by no means confined to the Twite, whatever purpose such may serve. I have noticed this adornment in the nests of species as diverse as the Twite and Spotted Flycatcher. It is very strange that there is no satisfactory breeding record of the Twite in North Wales. I have had some little experience in trying to substantiate such a record, and I have always been under the impression that if the Berwyn range of hills were systematically searched it would possibly be established as a breeding species in North Wales. The hills there are in many cases heather-clad, similar to the West Riding hills, though of course the formation is Cambrian, while in the West Riding of Yorkshire the formation, which is heather-clad, is mainly millstone grit. According to Messrs. Coward and Oldham, in their 'Birds of Cheshire,' the Twite as a breeding species in Cheshire "is confined to the hill-country of the east." Its southern limit in England, so far as my knowledge goes, is the Pennine Chain and its lateral ridges. We want more information on the subject. Now that the subject is topical, I should be pleased if any readers of 'The Zoologist' would give any definite personal information as to the breeding of this species in Great Britain, especially for any record, if there be any, for counties south of Derbyshire.—ROSSE BUTTERFIELD (Wilsden, Bradford).

Cuckoo's Eggs in Finches' Nests.—The finding of a Cuckoo's egg in the nest of a Bullfinch, Greenfinch, or Linnet is very exceptional. I venture to say that I examine as many of these nests in a year, as well as the other commoner species, as perhaps any man in England, and have found it once with five Greenfinch's eggs, and once with three eggs of Bullfinch—never in a Linnet's nest. The common foster-parents here are Hedge-Sparrows and Pied Wagtails. I may add that I found this

egg once with four Chaffinch's eggs, and once in an empty newly-built Spotted Flycatcher's nest. I took the egg, and did not visit the nest again. I have a very unique Cuckoo's egg, which I found with three Hedge-Sparrow's eggs; it is perfectly blue, varying from those of the foster-parents in the thickness of the shell, being a trifle thicker and a shade or two darker in colour; but the remarkable part is that the egg is about the size of a pea. Larger blue eggs are met with exceptionally.—STANLEY LEWIS (Wells, Somerset).

Tawny Owl in a Chimney.—On Nov. 24th, 1905, a Tawny Owl was sent me, which fell dead from the same chimney as the one previously recorded (1905, p. 72), and under similar circumstances. It is most unfortunate that these casualties should have occurred on a property where Owls are quite safe from ordinary risks, and where only a few days before, when the woods were shot through for the first time this season, the request was specially made that any Owls seen should not be shot. This bird, like the last one, was a female, and, as the estate from which it came joins the churchyard on three sides, I have little doubt that it was my old friend whose nest I watched last spring in the church-tower. From the letter which accompanied it, I gather that the chimney is to be covered over with wire-netting at the top to prevent others sharing the same fate.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds, Suffolk).

Breeding of the Hen-Harrier in Cornwall.—It may be of interest to note that the Hen-Harrier (*Circus cyaneus*) still breeds in Cornwall. I know of a quiet place where two can be seen any day of the year, and, until last year, of another couple a few miles distant; but unfortunately one of the latter has been shot. The first named successfully reared three young in the year 1904, but last year, although two eggs were laid in May, they had mysteriously disappeared by June. The nest was a large one, built in an oak-tree about twenty-five yards from the ground. This species is supposed to nest on the ground, but a local man said that the large nest in question was used by the Harriers. I first noticed these rare birds in November, 1903, again in 1904, and several times last summer, and once last November the female only. There are only a few trees—probably not more than fifty—and about two acres of gorse and brake on the steep side of a short valley, four miles from the north coast. Montagu's Harrier apparently breeds in the Lizard district, although I have not been there, so cannot say for certain. The Peregrine and Buzzard may still be seen on our cliffs, but they are much persecuted in some districts, one wealthy landlord

offering his gamekeepers a sovereign for every bird of prey destroyed.
H. P. O. CLEAVE (18, Leigham Street, Plymouth).

How does the Osprey carry its Prey?—In reply to Mr. Meiklejohn's query (1905, p. 435), I may say that in Newfoundland, where many years ago I could watch six Ospreys daily from the house I was living in, the fish were invariably gripped by the shoulders, and carried in a parallel position. The birds frequently submerged themselves completely with the force of their plunge; then the tips of the two wings would reappear, and then the bird itself with its prey. I never saw one miss. The fish were Sea-perch, and the scene a narrow inlet of salt water at the end of Placentia Bay.—R. B. LODGE (Enfield).

Early Records.—Mr. O. V. Aplin, in his Oxfordshire Notes (1905, p. 413), mentions the lesser celandine being in flower on Feb. 20th, 1903. In the same year it was in flower here on Feb. 8th. Our earliest date for the Clifffhaff singing is March 24th. Here the Blackbird very rarely sings in January, the 31st being my earliest date. The Tawny Owl and Long-eared Owl are our earliest breeding birds. I have found eggs of both species near here on March 11th.—W. GYNGELL (Scarborough).

Bird Notes from Shetland (May to November, 1905).—

LAND-RAIL (*Crex pratensis*).—First heard, 2 a.m., May 16th.

MARTIN (*Chelidon urbica*).—One seen at Cliff Loch, May 19th.

SWALLOW (*Hirundo rustica*).—One at Uyeasound, 3 p.m., May 25th.

WOOD-PIGEON (*Columba palumbus*).—One in garden at Halligarth, May 25th.

ROCK-PIGEON (*C. anas*).—Becoming more plentiful.

WHITE-TAILED EAGLE (*Haliaëtus albicilla*).—One seen, June 1st.

SHAG (albino) (*Phalacrocorax graculus*).—An albino Shag was pointed out to me at Bunafirth on June 22nd.

ROCK-PIPIT (*Anthus obscurus*).—Found nest with three pink eggs on June 28th. The eggs are not unlike the pink variety of Tree-Pipit's, but larger.

TREE-SPARROW (*Passer montanus*).—My niece found a nest with five eggs, on June 28th, in the garden, not far from where I found the former nest (*cf.* Zool. 1903, p. 462).

SKY-LARK (albino) (*Alda arvensis*).—Brought to me alive on Aug. 18th.

SCOPS OWL (*Scops giu*).—On or about Aug. 20th a small Owl was caught on the Lighthouse Rock. It was kept for a few days by the keepers, who fed it on flies and beetles. From the careful description

given to me by the native who used to shoot birds for my father, this Owl could only have been an example of the Scops Owl. Unfortunately the bird died, and there were no means of sending it to me, and none of the keepers knew how to skin or preserve it, and it never occurred to them to keep a wing or even some feathers; so the bird was lost.

RING-OUZEL (*Turdus torquatus*).—The only occasion on which I have seen this bird in Shetland was on Oct. 27th at Halligarth, when the bird rose from a bush almost within arm's length of me, and settled on a tree close at hand. I was only armed with a telescope, and while having a good look at the bird a couple of Merlins and some Hooded Crows came careering overhead, and scared the Ouzel away. It just seemed to fall away from the branch on which it was sitting, and was immediately lost to sight.

SWAN (WHOOPEE) (*Cygnus musicus*).—Two at Baltasound, Oct. 27th.
ROOK (*Corvus frugilegus*).—A few seen on Nov. 7th.

BULLFINCH (*Pyrrhula europæa*).—One shot on Nov. 21st. The bird was a male in fine plumage, measuring 6.12 in., and weighing one ounce and seventy grains.—T. EDMONDSTON SAXBY (Halligarth, Baltasound).

Black-throated Diver (*Colymbus arcticus*) at Woburn.—On Tuesday last (Jan. 9th) a Black-throated Diver, which I had noticed for several days on one of our ponds, was found dead. I took it to the Natural History Museum, South Kensington, where it was pronounced to be a young bird.—J. W. BEDFORD (Duchess of Bedford) (Woburn Abbey, Woburn).

PISCES.

Flying Fish near Ramsgate.—Seldom is one placed in the position of public critic of one's own defects or omissions, but into that predicament I am herewith landed; so I need not spare the rod, knowing on whose shoulders it falls. In a communication to 'The Zoologist' (1905, p. 401), among other remarks, I ventured to say, relative to the Medway and Swale specimens:—"In so far as we are aware, the two fishes in question are the only authentic evidence of the presence of species of Flying Fish (*Exocoetus*) on the Kent shores." This statement, though made quite sincerely at the time, nevertheless has now to be refuted. Since the publication in question I have quite accidentally come across the record of a capture on the Kent coast some forty years ago. This appeared in 'Land and Water,' vol. iv. p. 206 (Oct. 19th, 1867). In a paragraph signed "A Soldier" it narrates how

that, "a few years ago, when walking on the sands between Ramsgate and Broadstairs with Major J. C. G. and Mr. C., . . . we met an old fisherman much employed by the visitors on that coast to collect sea productions, carrying in his hands a Flying Fish alive and in a lively state." The writer goes on to say that he and the major had made several voyages to the East Indies, and could not be mistaken in their identification of the fish. Judging from the context, the trio of friends were in such eager argument over the ins and outs of the case, and so astonished how such a tropical form reached our shores, that, as admitted to their regret, they omitted securing the specimen from the "old salt." What ultimately became of it is doubtful. What species it was, of course, we know not, but the incident supports the view previously suggested of the presence of Flying Fish on the British coasts oftener than in the tabular data given in my paper (*loc. cit.*).—
J. MURIE (Leigh-on-Sea, Essex).

NOTICES OF NEW BOOKS.

Nature in Eastern Norfolk. By ARTHUR H. PATTERSON.
Methuen & Co.

THIS book is devoted to the fauna of Great Yarmouth and its vicinity, and our readers will remember a number of faunistic papers contributed by the author to these pages during the last few years. These revised and enlarged form a very large portion of the volume, and constitute a handbook that will be indispensable to naturalists who explore that once famous and still more than interesting district.

The chapter devoted to "Some General Observations on the Fauna" will prove the charm of the book to those whose zoological proclivities have not attained the purely special character. We read of the changes that can take place, principally by the agency of man, in a local fauna during the term of a single human life; the reminiscences of hardy and obscure folk who gained a precarious livelihood as wildfowlers, better known as "Breydoners"—are well, sympathetically, and racily told; and there is a welcome record of the more favoured local collectors, mostly of a bygone time, and the rarities which came into their possession. But many a rare bird has been killed and unrecognized in this favoured locality. "It is on record that Lilly Wigg, an old-time Yarmouth naturalist, cooked and ate a Red-breasted Goose (*Bernicla ruficollis*), and did not even guess its species until the feathers afterwards attracted his attention." Birds alone have not become scarcer in Eastern Norfolk; mighty Perch (*Perca fluviatilis*), of which captures are recorded weighing four to four and a half pounds, are not heard of now; large examples are less frequently taken, and "it is said that the *Anacharis* weed has injuriously invaded many of the Perch's spawning quarters."

Twelve coloured illustrations by Mr. F. Southgate add to the value of this excellent narrative of a local fauna.

The Birds of Hampshire and the Isle of Wight. By the Rev. J. E. KELSALL, M.A., and PHILIP W. MUNN, F.Z.S., &c. Witherby & Co.

EVERY student and lover of British Birds eagerly anticipates and welcomes the appearance of a county volume, especially when the district is his own, or one of his favourite localities; we Surrey men are vastly interested in the fauna of the beautiful county just over one of our borders; most naturalists are alert when the New Forest is mentioned, and no little interest appertains to the birds of the Isle of Wight. Consequently this is a volume that will quickly find its way on many shelves, especially those of the readers of 'The Zoologist,' who have so long been made interested in at least one part of Hants by our old contributor Mr. Corbin; but above and beyond all, the county contains Selborne, the home of Gilbert White, whose book has long since gained the position of an English classic, and is neglected by no reader of English literature.

Two hundred and ninety-four species are enumerated; of these eighty-five are residents, forty-two summer visitors, seventy winter (including spring and autumn) visitors, thirty-six occasional, and sixty-one accidental visitors—a formidable list compared with the one hundred and twenty recorded by White as found at Selborne only. Very much information has been garnered respecting each species, and records diligently consulted; so that the work may fairly claim to be "up to date."

We have only noted two errors in reading these interesting pages—one a mistake, the other a misprint. In the bibliography we read "Letters of Rusticus, edited by Edward Newman." The first editor of 'The Zoologist' did *not edit*, but was *the author* of that volume. The misprint is in the spelling of the name of Col. Feilden.

The work is well illustrated from actual photographs, and an excellent map is also given.

Eggs of the Birds of Europe, including all the Species inhabiting the Western Palæarctic Area. By H. E. DRESSER, F.L.S., F.Z.S., &c. Part I. Published by the Author.

WE gladly call attention to the first part of this beautiful and useful publication. Not only are the coloured figures of the eggs all that can be desired, and an advance on some previous productions, but the text also contains many blocks illustrating rare or not commonly known nests. No particular system of classification is adopted, as the part commences with *Circus æruginosus*, and other allied *Falconidæ*, and the second half is devoted to the *Sylviinæ*. We need scarcely remark that the writer of 'The Birds of Europe' is quite at home, and can be relied on in the text.

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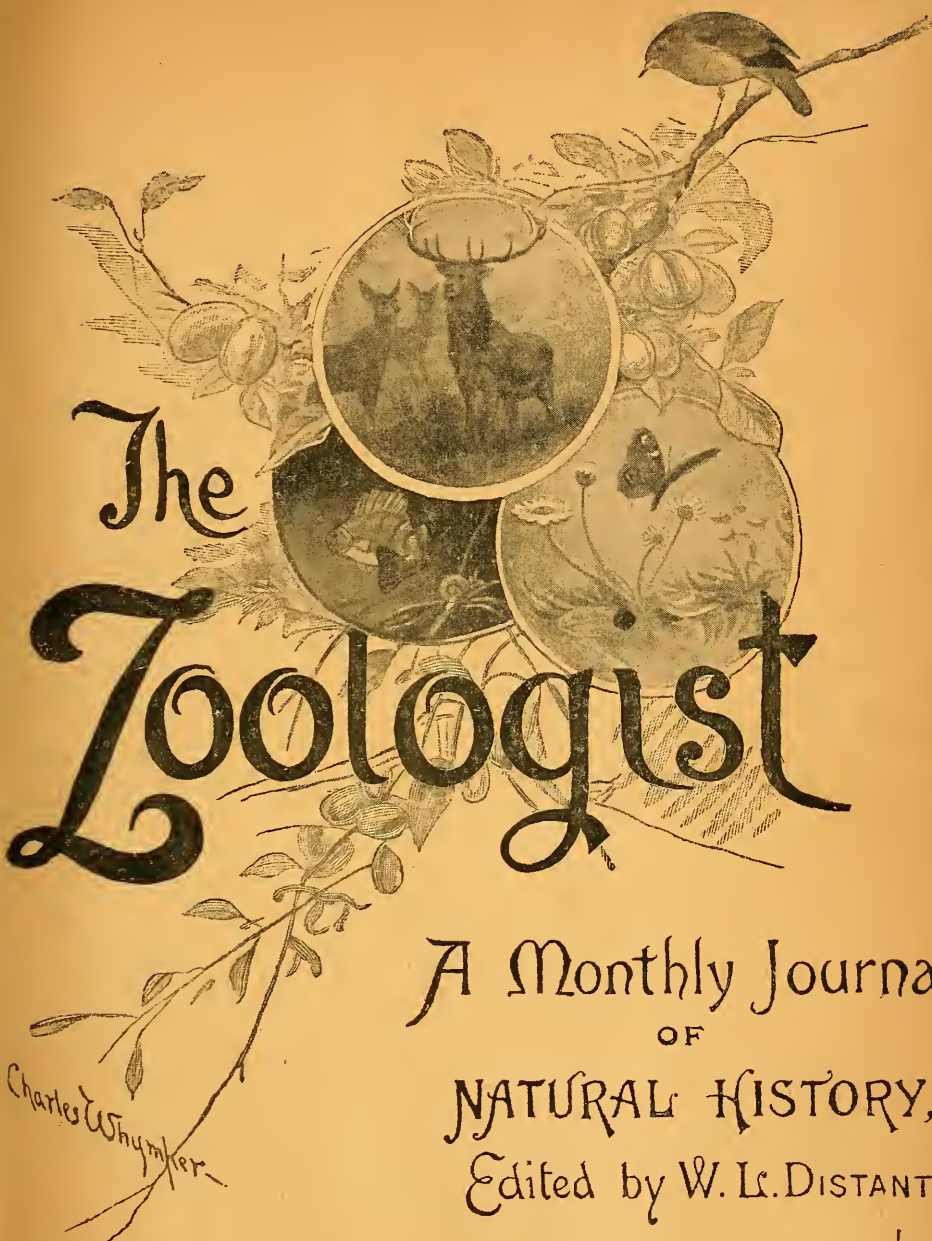
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THE ZOOLOGIST

No. 776.—*February, 1906.*

NOTES ON THE ARCTIC WHALING VOYAGE OF 1905.

BY THOMAS SOUTHWELL.

EIGHT vessels left Dundee in the past season for the Arctic fishery, against five in 1904, the 'Scotia' and the 'Morning' having been added to the fleet, and the ketch 'Snowdrop' of 64 tons made a speculative voyage, killing one Whale, two Walruses, and seventeen Bears, yielding 15 tuns of oil and 18 cwt. of bone. Six of these went to Davis Strait, one to Hudson Strait, and one to Greenland, subsequently proceeding to the Strait, of which more hereafter. The 'Queen Bess' took out stores to the mines in Hudson Strait, and returned with mica and furs collected there, but did not fish; and the 'Alert' is wintering at Pond's Bay.

The 'Eclipse' was the most fortunate vessel, and the first to return to port. On the outward voyage she was favoured with fine weather, and on July 6th captured two Whales; on the 8th a third was secured off Dexterity Bay. A fortnight later two others were killed, and on July 24th two more, making seven in all. On July 25th she put into the fishing station at Pond's Bay, but no Whales had been killed there. The return voyage was commenced on Oct. 14th, and was attended with exceptionally wild weather, but she arrived safely at Dundee on Nov. 6th, after a successful voyage.

The 'Balæna' arrived on Nov. 8th with four Whales. The chief event of the voyage was the meeting with a school of Whales whilst so closely beset with ice that they could not lower their boats, but, one of the Whales coming close to the vessel, it was fastened to by a harpoon fired from the deck, and secured without the crew leaving the ship—a most unusual circumstance.

The 'Morning,' having returned from the Antarctic, was purchased from the Government by Mr. Kinnes, and joined the Dundee fleet. Her catch consisted of three Whales, forty-two Walruses, and twenty-four Bears, four of which she brought home alive. The North Atlantic gave her a very rough reception, her return voyage occupying thirty-four days.

The 'Scotia,' on her first voyage to the north, left the Tay on May 4th, and proceeded to East Greenland, this being the first whaler which has visited these waters since the year 1900, when the 'Balæna' made an unsuccessful voyage to that region. Saving that she saw two Whales, neither of which, owing to a strong southerly wind rendering the condition of the ice impossible, she was able to capture, this portion of her voyage was as unsuccessful as that of the 'Balæna' had been five years ago, and, like her, on July 10th, she proceeded to Davis Strait, rescuing the castaway crew of a Norwegian sealing smack, who had been drifting in two open boats for seventeen days, on the passage. On Sept. 20th she captured her first and only fish, and bore up for home on Oct. 20th, arriving at Dundee on Nov. 9th.

The 'Windward' killed two good Whales and thirty-eight Bears, and the 'Diana' secured two others, having the misfortune to lose three; she visited Lancaster Sound, but saw no signs of the absent Arctic expeditions.

The 'Active,' as usual, visited Hudson Strait, and returned with a very miscellaneous cargo, consisting of 3 Whales, 20 White Whales, 53 Walruses, 146 Seals, 31 Bears, and 104 Fox-skins, partly collected at the station. The 'Active's' three Whales were killed by the station boats, but at such a distance that the oil had to be sacrificed; hence the disparity between her oil, which was only $5\frac{1}{2}$ tuns, against 25 cwt. of bone. The Hudson Bay produce also comprised 25 Bears, 15 Seals, and 268 Fox-skins, brought home by the 'Queen Bess.' The 'Snowdrop' has already been alluded to. The existing winter stations are in Hudson Strait, Pond's Bay, and Cumberland Gulf.

During the past season more Whales were seen in Davis Strait than usual, and others were observed in localities where they had not hitherto been met with; this the captains attribute to the early break-up of the ice, and its scattered condition, until the wind from the north-east set in, when it became jammed

on the coast, rendering the fall fishery impossible; but the season has been a very fair one, resulting in 23 Whales, 37 White Whales, 122 Walruses, 408 Seals, 200 Bears, 471 Foxes, 290 tuns of oil, and 393 cwt. of bone. The price of oil is £19 per tun, and the last sale of bone realized £2250 per ton. The total value of the season's produce may be roughly estimated at £48,000.

I am, as usual, greatly indebted to Mr. Robert Kinnes, of Dundee, for his kind assistance; and to Mr. J. Mitchell's annual circular for details of the produce.

As the present may be the last opportunity which will present itself, may I be allowed to add a few brief statistics illustrating the decay of this vanishing industry in the past century?

No history of the British Whale fishery has ever been written comparable with that from the United States of America, compiled by the United States Fishery Commission.* Perhaps Scoresby's record contained in his 'Account of the Arctic Regions' (ii. pp. 1-396), 1820, is the most complete account of the British fishery to that period; a chronological record of the chief events is given in Anderson's 'Origin of Commerce' (1801), vols. iii. and iv. Much information is also to be found in McCulloch's 'Dictionary of Commerce' (edit. 1844), and scattered through the pages of the 'Gentleman's Magazine.'

Scoresby, so accurate in all that came under his personal observation, shared the error prevailing at the time he wrote—and, indeed, long after—as to the species of Whale pursued in times long past by the Basque fishermen off the French and Spanish coasts, and which we now know to have been an inhabitant of the temperate waters of the northern oceans, quite distinct from the Polar Whale (rarely to be found south of lat. 76°), with which he was familiar; and doubtless it was his great experience of the habits of this ice-loving species that led him to suggest that the Whale hunted by those ancient fishermen might have been *Balænoptera rostrata*—a much more difficult animal to capture; but he unconsciously solves the difficulty when he tells us that Right Whales have, on rare occasions, and

* "History of the American Whale Fishery from its inception to the Year 1876," U.S. Commission of Fish and Fisheries, Report for 1875-76 (1878), part iv. pp. 1-767. Also U.S. Fisheries Industries, Section v. vol. 2 (quarto, 1887), pp. 3-318.

under peculiar circumstances, been known to occur as far south as lat. 71° or 72° , which is the northern or summer limit to the range of *Balæna biscayensis*. Scoresby also, like many others, was greatly puzzled to reconcile with Ohthere's known accuracy the supposed slaying of sixty "Whales" in two days by that traveller and his companions—a fact so simple of explanation when the passage recording the event is correctly construed (see 'Notes and Queries,' s. 7, vi. p. 44 (1888)).

It is now clearly understood that the discovery of *Balæna mysticetus* and the origin of the important industry which followed was due to the discovery of Spitzbergen, then believed to be part of the continent of Greenland, by Barants, in 1596, and the subsequent visit of Hudson in 1607, three years after which Thomas Edge commanded the first Greenland whaling fleet fitted out by the British "Muscovy Company." In 1611 the Muscovy fleet came to grief, and a Hull vessel which "happened" to be in the neighbourhood rendered them assistance. The honour therefore of being the first to initiate this important and lucrative industry rests with London and Hull, and the date of the event the year 1610 or 1611.

At a much earlier date both Hull and Bristol had vessels out at Newfoundland and the entrance to the Bay of St. Lawrence,* but their main quest seems to have been Walruses and Seals, and what Whales they killed were doubtless the Southern Atlantic species. Hull also sent vessels to Iceland and the North Cape on the same errand as early as the year 1598. Seeing the tenacity with which Hull clung to this exciting industry, it might have been expected that Bristol would have done the same, but I cannot find that such was the case. According to Latimer's 'Annals of Bristol in the 18th Century,' an attempt was made to establish a Whale fishery from that port in the year 1752, and two ships were sent out and a third in 1755, but after varying success the venture was abandoned in 1761.

From Ireland also, about the year 1737, an attempt was made to establish a Whale fishery off the coast of Donegal. A

* Hakluyt records that in 1577 there were 315 vessels at the Newfoundland fisheries, fifteen of which were English; "there were also twenty or thirty ships from Biscay, to kill whales for train oil." Quoted from Anderson's 'Origin of Commerce,' ii. p. 144.

writer in the 'Gentleman's Magazine' (vii. p. 703, 1737) took a very optimistic view of the venture, but it soon came to an end, as might be expected, seeing they would be fierce and active Fin-whales that were met with in the Irish Seas.

The Dutch opened the way to Davis Straits in 1719, and had the fishery there all to themselves for a few years before the British vessels joined them; but it was not till the year 1818 that Baffin's passage through the bay named after that intrepid navigator was repeated, and the prolific "North Water," which has ever since proved the most attractive hunting-ground, was invaded.

The Scotch took part in the fishery first in the year 1750, when a vessel was sent out from Leith, and other ports soon followed. Peterhead commenced in 1788, and Dundee, which is now the only British port engaged in the northern Whale fishery, in 1790.

The South Sea fishery for the Sperm Whale, formerly a very important industry, does not rightfully come within the scope of these remarks, but perhaps I may be allowed to say that it was, according to the 'Encyclopædia Britannica,' entirely confined to the port of London; it commenced in 1775, and was discontinued by British vessels in 1853, being now entirely in the hands of the American whalers. The average duration of the cruise from London was three years and three months.

My object, as above stated, is to record some facts as to the decadence of this industry, but, to show how important it was in its most flourishing period, I may perhaps be allowed to quote the following figures, supplied me by the late Capt. David Gray, relating to the ports of Peterhead and Dundee to the end of the season of 1879:—

No. of Voyages.	No. of Whales.	No. of Seals.	Gross Value.	Net Value.
Peterhead:— 995	4195	1,673,052	£2,594,400	£583,020
Dundee:— 538	4220	917,278	2,160,400	652,320

In each case the gross value of the Whale and Seal oil, including skins and whalebone, is taken at an average of £50 per tun, an

exceedingly low average compared with present prices, oil being £19 per tun, and whalebone £2250 per ton. At the above estimate the Peterhead whalers brought a net return to their owners of £586 per voyage, and those of Dundee £1212 10s.; but of course the amounts varied greatly in different seasons.

The year 1830 was a very disastrous one in the Whale fishery. Hull had eighteen vessels out, six of which were wrecked, and the loss was never recovered; this, following the discontinuance of the bounty in 1824, led to a considerable decline in the number of the vessels employed, and as they were lost or worn out they were not replaced. Thus the diminution was gradual; but the introduction of steam in 1858 not only placed the sailing vessels at a disadvantage, but, from its disturbing effects and the facilities it afforded for following the Whales in the ice-floes, rapidly decreased their numbers, and gave the final death-blow to whaling in the Greenland Seas.

In the following list of ports known to have been engaged in the northern Whale fishery it will be observed that the great majority are situated on the east coast. Where possible I have given the date when each port first sent out vessels, and, so far as I have been able to ascertain, that of discontinuing to do so:—

	Earliest Voyage.	Latest Voyage.
Bristol.....	1752	1755
Banff		1818
Lynn		1821
Yarmouth		1821 ?
Grimsby		1821
Liverpool		1823
Kirkwall.....		1825
Greenock		1830
London		1836
Whitby	1753	1837
Berwick		1837
Montrose		1839
Burntisland	1831	1839
Leith	1750	1840
Boness	1836	1840
Kirkaldy.....		1865
Fraserburgh		1868
Hull		1869
Aberdeen		1870
Peterhead	1788	1893
Dundee	1790,	and still continues.

Whaling vessels were also equipped by Edinburgh firms, and

from Dunbar, Glasgow, Grangemouth, Queensferry, Sunderland, Stockton, Newcastle, Scarborough, Ipswich, Exeter, and Whitehaven, but I have not been able to obtain any statistics in either case.

I fear the above list is very incomplete, and should be grateful for any additions or corrections.

The following table shows the number of vessels employed, and the results of the voyages for each of the twenty-five years to which my notes extend.

TABLE SHOWING THE PRODUCE OF THE BRITISH ARCTIC WHALE FISHERIES FOR THE YEARS 1881 TO 1905, BOTH INCLUSIVE.

Year.	No. of VESSELS.		No. of WHALES.		White Whales.	Bottle-nose.	No. of Seals.	Tuns of Whale Oil.	Cwts. of Bone.
	Dun-dee.	Peterhead.	Green-land.	Davis Strait.					
1881	15	4	23	48	—	116	23,984	709	666
1882	15	3	—	79	—	413	22,142	1117	582
1883	13	6	2	17	2736	535	37,922	1148	216
1884	15	9	11	79	—	317	39,700	1224	932
1885	16	5	14	27	—	84	32,302	561	418
1886	15	4	15	19	1033	23	7964	499	371
1887	10	3	3	11	1931	20	5762	475	138
				(2 suckers)					
1888	10	4	4	8	902	22	15,688	314	87
1889	10	4	16	11	—	19	15,079	342	326
1890	10	4	—	18	806	22	6603	420	270
1891	9	3	11	6	569	3	1560	262	169
						Walrus.			
1892	10	1 (Newfd. only)	3	8	1309	67	12,096	298	114
1893	9	1	1	29 (4 suckers)	32	75	325	389	416
1894	8	—	4	16	1261	49	11,712	412	287
1895	7	—	11	6	1436	16	4500	349	180
1896	8	—	6	6	9	43	3890	149	135
1897	8	—	1	12	7	772	5100	228	153
1898	6	—	—	6	984	591	779	297	112
1899	7	—	—	28	—	609	3036	385	350
1900	6	—	—	17	—	632	3453	290	229
1901	5	—	—	14	738	420	3420	260	163
1902	5	—	—	12	652	118	1984	212	187
1903	4	—	—	14	79	107	3229	145	175
1904	5	—	—	11	168	45	1135	114	113
1905	8	—	—	23	37	122	408	290	339

Note.—The above table is compiled from the annual circulars of Mr. David Bruce and Mr. J. Mitchell, of Dundee.

The first column gives the number of vessels actually engaged in whaling or sealing, and does not include carriers or tenders at the permanent stations in Hudson Strait, Cumberland Gulf, and Pond's Bay, the produce of which, or that collected by the natives, is included in the general returns.

The Bottlenose Whales were obtained in the Greenland Seas in about lat. 70° N.; none have been killed by the British vessels since 1891, no Right Whales in those seas since 1897, and no Seals since 1898.

The number of Seals given above does not include those killed by the British vessels in Newfoundland.

The Bottlenose oil is included with the "Whale oil," but not that yielded by the Seals. The yield of Right Whale oil may be roughly estimated at one tun (of 252 gallons) for each hundredweight of bone.

THE PIGEON HOLLANDAIS.

BY GRAHAM RENSHAW, M.B., F.Z.S.

AMID the general havoc of the French Revolution, the establishment maintained at the Jardin des Plantes was the only institution respected by the Paris mob. The zoologist who visits the natural history museum of the French capital will find much to interest him. Here may be seen the Quagga, probably the actual specimen once in the King's menagerie at Versailles; the Indian Rhinoceros, whose anatomy was investigated by the famous Vicq d'Azyr in 1793; the Blaauwbok Antelope, extinct since 1800; the Giraffe which, sent to Paris by the Pasha of Egypt, in its day was a celebrity which thousands of people flocked to see; the Black Emeu, of which but one other stuffed example is known; a curious *model* of the Dodo of Mauritius; and, last but not least, the Pigeon Hollandais.

The Pigeon Hollandais, or Mauritius Dove (*Alectorœnas nitidissima*)—the Hackled Pigeon of some writers—is an extinct species, which just survived long enough to be collected and described by scientific ornithologists. Belonging to a small group of arboreal Pigeons inhabiting the Seychelles and adjacent islands, the present species was remarkable in displaying in its plumage the three colours of the Dutch flag—hence, probably, its popular name. The bill was crimson, tipped with yellow; the iris (and a bare space surrounding the eye) was also crimson; the sides of the face were naked and flesh-coloured. The head and neck were white, and decorated with long hackles, which were, however, narrow and pointed, and shone with a peculiar gloss; the back, wings, and belly were deep indigo-blue; the rump, tail-coverts, and tail were crimson, while the legs and the powerful feet were bluish black. The length of the Pigeon Hollandais was about $13\frac{1}{2}$ in. The remarkable appearance of this bird, and the rapidity with which it was exterminated unknown to naturalists, render it a very interesting species for study.

The Pigeon *Hollandais* is first mentioned by Pierre Sonnerat, who in 1774–81 travelled in the East Indies and China by order of the King of France. In his wanderings Sonnerat visited the Mascarene Islands; his book of voyages gives some description of Mauritius, and a figure of the Hackled Pigeon. Apparently taken from a stuffed specimen, the drawing represents the bird as standing stiffly on a branch; the eye, however, is rendered with a very natural expression of alertness, and the strong feet grasp the perch with considerable power; while the stiffness of the almost horny hackles on the neck is well brought out in the illustration. Sonnerat brought home with him two specimens of this curious Pigeon, which were afterwards acquired by the Paris Museum. His book, ‘*Voyage aux Indes Orientales et à la Chine*,’ was published at Paris in 1782, and is very interesting reading.

The Abbé Bonaterre stated, in 1790, that the Pigeon *Hollandais* was still abundant in Mauritius. Perhaps this accounts for the careless treatment meted out to Sonnerat’s specimens, for they were allowed to become spoilt. Coenraad Temminck, the first Director of the Pays Bas Museum, which was founded at Leyden in 1827, visited Paris on one of his rambles. He found that the birds’ plumage had been badly injured, but nevertheless thought it worth while to figure the species in his work on Pigeons. As a matter of fact, the fumes of sulphuric acid had been allowed to gain access to these specimens. Luckily, though damaged, they had not been thrown away, as was the Dodo in the museum at Oxford. M. Dufresne, about 1815–16, had a specimen of the Pigeon *Hollandais* in his collection; its previous history is unknown, and, since its possessor was a professional dealer in natural history specimens, it may have remained practically unnoticed amongst the rest of his stock. He was, however, for some time Conservator of the Cabinet of Natural History belonging to the Empress Josephine; and, since he is still remembered through that tiny bird, Dufresne’s Waxbill, one may rank him as more than a mere buyer and seller of dried skins. Indeed, he afterwards joined the staff of the Paris Museum as *aide-naturaliste*, his own collection passing into the possession of the Edinburgh University. The Pigeon *Hollandais* was included in the series, and may now be seen in the Museum of Science and Art at Edinburgh. And then the curious Hackled Pigeon of Mauritius

made a dramatic exit. Before even naturalists of eminence had realized the fact, it had disappeared from the face of the earth.

The true Quagga was exterminated about 1875, or perhaps 1879, the Spectacled Cormorant about 1850, and the Réunion Starling about 1860; but so unobtrusively did the Pigeon Hollandais vanish that even an approximate date of extinction can hardly be assigned to it. In 1862 the Acting Civil Commissioner for the Seychelles had alive three fully-fledged young birds, supposed to be the true *Alectorœnas nitidissima*; but the Seychelles themselves are the habitat of the closely allied *A. pulcherrima*, and some confusion may have unwittingly occurred between the two species. The wild Pigeons occurring near Savanne, Mauritius, in 1861, though at first supposed to be *nitidissima*, turned out to belong to another species. The only veritable specimen unearthed of late years seems to be the Pigeon Hollandais (already stuffed!) in the Port Louis Museum.

As for the causes of extinction, one is tempted to draw a parallel between the present species and the Réunion Starling. Thousands of Mynahs introduced from India swarm (or swarmed) in Mauritius, as they do in Réunion. Perhaps they were too fond of eggs and nestling Pigeons, and so effected the exit of the Mauritius Dove. Then, again, the planters may have exterminated the bird, for the surviving representatives of the genus *Alectorœnas* are notorious for the damage they do to the rice crops.

The young birds owned by the Civil Commissioner for the Seychelles would only eat berries and small fruit; so arboreal were they that they would not alight on the ground if they could help it, preferring to stretch down from their perches and crane their necks to a considerable extent to pick up their food. This circumstance reminds one of the similar tactics of the pretty Bengal Fruit-Pigeons (*Crocopus*), as anyone who has kept these latter in captivity will admit; since the Pigeon Hollandais was about the size of a *Crocopus*, and probably once swarmed in the hill-forests of Mauritius, the settling of a flock amongst the crops might by their mere weight do considerable havoc. The actual cause of extinction will, however, in all probability never be known.

In 1889 the Government of Mauritius appointed a Commission to inquire into the "Souvenirs Historiques" of the island. Under the able direction of Mr. Théodore Sauzier, the party continued the exploration of the marshy Mare aux Songes, which had already yielded many Dodo relics to previous workers. A considerable number of valuable specimens rewarded the industry of the Commission. Bones of the extinct Parrot (or rather Cockatoo), *Lophopsittacus mauritianus*, were unearthed, together with relics of the *Fulica newtoni*, and many other species. Ornithologists may perhaps remember this exploration from the magnificent Dodo skeleton then obtained, perhaps the finest in the world. Our present interest, however, centres on the fact that amongst the remains were the bones of a bird believed to be the Pigeon Hollandais. Thus associated with the vanished Dodo and Mauritius Cockatoo, perhaps the *Alectorænas* was itself already on the wane. Unknown natural causes may have been working its downfall long before the day of Sonnerat and Dufresne.

Uno avulso, non deficit alter. The Pigeon Hollandais lives again, Phœnix-like, in its near relation, the *Alectorænas pulcherrima* of the Seychelles. Indeed, the Seychelles bird is now actually called the Pigeon Hollandais! This understudy certainly bears some likeness to its lamented cousin. Grey on neck and breast, the *pulcherrima* has the upper parts and tail black shot with blue; a crimson patch decorates the crown of the head, and the orbits, lores, and forehead are bedecked with wattles.

Long may the Seychelles Pigeon flourish, and may it escape the fate which has overtaken its predecessor in the title! Man has exterminated the Labrador Duck, the Spectacled Cormorant of the Aleutian Islands, and the Black Emeu. During the last five years the greed of the museum collector has all but finished the Chatham Island Rail. The enlightened action of the New Zealand Government in establishing a bird sanctuary in Dusky Sound will appeal to all nature lovers, while in the three museums of Edinburgh, Paris, and Port Louis the remains of *Alectorænas nitidissima* plead silently yet unceasingly the cause of bird protection.

NOTES ON MARINE CRUSTACEA IN CONFINEMENT.

BY ALBERT H. WATERS, B.A.

I HAVE from my very childhood had a *penchant* for keeping marine aquaria. I started my first one at Great Yarmouth, when residing there as quite a youngster. It was there that I made acquaintance with the Common Shore Crab (*Carcinus mænas*), and, by the way, I was beguiled into eating one or two which someone had put in a saucepan of water and boiled. I had them for tea, and survived it! But my interest was more with the living Crabs as creatures to be watched moving about in a vessel of sea-water, and I did not personally regard them with gastronomical eyes. From that day to this I have seldom been for long without living specimens of these Crabs—not to say others. What has always been an attraction to me is their readiness to adapt themselves to circumstances, and become on good terms with me. I have had them so tame that they have gently taken meat from my fingers without attempting to pinch them. What the amount of their intelligence really is I cannot say, but I could write a volume on the psychology of these and other marine creatures I have had under observation, especially in the days when an injury to my spine made me a prisoner, and my aquaria and vivaria were some of my solaces. Just as prisoners in a dungeon have learnt things about the ways of spiders, and even tamed them, so, when my injury made me delicate in health, I learnt from my aquaria and vivaria traits in the nature of the lower animals I might never have known had I always been healthy and strong; for then I should have been so employed as not to have the time for careful observation.

As I have mentioned the Shore Crab, I may as well commence with this common member of the *Portunidaæ*. I have been able to study its life-history from the ovum to the aged crab, and, when I say that I have had the same individuals living for years,

I think I may claim to have had opportunities for observation of some value.

As a rule, two Crabs will not live together for long in a small aquarium. Sooner or later they will have a desperate battle, and the weaker will get killed. In one case I rescued the vanquished *mænas* before he had lost his life. He was in a parlous state, having lost both his claws and three of his legs. I transferred him to a small inverted propagating glass, and carefully fed him; much as one feeds a baby with a spoon, so did I put morsels of scraped beef on to his mandibles with a wooden skewer. He used the foremost of his remaining feet to push the food into his mouth, reminding me of an armless man I saw in a show at Cambridge Fair who fed himself with his toes. He was in this miserably crippled condition for weeks. At last came the time for the exuviation of his shell; then, lo! as by a miracle, he appeared straightway with his full complement of legs and two pairs of claws, just as if nothing had happened.

The day before the Crab exuviated there had not been a vestige of claw to be seen or of the three vanished legs. There was no sign whatever of sprouting and gradual growth. When the old shell was cast off the new limbs grew as quickly as do the wings of a butterfly or moth when released from the chrysalis-case; they grew so quickly that I did not see them grow. One hour the Crab had no claws and only five legs; in the next, when I again noticed him, he was soft and flaccid, but with every one of his limbs quite perfect. The new shell rapidly hardened, and the next day the Crab was using his new claws just as if he had never lost them. I put the exuviated shell in my little museum, and when the Crab exuviated again I put by the side of it the newly-formed shell with the full complement of claws and legs.

Out of the many specimens of *Carcinus mænas* I have had under observation I have never noticed a single instance of a new limb sprouting out and growing gradually in the manner I have seen described in books. A lost limb has always been instantaneously, as it were, reproduced at the time of exuviation.

Yet sometimes we meet with Crabs of the edible species having one large and one small pair of pincers and claws. Personally, I have only met with one instance of this. In that

specimen one claw is rather more than twice the length of the other, and it is, I think, analogous to the crippled wing of a moth. It is well known that such a slight cause as the sticking of a piece of the chrysalis-shell will hinder the development of the wing, and if its growth be arrested it will never expand to its full size, for the soft ductile substance of the wing is in an incredibly short time acted on by the gases of atmospheric air, known or unknown, and converted into chitine and membrane. Something similar goes on in the case of the shell of a Crab. At first it is quite soft, with apparently no more substantiality than the body of a jelly-fish, if so much. It is just a sort of gelatinous slime, which subsequently becomes like a double membrane, enclosing water or gelatinous slime between it. Then changes ensue so rapidly that I have never been able to follow them with the microscope.

I had, some little time ago, the idea of making a combination of microscope and cinematograph camera, and then examining the long strip of film in detail. I greatly regret I was unable to afford the outlay, as I believe much might be learned by this means about processes too rapid for investigation with unaided vision.

Carcinus mænas lives ten years and more I know, but how much longer I am unable to say from personal observation. A Crab ten years old has exuviated for the last time, and done growing. Its shell has become a resting-place for barnacles, and possibly seaweeds may be growing thereon. A patriarchal Crab I had died last spring, killed by a frosty night; its shell was covered with acorn barnacles, which seemed to enjoy being carried about, now in and now out of the water.

The Shore Crabs do not seem to be able to stand very cold weather, and I have lost many I had hoped to have kept to extreme old age. They bury themselves in the sand as soon as the temperature falls below forty degrees, and would retreat into deep water if they could.

The Edible Crab is far inferior to the Shore Crab in intelligence, and not so easily tamed; but it is not particularly difficult to keep in captivity if one feeds it carefully. It is not happy unless it has stones to hide under, and most of its time seems to be spent asleep. It is the longest lived Crab I am acquainted

with, and grows very large before its final exuviation—if it ever leaves off moulting at all until it dies. I do not like to hazard a guess as to the length of life to which it will attain. I have seen more than one which, judging by the rate of growth of those I have had under observation, must have been considerably older than I am. Not one of my aquaria is large enough to contain specimens of the size which those I have kept might have grown to if they had had more room. They require far more water than the Shore Crab does. The latter I have kept fairly successfully in cages with just a pan of sea-water for them to bathe in, but the Edible Crab will die unless wholly immersed, and is not happy unless the water is deep, and in plenty. I only wish it had been my good fortune to have had charge of the tanks in the Crystal Palace Aquarium or at Brighton. I should have enjoyed nothing better. In such deep tanks as these the Edible Crab is at its best.

Other species of Crabs which I have kept with more or less success have been the Swimming Crabs (*Portunus*)—very interesting crustaceans, but needing larger aquaria than mine. My largest tank was five feet long by two deep, and twenty inches wide. I was not able to work out the life-history of these Crabs so thoroughly as in the case of the shallow water Crabs. Then I have had the long-armed Masked Crabs (*Corystes cassivelaunus*), very interesting to me as being living representatives of some I used to find fossil in the Cambridge greensand, and labelled *Notopocorystes bechei*.

Not the least interesting of my Crabs have been the Hermit Crabs. It is most comical to see them change from one domicile to another. A curious trait in their character is that they seem to like company. To name them after a monk is singularly inappropriate to those who know how fond they seem to be of the society of creatures lower than themselves in the scale of life. The association between the "Hermit" Crab and the Cloaklet Anemone is well known, but I had a *Pagurus* which permitted a large *Nereis* to live with it in a *Whelk*-shell and share its food. It neither quitted the shell in disgust nor tried to kill the intruder, as it might easily have done when the worm came half out of the shell.

Then I have kept the long-legged Spider Crabs and the

Shorter-limbed *Hyas* and *Maia*. The most remarkable trait of the latter has been the fancy it has for sticking pieces of seaweed on the short spines which are beset all over its body and limbs.

For thirty-five years my aquaria have never been for long without some representatives of the Prawns and Shrimps. I have been specially interested in the former because of the marvellous transparency of their bodies when in health. One which I had more than thirty years ago, and which lived a long time—even breeding—I called "Crystal," because she looked as though made of glass. She was not the only one I have had breed. I have kept sometimes as many as two hundred small larval Prawns at one time.

(To be continued.)

A NOTE ON THE ARANEÆ AROUND YARMOUTH.

BY RICHARD HANCOCK.

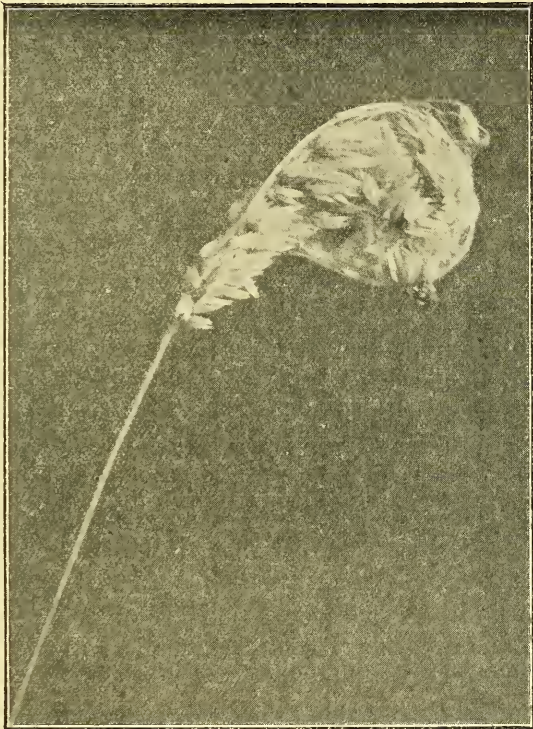
In August last I had the pleasure of spending a few days' holiday with Mr. Arthur H. Patterson, of Great Yarmouth. I started away from home with the idea of spending several days collecting the Spiders of the immediate district, but could not break away from the charms of the houseboat and its owner; so that consequently little collecting was done. However, although my captures were but small in number (some thirty-one species only), some of them I had not found in my own county (Warwickshire); while one of the *Erigoninæ*, viz. *Neriene affinis*, Bl., has only been found on three or four occasions in England, and is remarkable for the great length of palpus and the smallness of the digital joint, while the falces have a peculiar denticule or tooth near the middle, and directed towards the inner surface. It is found also on the Continent, being the type of the genus *Tmeticus* of Menge, viz. *Tmeticus leptocaulis*. I was indeed pleased to be able to record this rarity.

One afternoon I went to Belton, a little straggling village about four miles away, and spent a couple of hours on some marsh-land near the station. Within an area of some three hundred yards square I found fifteen species, several of them in great numbers. On the stems of the sedges were many silken tubes having open ends, containing one of the *Drassidæ* (*Clubiona neglecta*), a sombre-looking spider, as, indeed, nearly all of this family are.

The very handsome Orbweaver (*Epeira quadrata*) was found in large numbers in its snare, or in its little silken nest near by; while in close proximity were numbers of another interesting species (*Epeira cornuta*), which had bent over the flower-heads of the grasses into a coil, bending them up with silken cords, forming heads somewhat similar in outline to that of a bishop's crozier. Having an oblong tin-box with me, I brought several of *cornuta's* domiciles home with me to photograph.

I have always ridiculed the idea of the bite of any of our British species being hurtful to any degree, but am afraid shall have in future to except that of *Epeira cornuta*. One stout female resented being held in the hand for a moment, biting viciously, holding on to the thick part of my thumb for a few moments, drawing the blood.

The following day we went up to the houseboat for a quiet



HOME OF *Epeira cornuta*.

chat, and on going for a ramble before returning home across by Banham's farm, on passing a disused stable, we saw a pitched battle going on between a little army of winged ants and a number of the very common Orbweaver (*Zilla × notata*), whose webs were in great profusion at the edge of the roof-thatch. Unfortunately for the ants it was a one-sided affair, for they had

little chance against the wiles of *Zilla*, and on coming to close quarters with the snare soon succumbed. It was interesting watching the *Zillas* at work, running here and there on their orb, too busy to return to their tubular retreat, such good luck coming their way but seldom. It was a day to be chronicled in their life-history, and the next few days would be for them an incessant round of feeding, until their jackets would not stand the strain any longer and burst. The moulting of this little colony of *Zillas* would probably occur long before that of their half-starved brothers at the back of the shed, but little cared they for this, for Spiders are selfish creatures, and think only of themselves.

A most pleasant afternoon was spent on Filby Broad, and, after a good row round its borders, I made for a private jetty, to have a search for some of the night-roving species lurking under the loose bark of the piles driven into the lake. Here the evil-looking Shadow Spider (*Epeira umbratica*) was found in all stages of growth, and some *Drassidæ* (*Clubiona pallidula* and *C. holosericea*), while a female of *Drassus lapidosus* was captured. I found, too, a number of specimens of what I think is one of the most handsome British species (*Segestria senoculata*), one of the few six-eyed Spiders that are found in the British Isles.

Altogether I turned into a tube of methylated spirit some thirteen species in the short time I was around this jetty, and, on putting off, feared the owner might require summary vengeance for bark-stripping his property. If he is a "nat," and reads these lines, he will forget and forgive, for all naturalists have sometimes to sail close to the wind to obtain specimens for their cabinets.

A walk one morning along the road to the old ruins of Burgh Castle will remain long in my memory, for it was on some palings a short distance from the Southtown Road that I found the Erigone which I have mentioned. I saw numbers of the commonly distributed Lycosid (*Pisaura mirabilis*) in their nests in the hedge-banks, with the young clustered around, and it seemed remarkably late, for in the midlands the young had dispersed weeks before. The interesting "Grass-field Spider" (*Agelena labyrinthica*) was fairly abundant, lying in its tubular retreat, ever ready to capture any insect that should alight on its

sheeted web. This species being one of the few that live in amity, the pair are often captured together, and make excellent examples to keep under observation in one's study. Their nest is a fine example of a spider's engineering skill, their silken cocoon being suspended in the centre of a many-chambered nest. I have at the present time, in an observation cage, a female which has built an elaborate cocoon chamber, decorating the outside with the bodies of flies with which she has been liberally supplied for some months.

Owing to the few hours given over to the search, I obtained but few species of many of the larger groups, but I am quite sure that a systematic search by a few good workers throughout the county would reveal large numbers of species, some perhaps of a rare and interesting character. Until a few collectors and students of the *Araneæ* can be found in every county to take a deep interest in this interesting class of creature, one cannot hope to know much of the comparative rarity or otherwise of many of the species. Let us hope that this time is not far distant. For myself, I am looking forward to that time when I can pay another and more extended visit to this district, when I shall hope to add considerably to my list of species.

A PLEA FOR THE FURTHER RECOGNITION OF
SUBSPECIES IN ORNITHOLOGY.

BY W. RUSKIN BUTTERFIELD.

WHEN Linné proposed his great reform of binomial nomenclature species were universally believed to be perfectly circumscribed and immutable groups. Men's ideas of species have, however, like species themselves, undergone changes. But it is still the usual practice in this country to treat as "species" all forms that in the opinion of the describers are separable, no lower classificatory unit being recognized. It can hardly be doubted that this conservative method of treatment has greatly hindered the progress of ornithology, and in the following remarks I venture to urge the importance of paying due regard to subspecies.

By subspecies are here meant the recognizable geographical forms or components of a species, whether these components occupy continuous or discontinuous areas—in other words, whether they intergrade or do not intergrade. Some ornithologists who admit subspecies restrict the term to intergrading forms, while forms that do not intergrade are elevated to specific rank. On the other hand, separate treatment is not accorded geographical intergrading forms by ornithologists who refuse recognition to subspecies.

The evidence of subspecies is clear enough when a large and representative series of a widely-ranging species is examined, e. g. *Certhia familiaris*, *Galerida cristata*, *Parus palustris*, *Aluco flammea*. The most cursory examination shows that such an assemblage is not an homogeneous assemblage, and when the specimens are arranged geographically the whole series is seen to break up into a number of subordinate groups, the proper delimitation of which is only possible when a large number of specimens are available, and when they are derived from many portions of the range. Of course, the number of examples of a widely-distributed species to be found in any collection bears but

a very small ratio to the whole assemblage forming the species. The question therefore arises whether, if a sufficiently large number of individuals of a compound species inhabiting a continuous area were forthcoming, they would not present a perfectly graduated series. It is enough at present to reply that, as the available material increases, the evidence of subspecies becomes strengthened. In some cases, indeed, instead of a graduated series, it is found that examples from opposite confines of the range of a species resemble one another more closely than they resemble examples from intermediate regions. Thus our native Long-tailed Tit and Tree-Creeper are nearest to those from Japan, and Marsh-Tits from Pekin can hardly be distinguished from the North Italian form.* Moreover, contiguous forms of the same species sometimes differ considerably.

I believe the main reason that subspecies are more generally recognized by ornithologists in the United States than in the British Islands is that it was in the former country that the importance of large series was first perceived.

Racial differentiation being, then, a concomitant of distribution, it becomes necessary to find some means of designating the subordinate groups if account is to be taken of them, and the most convenient means yet devised consists in using trinomials. The nomenclatural value of subspecies cannot be expressed within the limits imposed by the binomial system. No justification can be found for the suppression of the middle term of trinomials when describing avowed subspecies, as is the custom of some ornithologists, who thereby obscure the status of these forms. It is obvious that an ornithologist who designates a new subspecies binomially does not encumber nomenclature and tax the memory to a less degree than if he were to name it trinomially, since in the latter case the second term is always one in current use.

It is often urged in opposition to subspecies that they are frequently based upon very trifling characters, and thus lead to much subdivision. A feature, however, that appears trivial in a single individual, or in a few individuals, at once assumes importance when it is found in a large series. To an accustomed

* I am enabled to give these instances through the kindness of Dr. Ernst Hartert.

eye a feature unnoticed by others may appear conspicuous—"Man sieht nur was man weiss." Even the most inveterate "splitter" has some grounds for his subspecies, and it is hardly fair to condemn his work without a knowledge of the material upon which it is based. When one looks over a large series of skins of a compound species so arranged that the geographical components are separated by spaces, it is possible to appreciate at a glance differences that are most difficult to state formally in diagnoses (*cf.* Dr. J. A. Allen, 'Science,' n.s., xvi. pp. 383-386). It should not be required for the institution of a subspecies that it be conspicuously different from others. A character or combination of characters, however small in amount, is sufficient if thereby we can distinguish a form, but it is essential that the character be supported by adequate material. Opponents of subspecies are not alone in deploring the practice of founding new forms upon one or two specimens; sometimes, indeed, without comparing them with reference to sex or date.

In giving recognition to characters that are small in amount but constant, the "splitter" is rendering a service to science, for we may expect to gain a truer view of the derivative origin of species by attending to the smaller and more immediate products of variation, rather than to the larger and more remote.

There seems to be a widespread feeling that, if subspecies are persisted in, it will be injurious to the study of birds (*cf.* 'Ibis,' 1904, p. 660). It is easy to reply to this argument by referring to the United States, where subspecies are much attended to. No one will affirm that their recognition in that country has had this effect.

The non-recognition of subspecies often causes important points in distribution to be overlooked. As an instance it may be mentioned that two forms of Nutcracker are known to visit this country, but they are usually placed together under the name *Nucifraga caryocatactes*. There is reason to believe that the majority of recorded specimens refer to the eastern form, *N. caryocatactes macrorhynchos*, Brehm, and that the western representative, *N. caryocatactes caryocatactes* (Linn.), is of very infrequent occurrence. It is clearly of importance to distinguish these two forms so that we may know whence any Nutcracker that may visit us has wandered.

BIRD-NOTES IN SWITZERLAND AND GERMANY IN JUNE AND JULY, 1905.

BY THE REV. CHARLES W. BENSON, LL.D., Rector of Balbriggan.

As a summer chaplain for the Colonial and Continental Society, I sojourned at Schinznach and Strassburg during the months of June and July, 1905, and spent most of my spare time in observing the birds in those two places, and in the regions round about.

Schinznach Bad is in the Canton Aargau, in the north of Switzerland, about two hours distant from Basle, and forty-five minutes from Zurich, and is one of the pleasantest places I ever visited in Switzerland or anywhere else. Our hotel was situated in grounds abounding with birds, whilst the Aare ran foaming downwards through the woods to join the Rhine, uniting before it did so with the Reuss from Luzern and the Limmat from Zurich. We had thus river birds and birds of the woodlands in large numbers, and I made a list of sixty-four species there.

Quite close to the hotel there were many interesting birds, such as the Blackcap, Garden-Warbler, Serin Finch, Goldfinch, and the two Redstarts; whilst in a walk of about half an hour it would have been possible to find nearly all the species I observed. The Warblers on my list included the Blackcap, Garden-Warbler, Willow-Warbler (not common), Chiffchaff, Sedge-Warbler, Wood-Warbler, Whitethroat, Bonelli's Warbler, and the Icterine Warbler. This last bird I heard in marshy ground near the Aare, and I felt some doubt at first as to its identity. It began its song with a few peevish notes—something like "aye, aye, aye"—before it launched out into its delightful song, which, however, was somewhat marred by certain jarring notes. I heard it not only near the river, but also in the fields, and in the streets of Strassburg, of which more anon.

Orioles were very plentiful both at Schinznach and at Strassburg, but they were always difficult to be seen. We heard them

every day, and almost everywhere the "wheet le veo" of the Pirol or Gold Amsel revealed the presence of this beautiful bird. The clear whistle can be readily imitated.

A Grey Woodpecker (*Picus canus*) (Grauspecht) nested quite close to the hotel. At first I took it for a Green Woodpecker, but the note seemed so much softer that I observed it more closely, and finally identified it as *Picus canus*. I also saw one in Strassburg. He sometimes appeared on the top of a tree near the hotel courtyard, and thus verified Naumann's description: "Der Specht sitzt dazu allemal auf der Spitze eines hohen Baumes, und so schallen diese herrlichen Töne weit in den Wald hinein."

It was very remarkable to see the Terns fishing on the Aare; it seemed almost impossible for birds to pluck fish from a stream running at the rate of nearly ten miles an hour, yet they seemed to live and thrive. They often hovered, like Kestrels, over the river, and the alders near it, in a captivating manner.

There were not many Storks in our neighbourhood at Schinznach; Lensburg and Umiken had them, but Brugg had not, nor did we see any at Baden or in the Black Forest, which we afterwards visited. The Lesser Spotted Woodpecker was called in our neighbourhood "der kleine Zimmermann" (the little carpenter)—a pleasant name.

On June 13th I walked with my wife to Brugg, about three miles distant, on a very pretty road, with woods on our right hand and the valley of the Aare on the left. As we approached the town I heard the cry of a bird quite unknown to me proceeding from a potato-field which lay below the road towards the river. I got down at once into the field, and there I saw a brownish bird running about among the furrows and crying "pip, pip, pip" in a loud tone, somewhat resembling that of a chicken. I drew near cautiously, and had an excellent view of it as it ran before me, looking back at me with its head turned round slightly to see whether I was following; it made no attempt to fly. The general tone of the plumage was brown, and the bird seemed to be somewhat the size of a Lapwing. It had black bands, and a very conspicuous white one lower down on the breast. I took it for some species of Plover, but was obliged to defer identification till I visited the museum at Basle on June 29th, where I saw at

once that it was the Little Bustard (*Tetrax tetrax*)—in German, “Zwergtrappe.” The birds were doubtless young ones, and when in Strassburg I found that there was but one specimen in the Zoological Museum, and that none had been observed in Alsace since 1853. My list at Schinznach was sixty-four species.

Strassburg I found to be an excellent bird-station, and there I observed seventy-two species. Most of these I had previously noted at Schinznach. The Serin Finch seemed to be the characteristic bird of Alsace—or rather Elsass—as was the Chaffinch of Switzerland. In the very hottest weather—and we had the temperature on some days in July up to 95°—the unwearied “buzzing” song of the little Serin could be heard and he himself seen in tree-tops or on telegraph-wires everywhere.

Our pension in the Universitätstrasse had opposite to it the University Botanical Gardens and Observatory, and beside it the Zoological Museum, where I was very kindly received by the Director, Herr Döderlein, and his assistant, shown the various specimens, and allowed to make extracts from Naumann’s great work and others. I had also the honour of making the acquaintance of Geheimrath Dr. Julius Euting, University Librarian, and President of the Vogesen Club, who gave me a great deal of interesting information about the Storks and other birds at Strassburg. He said that the following birds nested in the cathedral spire and towers: Kestrel, Jackdaw, Common Swift, and domestic Pigeon; but that the number of Storks breeding in Strassburg had of late years greatly diminished, and that whereas twenty or thirty years ago there were as many as one hundred and twenty nests in the city, this year there were but nine. He attributed the decrease to the universal burning of stone-coal instead of wood; the birds greatly disliked the fumes of the former. He gave the date of their arrival about mid April, and of their departure about Aug. 15th.

On July 4th I looked out at 3.15 a.m., just as day was dawning, and heard a few notes of celestial music, as it seemed to me; a Lark, and yet hardly a Sky-Lark, there, I thought. Next morning, at seven o’clock, I heard it again, and then saw that it proceeded from a Lark singing on the top of a high house nearly opposite. On inquiring at the museum I found that this bird was the Crested Lark (*Alauda cristata*)—in German, “Hauben-

lerche"—and that there were two nests on the roof of the Zoological Museum. Both were smashed to pieces by the hail during a terrific thunderstorm which occurred while we were there, the temperature falling from 95° in the shade to 64° in twenty-four hours.

At the Orangerie, a beautiful park, said to be the finest in Germany, I saw, but did not hear, the Nightingale, and in the Black Forest and also in the Vosges Mountains I observed the Crested Tit; but other birds were scarce. The Greenfinches in Strassburg had a few notes which I never heard anywhere else; and the Icterine Warbler—called there "Gartensänger"—could be heard every day in the gardens near the university, but the time of the singing of Nightingales was past. On the whole I noted eighty-five species during June and July, but there were two which I failed to identify—frequently heard, but unseen. Perhaps some of your readers might be able to solve the mystery:—1. From the marshy ground near the Aare I heard what I can best describe as a "desolate" cry—"kra-ah-ah"—and one evening saw a large bird high in the air, flying with neck stretched out rigidly. Could this have been a Crane? 2. We frequently heard a soft melodious note of a few syllables, something like the "rippling" note of the Little Grebe, but louder, sweeter, and more of a whistle, with about as many syllables as in the well-known cry of the Whimbrel. I never saw the bird, but constantly heard it, sometimes near water, but on other occasions in a meadow some distance away. Could the Little Grebe have any notes other than those we usually hear, for on one occasion at Neu-hof I heard the well-known note of the Little Grebe followed immediately by this louder and richer cry?

NOTES AND QUERIES.

MAMMALIA.

Notes on Cave Bats.—On February 22nd, 1905, I found a bunch of Lesser Horseshoes hybernating in one of the lower chambers of a Mendip cave. I have many times searched this cave through the upper as well as the lower chambers purposely for Bats, for I know several species to exist therein, but this particular find was, I should think, an exceptional one; they occupied a small fissure in the rocks above my head, and were hanging in a bunch one from another. The cavern is very dark and extremely dangerous, as Mr. Rothschild's representatives can well testify, immense gulfs yawning out beneath you every here and there, with perhaps a sheer drop of a hundred feet into the river which flows through and here finds an outlet from the Mendip Hills, the river entering the cavern at the further end of the bottom chamber. Human remains, also bones of the Cave Bear, have been found in this spacious and lofty chamber. Fixing my lighted candle against the rock, I managed with difficulty to take one of the lower specimens, which I sent to Mr. Lydekker, informing him of the find. Five species of Bats live, and no doubt breed, in this cave—the Barbastelle, Greater and Lesser Horseshoes, Noctule, and one other species which I have found and located, but have not yet secured. The Greater Horseshoes are not so easily disturbed as the smaller species during the period of hybernation; they take but little notice of the light, and seem altogether drowsier, and when touched just lift themselves up a little with a faint squeak, and settle down again. The Lesser Horseshoes fly about the cave during hybernation, but I think only on account of having been disturbed; for instance, having found three or six at the commencement of a chamber, we *may* leave them for the return journey, when we find they are gone. These, I think, are "disturbed flights," but which I have not found with the Greater species. Moths hybernate singly on the boulders of rock here; this proves that the Bats do not take food, or else that the moths are sufficiently protected from them, their colour so nearly resembling the sandy rock on which they sit. I had been many times to the cave before, when, in company with Mr. Goodson, of Tring, I noticed one of

these moths, and then we could find several. On Aug. 26th, 1905, I sent three Noctules to Mr. Lydekker for the Museum. I smoked them out of a hole on the cliffs, where there appears to be a small colony. These Noctules fly about with the Horseshoes, but I do not think occupy the same place or chamber when hibernating. I am probably correct in saying that these three specimens were males. On July 26th, 1905, there seemed to be more Bats than usual about, but it is difficult to get them in the net; they dodge wonderfully quick, a fact that seems remarkable when one examines their tiny and seemingly obsolete eyes. However, on this date I sent Mr. Lydekker four Greater Horseshoes, one proving to be a young member, which differed from the adults in its coloration, and, until he informed me, I thought it was a Lesser. I intend searching portions of the cliffs at Cheddar this winter, when I may be able to collect a few more notes of interest. STANLEY LEWIS (Wells, Somerset).

Whiskered Bat (*Myotis mystacinus*) and Lesser Horseshoe Bat (*Rhinolophus hipposiderus*) in Denbighshire.—The Whiskered Bat is probably not uncommon in Denbighshire, although, as far as I know, it has not been hitherto recorded for the county. On Jan. 14th Mr. F. Brownsword and I found one in an old mine tunnel in the Upper Silurian rocks of a wooded valley at Coed Coch, four miles south of Colwyn. The Bat was hanging, asleep, on the wall, only five feet from the tunnel-mouth, and the presence of fæcal matter in its intestines suggested that it had been feeding recently. Little is known of the depth or duration of the winter sleep in this species, and it is possible that the individual in question had gone outside to obtain food; though not necessarily so, for hibernating on the dry walls of the tunnel were gnats and other dipterous insects, and the two species of moths, *Scotosia dubitata* and *Gonoptera libatrix*, which one usually sees in such places during the winter. Near the end of another tunnel in the same valley, which had been driven into the hill-side for a distance of ninety yards, we found two Lesser Horseshoe Bats, a male and female. These were hanging about ten yards apart, and, owing to a sharp turn in the tunnel a few yards from its mouth, were in absolute darkness. They were less lethargic than the Whiskered Bat, and, though tightly enfolded in their wing-membranes, were apparently conscious of our presence, for before we touched them they raised their bodies by flexing the legs, and swayed slightly. There was water to the depth of some inches on the floor near the mouth of the tunnel, and the walls were wet in many places; but, although we saw neither moths nor flies here, the presence of fæcal matter in the intestines of

the Bats seemed to indicate that they too had fed recently. — CHARLES OLDHAM (Knutsford).

Mus alexandrinus at Yarmouth.—Mr. Rumbelow (*ante*, p. 26) is, I think, correct in stating *Mus rattus*, and its compeer *M. alexandrinus*, are on the increase hereabouts. I am constantly hearing of their appearance in fresh quarters, and very little to their credit. Cats are very fond of hunting them, and eagerly eat them, leaving only the snout and teeth. The Rats themselves are not averse to anything that promises the least nourishment, and are not above nibbling the toe of a sound sleeper. A house in which a babe was some time ago seriously mauled by Black Rats has since been shut up, for the smell of those poisoned, after the carpenters had been at work, has made the place as insanitary as it was before unsavoury. In warehouses, dates, eggs, jars of jam—anything, in fact, is fish in their net. Passing a sail-loft on January 25th, a sailmaker asked me if I could do with a couple of Rats, “one of ’em a *clinker!*” i.e. an extraordinarily large one. I gladly accepted, and sent them to Dr. S. H. Long, of Norwich, who is much interested in the species. One was a jet-black male *Mus rattus*, the other a very large example of *Mus rattus alexandrinus*. As it differs slightly from one referred by Mr. J. G. Millais as coming from Yarmouth (Zool. 1905, p. 203), I have thought it worth recording. Measurements:—Head and body, 8½ in.; tail, 9 in.; weight, 7¼ oz. Body of a smoke-brown generally, with slightly darker hair on the back, and of a lighter hue below. Both fell victims to their love of Russian tallow, not a scrap of which that sailmaker dare leave about at night, except some placed in a trap for their especial benefit—and his own. When writing a very tarry smell emanated from the hides of both Rats, due to their having made their beds of such tarry twine as they found lying about the loft. — ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

AVES.

Breeding of the Twite. — Mr. Butterfield (*ante*, p. 32) asks for authenticated instances of the Twite breeding south of Derbyshire. I have a clutch taken two years ago in Devonshire. They were found by a friend who identified the parent birds, and kindly sent me the nest and eggs. These were exhibited at a subsequent meeting of the British Ornithologists' Club, and a note on the subject will be found in its bulletin.—CHARLES E. PEARSON (Hillcrest, Lowdham, Nottingham).

Cirl-Bunting (*Emberiza cirlus*) in Cheshire.—On Jan. 23rd, 1906, I was fortunate in seeing a small party of Cirl-Buntings feeding

together on the Dee Cop, about a mile from this city. There were about eight or ten of them. With binoculars I had a good view of a male not many yards distant, before they took flight across the river, besides hearing their thin characteristic call-note, which alone would put all question as to identity beyond doubt. I have found this interesting bird not uncommon during the breeding season in certain districts in the neighbouring counties of Denbigh and Flint, but hitherto there has not been any authentic record of this species in Cheshire, so far as I know. The nearest place to the Cheshire border where I have previously met with the bird is Hope, Flint, some three and a half miles outside the county boundary, where I heard one in full song on Aug. 10th, 1905.—S. G. CUMMINGS (Chester).

Shore-Lark in Cheshire.—Mr. Lewis Jones, of Hilbre Island, informs me that on Dec. 19th, 1905, he watched a Shore-Lark (*Otocorys alpestris*) on that island. He was about eight or ten yards from the bird, and was able to make a rough sketch of it, showing the distribution of colour. Mr. Jones kindly showed me this sketch, and there is no doubt about his identification of the species, and, as he did not notice the erectile tufts above the eyes, it was presumably either a female or an immature bird. He has never before seen a Shore Lark at Hilbre, and this is apparently the first record for the county, though the species has been met with on the Lancashire coast north of the Mersey Estuary.—T. A. COWARD (Bowdon, Cheshire).

The Cuckoo and its Foster-parents.—Mr. Tuck's caution with regard to spurious Cuckoo clutches (Zool. 1905, p. 434) is very necessary for these times. In pursuing my search for an authentic instance of a Cuckoo's egg deposited by the parent bird in a Twite's nest, I have not found it easy to discover one which would command universal acceptance, though I have come across a good deal of evidence that Cuckoo clutches are not infrequently made up by unscrupulous persons for the benefit of incautious oologists. Great circumspection should be exercised before accepting a rare Cuckoo clutch as authentic, when it is remembered how easy fraud is in the matter, and how difficult to detect. During my investigations I had the pleasure of examining some two hundred Cuckoo clutches in one private collection, which had been purchased but not yet examined or arranged by the owner, who is one of our most famous ornithologists. Among these were two clutches in which the "Cuckoos' eggs" were obviously a Sky-Lark's and a House-Sparrow's respectively! There were about twenty clutches of Greenfinch, Linnet, Bullfinch, or other seed-eating birds, with Cuckoo's eggs, but nearly all of these had been obtained from one

neighbourhood by one obscure individual, whose initials were given as authentication. I have examined one clutch of Twite with Cuckoo, and have been informed of several others, but all these were obtained by Mr. James Ellison from Steeton Moor, Yorkshire, the authority referred to by Mr. Booth (Zool. 1905, p. 433). Two other dealers from whom I have heard, who have collected on moors near the same district—one of them for fifty years—inform me that, although well acquainted with the Twite and its nest, they have never found one with a Cuckoo's egg, much as they have desired to do so. But the case is one in which it is difficult to obtain satisfactory proof either on the positive or the negative side. Independently of dealers, there is, I admit, good evidence for the occasional depositing of a Cuckoo's egg in a Twite's nest. The authority of Mr. Bidwell, Dr. Rey, and others, quoted by the Editor, is certainly great. I have not been able to look up the references, and will not question them, as these well-known ornithologists are not likely to value evidence at more than it is worth. A Cuckoo, no doubt, may place its egg in almost any nest which it can get at. I have lately heard of a case, on what seemed good authority, of a Cuckoo's egg having been found in a Pheasant's nest, the female Cuckoo having been seen to fly from the spot. But this, I think, has been made clear, that for the Cuckoo in one neighbourhood to deposit its eggs exclusively in the nests of the seed-eating Twite was *à priori* very improbable. Whether a seed-eating bird is able to rear a young Cuckoo is a question upon which I would now invite evidence. Has anyone ever seen a young Cuckoo reared by a Goldfinch, Greenfinch, Bullfinch, or Linnet? Mr. Moffat's interesting experiment (Zool. 1905, p. 431) loses a little of its value from the fact that it was made thirty years ago, and that he has kept no record of it, depending, as he informs me, solely upon memory. It ought, however, to be easily repeated, and perhaps has been tried by others whose experiences would be interesting. "Sauce for the goose is sauce for the gander," but it does not follow that a strange food which succeeded with young Hedge-Sparrows would also succeed with a young Cuckoo. It is well known that a nestling Thrush or Blackbird can be reared on bread soaked in milk, but in the case of the young Cuckoo there would be other considerations besides the strangeness of the food. The usual foster-parents of the Cuckoo are long-billed insectivorous birds, and anyone who has watched a Wagtail or Meadow-Pipit feeding a young Cuckoo with an insect held at the tip of its beak, and darted quickly into the open gape of its monster child, apparently

at the risk of being itself swallowed, will ask what would happen in the case of a Bullfinch, with its short blunt beak, if it attempted to feed the young Cuckoo by disgorging seeds from its crop, a process which generally lasts for a minute or more. Here surely is a field for inquiry. Do such birds feed the young Cuckoo (if they ever feed it at all) in the same way in which they feed their own young, or do they alter their habits to suit the occasion, and obtain for the intruder its natural food—insects?—ALLAN ELLISON (Watton-at-Stone, Herts).

White-tailed Eagle (*Haliaëtus albicilla*) in Staffordshire.—On Nov. 30th, 1905, Mr. Guy Harris, of The Radfords, Stone, Staffordshire, observed an Eagle at about 12.30 p.m. coming from the south-east. It then circled round for some fifteen minutes, and he was able to observe it carefully through field-glasses. It went away in a westerly direction, and was next heard of at Sandon (about five miles distant), where it is said to have been shot at several times, and eventually, on Dec. 4th last, it was trapped by one of Lord Lichfield's keepers on Cannock Chase. The bird is now being preserved for his lordship, and the taxidermist states that it is a young White-tailed Eagle (a female), and that the measurements are as follows:—"Length from tip of bill to tip of tail, 38 in.; breadth from tip to tip across the back, $93\frac{1}{2}$ in.; length of flight from tip of wrist to the end of tip of primaries, $28\frac{1}{4}$ in.; length of tail from root of tail to the end of rectrices, $14\frac{7}{8}$ in." He adds: "The bird was very fat, and showed no indications of having been in a cage, and I believe that it is a perfectly wild bird." This is the first authentic record of the occurrence of this bird in Staffordshire, although it is now practically certain that the two Eagles mentioned in Shaw's 'History of Staffordshire' (1798) were of this species. It may be of interest to refer to my note on this subject, which appeared in the 'Transactions' of the North Staffordshire Field Club, 1902-03, p. 63.—JOHN R. B. MASEFIELD (Rosehill, Cheadle, Staffordshire).

Whoopers in Islay.—On Ardnave, a fresh-water loch in the north of the island of Islay, which I visited on Dec. 6th, 1905, I saw as many as ninety-eight Wild Swans—I think, all Whoopers. The birds, in brilliant sunshine on the dark blue water, were a beautiful sight. The loch is not half a mile across, and, besides many Gulls and Coots, had on it Mallards, Wigeons, Golden-eyes, Tufted Ducks, Pochards, and a pair of Pintails; the latter are the first I have seen in Islay, and, according to Mr. Harvie-Brown's 'Fauna of Argyll,' they are rare in the Inner Hebrides. In December, 1900, I saw twenty-seven Whoopers on Ardnave Loch, and I am told some come every winter, but I

imagine that ninety-eight is an unusually large number. — FLORA RUSSELL (2, Audley Square, W.).

Colour of Eyes in *Fuligula nyroca*.—On Jan. 1st I handled a locally and fresh-killed immature specimen of the White-eyed Pochard (not a hybrid), the irides of which were light brown, without any trace or shade of white. Can the authorities be wrong, as no writer known to me suggests the elimination of white from the eye of this species at any age? The eye of the Common Pochard is generally given as red or pink in the adult male, but this is only the case in over-year-old birds, and then seldom before January. I have on several occasions noticed this colour fade to yellow shortly after death, or even before in birds that I have shot.—MAURICE C. H. BIRD (Brunstead Rectory, Stalham, Norwich).

Eider (*Somateria mollissima*) in Cheshire.—On Dec. 31st (1905) an Eider—a duck or a drake in the plumage of the first winter—was swimming close inshore at Leasowé. Sheltered from the gale, which was blowing from the south-east, the bird was diving for food in the quiet water under the lee of the sea-wall, and I was able to get within a few yards of it, sufficiently close to distinguish with a glass the feathered wedge on the upper mandible, and the details of its plumage, although I could not make out upon what it was feeding. When it saw me the bird got on the wing, and, keeping well in the shelter of the embankment, flew just above the water for about a quarter of a mile. Then it dropped and began to feed, affording me another opportunity to approach and watch it at close quarters. The Eider is a rare species on the north-west coast of England, and has only once before been recorded for Cheshire.—CHAS. OLDHAM (Knutsford).

Interesting Hybrid Duck.—When walking up and down the ranks of Yarmouth Market on Jan. 20th, as is my usual custom on Saturdays during the shooting season, in search of any interesting fowl that may turn up, I was attracted by an odd-looking Duck strung up by the neck with a Mallard, hanging on a slate. On closer inspection I found it to be a remarkably pretty hybrid between a Mallard and a Black East Indian Duck. The head was glossy greenish black, as was the back. Underneath the bird was a patch of white, with another spot of white on the “throat,” and the breast was a dark brown. The black feet were small, the toes only showing a brown streak, and the black upper mandible was relieved by a light brown patch on either side. The bird was in fine condition, and undoubtedly a male. I should have purchased it, but the good woman “couldn’t for the life on her” say the

price of it, as her husband had not "set the figger." I should have taken the liberty of making a sketch of it, only I had not wherewith by me to do it. I therefore made another quick examination of it, but had not the chance of again calling round to purchase it.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

Sea-going Pigeons.—A remarkable instance of tame Pigeons making a daily visit to a lightship has recently come under my notice. Some eighteen months since a Pigeon, in hazy weather, made its appearance on the St. Nicholas lightship, which is moored a mile and a half from the town. It was fed, and, being unmolested, rested awhile, and shortly flew back to the shore. Not long after it voluntarily made its appearance on the vessel, was fed again, and once more returned. It learned to recognize the tin in which some corn was kept, and would soon come aboard when it saw the "signal" flashed by holding up the tin above the bulwarks. Shortly after another bird, somewhat shy, ventured on the trip with it, and was made welcome; and in time no fewer than five birds made it a daily practice to honour the delighted seamen with their presence. They do not seem all related, although two may probably be young birds belonging to the first pair. They still visit the ship, alighting first on the davit-guys, and then descending to the deck to feed, after which they fly away home for the rest of the day. Such an instance is, I think, unique, and worthy of record.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

Peculiar Habits of *Gallinula chloropus*.—In Rickmansworth, during Christmas week, I noticed a Waterhen perched on an ivy-covered tree in the churchyard, about twenty-five feet up, and busy feeding on the ivy-berries, pecking vigorously at the bunches. As the weather was quite open, and neither the ground nor the adjacent waters were frost-bound, this unusual kind of food for a Waterhen seems worth a note.—M. J. C. MEIKLEJOHN (Tentsmuir, Northwood, Middlesex).

Knot inland in Cheshire.—On Dec. 30th, 1905, a gamekeeper, when shooting Snipe on the borders of Marbury Mere, near Norwich, killed a female Knot. The bird, which is now in the Grosvenor Museum, Chester, was in very poor condition. Though Knots occur—sometimes in large numbers—almost every winter in the Dee Estuary, they are seldom met with inland in Cheshire; I only know of one other occurrence—a bird which struck the telephone-wires in Bowdon on Oct. 24th, 1902 (Zool. 1902, p. 467). Knots do not as a rule venture far up the Dee estuary, but on this same day some were killed out of a mixed

flock of Knots, Redshanks, and Dunlins near Connah's Quay. On the following day Mr. C. Oldham saw many flocks between Parkgate and West Kirby. He estimated that one of these flocks contained at least two thousand birds, and another perhaps half that number.—T. A. COWARD (Bowdon, Cheshire).

Interesting Acquisitions by the Grosvenor Museum, Chester.—A very remarkable form of Kestrel-Hawk (*Falco tinnunculus*), sex (?), has been taken in North Wales, and presented to the Natural History Museum, Chester, by R. Farmer, Esq. Having never before seen a more remarkable and beautiful variety of the *Falconinae*, I thought it worthy of record. The structure of the colour-markings is almost identically the same as in the type, but the colour is of a light fawn and greyish white. Variety of Blue Tit (*Parus caeruleus*), sex (?), shot near Chester, and presented to the Natural History Museum, Chester. Head, neck, wings, and tail French grey; back and under parts canary-yellow; eyes pink. Size rather smaller than the type. A very remarkable form. I was told that the bird seemed semi-domesticated when alive.—ALFRED NEWSTEAD.

PISCES.

Flying Fish reported from Yarmouth (?).—The records in 'The Zoologist' of the occurrence of Flying Fish on the Kentish coast are interesting, and recalled to me an account of one whose "fin" was exhibited in the Fisheries Exhibition in London in 1883. I have hunted up a catalogue of exhibits made by the well-known Norwich naturalist, Mr. T. E. Gunn, and find the following:—

"Case 50, FLYING FISH.—Fin of Flying Fish (*Exocoetus volitans*); specimen caught off Yarmouth, May 23rd, 1868. . . . Only known instance on this part of the eastern coast. I submitted it to the late Dr. J. E. Gray, of the British Museum, who identified the species for me."

For many years I have watched for an example to turn up, but as yet without success. I have not included this "capture" in my 'Nature in Eastern Norfolk,' for the simple reason that neither in the second edition of Lubbock's 'Fauna of Norfolk,' nor in any of the 'Transactions' of the Norfolk and Norwich Naturalists' Society, is Mr. Gunn's specimen referred to. It would be as well, however, for all east coast naturalists to be on the *qui vive*, and help to more firmly establish the claim of this fish to be upon the Norfolk list.—A. H. PATTERSON (Ibis House, Great Yarmouth).

CRUSTACEA.

Arctus ursus (better known as *Scyllarus arctus*) at Guernsey.—A specimen of this rare and curious crustacean, a native of the Mediterranean, was caught off Guernsey, in a pot baited for the “Chancre” or Edible Crab, measuring five inches in length, and of a dark red-brown colour. Three or four specimens are usually found during the summer round the island of Guernsey.—F. S. WRIGHT (Guille-Allès Library, Guernsey).

[In earlier volumes of ‘The Zoologist’ there are many records of this species being found in English waters, especially in the neighbourhood of Cornwall and Plymouth. It has also been figured in these pages (1879, p. 473), where Mr. Thomas Cornish gave an interesting communication respecting its British records.

It may be well to draw attention to an error in Parker and Haswell’s ‘Text-Book of Zoology,’ vol. i. p. 539, where a figure is stated to represent this species, but is really that of *Thenus orientalis*.—ED.]

O B I T U A R Y.

CHARLES JOHN CORNISH.

At the early age of forty-seven this pleasant writer on natural history and sporting subjects passed away on Jan. 30th, after an illness extending over three months. He was a Devonshire man, and was the son of the Rev. C. J. Cornish, who afterwards removed to the rectory of Childrey, at the foot of Berkshire Downs. It was in this happy region that he probably was imbued with the sights and sounds of country life, and, without making claim to be a profound zoologist, became an established writer on different aspects of the varied life around us. Several of his books have been reviewed in these pages. Since 1884 he had held an assistant mastership at St. Paul’s School, and this, combined with his outdoor recreations and his literary occupations, the outcome of a too active temperament, terminated in a premature death by overwork. He was much endeared to his friends.

NOTICES OF NEW BOOKS.

Creatures of the Night ; a Book of Wild Life in Western Britain.

By ALFRED W. REES. John Murray.

WE are glad to read another book written by the author of 'Ianto the Fisherman,' of which a notice appeared in our last volume. Mr. Rees again proves himself to be an observant naturalist, and it is only a few indeed who can, or who are inclined to, follow his nocturnal watchings. Of course it was found impossible to restrict all the observations to those made during midnight vigils, especially those relating to an active diurnal creature like the Water-Vole, and what we really peruse is a description of the night and day habits of seven most interesting species of British mammals. Then again the animals are made to tell their own narrative, an effort fatal to an author who is either not sure of his facts, or who has not a sufficiency of his own observations to enable him to tread on the very firmest ground of information ; from both of these dangers Mr. Rees suffers no impediment.

The importance of this volume, which we consider almost unique, is in the recital of the life struggles of all these creatures, and their intelligent, not automatic, efforts to preserve their existence and comfort. If disease and poverty are the worst menaces to human life, other animals without the tribal organization possessed by man, are subject in an even more drastic way to the constant terror of sudden death or starvation ; to eat and not be eaten, or to kill and not be killed, seems at least the great problem of their existence, and to them there is a constant terror by noonday as well as by night. And yet their happy moments are probably as frequent as our own, and from the pages of this book we see no indication of a difference in kind, but only of degree in the method of *wisdom*, not of *intellectuality*, pursued by man and other animals in the struggle of life.

The story of the Water-Vole is delightful ; that is one of the

animals which know a little of two worlds—the surface of the earth as we do, and much of the dusky realm of water which we do not.

Nature's Nursery. By H. W. SHEPHEARD-WALWYN, M.A., &c.
Hutchinson & Co.

THIS is one of those books which tell us many ordinary and elemental biological facts which we are all supposed to know, but which many of us do to a very imperfect degree, and it is a publication which relies largely on the beauty and efficacy of its photo-blocks, which are as informative as the text. As regards the last we have only one complaint—the failing of too many popular lecturers on these subjects—and that is, the desire to be funny. It is well to avoid the pedantic attitude, but mild jokes in the end sometimes become too strong for the average reader.

Part I. is devoted to “The Tale of the Chicken,” which can be strongly recommended to the perusal of all lovers of poultry who would desire to have some knowledge on the hatching processes of their pets; the series of twenty-one photographs taken of a chicken between the ages of eight hours, and two weeks, is worthy of a place in every poultry book, while those of some full-grown specimens are in strong contrast to the rigid caricatures we so often find in publications on this subject, and which might represent the art of a very ordinary birdstuffer.

The part descriptive of “Flora's Nursery” is also calculated to give a well-illustrated insight into many interesting points of seed dispersal, and fertilization, incidental to many well-known plants, and the volume should certainly be placed on the list of useful and interesting prize books.

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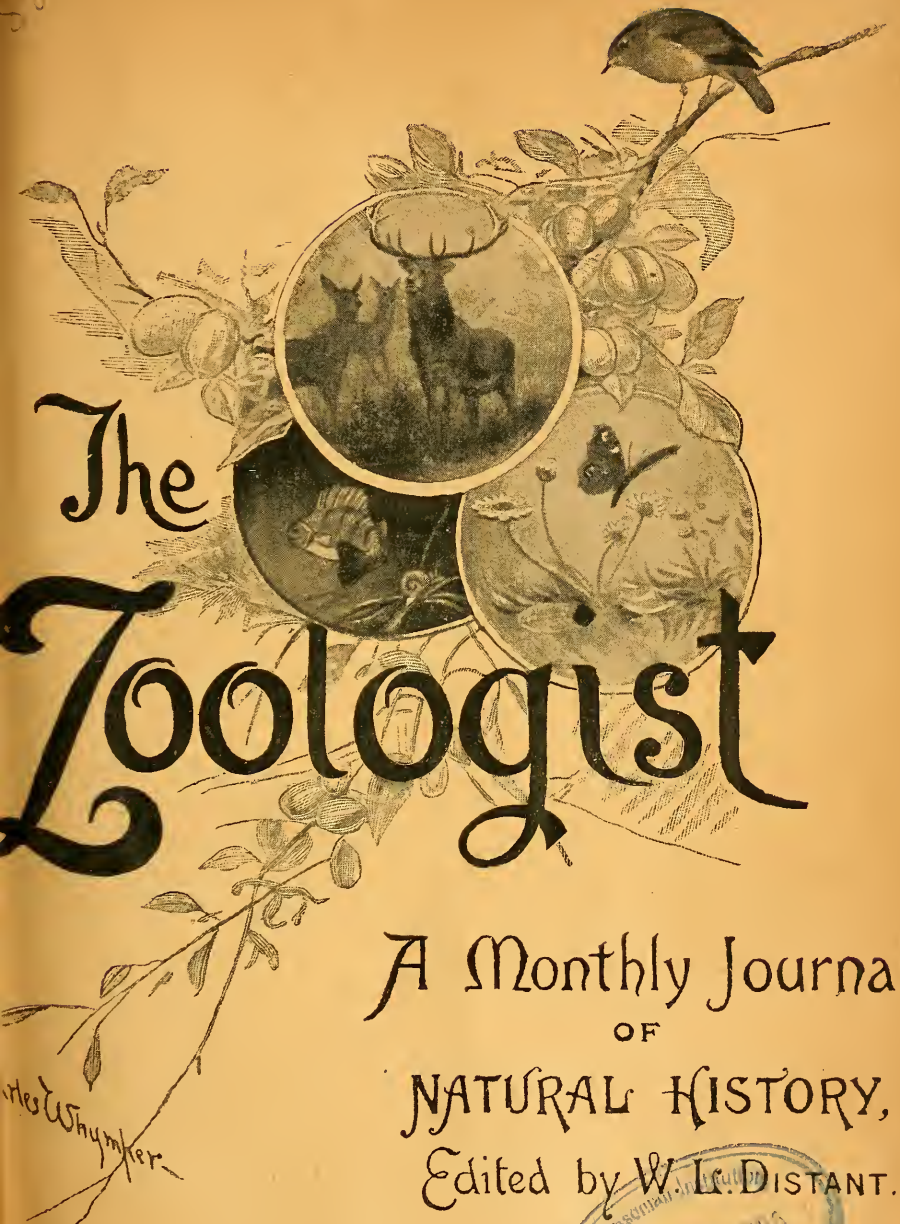
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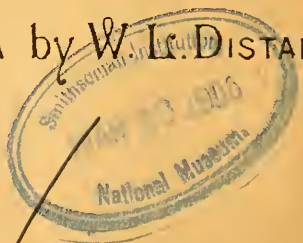
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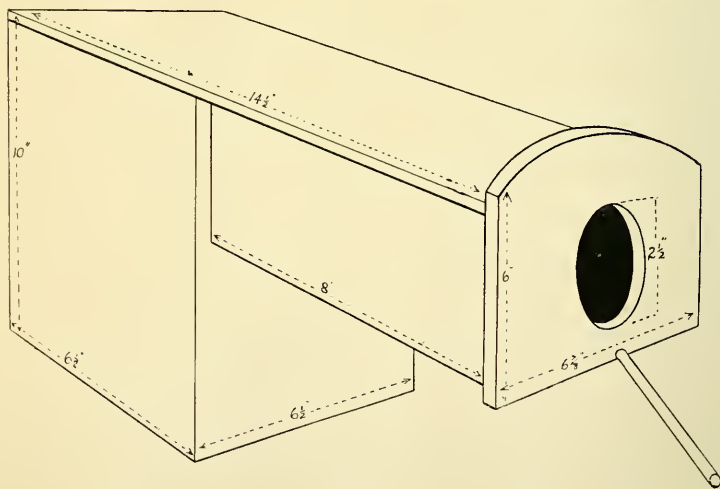
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1.



2.

Fig. 1.—NEST OF WHIMBREL (*Numenius phaeopus*).

Fig. 2.—NESTING-BOX IN USE AT THE FÆROES (cf. p. 86).

THE ZOOLOGIST

No. 777.—March, 1906.

AN ORNITHOLOGICAL VISIT TO THE FÆROES.

BY PERCY F. BUNYARD.

(PLATE I.)

WITH only three weeks at our disposal, this journey was perhaps a rather big undertaking for so short a time; however, we succeeded in spending exactly sixteen days on the islands. I was fortunate in having secured the companionship of another known ornithologist, and was not only surprised at the amount of ground we were able to cover, but, owing to the almost perpetual daylight, always put in a good day's work. We left Leith *en route* for the Færoes at midnight on June 2nd, 1905, by the Danish Royal Mail Steamer 'Tjaldur.' After a fair and somewhat uninteresting voyage we sighted the southernmost island of Syderö at 2 p.m. on the 4th, arriving at Trangjiswaag, our first port of call, at 6 p.m. (Sunday evening). The view awaiting us as we slowly steamed up the fjord was grand in the extreme; the quaint and straggling little town, with its green turf-roofed houses, the spotlessly white spire of the kirk glittering in the evening sun, and the mountains rising over one thousand feet behind, made a fitting background for this already beautiful landscape.

It is not my intention here to again describe the beauty of the islands, neither is it possible to do justice to them in the limited space at my disposal; suffice to say, though barren and

treeless (except where a few trees have been planted in the villages), we found the islands extremely interesting, and the scenery magnificent; the people, nearly all of whom speak a little English, were most hospitable.

I have, to save any unnecessary confusion, used the names found on the map of the Færoe Islands, from the Danish Government survey, published by the Admiralty, Jan. 25th, 1901; this is the best map yet published, and is in general use by visitors to the islands.

I took a camera with me for the first time on an expedition of this kind, and, owing no doubt to the grand light, succeeded in securing a fine series of photographs; and I trust that of our first Whimbrel's nest may be interesting (*cf.* Plate I. fig. 1).

Fully prepared to rough it, we did not find things so bad as we had been led to believe, but I should strongly advise all intending visitors to take a certain amount of food with them in the way of tinned fruit and vegetables, even at the cost of an extra carrier, for it must be borne in mind that, when moving about or crossing the islands, it is almost impossible at this time of the year to obtain fresh fruit and vegetables, though at Thorshavn, the capital, one can now procure nearly anything except fresh goods. It was not our intention, owing to the very limited time at disposal, to visit the whole of the group; we therefore confined our energies to the four largest southernmost islands, *viz.*, Syderö, Sandö, Stromö, and Nölsö; also a small rocky island, Hoivig Holm, near Thorshavn. It is important that this should be well understood by my readers, for the remarks on the avifauna only apply to the above-mentioned islands. It is, of course, possible that some of the species not found breeding may do so on the islands we did not visit, more especially the northern ones. It must also be borne in mind that, owing to the Game Act of April, 1897 (Diplomatic and Consular Reports, Denmark; Report of the Færoe Islands, 1901), it was impossible for us to obtain any assistance from the natives in our ornithological research. The result of this visit is, therefore, entirely due to our own personal investigations and hard work.

I regret that we have no new species to record, neither have we anything particularly interesting to note beyond that which

is already known and written on the birds of the Færoe Islands. The principal object of these notes is to bring up to date, as far as possible, the information already to hand. It will perhaps be as well to mention that only on one occasion during our visit did the weather in any way interfere with our operations; in fact, it was a remarkably dry season for these islands, subject as they are to incessant rain and mist at this period of the year.

Owing mainly to the steady increase of population, that many species have considerably decreased during the last half-century is beyond doubt.

Referring to Col. H. W. Feilden's memoir, "The Birds of the Færoe Islands" (Zool. 1872, pp. 3210, 3245, and 3277), I find he enumerates one hundred and thirty-eight species. It is my intention, with a few exceptions, to deal only with those we saw or actually found breeding. It is noteworthy that the following birds which have bred, according to previous writers, were not met with by us on the islands visited, and we consider it very doubtful as to whether they now do so, *viz.*, Redwing, White Wagtail, Tree-Sparrow, Snow-Bunting, Sky-Lark, Merlin, Grey Lag-Goose, Long-tailed Duck, Teal, Quail, Corn-Crake, Red-necked Phalarope, Dunlin, Redshank, Black-tailed Godwit, and Black-headed Gull. I may also mention the following, which on very meagre evidence are supposed to have bred:—Snowy Owl, Mealy Redpoll, King-Duck, and Turnstone. The breeding stations of the following, which undoubtedly still breed, were not visited, and we therefore had no opportunity of verifying the same, *viz.* Cormorant, Shag, Gannet, Herring-Gull, Razorbill, Stormy Petrel, and Manx Shearwater.

Nearly all the eggs from the Færoe Islands in the British Museum were taken by Herr F. C. Müller, a native of Thors-havn, and eventually acquired by the late Edward Hargitt, R.I., being finally presented to the National Collection in 1893 by that ardent and sterling naturalist, the late Henry Seebohm.

WHEATEAR (*Saxicola œnanthe*). Native name, "Steinstolpa."—This beautiful bird was by far the most abundant member of the large Order to which it belongs. Found breeding on all islands visited, though mostly confined to the valleys; we occasionally came across them on the mountain tops. Though we did not search

for the nests, it was astonishing that more were not found. One nest on Sandö contained young on June 12th, and was beautifully concealed in a hole behind a large stone. Found several empty shells about, which was evidence that incubation was complete. No opportunity was offered of seeing the large broods attributed to this species in these islands.

NORTHERN WREN (*Troglodytes borealis*). Native name, "Mousabrouir."—We can fully endorse the remarks of Col. Feilden in regard to the song of this lively little bird. It would, indeed, not be out of place to call it the Færoese Nightingale, so much do some of the notes resemble not only in melody but in power the song of *Daulias luscinia*. It is almost impossible to believe that so powerful a song could come from so small a bird; it is quite unlike that of our Common Wren (*T. parvulus*). Though heard on four of the islands visited, it was seldom that we had a good view of the birds, as they were generally high above our heads on the cliffs or mountain sides. The only opportunity I had of a close inspection was at Skaalevig, while we were waiting for the carriers to take our luggage over the mountains to Sandö. We had started a close inspection of the boat-sheds and outhouses, when out flew a small bird through the entrance. It flew about ten yards, and settled on a large stone. After examining for some time with our glasses, we identified the bird as *T. borealis*. It did not require a very long search before the nest was found—a conspicuously bulky structure, though compact and well built, of straw, lined with moss and feathers. It contained five newly-hatched young. The hole was placed almost on the top, and the nest was tightly wedged in between the beam and the thatch. As our porters had arrived, we had no further time to watch this interesting species, though from what we saw I consider the bird very different from *T. parvulus*. It was much larger and paler in colour. While staying at Sand we had two eggs brought to us; they are considerably larger than the eggs of *T. parvulus*, and larger than those of the much disputed St. Kilda Wren (*T. hirtensis*). One egg is slightly larger, and the other the same size as typical eggs of the Tree-Sparrow (*P. montanus*), and are only slightly marked at the large end with fine faint red spots. These eggs are now in my collection.

MEADOW-PIPIT (*Anthus pratensis*). Native name, "Graatuj-tlingur."—This species must have decreased very considerably since the visit of Col. Feilden to the islands in 1872, for he describes it as extremely abundant. We saw and heard it on Syderö, Sandö, and Stromö, but it was nowhere numerous, and only found in the valleys and cultivated spots, and then only in small numbers. We did not look for or find a single nest, though I saw one bird just fledged on Stromö on June 19th.

ROCK-PIPIT (*Anthus obscurus*). Native name same as used for Meadow-Pipit.—Seen and heard on Syderö, Sandö, and Stromö. One nest with four much incubated eggs found on Nolsö, June 17th. These birds were generally to be seen on the rocky shores, though on one or two occasions in fairly elevated spots among the mountains. We had no opportunity of verifying Col. Feilden's observations in regard to size and plumage, as no birds were taken, and they were extremely shy and difficult to approach.

STARLING (*Sturnus vulgaris*). Native name, "Steari."—Not met with on Syderö; first seen at Skaalevig, on Sandö, where several were seen about the buildings. It was not until we reached Thorshavn that this bird was found at all numerous. On the evening of our arrival we saw several small flocks flying about the town, and settling in the trees opposite the hotel where we were staying. We were informed that they were steadily increasing, for they receive every encouragement from the Færoese, and are now protected all the year by the Game Act of April 23rd, 1897. They are looked upon as almost sacred, and it would be as great a crime to shoot or kill a "Steari" in the Færoes as it is to kill a Stork in Holland. It is, in these islands, a valuable bird to the agriculturist and horticulturist. I was not able to find out to what extent the Starling takes toll of the black, red, and white currants, also the few strawberries—which are the only fruit grown on the island. The currant-bush here assumes an enormous size, and it was no uncommon sight to see them from four to seven feet high, and from two to three feet through; there was an abundance of fruit, which had just started to swell. These bushes were nearly all in sheltered positions, and there was a total absence of that destructive pest, the black currant mite (*Phytoptus ribis*), which is devastating the black currant in this

country. The most interesting thing in connection with this bird was the nesting-boxes, of which I give an illustration (Plate I. fig. 2), placed on most of the buildings in Thorshavn, and was quite the best thing I have seen in this way—made of wood and painted brown. All appeared to be occupied.

RAVEN (*Corvus corax*). Native name, “Ravnur.”—We were too late for this early breeder, and were unable to make any extensive observations as to its habits and difference of plumage to our own bird. It was nowhere abundant. We saw a few on Sandö, also on Stromö; these were all on the wing, and at some distance.

HOODED CROW (*C. cornix*). Native name, “Kraaka.”—Fairly plentiful, specially on Stromö, where we saw them in small flocks. Some late birds, judging from their behaviour, still had young or eggs. One nest of Whimbrel’s eggs found had evidently been sucked by Hoodies. They have lost much of their semi-domesticity. Only on one occasion did we see them about the dwellings. In winter, no doubt, they are driven to their semi-domestic habits by the scarcity of food that must occur in these islands.

SNOWY OWL (*Nyctea scandiaca*). Native name, “Katula.”—Neither seen nor heard of. Two badly mounted specimens in the School Museum at Thorshavn, one of recent date.

MERLIN (*Falco æsalon*). Native name, “Smiril.”—Not a single specimen seen. Found the remains of a small bird which looked like the work of a Merlin, but, as we did not see this species, concluded it must have been caused by Hooded Crow (*Corvus cornix*). Should say no longer breeds. A set of three eggs from the islands are in the British Museum. (‘Catalogue of Birds’ Eggs,’ vol. ii. p. 304; Brit. Mus., Nat. Hist.)

MALLARD (*Anas boscas*). Native name, “Viddunna.”—Some down and flank-feathers taken from an empty nest on Sandö have been kindly identified by Mr. Heatley Noble as belonging to this species. We did not meet with any birds.

PINTAIL (*Dafila acuta*). Native name, “Andt.”—A pair of birds on small lake near Sand probably breed. Eggs of this species in School Museum at Thorshavn, said to have been taken in the islands.

SCAUP (*Fuligula marila*). Native name, “Andt.”—One bird

seen on Sandö, June 10th. There is a set of eggs from the islands in British Museum. ('Catalogue of British Birds' Eggs,' vol. ii. p. 182; Brit. Mus., Nat. Hist.)

EIDER-DUCK (*Somateria mollissima*). Native name, "Eava."—No opportunity was offered of visiting the large colonies where they breed in great numbers. We found the birds very abundant round the shore. They did not appear to have generally commenced nesting. The only nest seen was on Stromö, June 18th, and contained three eggs and a small quantity of down. This was placed high up on the mountain side, overlooking Kalbaks Fjord, and was well sheltered by a large stone.

RED-BREADED MERGANSER (*Mergus serrator*). Native name, "Topandt."—Seen on Syderö and Sandö. No nests found, but undoubtedly breeds.

ROCK-DOVE (*Columba livia*). Native name, "Blaadigva."—It is not surprising that we did not see more of these birds, as most of our time was spent on mountains and in valleys. One bird seen on Syderö, June 8th. They breed in fair numbers on the sea-cliffs and in the caves.

RINGED PLOVER (*Ægialitis hiaticola*).—Native name, "Svartholsa."—Seen on Sandö and Nolsö, and, judging from their behaviour, were undoubtedly breeding. This was confirmed later by Mr. Petersen, of Nolsö, who knows the birds well, and is a known authority on the birds of the islands. We found them as high up as 1500 ft. on Sandö. There are six sets of eggs from the islands in the British Museum. ('Catalogue of Birds' Eggs,' vol. ii. p. 24; Brit. Mus., Nat. Hist.)

GOLDEN PLOVER (*Charadrius pluvialis*). Native name, "Legv." Cannot now be so abundant as Col. Feilden observed it to be in 1872. Have found it quite as plentiful in Caithness and Sutherland. It was breeding on the mountain tops and in the valleys. Five nests were found, each containing four eggs in all stages of incubation. In four cases the birds were flushed almost at our feet. They appear to sit tighter than I have noticed them to do elsewhere. One nest, found by stalking, which occupied an hour before the bird went down. The plumage of this species was remarkably fine.

OYSTERCATCHER (*Hæmatopus ostralegus*). Native name, "Tjaldur."—By far the most abundant species, found practically all

over the islands visited, with the exception of the highest mountain tops. They greatly handicapped us in our stalking Whimbrel, though they were generally down and quiet long before the Golden Plover (*Charadrius pluvialis*). Always on the look-out, and the slightest movement on our part seemed to disturb all the Oystercatchers in the neighbourhood, their plaintive but musical note echoing and re-echoing throughout the valleys. It was not surprising, at this late date, to find the majority of birds with young, though eggs were found in all stages of incubation. One nest contained three eggs of a type I had not previously seen—ground colour light brown, large underlying markings of purplish grey, over markings large and of a rich brown. We did not see a nest containing four eggs, though with this species it is of fairly common occurrence. The nests, placed in fairly sheltered positions, were mere depressions in the fine shingly granite-like stone. There appeared to be a great many non-breeding birds, which we often came across in flocks of from twenty to thirty on the edges of the lakes, or on the small islands. It is very amusing to watch the sly way in which these birds leave their nests or young, appearing to keep an eye on you the whole time they are moving away.

RED-NECKED PHALAROPE (*Phalaropus hyperboreus*). Native name, "Helsareji."—We searched all the most likely places for this bird, though not a single specimen was seen; neither did we find the nest. Can it be possible that this species has ceased to breed during the last thirty-three years, or probably it has never bred in the two southernmost islands, Syderö and Sandö? The small collection of eggs in the School Museum at Thorshavn does not contain eggs of this species. It is also interesting to note that there does not appear to have been any eggs taken by H. C. Müller in the Hargitt Collection, acquired by Henry Seebohm, and afterwards presented to the British Museum. ('Catalogue of British Birds' Eggs,' vol. ii. pp. 70-71; Brit. Mus., Nat. Hist.) It is evident that Col. Feilden did not find it breeding, though he mentions it as being extremely abundant (Zool. 1872, p. 3251). We questioned one man on Sandö; he evidently knew the bird well, and was certain it did not breed, though he had seen it in spring and autumn. Should say islands visited are hardly suited to its breeding habits.

COMMON SNIPE (*Gallinago caelestis*). Native name, "Mujres-nujpa."—Fairly plentiful, rather more so than in this country. Two nests found by flushing, each containing four eggs. One of these was placed in a rather unusual position in the side of a bank almost facing a wall. One lot of young on June 11th still in the nest.

PURPLE SANDPIPER (*Tringa striata*). Native name, "Fjadl-murra."—This species was the principal object of our visit, but it was not until the seventh day of our stay that we succeeded in coming across the interesting and beautiful bird. We had, in fact, almost given up all hopes of finding it, but eventually had unique opportunities of studying its habits. Only on one of the islands visited did we find them. They must have diminished in numbers considerably since the time of Müller, and Col. Feilden's visit in 1872, for he says: "Pairs of these interesting birds are to be found breeding throughout the islands" (Zool. 1872, p. 3250). It is now a rare breeding species, though we found altogether seven broods of young; they were all confined to an area of about a square mile. We did not succeed in finding a nest with eggs. It was the evening of June 10th, on our way home, and feeling somewhat disappointed at our bad luck, that we saw our first Purple Sandpiper. I saw a bird rise and settle again just in front of me; I immediately fixed my glasses, and identified it as our long-sought-for Purple Sandpiper. I hailed my companion, who came over to me, and we immediately lay down to watch the bird, which was not more than fifteen yards away. We had not been down more than a minute or so before the bird commenced running, and after a series of these little spurts it sat down, as we thought, on the nest, but, in order to make sure, it was arranged to give it five minutes before commencing our search, when, to our surprise and disappointment, we saw a downy youngster run towards where she was then standing. After examining the bird with our glasses, we rose and approached with the intention of catching the young bird, which we succeeded in doing, and were then rewarded with one of the most pitiful sights in bird-life one could wish to witness, for never had we seen so much anxiety displayed by the parents of any other species. We were very carefully handling and examining the downy creature when the parent bird made a

series of flights towards her young, and, when on the ground, dragging her wings and making a peculiar squawking noise, coming so close to us that I could have caught her quite easily. It was then that this beautiful Sandpiper could be seen to advantage. We did not find the other members of her family, though they could not have been far off. They were most difficult to see, so beautifully did they harmonize with the surroundings, especially with the moss that is found on the tops of the mountains. It was on the following day that we found six more lots of young, and, with the exception of one set, which had not left the nest, were all apparently about the same age, and the parents displayed the same amount of anxiety as with our first experience. We very carefully examined the nests found; they were all exceptionally deep cup-shaped depressions, slightly lined with fragments of moss and dead leaves of the bilberry, and placed on the sheltered side of the mountain tops, generally at the edge of the patches of moss. On June 13th we saw three more birds, and watched them for some time, but do not think they were nesting. The disappointment at not seeing the eggs *in situ* was amply compensated for by the splendid opportunities we had of examining the birds and their breeding habits. The splendid series of eggs, nearly all taken in the Færoes, and now in the British Museum, are well worth a visit.

REDSHANK (*Totanus calidris*). Native name, "Stelkur."—We saw some eggs of this species in the School Museum at Thorshavn, but we were unable to ascertain with any certainty as to whether they had been found in the islands, though we heard that all the eggs in this collection were supposed to have been taken there. We did not find it breeding, and no birds were seen.

WHIMBREL (*Numenius phæopus*). Native name, "Spegvi."—I must reluctantly add this to my already long list of species that may be considered to have decreased; that is to say, if I am to rely upon previous writers upon the birds of the islands. They were certainly in fair numbers, and were evenly distributed, but to call them abundant would be to exaggerate. In comparison, I have found Curlew (*Numenius arquata*) in considerably greater numbers in Westmoreland, and seen as many nests of that species

in a day as were found of Whimbrel during the whole of our visit. Not more than about a dozen nests were seen, half of which were found by stalking and hard work. Covering, as we did, so many miles in our daily rambles, it was perhaps rather surprising more eggs were not found. The eggs were in all stages of incubation, and there were a few young birds about. The nests were invariably placed under the shelter of a large stone—in one case between two stones, so that it was possible to sit over the nest without damaging the eggs. Variation in the eggs seen was considerable, both in colour and markings, the ground colour varying from pea-green to olive-green, and from pale brown to dark brown.

ARCTIC TERN (*Sterna macrura*). Native name, "Tedna."—Seen on all islands visited. On June 17th we made our second attempt to land on Hoivig Holm, a small island near Thorshavn, and this time we were successful. We found a large colony of this species breeding, but they had not finished laying, only a few nests contained a full complement of eggs. On an average the eggs were smaller than those of the Common Tern (*Sterna fluviatilis*), and were somewhat richer in colour and markings. A small colony were also found breeding on Nolsö.

LESSER BLACK-BACKED GULL (*Larus fuscus*). Native name, "Likka."—Found breeding on Sandö in fair numbers; incubation well advanced on June 13th. One nest on Stromö, with two young and one egg chipping out, on June 16th. Nowhere abundant.

GREAT BLACK-BACKED GULL (*Larus marinus*). Native name, "Svartbeákur."—Seen on several occasions, but did not find it breeding.

KITTIWAKE (*Rissa tridactyla*). Native name, "Rida."—Seen breeding in large numbers in company with Guillemot (*Uria troile*), Fulmar (*Fulmarus glacialis*), &c., on the cliffs of Little Dimon, Store Dimon, and Skuö, as we passed in the steamer on the way from Syderö to Sandö. Seen also in enormous flocks on the lakes near Sand.

GREAT SKUA (*Stercorarius catarrhactes*). Native name, "Skuir."—I am glad to be able to record the fact that this species still breeds; but only on one of the islands visited did we find it breeding, in solitary pairs, on the tops of the mountains. On

June 11th two nests were seen, each containing two eggs; one lot in advanced incubation, the others chipping out. On the following day we found another nest containing one egg, where we had previously seen birds. The nests were placed on the long strips of moss peculiar to this elevation, which, I think, is the same variety as I have seen on the tops of the mountains in Scotland, and upon which I found the Dotterel (*Eudromias morinellus*) breeding. The birds, as we approached their nests and handled the eggs, were very demonstrative. In their downward swoops they came quite close to us. I was much impressed on this my first acquaintance with the handsome bird.

RICHARDSON'S SKUA (*Stercorarius crepidatus*). Native name, "Tjegvi."—Seen on Syderö, Sandö, and Stromö. Though we did not find them breeding, they undoubtedly do so. We did not pay much attention to them. On one occasion we saw a pair being mobbed by Whimbrel, as they approached too near the spot where we afterwards found a nest containing eggs. There are twenty-nine eggs in the British Museum. ('Catalogue of Birds' Eggs,' vol. ii. p. 227; Brit. Mus., Nat. Hist.)

GUILLEMOT (*Uria troile*). Native name, "Lomvia."—Breeds in countless thousands. Two large boxes of eggs were brought up to the British Consulate on the day of our arrival at Thorshavn on June 14th. Large numbers of these eggs are consumed by the natives, and one constantly came across the empty shells lying about the dwellings. A fine egg of the red type is in the School Museum at Thorshavn.

BLACK GUILLEMOT (*U. grylle*). Native name, "Tajsti."—Birds frequently seen when on the shore, but we did not look for or find its breeding haunts.

PUFFIN (*Fratercula arctica*). Native name, "Lundi," which is pronounced more like "Lunta."—On June 17th we visited Nolsö, and were taken to a breeding-station of this species, where we found eggs in all stages of incubation right under and among the large boulders. Amongst these we had to grope; sometimes the birds were taken on the eggs, on others they shuffled to the back of the hole, leaving the eggs exposed to view. During this rather unpleasant occupation we were attacked by parasites which infest these birds, and it was not until after some days that we succeeded in getting rid of them. On several occasions

we dined off these birds, and I must say found them very excellent eating. Only the breasts are served up; they are skinned, after having the wings, back, and legs cut off, parboiled, then roasted or grilled. There was a total absence of any fishy taste. The flesh looks and tastes very much like Capercailzie (*Tetrao urogallus*).

RED-THROATED DIVER (*Colymbus septentrionalis*). Native name, "Loumur."—One bird seen, on June 9th, on a lake on Sandö. On June 13th saw a bird of this species leave a small lake on Sandö; after a successful search we succeeded in finding a nest containing two eggs. This was placed rather high up on the bank, and was in a much drier condition than I have found it in Scotland, where it is more plentiful.

FULMAR (*Fulmarus glacialis*). Native name, "Heavhestur."—Seen breeding on the cliffs on Syderö and Nolsö. From one position on Nolsö I could see, with my glasses, the eggs on the ledges. Appears to be well established throughout the islands.

ANGLESEA BIRD-NOTES.

BY S. G. CUMMINGS AND CHARLES OLDHAM.

IN the latter half of June, 1905, we spent a week at Bull Bay, on the north coast of Anglesea. Our chief object was to visit the breeding-place of the Arctic and Roseate Terns at the Skerries, which for various reasons we had been unable to do in three previous years. The rocky islets which constitute the Skerries—or, to give them their Welsh name, Ynysoedd Moelroniaid—are situate two miles north-west of Carmel Head, and about eight miles north of Holyhead. They are familiar objects to passengers on the Cork boats, and the deep-sea craft which pass close inshore along the north coast of Anglesea on their way to and from Liverpool, but are seldom visited, and, save for the light-housemen, are uninhabited. Indeed, a trip to the Skerries, whether from Holyhead to the south, or from Cemmaes or Bull Bay to the east, is not one to be lightly undertaken. It is only possible to land in calm weather, the currents run strongly between the islets and the mainland, and there must be a favourable conjunction of wind and tide to enable one to reach the place at all in a sailing-boat. The evening of June 22nd was wonderfully clear, and up to 10.15 we could from the cliffs at Bull Bay see the broken outline of the Manx hills, forty miles away, silhouetted plainly against the sunset. Our boatman augured that if the light easterly wind held the tide would serve at four o'clock, and we might reach the Skerries on the ebb, to return with the flood. We put out from the little harbour at Porth Llechog in the grey of the morning, sailing and drifting—for the strong tide helped us when the wind failed—westward along the coast, whose sheer cliffs topped by heathy brows are among the finest in North Wales, and seen to the greatest advantage from the sea. Skirting Hell's Mouth—the ill-omened bay where an offshore wind sweeping down through a gap in the low hills

gives rise to sudden squalls—we passed to seaward of Ynys Badric with its colony of Herring-Gulls, whose breeding-place we had invaded two days before.

We had seen Guillemots, Razorbills, Puffins, and Manx Shearwaters, but only an occasional Arctic Tern until we left Ynys Badric astern. In the seven miles which still separated us from the Skerries the Terns became increasingly plentiful as we drifted westward, and when we neared the islands we saw that they were peopled by thousands of the birds. Terns flecked every patch of green turf with white; many were standing in crowded groups on the rocks below high-water mark, whilst others were fishing in the tide-race close inshore. This must be one of the largest colonies of Arctic Terns in the British Islands. The number of birds on the wing together when seen from a point of vantage was extraordinary, and constituted a curious and beautiful sight. The Common Tern does not occur here except perhaps as an occasional straggler.

The Skerries comprise three main islets, on the middle one of which is the lighthouse, and a number of smaller stacks accessible from the others at low water; the whole group is about a third of a mile in length. There is a good deal of turf, honeycombed with Rabbit-holes, and in places a fair amount of short grass—at one spot there is a large patch of sorrel—but the greater part of the area is bare, or at best lichen-covered rock, and there is but little of the scurvy-grass and *Atriplex* which abound on most of the Anglesea stacks.

The lightkeepers told us that there were not many Rats on the islands, and that those were small black ones with long tails. We were unable to procure one, but the description suggests *Mus rattus*, and it is probable that a colony of Black Rats exists here, the descendants of castaways from a wrecked ship.

At the place where we landed two adult Kittiwakes were standing on the rocks with a number of Terns, which seemed quite indifferent to their presence. On one of the outer stacks a small party of Herring-Gulls were resting, but the lightkeepers assured us that the Terns will not tolerate these robbers near their nesting-places. A few pairs of Oystercatchers breed on the islands, but the Terns practically monopolise the place. We saw neither Rock-Pipit nor Wheatear, though there was a solitary

Blackbird, which looked rather out of place with never a bush to shelter in. It is probable that many Arctic Terns had not yet laid. Hundreds of nests only held single eggs; more had two; here and there was one with three, and in two instances there were four eggs—undoubtedly the produce of two pairs. The nests were spread over the whole area, and were in a variety of situations, some close to the lighthouse buildings, others on the bare rock or amongst the sorrel, but the patches of short grass were the most favoured. In many cases no nest at all had been attempted; a hollowed depression in the turf or a natural one in the rock served to hold the eggs; in others a slight nest had been made of a few grass-stems, lichens from the rock, or not infrequently a collection of dry Rabbit-dung. The birds were tame, and settled again after being disturbed so soon as we retired for a few yards. It was very hot, which perhaps accounted for the Terns not brooding very closely, for often all the birds in one district, whether they were brooding, standing on the turf, or hovering about their stationary companions, rose simultaneously, and flew low over the turf and beaches and out to sea in a thick grey mob, returning in a few seconds to settle on their nests, or on the turf or rocks, as the case might be. This happened once when a foraging Peregrine passed along the coast-line at a slight elevation, though its presence probably had no connection with the Terns' action; it certainly was not the cause of it on other occasions. The alarm-note of the Arctic Tern is subject to considerable variation—"kare," "kaah," or "kee-ah," but always quite distinct from the long-drawn "pirre" or "pee-rah" of the Common Tern. Another note is a thrice-repeated "tchick," and now and then we heard a Hawk-like whistling scream. Some Arctic Terns stooped repeatedly in a bullying fashion at a Roseate Tern which was standing beside its sitting mate, but they did not actually touch it. There were seven Arctics brooding in close proximity to the Roseates, but these sitting birds showed no animosity, and at any rate tolerated the presence of their congeners. The telegraph-wire crossing the islets is a source of danger to the Terns; one dead bird lying beneath it had one wing cut clean off, and two others were struggling on the ground with broken wings.

The Roseate Tern is not abundant on the Skerries. It is

impossible to give its numbers exactly, but at a rough estimate there cannot be more than one pair to six or seven hundred or perhaps a thousand pairs of the dominant species. In June, 1902, when one of the writers visited the place, there appeared to be about the same number as now. The birds were not segregated, but scattered among the Arctics all over the occupied area, though at one spot there were three pairs close together. We watched two birds on their nests, their mates standing beside them. One was brooding on two, the other on a single egg. The two eggs were on a few pieces of green sea sand-spurry (*Spergularia*) in a narrow cleft in the rock-floor, into which the bird appeared to be wedged when seen from a short distance. The single egg was on a slight nest of dried pieces of spurry, also in a cleft in the rock.

Normal eggs of the Roseate Tern are easily distinguishable from those of the Common and Arctic Terns, although the contrary has been frequently asserted. They are usually more elongated; the ground colour is creamy buff, varying in tone in different specimens; the markings are small, irregular, reddish brown spots and streaks, usually distributed evenly over the whole shell, but sometimes densest at the thicker end, where they form an indistinct zone, and numerous underlying grey spots and blotches; the dark markings have very often a "run in" appearance on the ground colour, and are very characteristic. It may be that abnormal eggs of the Roseate sometimes approach in character certain types of the Common and Arctic Tern, but it is very doubtful if the converse ever occurs. The Roseate Tern shows a marked preference for rocky ground whereon to lay its eggs; these are generally in a cleft in the rock with some pretence at concealment. Two eggs seem to be the usual number, though one is not infrequent—three are exceptional; the number, however, may vary in different seasons and localities.

In the clear light of early morning, with the sun's level rays striking the flying birds, the grey on the breasts of the Arctics and the pink blush of the Roseates was quite apparent when the birds were viewed in an advantageous position; but in many lights it is impossible to distinguish the different Terns, whether Arctic, Common, or Roseate, by the colour of the breast as the

birds drift in an ever-shifting cloud above one's head. The black bill and the long streamers of the Roseate Tern are characters more readily recognized, especially when the birds are on the ground. This species does not raise or depress its wings so much as the Common and Arctic Terns, and its flight consequently appears to be more buoyant, though this may be due in some measure to its more elegant shape. The notes of the Roseates—the harsh “craak” of alarm and the call-note “chewick”—were easily discernible in the babel of the Arctics' voices, and are perhaps the best means of focusing attention on the birds when they are flying in a vast company of other Terns. The Roseate, however, is a more silent bird than the Common or Arctic Tern.

It is a matter of common knowledge that the Roseate Tern nests on the Skerries—we have no intention of revealing the exact locality of a second colony in another part of Wales, known, we believe, to only a few ornithologists—but the inaccessibility of the place has secured the birds in some measure from the rapacity of egg-collectors. It is, however, a deplorable fact that in the past the lightkeepers have been induced, sometimes by the payment of considerable sums, to obtain eggs. The extent to which one collector has engaged in this abominable traffic merits the strongest condemnation. To expose him would serve no useful purpose, as, happily, a better state of things now obtains. The Roseate Terns are under supervision, and all who are really interested in our avifauna may hope that, with the protection now afforded it, the bird will increase in this, one of the very few places in Britain where it still breeds.

Ynys Amlwch (the East Mouse) and Maen-bugail (the West Mouse) are bare stacks of no great height, washed over by high tides, and support no colonies of sea-fowl. Ynys Badric (the Middle Mouse), largest of the three, is a steep rocky stack which rises from deep water about half a mile from the bold headland to the east of Cemmaes Bay, and midway between the other two islands. Its summit, clothed with thick beds of scurvy-grass and *Atriplex*, accommodates about a hundred pairs of Herring-Gulls. As our boat came to anchor under the lee of the island on the afternoon of the 21st, we could see young Herring-Gulls running about in all directions on the rocks and in the herbage,

while the old birds swung in a screaming cloud above them. Among the Herring-Gulls were a pair of Lesser and two pairs of Greater Black-backed Gulls, the deep angry "ugh, ugh" of the larger birds being audible in the general clamour. When we scrambled up the stack the young birds crouched in the herbage, or on the lichen-covered rocks, remaining for the most part perfectly still until we picked them up, though now and then one, older than its fellows and more sure of its feet, would run before us until it fell sprawling into some crevice, or over the edge of the plateau to find safety on the rock below. There were Herring-Gulls' nests with two or three eggs, mostly chipped for hatching, and young in all stages, from downy nestlings just out of the shell to those with the brown feathers of the mantle and under parts well grown, almost able to fly. The young birds appear to leave the nest as soon as they are hatched, crouching a few inches away from the shallow untidy structure of dried grass and herbage, a habit common to the Black-headed and Greater Black-backed among other Gulls. We found the young of both pairs of Greater Black-backed Gulls crouching in the scurvy-grass. Their primaries were not yet showing, but the birds were much larger than Herring-Gulls in the same stage of growth, and bolder, running and calling loudly when we disturbed them. Their legs were stouter in proportion, and their beaks shorter and stouter than those of the Herring-Gulls, whilst their heads were rather greyer. They disgorged what appeared to be the flesh of some mammal or bird—pink, loose-fibred, half-digested stuff—possibly the flesh of young Herring-Gulls; there were several dead nestlings on the rock, and the old Black-backs would have had no need to kill living birds if such food were to their liking. The young Herring-Gulls we handled ejected fish and fragments of Crabs in their fright. As is always the case in a Herring-Gull colony on the Welsh coast, there were many pellets of small broken Mussel-shells lying about; and near one of the Black-backed Gulls' nests a pellet formed of the remains of a full-grown Water-Vole.

During our week of enforced waiting for a chance to reach the Skerries, we met with many birds along the coast. To give a list would be superfluous in view of the recently published account of the birds of this district, and it will suffice to speak of a few

of the more interesting species.* From Point Lynas in the east to the Skerries in the west there were Guillemots, and in lesser numbers Razorbills and Puffins, fishing, or flying westwards in strings low over the water. Assuming that these were breeding birds, they must have travelled considerable distances to their feeding-grounds, for the nearest Puffin colonies are on Puffin Island and the cliffs near the South Stack, eighteen and sixteen miles away respectively. We saw many Manx Shearwaters. The nearest known breeding-station of this species is fifty miles off, on the coast of Lley. The Shearwaters often settled on the water, and seemed to be as indifferent as the Auks to the proximity of our boat as we sailed close past them. It is an easy matter to distinguish the Shearwaters on the wing at a distance from the Guillemot, Razorbill, and Puffin, whose hurrying flight is effected by continuous rapid wing-beats. The Shearwater proceeds by a few rapid wing-beats succeeded by an interval of sailing on rigid wings, and, if the sea be rough, it tilts its body so as to show the black upper parts at one moment and its white under surface at the next as it skims close over the crests of the waves. We saw three Gannets fishing close inshore on different days; an adult and two immature birds in different phases of plumage.

A Chiffchaff—rare in North Anglesea—was singing in some bushes on the cliff at Porth-y-Gwichiaid, south of Point Lynas, and we heard another in the shade trees at Llanelian rectory.

A pair of Ravens, whose nest on a precipitous cliff had been robbed in the early spring, had built another nest about a hundred yards from the first, and had succeeded in getting off their brood at the second venture. When we visited the place the two old birds with three young ones were on the steep hillside above the cliff. One of the old Ravens—a ragged creature compared with the young birds—flew to and fro along the cliff-face; its throat-feathers stood out like quills, a character not noticeable in the young. Herring-Gulls mobbed it, and a male Merlin, one of a noisy pair which had young near at hand, dashed at it several times, and once actually struck it, but provoked no retaliation beyond a croak, which was the case, too, when a Herring-Gull pursued the big cowardly bird too hotly. A pair of

* Cf. "Notes on the Birds of Anglesea" (Zool. 1904, pp. 7-29).

Barn-Owls were nesting in a crevice in the ivy-clad cliffs at Porth Wen.

The Merlin is a common bird in North Anglesea. A pair were nesting near Point Lynas, and we found four nests on the brows above the cliffs between Cemmaes and Bull Bay. One, on an old footpath overhung by the strong growth of ling through which it passed, held five young birds perhaps a fortnight old. This nest—a flattened heap of ling—was much defiled by the excreta of its tenants, and the sodden feathers of a Greenfinch, a Song-Thrush, and other small birds; close to it were the remains of two plucked House-Sparrows. The little Merlins hissed and called—a faint echo of the old birds' whistling scream—when we handled them, snapping and striking at us with their talons. They were covered with grey down, except on the head, where the down was pale buff. The primaries were just bursting their quills; bill pale lead-colour; cere yellowish horn; legs and feet dull pale yellow; iris dark brown, pupil blue. The old birds were vociferous while we were near the nest, as is their wont even before the eggs are hatched; behaviour different from that of the Kestrel, which is usually silent under similar circumstances. We had seen several Kestrel's nests with young during the previous few days, but only once had one of the old birds screamed. The second Merlin's nest was a fairly substantial mass of dead ling concealed in a thick patch of the living plant. The four young birds were not actually on the nest, but on the ground near it; the place was foul with excreta and feathers, as in the first case. In this brood the primaries and rectrices showed plainly; all traces of the pale buff which characterizes very young birds had disappeared, and the down on the head was of the same pale grey as on the body. Two of the four had their pink tongues tipped with a large greenish-grey scale, as all in the first brood had; in the remaining two this scale had apparently been shed. The birds, rather older than the first lot, were also fiercer; they threw themselves on to their backs, and fought savagely with beak and talons, screaming and hissing the while. On the following day (June 21st) we put up a hen Merlin which was brooding on four eggs in a fairly substantial nest of ling and moss at the cliff edge; she clamoured as long as we were near the nest. Two days later the cries of a pair of Merlins prompted

us to search for their nest in a large patch of ling on one of the headlands where there were scattered remains of House-Sparrows, a Pied Wagtail, and several Sky-Larks. On the verge of the cliff itself, overhung by ling, was an old Carrion-Crow's nest, and in it two young Merlins with rectrices just showing, and two addled eggs. The Crow's nest, which was much flattened, looked as though it had been occupied by the Merlins in previous years. These birds frequently occupy the same nesting-site year after year. Kestrels commonly lay in disused Crow's nests, but their appropriation by Merlins is very unusual—on the Anglesea coast, at any rate.

One evening from the high road near Bull Bay village we heard, in a field of mowing grass, a curious monosyllabic note, "eek" or "peek," not unlike a certain note uttered by the Lapwing when on the ground in the pairing season, but louder. The noise continued, and the grass moved at the place whence the sound came. When we reached the spot, a few yards distant from the road, a Corn-Crake rose, and flew with dependent legs low above the grass, into which it dropped a few yards away. The bird left a nest with twelve eggs—one of which was broken—and appearances suggested that a Rat or some other animal had been in the act of looting the nest when we heard the alarm-note. If such was the case the Corn-Crake had, judging from the commotion we had seen in the grass, resisted the attack by active measures in addition to cries of alarm. The nest was a slight mat of grass-stems and fibres, which had evidently been gathered green.

Nesting Wheatears are singularly rare on the North Anglesea coast; any that attempt to breed are probably killed sooner or later by Merlins. We saw one old bird with a brood of young on the cliffs near Amlwch. At Freshwater Bay, near Point Lynas, we flushed a Grasshopper-Warbler, our attention being called to it by the thin alarm-note, "tchick, tchick," a cry quite as difficult to locate as is the "song."

On June 22nd we revisited a nesting-place of the Peregrine on the south-west coast. The falcon greeted us with angry clamour when we were some three hundred yards from the precipitous cliff where the eyrie is. She circled over the cliffs and bay for more than an hour without alighting, barking

fiercely all the time. We searched the cliffs in vain for the eyrie, the falcon being in close attendance wherever we went, and had given up hope of finding the young when we caught sight of one perched on a rock jutting from the cliff-face. It was well feathered, and no doubt well able to fly, although tufts of down still showed on its wings, head, and thighs. It uttered no sound, but stood bolt upright, and turned its head from side to side to watch its mother as she soared above. We only saw the tiercel for a minute or two, when we first got to the bay. On the cliffs in the immediate neighbourhood we found the bones of the head and torn fur of a half-grown Rabbit, a partly eaten Moorhen, and the scattered feathers of a Stock-Dove, a domestic Pigeon, and a Blackbird.

Near Bull Bay, on June 24th, we flushed a Partridge from a nest containing sixteen eggs close to the edge of the cliff. There was a well-worn run in the turf leading to the nest from the rising ground above.

One of the writers (S. G. Cummings) visited this district (the north coast) in March, 1905. The following additional notes relate to a few of the birds seen between the 18th and 27th of that month:—

MISTLE-THRUSH.—Several nests were built in thorn-hedges by the roadside four or five feet from the ground, in sites similar to those usually chosen by the Song-Thrush. One nest was decorated externally with several white feathers of the Herring-Gull; another was composed almost entirely of long green moss, matching the green lichen-covered boughs on which it was built.

GREY WAGTAIL.—One seen at Porth Wen Bay, and one at Freshwater Bay, near Point Lynas, feeding on the rocks at low water. One heard near Llys Dulas, and another seen on a stream near Cemlyn Bay.

LESSER REDPOLL.—A party of five on the wing near Llanfechell.

CORN-BUNTING.—In flocks about the farmyards; many singing.

SNOW-BUNTING.—Three on the wing near Point Lynas, on the 20th.

SHAG.—Two or three were sitting on freshly-built nests near Carmel Head, where we have seen them in former years.

POCHARD. — Two—females or immature birds—on Llyn Geirian.

COMMON SCOTER. — An immature bird frequented Porth Wen Bay for several days.

RINGED PLOVER.—Two or three pairs at Llyn Geirian. The bird probably breeds on the shores of this lake, where we have seen it on previous visits.

GOLDEN PLOVER.—One at Carmel Head, on the 23rd.

TURNSTONE.—A party of twenty or more at Hen Borth, near Llanrhwydrys.

COMMON GULL.—Numerous on the fields inland. Over two hundred resting on the rocks in Porth Wen Bay late one evening.

LESSER BLACK-BACKED GULL.—Three in adult plumage on the Middle Mouse; a pair at Llyn Geirian.

KITTIWAKE.—About a dozen on the water below the cliffs at Llanbadrig; many in immature plumage.

GUILLEMOT.—One in summer plumage fishing off the cliffs near Porth Wen Bay.

REMARKABLE CHANGE IN HABITS OF THE HERRINGS
VISITING KILLALA BAY, CO. MAYO.

BY ROBERT WARREN.

THE Herrings visiting Killala Bay in the harvest and autumn seasons have, since 1899, changed their habits very considerably. Up to that date the principal fishing took place in the open bay, and if a few schools entered the estuary they remained only for a few nights, while any boats that followed them took but a few hundreds, and in consequence all the boats fished in the bay, the estuary fishing being profitless. However, in 1899, there was a large run of Herrings into the estuary, and great numbers were taken (even high up the tidal parts of river) for about three weeks. The following season they again came in, and remained longer, and fine catches were made, while the bay fishing declined; and thus each season the estuary fishing improved, while that of the bay became worse and worse, until the last two seasons, when the fishing was nearly altogether confined to the estuary, the fish coming in about the last week of August, or first week of September. In 1904 the fish appeared in the bay the last week of August, but did not enter the estuary until Sept. 15th, when some small schools showed, though the great rush of fish did not begin until the 26th, and continued up to Nov. 21st, when the Herrings cleared out of both river and estuary with the heavy gale of that date. Yet some schools lingered on in the bay, especially at the Kilcummin side, and some Herrings were taken on Dec. 12th and 13th, and even as late as Jan. 8th some were taken between Kilcummin and Rathfran Bay on the western side. The Herrings were caught night after night, even on the upper reaches of the river, and as the estuary is so well sheltered by the Island of Bartragh from the seas of the bay, and the weather being calm and fine, every sort of boat was out, from the large yawl, with its crew of six or eight men and its train of six nets, to the little punt, or dinghy,

with its two men or boys and one or two nets. All were successful, and the earnings were very large, for it was a veritable harvest to the fishermen, with a minimum of trouble or hardship, so different from the bay fishing.

In the season of 1905 the Herrings came into the estuary about Sept. 7th, and were taken in very large numbers nearly every night up to Nov. 27th, when they left the estuary with a heavy gale from the north-west. The Herrings enter the estuary evidently for the purpose of spawning, and remain for some time afterwards, as if the feeding was better inside than in the bay; and they were also *safer* from their usual enemies, which did not follow the schools into the estuary from the bay.

It was strange that the best fishing took place on the *ebb* tides, very few being taken on the flood, apparently showing that during the flood and high tide the fish spread in to feed over the shallow parts of the estuary, and then on the ebb collected in the deeper water of the channel where they were taken.

The chief fishing-ground was the open reach of the river between Moy View and Roserk, extending from Goose Island to some distance above Castleconnor. It was a most interesting sight on a calm evening to see the smooth surface of this wide sheet of water ruffled by the rising fish, giving it an appearance as though a heavy shower of rain was falling, while the sound caused by the Herrings striking the water was quite similar to that of a heavy shower. I used frequently to walk down to the shore to look at the boats, some taking the fish within fifteen and twenty yards of the beach; and one evening when the fish were near the bank, one of the boats left their nets anchored, and rowed close along the shore, beating the water, so as to drive the fish from the shallow water into their nets, a plan that succeeded, and they got a fine haul, for on being alarmed the Herrings all rushed for the deeper water where the nets were stretched. Some of the large boats used to take from three to five thousand, and the smaller boats in proportion to the number of the nets. I saw one small boat with only three nets bring in two thousand five hundred Herrings for one shot of their nets. The earnings of the fishermen were very considerable, one man, the owner of a large yawl and six nets, told me that during the run of Herring he received £154 for the fish taken inside the estuary, but then he

had all the earnings, for his crew was composed of his sons, so all the money came home. A boatman in a small way told me that he made £50 ; in fact all the boats, small or large, did very well.

On the 9th of November I had a most amusing encounter with some large schools of Herrings as I was returning from Bartragh in my shooting punt. When I got to Goose Island I was surprised at seeing a lot of Gulls and Cormorants dashing into the water and diving at the mouth of a little narrow "gut," or channel, running from Roserk Island between the sands and the shore of the mainland. On hastening up, I found the Gulls very excited, and saw the water at the mouth of the "gut" at times quite broken by the masses of Herrings rushing madly about as they passed down. I landed on the bank, and waded out as far as my long boots allowed, right in the middle of the Herrings, school after school passing down and striking my legs as if stones were hitting them. The little channel looked as if paved with Herrings, and the cause of the commotion among them when they rushed about so madly was the fish on the outside of the schools forcing those next the bank into the shallow water. These, unable to force their way at once into the deep water, plunged furiously about in all directions, even sometimes on to the dry sand, and eventually floundering out to the deep water again. I got a few, but if I had had a landing-net, I might have filled my boat while they were passing.

NOTES AND QUERIES.

MAMMALIA.

Melanism in the Bank Vole (*Microtus glareolus*).—On Feb. 23rd I received for identification from Mr. A. A. Thompson, Ellesmere, Salop, a "Mouse" that had been taken when opening a potato-tump in his garden the previous day. It proved to be a Bank Vole, but of a most unusual colour, the entire animal being of a dull brownish black. It is being mounted for Shrewsbury Museum, and another similar one taken at the same time and place is to be placed in Ellesmere Museum. I have not heard of any previous case of melanism in this species, but the colour of the fur varies considerably, especially the under parts. Examples received from Bala are clear yellowish white; others from Bangor dirty grey.—H. E. FORREST (Hillside, Bayston Hill, Shrewsbury).

Mus flavicollis in Suffolk.—In our church here we found recently that some marauder had bitten the blossoms from the chrysanthemums in the vases, nibbled the hangings, and been "mischieful" (as we say in East Anglia) in divers ways. A trap was set, and the culprit proved to be *Mus flavicollis*. This specimen, which was sent in the flesh to York Museum, is the seventh which has come into my hands, including that described at length by Mr. Southwell in 'The Zoologist' for 1903 (p. 150). None of these could be called intermediate between the common *Mus sylvaticus* and the true *Mus flavicollis*, for the latter really looks, as was remarked of this example, "like a little Rat."—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

AVES.

Mimical Song of the Blackcap.—During a fortnight of July last year I was much entertained by a Blackcap (*Sylvia atricapilla*), which used to start singing just outside my bedroom window at about 6.30 every morning. I have always been a great admirer of the Blackcap's song, but this one was much finer than any I had ever heard before, the notes being so loud and clear. The chief interest, however, in the

song was the number of borrowed notes of other birds. It often started with the most perfect Blackbird's notes, then before one had realized the change it had merged into that of the Thrush, and ended off with the usual Blackcap's phrase. At other times the Blackbird's and Thrush's notes were more prolonged; and again the bird would begin with its own song, but would bring into the middle of it one of the well-known notes of the Nightingale. But there was yet another note which puzzled me for several days, and it was not until I had actually seen the Blackcap singing it that I would believe this species was capable of such mimicry. It was an attempt at the Great Tit's "ze-wit, ze-wit" (repeated some eight to ten times), but without any of the metallic ring that the Great Tit always gives it. As I had never heard of the Blackcap as a mimic, I naturally thought of the possibility of this bird being an Orphean Warbler; however, after a great deal of trouble (as the bird was very shy), I satisfied myself with the help of opera-glasses that this was not the case.—NORMAN H. JOY (Bradfield, near Reading).

Colour of the Eyes in *Coccothraustes vulgaris*.—In my 'Catalogue of Shropshire Birds,' published in 1897, occurs the following passage:—"In 1891 I caught a young Hawfinch at Caynton, which I brought up by hand and kept for a couple of years. I always noticed that, when angered, his irides were suffused with a much deeper purplish red tint than when he was quiescent." And in a footnote add, "I never saw the irides of a living Hawfinch greyish white, such as one sees in stuffed specimens, and which colour is only assumed at death." I write this because it bears out the interesting remarks of the Rev. Maurice C. H. Bird anent the colour of the eyes in *Fuligula nyroca*. Unfortunately authors do not always confine their errors to colour of the irides.—G. H. PADDOCK ("The Hollies," Haygate Road, Wellington, Salop).

Increase of Goldfinches.—I have only recently seen the December number of 'The Zoologist' (1905), and notice (p. 463) notes upon the increase of the Goldfinch in Middlesex, Herts, and Bedfordshire; in the latter county this fact being accounted for by the species being scheduled for several years. In the Scarborough district the Goldfinch, usually a rare species, has been much more abundant during the past twelve months, and many nested last spring. I heard of three nests actually within the borough boundary, and of a score or more without it, and of these only one was destroyed—all the others safely fledging the young birds. The Goldfinch receives no special protection in this district, therefore the increase in numbers cannot be attributed to this

cause. I heard of a pure white one being seen a few days ago.—W. J. CLARKE (33, Nelson Street, Scarborough).

Brambling in Surrey.—Although the Brambling (*Fringilla montifringilla*) cannot be called a common bird in Surrey, there can be little doubt that some probably visit the county every winter. But one may spend a good many years observing birds without noting one. This winter, however, they are extraordinarily abundant in this neighbourhood, especially on the North Downs between Guildford, Dorking, and Leatherhead. Mr. Bucknill, in his 'Birds of Surrey,' records certain winters as "Brambling years" in Surrey, and it may therefore be worth noting that this winter appears to be one of these, as was 1835-6, 1863-4, and 1892-3. It would be interesting to know whether unusual numbers have visited the whole country. They are almost always in company with flocks of Chaffinches under beech trees, but their light rumps render them conspicuous at a great distance. There are unverified reports of this species having nested in Surrey, and so the date of their departure and the fact of any remaining through the summer would be of interest.—HAROLD RUSSELL (Shere, Surrey).

Cuckoo's Egg in Nest of Twite.—My thanks are due to your many correspondents who have not allowed my note on the Cuckoo's egg found by one of my sons in the nest of a Twite (*cf.* 'Zoologist,' 1904, p. 315) to pass without comment, and I quite reciprocate their spirit in so far as it is their wish to canvass facts and sift evidence. Especially is this the case in the present instance, where there appears to have been such *prima facie* evidence in support of your correspondent's position. For forty years and upwards I have been acquainted, and intimately acquainted, with the habits of this interesting bird, as the high moors (1000 ft.) almost girdle this place, and, being within easy access, I have spent much of my leisure hours in the haunts of the Twite. It nests occasionally at lower altitudes near this village, but perhaps more rarely than formerly; indeed, on the high ground it is not so numerous during the breeding season as in former years, but I had attributed this to the opening out of some quarries. But Mr. Ellison, of Steeton, informs me it is much less common than in former years in his district, where the conditions have not changed, and it would be interesting to know whether this relative scarcity is of local application, or applies to a wider area in its distribution in the nesting season. There is no falling off in its numbers, however, in its visit to this district after the breeding season—immigrants I take them—where they may be seen in immense flocks on the roadside and waste places

wherever weeds abound, especially plantain and shepherd's-purse, to whose seeds they are very partial. Although so well acquainted with the nests of the Twite, I have never yet found a Cuckoo's egg deposited in the nest of this species. When my son told me of his having found the one referred to in my note I was much surprised, but never for a moment questioned the truthfulness of his statement. I fear, however, in making the bare announcement I presumed too much upon your readers looking at the matter from my view-point. I wrote recently to Mr. James Ellison, referred to by my friend Mr. H. B. Booth ('Zoologist,' 1905, p. 432), whose experience of the habits of the Twite is almost unique, and he informed me that he has found the egg of the Cuckoo in the nest of the Twite at least in six instances—in one case in a clutch of white eggs; but further adds that he has never found the egg deposited in nests built on the more exposed and extensive tracts of moorland, but always in one particular locality where there are a few patches of heather of a few acres in extent. He writes that three years ago he had for the first time a splendid view of a young Cuckoo ejecting young Titlarks and eggs from the nest. It had only been hatched a few hours, and it was wonderful to see the way in which it heaved the young Titlark out of the nest. It climbed up the side of the nest with the young Titlark on its back, raising itself in a backward manner by fixing the hooks of its rudimentary wings into the body of the nest, gradually drawing itself up step by step, just as one does in mounting a flight of steps. On two occasions he had taken two eggs of the Cuckoo out of Titlark's nests; in both cases he thinks they had been laid by different birds, as the eggs differed both in colour and shape. The last two eggs I found, which were also deposited in the nest of a Titlark, were so very similar, and differed so widely from the type usually found in this district, that I was almost forced to the conclusion they were the product of one female. It is very significant that Mr. Ellison should have found the egg of the Cuckoo only in those Twite's nests which were built in isolated patches of heath away from the wilder parts of the moor. It is curious that the egg found by my son, recorded at the head of this note, was in a nest forming part of a colony which has established itself at some distance from the main body, and at a considerably lower altitude, perhaps 300 ft., and which build on the ground among the bracken. Never once have I found the nest of this species built on the ground on the high moors immediately surrounding this village. This local variation of habits of birds is a most interesting feature in their economy. The Mistle-Thrush here seldom builds its nest except in trees; whilst in the next valley (Wharfe), in its upper part, it is not

an uncommon occurrence to find it nesting in walls, even in the vicinity of moors. The Wheatear here almost always breeds in old walls; further away in the wilder parts of the district, it frequently makes its nest in a hole in the ground. The Hawfinch, too, in this district, has well defined local nesting habits. The Ring-Ouzel nests occasionally here in trees; probably it does so in many other places, but I have never been so fortunate as to discover such nests. I fear Mr. Allan Ellison is mistaken if he supposes that the Twite is generally distributed "where moors, mountains, and exposed heathy places are found" in the British Islands. There are vast tracts of moorland, even in Yorkshire, where it appears to be very scarce or indeed absent altogether. A few years ago I spent my holidays about Whitby, making Goathland my centre, and passed much of my time on the moors without finding a single nest. I tramped from Goathland to Robin Hood Bay, which is practically moorland all the way without seeing a single bird; all the other characteristic moor birds were there, *viz.*, Ring-Ouzel, Curlew, Golden Plover, Titlark, &c. I also spent a few days in Wales a few years ago with Mr. Forrest, H. B. Booth, and Rosse Butterfield, much of the time being passed on the moors, which seemed to be ideal breeding-places for the Twite, but we failed to find its nest, although our mission had been organized chiefly in the hope of doing so.—E. P. BUTTERFIELD (Bank House, Wilsden).

Greenland Falcon (*Falco candicans*) in Co. Antrim.—This rare arctic species was obtained above Carrickfergus, on the Knockagh, on Feb. 12th, by Mr. Paul Logan. It was brought to Mr. Sheals, of Corporation Street, Belfast, by Mr. Patterson, where it has been beautifully mounted, and where I had the pleasure of examining it on Feb. 17th. It proved on dissection to be a male, the stomach containing a half-digested Lark. It is in fine white plumage, with black markings. It is set up in the life-like attitude which we know so well from photographs of Peregrines and other birds of prey kept for hawking; so many taxidermists draw out their specimens when setting up, thus taking away the natural compact form of a bird. There have been in all twenty-nine records of Greenland Falcons in Ireland, only two of which were obtained in Co. Antrim, the west coast being their natural landfall. For further particulars, *cf.* "Nature Notes," 'Northern Whig,' Feb. 17th; and for account of the 1905 invasion, *cf.* 'Irish Naturalist' for that year.—W. H. WORKMAN (Lismore, Windsor, Belfast).

Colour of Eyes in *Fuligula nyroca*.—I have read Mr. Bird's remarks (*ante*, p. 75) on the colour of the irides in the immature white-eyed

Pochard recently examined by him, and I am much interested in what he says. I find that the large majority of authors who describe this species say nothing at all about the colour of the irides in the females and young birds. Personally, I should expect to find the eyes brown in immature birds. It may be of interest to Mr. Bird and other of your readers to know that my friend Mr. Robinson, of Lancaster, handled a female Tufted Duck some few years back, in which the irides were quite white. At the time he was inclined to think this Duck, which was shot at the mouth of the River Lune just above Glasson Dock, to be a white-eyed Pochard, from the colour of its eyes; and, to satisfy himself, he forwarded the bird to Mr. Eagle Clarke, of the Edinburgh Museum. Mr. Clarke pronounced it to be undoubtedly a Tufted Duck (*Fuligula cristata*), but was quite at a loss to account for the white eyes. I can fully endorse all Mr. Bird says with respect to the eye in the adult male Pochard (*F. ferina*). The colour most certainly does fade very rapidly to yellow after life is extinct. I think Mr. J. W. Harting is very happy in his description of the colour of the irides in this species, and I quote the following extract from his 'Handbook to British Birds,' new edition, p. 250:—"Having shot many of these Ducks at various times, and occasionally as late in the spring as the end of March, I have noticed that the colour of the iris varies with age. In the young bird it is pale yellow; in an older bird, orange; in a fine adult male, crimson; but the colour has been observed to change from red to yellow from excitement (see Stevenson, 'Birds of Norfolk,' vol. iii. p. 207)."—FRED SMALLEY (Challan Hall, Silverdale, Lancs).

WITH reference to the note, on the eyes of *Fuligula nyroca*, of the Rev. M. C. H. Bird (*ante*, p. 75), I find that Naumann ('Naturgeschichte der Vögel Mittel-Europas,' vol. x. p. 183, new edition) writes as follows (I translate roughly):—"The small and sparkling eye has in the quite young bird a grey-brown, then a dark brown iris, which presently becomes ringed with ash-grey. It then turns light grey, and with increasing age pearl-white; so that in the male it is in the second year, in the female not till the third year, that the eye displays this distinctive luminous colour, from which the species obtains its name of White-eyed Duck."—W. B. NICHOLS (Stour Lodge, Bradfield, Manningtree).

King-Eider ♀ (*Somateria spectabilis*) in Orkney. — On Feb. 28th, in response to a letter from Mr. Robinson, I went to Lancaster to examine an Eider which he had just received in the flesh from Stromness, Orkney. On seeing the bird I was at once able to pronounce Mr. Robinson to have correctly identified it. I found it to be a King-Eider without the question of a doubt. The specimen was

shot off the island of Graemsey by Mr. S. Sutherland of that place, and forwarded to Mr. Robinson. It is a remarkably fine adult female. Measurements: Length, 23 in.; culmen, measured from the anterior edge of the feathered wedge running on to the ridge of the culmen to the tip of the beak, 1.25 in. Head, chin, and throat buff, streaked with brown; cheeks lighter buff; breast and sides buff, with irregular markings; greater coverts and secondaries black, two narrow white bars on wing; back rich rufous brown, with semicircular black bars; elongated scapulars very rich rufous brown; under parts dark dusky brown; bill dark (probably became darker after death); legs and feet ochre, webs dusky. A shot-pellet had pierced both eyes and completely destroyed them, and I was unable to determine the colour of the iris. Am I right in supposing it would be dark brown? Perhaps some of your readers would be able to enlighten me on this point. Mr. Harting, in his 'Handbook to British Birds,' new edition, p. 465, gives eighteen authentic records of this species in British waters, but I am inclined to think he has omitted two, if not more, authentic occurrences, namely, the specimen in the Edinburgh Museum, shot at Tents Muir in 1872 (I believe I am correct in the date, but I quote from memory), and also the young male King-Eider which Mr. J. G. Millais saw off the Churchyard Rocks, Pomona, Orkney, in the spring of 1883, and which he twice set to, but failed to secure (see Mr. Millais's book, 'The Wild-fowler in Scotland,' pp. 138, 139, 140). I have no reason to suppose that so competent a naturalist as Mr. Millais was wrong in his identification of this bird, especially taking into consideration that he was near enough to it to distinctly note the curious shape of the head, characteristic of the male King-Eider.—FRED SMALLEY (Challan Hall, Silverdale, Lancs).

Ornithological Notes from Surrey.—On Feb. 17th a Gannet (*Sula bassana*) was seen on the River Wey between Eashing and Godalming. It had evidently been wounded. A Hen-Harrier (*Circus cyaneus*) was shot during the early part of February in the neighbourhood of Godalming by a man who was shooting Wood-Pigeons. The Harrier swooped down on one of the stuffed decoy Pigeons, and was in the act of carrying it off when shot. There were a pair, the female bird only being secured. I am pleased to be able to state that the Brown or Wood-Owl (*Syrnium aluco*) is steadily on the increase, and—round Godalming, at least—may be considered quite common. On Feb. 17th I counted fifteen Tufted Ducks (*Fuligula cristata*) on the Hammer Ponds, at Thursley. They remained there for several days. On the same piece of water, and on the same date, a pair of Little Grebes (*Podiceps*

fluviatilis) were in full breeding plumage. On Feb. 21st the Herons (*Ardea cinerea*) in Richmond Park were back on their old nests, and on the same day I noticed one Great Crested Grebe (*Podiceps cristatus*) on the Penn Ponds; but on the morning of the 22nd I found it had left, owing perhaps to the fact that most of the water was covered with ice.—GORDON DALGLIESH (Eashing, Godalming, Surrey).

Interesting Birds in Yarmouth Market.—One hardly knows whether to express regret, or satisfaction, at the remarkable falling off in the numbers of certain birds brought, winter by winter, to the market-place. Decreased slaughter, unfortunately in our case, implies fewer birds to be slain rather than a lessened desire to kill. Those who will refer to my notes on this subject in the "Birds of Yarmouth" (Zool. 1900, pp. 164-167)* will read of a marked falling off in a period of twenty years, a decrease which has since been accentuated from year to year. The altered conditions of the country round about Yarmouth have greatly to do with this local reduction in birds seen and shot. Another factor in our barer market is the lessened interest taken in wild birds by those who employ a cook, and certain birds which had attractions for the local epicure a decade or so ago may hang for days, indeed, until they fairly rot, and be finally pitched into the refuse-box. At the time of writing a Pink-footed Goose (*Anser brachyrhynchus*), that in the old days would have been "snapped up," now hangs by one leg on a string, after having been suspended for a number of days the reverse way; and it is the matter of only a day or two longer to see the game-dealer's penknife cut it down! Such has been the fate of Curlews, Knots, Pochards, and a number of others; and so slow a sale exists usually that those few gunners who used to sell their odd fowl just to cover a fresh supply of ammunition scarcely trouble to bring anything to the dealer. And there is but one man now who follows Breydon professionally with a punt-gun—one Fred Clarke, a hardy son of the marshes, who spends his days in Eel-picking, millwrighting (when there is any to do), and in assisting the marsh-farmers generally. He gives over everything else when there are a few wildfowl "driven in," and his wife, who trots round with them in a basket, disposes of his game to the certain limited circle of acquaintances, who purchase her wares more as a *bonne bouche* than a necessary article of diet. All ornithologists who visit Breydon should look up "Fred," who lives four-fifths of his days, and more than that of his nights, in a little Noah's ark, not far from mine, on Banham's Rond. He is full of birdy reminiscences, and an enthusiast in his way. Woodcocks, for

* And more enlarged upon in 'Nature in Eastern Norfolk.'

which there is usually a fair sale, have been conspicuously rare in the market during the past season, the first one appearing there on Sept. 29th (1905). The greatest number in any one day was five. Golden Plovers were in some numbers on Breydon during the first half of October—a rather unusual resort of this marsh-loving species. A few appeared in the market. Two young male Shovelers on a stall, Oct. 19th. An immigration of Lapwings must have taken place at the beginning of November; quite a glut of them in the market, bunches festooning many a countryman's stall on the 4th. No bird, with the exception of the Wood-Pigeon, so stirs the sporting instincts of the lowland farmer, who, for the sake of a little sport and the few coppers added to his Saturday's takings, ruthlessly slaughters his best bird-friend. Again, on the 25th, was the market glutted with "Peewits." Snipe have been scarce all the winter, and a very slow sale has existed for those that were brought in. Duck and Mallard, on the other hand, have been at times plentiful, and met with a fairly ready sale. An unusual number of dead Moorhens on Dec. 30th. Jan. 6th (1906), plenty of Wild Duck and Mallard in the market; a few Snipe, bunches of Blackbirds, and one Bean-Goose (*Anser segetum*). So rarely do Geese turn up in the market that *individual* occurrences find a place in my note-book! The stalls were festooned on Jan. 27th with strings of Wood-Pigeons, the majority of them indifferently plumaged "foreigners." They had been, mostly, industriously feeding on the clover-leys. Earlier in the winter acorns were the usual thing to find in their crops; in February they divided their attention between the clover and the turnip-tops. A number of Stock-Doves were mixed with their larger relatives on Feb. 10th, and on one other occasion I observed some. There was not a brisk sale for the Pigeons, the market-folk preferring to take them home again rather than sell at a reasonable price, eightpence each being asked for very indifferent examples. And one I purchased, with others, in a promiscuous sort of way, would have been dear at a gift, for it must have been brought to market week by week all the season, if I may judge by the condition I subsequently found it in.—
A. H. PATTERSON (Ibis House, Great Yarmouth).

O B I T U A R Y.

EDWARD WILLIAMS.

THE death of Mr. Edward Williams, of Dublin, which took place on Dec. 15th last, has been very deeply regretted. He was a man of much natural talent and artistic skill, born with a love for the study of nature, coupled with a strong desire to mount specimens in the most life-like attitudes possible. As a taxidermist, Williams was practically a self-taught man, originating many methods of his own. As a child of ten he could mount small birds, and before reaching manhood could produce work of a professional character. When little more than twenty he gave up his original business, and made taxidermy not merely a hobby, but a means of livelihood. He was exceptionally successful in his career, being recognized for the past quarter of a century as a taxidermist of the first water. He was the designer of the life-groups in the National Museum, Dublin, and the loss which that institution has sustained by his death is very great indeed. Williams was passionately fond of birds; he used to sit for hours watching their habits, both in a state of nature, and in captivity in a well-stocked aviary which he possessed. He was one of the highest authorities on the habits and occurrences of Irish birds, and the many notes and papers which he has published have been found useful and trustworthy to compilers.

Edward Williams possessed a sweet personality, his friendship was absolutely sincere, and his kind and earnest features will remain stamped indelibly in the memories of those who knew him. He passed away in his fifty-seventh year, after a very brief and painless illness.

C. J. P.

 THE REV. JOSEPH GREENE, M.A.

THIS well-known British lepidopterist recently passed away at his residence, Rostrevor, Clifton, Bristol, at the age of eighty-two. He was an old contributor to 'The Zoologist,' writing in these pages as long ago as 1850; but it was in the volume for 1857 (p. 5382) that his well-known paper "On Pupa Digging" appeared, a publication which is still the best and most consulted on the subject.

NOTICES OF NEW BOOKS.

The Geese of Europe and Asia. By SERGIUS ALPHÉRAKY, with coloured plates by F. W. FROHAWK, &c. Rowland Ward, Limited.

THIS work is a translation of the author's 'Gusi Rossii,' published in Russia in 1904, and is a valuable contribution to the complicated question of the identification of the *Anserinæ*; and as the author is not disposed to lay too much dependence on the dimension of the bill as a specific character, and which he regards as largely dependant on age, and also practises the greatest caution in using the colouring of the bill for the same purpose, he is notably at difference with some other students. Thus he disagrees entirely with Mr. Coburn's conclusion that the *Anser rubirostris*, Swinhoe, is a distinct species (cf. 'Zoologist,' 1903, p. 46), and states "that this so-called species has no existence." On the other hand, referring to Mr. Coburn's paper "On the specific validity of *Anser gambeli* (Hartlaub) and its position as a British bird" (cf. 'Zoologist,' 1902, p. 337), he remarks, "A careful study of the article in question has, however, failed to convince me that the Geese taken by the author for *gambeli* really belonged to that American variety of the White-fronted Goose," and the argument used in support of that objection must be sought at pp. 56-57. Then, again, he dissents from the view of the late Mr. Seebohm, that *Melanonyx brachyrhynchus* was only a slight variety of *M. segetum*, an opinion also shared by the late Mr. Cordeaux; and as his discussion of the question is full and interesting, it will be seen that the British ornithologist will find very much for his consideration in these pages.

There are two appendices, one by Mr. G. F. Göbel on the Eggs of Russian Geese; the other an Extract from the Diary of the Visit to Kolguev in 1892 of Mr. S. A. Buturlin. The twenty-four coloured plates contributed by Mr. Frohawk quite sustain the

reputation of that artist; and there is also a coloured frontispiece by Dr. P. P. Sushkin depicting Geese on Kairan-Kul, Turgai Territory, which will attract the wildfowler as well as the ornithologist.

The Zoological Society of London; a sketch of its foundation and development, &c. By HENRY SCHERREN, F.Z.S. Cassell & Co., Limited.

THIS book describes the evolution of a Society which has now become a well-known British institution; its rooms are the rendezvous of zoologists, its proceedings and transactions are a zoological library in themselves, and its gardens beyond their legitimate province have become a national holiday resort. Since its foundation, all contemporary zoologists have more or less been connected with it, so that the material for a really good book was available. The author has chosen a somewhat official method of dealing with his subject, but he has given its history so that we can always use the book for reference, while the account of the acquisitions to the gardens gives us data by which we may gather information in numerous instances of the time of our first knowledge of many animals. We need not discuss the question as to the real promoter of the Society, to which some prominence is given; rightly or wrongly, to ourselves, as to many others, the name of Sir Stamford Raffles will always be attached to that distinguished position, though his early death caused its foundations to be completed by other and able hands. In reading these pages, one is struck by the number of distinguished men who have guided the affairs of this Society, and notice is necessarily attracted to the strong man who, as Secretary for so many years, did so much for its stability, while, like all strong men, he made not only many friends, but some adversaries.

Among the animals that have lived in the Gardens, some will never be seen again. The Quagga has twice been on view at Regent's Park; while we read that in 1861 the Society's agent in Cape Colony "expressly barred Quaggas" in his offers for South African specimens. But, on the other hand, we may yet see a living Okapi! The illustrations are numerous, some by

Joseph Wolf; those depicting the Gardens in early days are good object-lessons when compared with the vast improvements made and being made under the present able management. The hope expressed by the author that the book may be of permanent value is already fulfilled.

More Natural History Essays. By GRAHAM RENSHAW, M.B.,
F.Z.S. Sherratt & Hughes.

DR. RENSHAW has given us a companion or supplementary volume to his 'Natural History Essays,' previously noticed in these pages, and as the subject is practically inexhaustible, and the author is an enthusiast on his subject, we may expect in time to possess a series of these volumes. Dr. Renshaw has restricted his material to mammals, but these are not confined to the continent of Africa, as was the case in his other volume. The great interest in these essays—in fact we may say their special feature—is to be found in the number of interesting notes and references, both bibliographical and statistical, which are centred round each species. Thus we have, as a rule, an account of the first discovery of the animal, and some personal incidents relating to the naturalist or hunter who obtained the specimen; references are given to the museums in which examples are contained, while much information has been collated from old and now little-read books, so that the pages contain a quantity of information in a condensed form which is of considerable referential value, and not to be so readily gleaned elsewhere. In these pages popular writers on the subject will find good quarry, and we expect to subsequently meet with considerable reincarnation of the author's material in what may be now described as zoological journalism.

Dr. Renshaw, as a rule, has confined himself to facts, and has eschewed theory; the almost only instance of the latter will be found at the commencement of the essay on the Antarctic Wolf, where there occurs a long paragraph on the influence of environment upon the size of animals, in which it is contended that "from the mere external characters and dimensions of an adult of any species one can approximately guess its habits."

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OF

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Edited by W. L. DISTANT.

Charles Whymper

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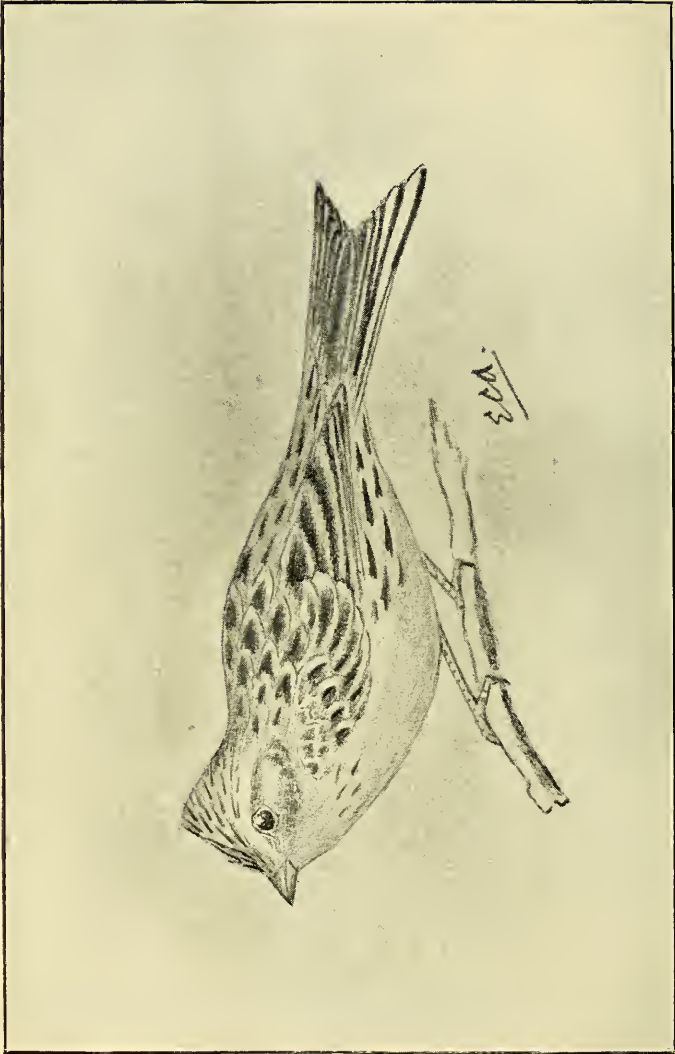
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YELLOW-BREADED BUNTING (*Emberiza aureola*, Pall.).

THE ZOOLOGIST

No. 778.—April, 1906.

ORNITHOLOGICAL REPORT FOR NORFOLK (1905).

BY J. H. GURNEY, F.Z.S.

(Assisted by several Norfolk Naturalists.)

(PLATE II.)

THE year 1905 produced two birds new to Norfolk, but it was a year devoid of much visible migration, except for the extended nocturnal movement of Aug. 25th, and that could hardly be called visible. There was not enough windy and unsettled weather to bring the movements of the birds under notice. The *Corvidæ*, which are always a criterion with us, have not been noticed in any such great numbers as sometimes occur. The chief autumn passage was that observed by Mr. F. Boyes in South Lincolnshire on Oct. 9th and 10th, which evidently extended to Norfolk, where it was recognized by the Rev. M. C. Bird.

Vernal Migration.—The spring migration of 1905 into England was studied by a Committee appointed by the British Ornithologists' Club, which has published a valuable Report, in which, referring to the east coast, it is pointed out (p. 58) that there is evidence of a departure northwards (probably to Norway) of Willow-Warblers from the coast of Norfolk at the end of April, and of Sedge-Warblers (p. 69) and Redstarts in the beginning of May. This I can readily believe, and should be inclined to add that the destination of spring migrants, which pass through Norfolk without halting, mainly depends on the wind, those which get a

S.W. wind going to Denmark or Norway, and those which meet with a S. or E. wind working up England.

What is really extraordinary about the emigration which takes place every spring from the east coast of England is its smallness, and the little notice it attracts, compared to the vast immigration in autumn. The departure of some of the *Corvidæ* is always seen in Norfolk, it is true, in spring, but very little besides. Where, it may be asked, are all those hosts of Sky-Larks which came last autumn from the north-east? Where are the thousands of Thrushes and Finches? Surely they ought to be returning in March and April, in diminished numbers, no doubt, but still in considerable bulk. This is one of the unsolved puzzles in ornithology, and only to be in part explained by a presumably large mortality among the birds during the winter.

Autumnal Migration.—Besides the annual migrations over the sea, there are certain coast movements in Norfolk, chiefly due to wind and weather, which must not be lost sight of by anyone who studies migration. These consist of passing bands of small birds, such as Swallows, Martins, Swifts, Wheatears, Sky-Larks, Finches, Redstarts, &c.; rarely more than five hundred yards from the sea, and often much nearer. It may be observed that they are nearly always going against the wind, the prevailing direction of which in September and October is west. They are not migrants in the restricted sense of the word, because they are often going the wrong way. This, I imagine, is because where the coast is bleak, as between Cromer and Mundesley, it is easier to move on against the wind than to remain stationary.

During October without doubt our ordinary visitants came over the sea, and the usual flights of large Gulls, following the shore-line in a north-westerly direction, took place at Cromer. This is a phenomenon of annual occurrence, but it is invariably to be noticed that they fly against the wind, and that as soon as it changes to E. or N.E. or S.E. the flocks of Gulls cease to pass (*cf.* 'The Ornithologist,' April, 1896, and 'Naturalist,' 1892, p. 360). That about one hundred thousand Gulls, chiefly Herring and Lesser Black-backed Gulls, pass Cromer nearly every autumn, going N.W., I verily believe, but very likely the same individuals pass more than once, in which case the actual number would be less. Ten thousand have been seen to pass in a day, after a gale

from N.W., and that more than once. At first sight one might suppose a great migration was in progress, but it is only a temporary movement against the wind.

In some autumns so many Rooks and other migratory birds are to be seen coming in against a west wind that some people have concluded that they preferred it from that quarter for crossing the North Sea; but probably the truth is that it delayed them, and, had it been from the east, the greater part of the birds would have passed on inland before daybreak. The *Corvidæ*, however, like the Sky-Larks, seem to be in great part day migrants by choice, which the vast majority of our feathered visitors are not. Migration is still a mystery in spite of all which has been written and learnt about it; but this much is certain—the Woodcock likes an east wind to travel with, and if a Woodcock arrives after 8 a.m. it is a delayed bird.

We know little of what goes on overhead at night. Occasionally the distant cries of some passing birds catch the ear, but the travellers themselves are invisible. If one of our navy search-lights were placed on Cromer Lighthouse hills, and its rays directed upwards, there would not be many nights in October when it would not reveal nocturnal migrants.

The chief rarities during 1905 have been—January: Water-Pipit (new to Norfolk). April: Snowy Owl. May: White Stork, two Stilts. June: Sea-Eagle (the first adult), nine Avocets. July: Stork. September: Red-breasted Flycatcher, Yellow-breasted Bunting (new to Norfolk).

The Pipit and the Bunting, new to the county, together with the Siberian Stonechat, erroneously given in last year's Report as a variety of the Common Stonechat, bring our list up to three hundred and fifteen. In this enumeration the Russian Bullfinch is included, but not the Short-toed Lark, which there is reason to believe was imported.

Neither the spring nor autumn migration of this year brought us a Hoopoe. This bird has become much rarer in Norfolk, Suffolk, and Lincolnshire, and the same is the case in the southern counties. The explanation of the gradual disappearance of this beautiful migrant seems to be this: those Hoopoes which used to come to England every spring were the birds which had wintered in France. Now these have all been

shot, and the Hoopoes which winter further south, *i. e.* in Spain, Algeria, and Italy, do not travel so far as England, for their migratory instinct tells them that their proper limit is the middle and north of France.

The rainfall for 1905 was 23.95 in. (E. Knight). The direction and force of the wind have been taken from the Daily Weather Reports for Yarmouth.

As many birds have been notified without exact dates, such are entered with D.U. (=date uncertain) against them.

JANUARY.

1st.—An Osprey seen over Hickling Broad, formerly a favourite resort of this fine fisher (A. Nudd); I never heard of one in January before.

5th.—The first snow soon passed away, and there was no weather hard enough to bring Whoopers. To-day, with a high wind (W., 4), my nephew saw about ten large "skeins" of Pink-footed Geese, some of them numbering over fifty, in Holkam Bay. Mr. A. Napier believes that the numbers on the Holkam and Burnham marshes exceed two thousand, surely the largest resort of Pink-footed Geese in Britain. A pair once remained as late as June, but generally they leave at the end of March.

20th.—E.N.E., 5. Fifteen Woodcocks on the coast at Runtun, probably just arrived. We often have a flight as late as this, and these winter flights often synchronise with the advent of Blackbirds, Snipe, Wood-Pigeons, &c., and are very profitable to the sportsman.

23rd.—A Bittern seen at Brancaster.

25th.—W. N. W., 3. A Water-Pipit† (*Anthus spipoletta*), female, shot near the beach; it closely resembles a Rock-Pipit, but has been pronounced by Mr. Howard Saunders to be of this species, as indicated by the outer pair of tail-feathers, which are more than half white, as are as the tips of the second pair. All the tail-feathers are worn, especially the two middle ones, which are greatly abraded in this example, the first identified for Norfolk. It has been added to Mr. Connop's museum (Pashley). I met with a good many of this species in Switzerland this summer (1905) at the Riffel Alp.

FEBRUARY.

2nd.—Great Northern Diver shot off Heacham ('Field').

6th.—Bittern at Ingoldisthorpe (R. Clarke).

9th.—Bittern near Hickling (E. Saunders). Others reported (D.U.) in the neighbourhood of Lowestoft (Bunn). This is not too early for their spring "booming" to be heard.

20th.—N.N.E. In spite of snow and a cold "north-easter," Mr. J. Cox found a Hedge-Accentor's nest containing two eggs at Gresham, and another nest complete without eggs. A pair of Black Swans belonging to Mr. Knight have two eggs,† and Mr. Southwell informs me of another pair which have three (D.U.). Mistle-Thrush's nest at Brunstead (Bird). This is the month in which Blackbirds fight, and Partridges pair; Kestrels look out for breeding-sites, and the note of the Lapwing is heard.

27th.—Wild Duck flushed from nest (M. Bird). Five days later Mr. Bird knew of another nest containing twelve eggs of this always early species. At this season the Garganey Teal which I usually keep on my pond give utterance to a most peculiar note, which can be best described by the word "crick." It is quite unlike the note of any other wildfowl, resembling more that of one of the Crakes. It is only made by the drake Garganeys, and lasts for several weeks.

28th.—Mr. Pashley tells me that in the last week of February (D.U.) three Scandinavian Rock-Pipits were detected on passage, and it is not unlikely that this vinous-tinted race is less rare than has been supposed (*cf.* Zool. 1897, p. 128), and may be looked upon as an early spring visitant.

MARCH.

23rd.—S.E., 4. Ray's Wagtail already in Norfolk (Bull. B. O. C., xvii. 73).

29th.—*Hybrid Linnet*.—A Linnet × Greenfinch hybrid†—a male, of course, or it would not have been detected—taken near Yarmouth whilst consorting with Greenfinches (E. Saunders). It exhibits very distinctly the double parentage, closely resembling a bird of this cross in the Museum, with which Mr. Saunders and I compared it. Possibly it had escaped, as this cross is occasionally bred by bird-fanciers. Similar hybrids were caught at Yarmouth in 1882, and August, 1889, and were recorded at the time.

APRIL.

Early in April (D.U.) a Snowy Owl had the misfortune, as I learn from Mr. W. Clarke, to put its foot in a rat-trap at Cocley Cley, near Swaffham. The owner of the soil intended sending it to the Zoological Gardens, but, though not damaged, it refused to feed in confinement, and did not long survive. It was probably the sharp cold of the 5th, 6th, and 7th, accompanied by snow, which brought this Norwegian stranger over; but April is a late date for it. It is always a more difficult bird to keep in confinement than the Eagle-Owl, and I am not surprised that Mr. Taylor was unsuccessful.

14th.—S., 4. A Black Redstart at the Inner Dowsing light-vessel (Bull. B. O. C. xv. p. 99).

17th.—E.N.E., 6. Grey Shrike at the Newarp lightship off Yarmouth (Bull. B. O. C. xvii. p. 125), where the wind blew a gale. I have had both these species from light-vessels before.

19th.—E.N.E., 6. More than thirty Red-legged Partridges discovered on the sand-hills near Yarmouth harbour-mouth, after a gale from the north-east (A. Patterson), in which quarter the wind had been for some time. I cannot believe in there being any immigration of this species, although some have thought so; but I certainly never heard of so many by the shore before. It has the same habit of appearing on the coast in Sussex, where I have seen one perched on a breakwater with the waves lapping against it.

26th.—N.W., 3. Nine Dotterel seen on Yarmouth "denes" (Patterson).

MAY.

1st.—A Grasshopper-Warbler, a Sedge-Warbler, a Blackcap, and a Willow-Warbler killed against Happisburgh lighthouse (M. Bird).

2nd.—S.W., 4. Four Wheatear† appeared within the precincts of the Castle of Norwich, in the centre of that city.

17th.—A Teal's nest at Westwick, from which the keeper had taken seven eggs, apparently a completed clutch, was comfortably ensconced in heather in a large wood near a lake. The number of Teals' nests in East and North Norfolk is now very small, and the few Garganey which remain are dwindling, but Mr. Bird

knew of one nest for certain. Black Redstart at Brancaster (R. Clarke).

19th.—N.N.E., 4. Mr. Jary saw a pair of birds flying over Breydon, which he thought to be Avocets; and on the same day a White Stork was unfortunately shot at South Wootton, which is close to the Wash ('Field').

22nd.—Five Herons' nests† at Wheatacre, which is five miles from the larger heronry at Reedham, where, Mr. Southwell was told on a recent visit, there were eighty-five nests.

24th.—A "trip" of seven Dotterel on passage seen near Yarmouth (B. Dye).

25th.—A Dunlin, catching mudworms on Breydon flats, was seen by Mr. Patterson to walk several feet down to the water with the worms dangling from between its mandibles, wash them, and return for more.

26th.—Hundreds of Whimbrel on Breydon (G. Jary).

27th.—Some Starlings observed by Mr. Patterson to be hovering over Breydon Broad like Gulls, in order to snatch up black flies which were floating drowned by thousands on the surface.

28th (D.V.).—Two Black-winged Stilts and a Red-necked Phalarope on the Broads (M. Bird). These Stilts may have been the birds mistaken for Avocets on the 19th.

30th.—Four Hooded Crows, two of them apparently young ones, on Cromer Lighthouse hills (Birch).

31st.—A Water-Rail passing over the town of Yarmouth struck a telegraph-wire, and fell into a yard; and a fortnight later a Kingfisher was picked up among some houses (Patterson). Such accidents are not very uncommon.

JUNE.

1st.—*Utility of Finches.*—Nearly all my gooseberry-bushes, which were covered over with permanent wire-netting to protect them from birds, have been attacked by the larvæ of *Nematus ribesii*, whilst those outside the netting, which have been exposed to the birds, and consequently cleared of caterpillars by Chaffinches, &c., have borne fruit as usual. It is clearly better to cover the fruit-bushes only for a few weeks in summer, when the fruit is ripening, which I intend to do in future.

4th.—N.E., warm. A pair of Spoonbills were seen by the watcher to fly over Breydon Broad, but not to alight, it being high water, after which they passed out of sight in the usual direction—north-east. These are the only Spoonbills seen during 1905, with the exception of one reported in May at Hickling.

9th.—E.N.E., 6. After five days of continuous north-easterly winds (velocity 5–6), amounting to a gale, an adult Sea-Eagle,† with a good white tail, turned up at Hanworth, some five miles from the coast, where it was speedily peppered with small shot by a too zealous gamekeeper. Norfolk has produced many Sea-Eagles at different times, but an adult has never been recorded before, and an effort has been made to secure the specimen for Norwich Museum. The date of its appearance was also very late, but for this the gale was accountable. Compared with the series in the Museum, its plumage is not very good, being decidedly faded, and the feathers abraded, like a bird which has missed its spring moult. The whole of the tail is white, except the upper tail-coverts, which are edged with brown; the tone of the head is very pale, and the wings from the carpal joint to the body are also pale. Male, proved by the dissection of the late Mr. J. A. Cole, who stuffed it.

12th.—Dabchick's nest with one egg near Twyford (C. Hamond), and another nest with three eggs at Stoke Holy Cross, which has long been an occasional breeding haunt of this species. The accompanying photograph by Mr. E. L. King shows its position, with the eggs uncovered (*cf.* p. 129).

13th.—*Utility of the Barn-Owl.*—A Barn-Owl's tub, put up in an oak-tree to encourage this "farmer's friend," contained on examination a young Starling and a Greenfinch, and the usual collection of pellets. These, being soaked in water and carefully examined, further yielded one Blackbird's skull, eight Sparrows' or Finches' skulls, and the remains of fourteen small Rats, thirteen Shrews, twenty-five Mice, and one Mole. While this testimony to the Barn-Owl's utility was being displayed, there might have been seen a few miles off two keepers' gibbets with Barn-Owls nailed up as vermin, as I am assured by friends who could not be mistaken. A copy of the leaflet on the Barn-Owl, published by the Board of Agriculture and Fisheries (No. 51), was sent in both cases to the head-keeper on the estate, and it is

to be hoped he read it, and realized the ignorance which had allowed him or his assistants to destroy a useful ally. The weird shriek of the quaint bird is not so often heard as formerly, but there are a few landowners who do their best to preserve this useful Mouse-hunter.

14th.—E., 5 (E., 4 the preceding evening). Nine Avocets on Breydon Broad, and seven Sheld-Ducks (Jary). Last year the



DABCHICK'S NEST.

Avocets came with a north-west wind, but this year with an east wind, which had been blowing from that quarter for ten days. Probably it would be more accurate to say they were delayed in England by this east wind, which prevented their going on to Holland. I believe the same to be the case with Spoonbills when they visit Breydon.

15th.—E.N.E., 4. The Avocets seen again on Breydon muds by Mr. Patterson and Mr. Dye.

16th.—E. The nine Avocets† still on Breydon, all standing on one leg except a single bird, which was perhaps a cripple; but soon some of them began to feed, which they did with great avidity, advancing quickly with eager sweeps, and finally, when disturbed, flying away in a compact flock. When first viewed there was just enough water where they were standing to give their reflections very prettily, together with those of four Black-headed Gulls, which were their only companions. Mr. Hamond and I longed to get near them, but a close approach was not permitted us. Mr. Patterson, who succeeded in getting rather nearer, watched them until the rising tide floated them off their feet, after which they had a lengthy swim, undulating as the moving water passed beneath them. He believes they were feeding on a small univalve (*Hydrobia ulvæ*). The news of their presence soon got abroad, and created some excitement, while that night the watcher had a hard task, as there were two non-respecters of the law in gun-punts following the Avocets about until 11 p.m., when it was too dark to see them; no shot was fired, I am glad to say.

17th.—S.E., 3. The Avocets were last seen in the moonlight at 10 p.m., and were quite visible to the watcher, but he thinks they must have left that night; and Mr. Dye believes they took their departure in a thunderstorm. Next morning the wind had changed to the west.

Cuckoo Notes.—June 22nd. The gardener discovered a Cuckoo's egg in a Hedge-Accentor's nest, deftly built in a currant-bush on our garden-wall. Very likely this egg had been laid by the Cuckoo whose offspring and their proceedings formed the subject of a previous paper (*Zool.* 1905, p. 164). With the Cuckoo's egg were also two Accentor's eggs, while about ten yards from the nest there lay the blue shell of another broken Accentor's egg, presumably removed by the old Cuckoo, and dropped on the ground. The Cuckoo's egg, being tried in water, was found to be fresh, and, as I concluded it could not hatch for a week, we did not disturb the nest any more.

July 4th.—11 a.m. One Accentor hatched, and the young Cuckoo also. The little Cuckoo is pale flesh-colour, and already

very restless, though probably only about six hours old; it gapes for food, but cannot see.

5th.—9.30 a.m. The young Cuckoo alone in the nest, and the Accentor's egg and nestling both lying on the ground—the egg unbroken and the nestling alive—one foot distant from the wall. As it is a drop of three feet three inches, it is incredible that the egg could have fallen or been thrown out of the nest without breaking; therefore, I suppose both it and the nestling Accentor were lifted out in the feet of the parent Accentor. I at once replaced the young Accentor, and, after waiting quite still for about five minutes, saw the tiny Cuckoo—not yet thirty hours old—edge itself beneath it, and lift it quite to the rim of the nest, which was a rather unusually deep one. It almost got the Accentor over, but, failing to do so, after a few seconds fell back exhausted, and, although I waited some time, it did not try again. The skin of the young Cuckoo is rapidly becoming much darker, and in this short space of time it has doubled its size. Before leaving I also replaced the Accentor's egg in the nest.

Same day.—10.45 a.m. The Accentor's egg is still in the nest, but during my short absence the nestling Accentor has been taken out, and is not to be found anywhere. This is probably the work of the Accentor parent, as no Cuckoo has been seen by the gardeners working near the nest. 6.30 p.m. The Accentor's egg has now been thrown out, and is cracked, which from its position seems to have been done by the young Cuckoo. It was replaced, but the next morning it was found hanging in a branch of the currant-bush, having been for the second time ejected.

JULY.

2nd.—S.W., 3. A White Stork seen by Mr. Patterson on the mud-flats of Breydon; it was very restless, and soon passed on, happily more fortunate than the one at Wootton. Possibly both of them were released or escaped birds.

16th.—Mr. Bird noticed a young Robin in the speckled plumage singing, which is surely unusual.

28th.—A Spotted Redshank and some Greenshank on Breydon (Jary). This is a very early date for the Spotted Redshank.

AUGUST.

23rd.—W., 4. Three Black-tailed Godwits identified on Breydon Broad by Mr. Jary, and many other birds of that class.

25th.—E., 5, cloudy. On the night of the 25th a large number of birds, consisting of Redshanks, Ringed Plovers, Grey Plovers, Lapwings, and Curlew (to judge from their notes), were arrested on their nocturnal migration by the bright glow from the street-lamps of Norwich, and their varied cries were listened to from soon after 9 p.m. until past midnight, and may have gone on until the lights were extinguished. At the same time similar cries, probably intended to keep the birds together, were heard in the darkness over the towns of Yarmouth (A. Patterson), Felixstowe (W. Clarke), Bury St. Edmunds (H. Buxton), Cambridge (Sir L. Jones), and at Beverley (F. Boyes) and Redcar (T. H. Nelson), in Yorkshire. The night was rough and very dark, but in spite of that Mr. Buxton could at intervals plainly see large flocks high in air over Bury, which appeared to be proceeding west, but occasionally dashed down as if attracted by the electric arc-lights in the streets (*cf.* 'Field,' 2, ix. 1905). The wind had risen that evening to force 5, and it may be mentioned that at 6 p.m. the temperature was 67°, 51° for Lowestoft, and 65° for South Lincolnshire. There was a fall of the barometer during the night, and the following morning, when the migrants were presumably winging their way over the English Channel, it was still going down, having at 8 a.m. the coast of Wales for its centre of depression. The circumstance of the birds being heard simultaneously at seven towns, or eight—for Mr. Caton Haigh believes Grimsby may be added—shows the extent of the migration, and that it all lay within the area of depression.

27th.—The gamekeeper at Northrepps disturbed a Honey Buzzard engaged in clearing out a wasps' nest. He refrained from putting down a trap, and the hungry bird, which may have just landed, soon came back, and ate the rest of the grubs. As its demise was not reported it probably escaped, and had probably been brought by easterly gale of the day before. Another, less fortunate, was subsequently trapped at Snettisham (R. Clarke).

29th.—Hobby at Thetford (W. Clarke).

SEPTEMBER. (Prevailing wind W. and N.)

2nd.—N.W. to W., 2. A young Gannet,† a bird of about ten weeks old, caught in a cabbage-field at Weasenham, fifteen miles from the sea (Buxton). I do not remember such a young one being picked up in Norfolk, or anywhere inland before.

4th.—S.W., 1. Two Great Crested Grebes, one of them with a full crest, seen in Blakeney estuary by Mr. Arnold. [Barred Warbler in Lincolnshire, C. Haigh.]

6th.—S.S.E., 2. Two Gannets off Blakeney "bar" (Arnold). Rooks coming inland (Bird).

13th.—S.S.W., 1. From an early hour in the morning continuous flocks of House-Martins were passing Sidestrand and Overstrand under the shelter of the cliffs, and all going W.N.W. This no doubt was a direction taken in order to fly against the wind, which was very light, and it is to be presumed there was a return journey eventually. In five minutes (not consecutive ones) the Martins which passed numbered thirty-two, thirty-seven, sixteen, seventy-three, forty-eight, which would be at the rate of nearly two thousand five hundred an hour. At what o'clock this movement commenced I am not sure, but I was on the cliff at 8 a.m. The "passage" continued until 11.30 a.m., after which it slackened, and at 12.30 had ceased, but I imagine that not less than fifteen thousand Martins had passed; and the Martin is no longer a very common species in East Anglia. The following morning (wind N.) I looked as early as 6 a.m. to see if there were any more, and again at 7, 8, 9, and 10 a.m.; but not a Martin was to be seen; they had all passed, and for five or six days afterwards there were only straggling flocks at rare intervals, while I was on the watch, which was often. Possibly these House-Martins, which were following our Norfolk coast-line, were the same which three days afterwards (Sept. 16th) were seen by Mr. W. Gyngell passing south along the Yorkshire coast in flocks (Zool. 1906, p. 31). They were going in his direction when they passed Overstrand.

19th.—N.W., 1. A Land-Rail on the shore (E. Arnold).

20th.—N.W., 3. Influx of Wheatears; a Red-breasted Flycatcher identified near the sea by Mr. E. Arnold, who had a good view of it. This is the sixth for Norfolk. In Heligoland it

generally appears with a rather strong N.W. wind (Gätke). [Lesser Grey Shrike at Whitby ('Naturalist,' 1906, p. 70).]

21st. — N.E., 4. A Yellow-breasted Bunting (*Emberiza aureola*, Pall.), immature, and probably a female, shot on the coast close to the shore, where it had most likely arrived that morning, as recorded briefly by Mr. E. C. Arnold (Zool. 1905, p. 466). He noticed its flight to be much more buoyant than that of a Yellowhammer, from which his example chiefly differs in having the lower part of the back streaked. If it had come three days earlier it would have been on the same date as the first Heligoland example. As this is its first detected visit, I am glad to be able to take advantage of the offer of a drawing made of it by Mr. Arnold (*cf.* Plate II.). Its occurrence on the day following the Red-breasted Flycatcher and Lesser Grey Shrike is interesting, probably all of them were from Eastern Europe.

25th.—Eighty-five House-Martins sitting, in heavy rain, on the ledges of my house. I think these birds have been commoner this year, or less persecuted by their arch-enemy, the Sparrow. Two of my correspondents write of large numbers roosting on the reeds of the Broads.

26th.—A good deal of migration reported as the result of yesterday's rain and easterly gale (force 6 at Yarmouth), *viz.* Peregrine Falcon at Fleggburgh (Lowne), Grey Shrike at Sprowston (E. Gurney), Bluethroat at Wells (Gunn), Solitary Snipe at Ringstead, Icterine Warbler at Blakeney, and an arrival of Teal, acceptable to shooters.

28th.—E.N.E., 3. Mr. Patterson picked up a Manx Shearwater, the result probably of the gale on the 26th, and saw some boys stoning a Red-throated Diver in the breakers; Mr. Dye heard of another Diver. Ring-Ouzel at Northrepps.

30th.—An adult Gannet taken on a farm at Weasenham, within half a mile of where the young one was picked up on Sept. 2nd (Buxton); a high wind the preceding day from N.E.

OCTOBER. (Prevailing wind N.)

1st.—A number of Siskins near Yarmouth (W. Lowne), and, later, a nice quantity at Keswick.

3rd.—Mr. R. Clarke received a Fulmar from Lynn, probably caught or picked up; the only one this year.

4th.—W.S.W., 5. Eleven Jack-Snipe shot on East Ruston Common (Bird), and a Fork-tailed Petrel caught on a fishing-boat (Lowne).

5th.—Grey Phalarope on Breydon (Patterson). Quail at Lopham (Rev. J. Sawbridge).

6th.—A young Red-necked Phalarope† shot on a pond at St. Faith's (Roberts). Received an adult Gannet† from Holme, which I believe was found alive on the shore. Mr. R. Clarke had another at the same time from Congham, and also heard of a young one being washed ashore.

7th.—Several Sky-Larks struck Happisburgh Lighthouse, and the following day four Goldcrests and some Starlings (Bird).

8th.—A Storm-Petrel flew on board a "lugger" (Patterson).

9th, 10th, 11th.—Many Grey Crows coming in (Bird). The hedgerows in South Lincolnshire teeming with Blackbirds, Thrushes, Redwings, Tree-Sparrows, Chaffinches, Bramblings, &c. (F. Boyes, 'Field'). Quail shot at Tunstead.

12th.—Received from Mr. Patterson a young Guillemot,† which had been hooked from Gorleston Pier, but I could not induce it to feed, and it soon died. Storm-Petrel caught on a fishing-boat (Lowne).

15th.—*Utility of Starlings.* Large flocks of young Starlings about, which later on were very busy on the wheat-fields, apparently attacking the blade wherever it had appeared above ground; but in reality what they are after is the wireworm lurking at the root of the wheat, which is a very small grub when young. The only harm that Starlings do is the loosening of the plant itself, thereby letting in drought or frost. Starlings have a curious habit of pecking with their mandibles apart, and this, I think, must help to loosen the wheat-plant. On the whole they do much more good than harm, but they are not above helping themselves to whiteheart cherries. I cannot so readily acquit the Rooks, which in September were carrying off walnuts at Cringleford in a provoking way, and later on were to be seen in great flocks on newly-sown wheat, where they were not wanted. Many of our farmers would not be sorry if the Act of Henry VIII. for their destruction was in force again. It must be confessed, however, that they take a great many wireworms and grubs of all sorts.

16th.—N., 2. Numerous flocks of Herring-Gulls† passed over Northrepps, going north; in fifteen minutes about five hundred passed, travelling against the wind. Drake Shoveler† on the pond at Stratton.

17th.—W.N.W., 4. A Woodcock† flew into a blacksmith's shop in the middle of Cromer about 2 p.m. The forge has a large door which faces in the direction of the sea, but there are many houses over which the Woodcock must have passed before descending into the street.

22nd.—Glaucous Gull shot on Breydon Broad ('Field'). I learn from Mr. E. Saunders that this Gull is in the white plumage, a transition stage which has occurred on the Norfolk coast before, but which is decidedly rare. Mr. Dye was informed that it had frequented the south beach for a fortnight. It has been the only Glaucous Gull in Norfolk during 1905, but an Iceland Gull is reported from Cley.

28th.—A Storm-Petrel taken on a fishing-boat (E. Saunders).

NOVEMBER. (Prevailing wind S. and W.)

1st.—During the autumn Bearded Tits were repeatedly seen by Mr. Barclay at Hoveton, where they are safe, and small roving parties were met with at Belton (Buxton), and Beccles (Patterson). But their breeding area is so small that their total number must be very limited, and it is desirable that all protection should be extended to them. Probably the total hatch would not exceed sixty broods, and they now breed nowhere else in England.

3rd.—A Storm-Petrel allowed itself to be caught on or by a fishing-boat (Patterson), the fifth caught in this manner. Spotted Rail at Catfield (Bird).

5th.—Several late Sand-Martins still at Cromer (F. Barclay).

8th.—Sharp frost. A Sand-Martin† picked up by my son.

9th.—Swallow† at Trowse. A Little Owl captured at Kelling (Pashley), doubtless one of the many turned out. Mr. Pashley says there was another with it.

10th.—Ringed Guillemot at Yarmouth (Patterson), where about this time two Lapland Buntings were seen (B. Dye), and some more (D.V.) at Blakeney.

W.N.W., 2. At about 6.30 a.m., by a strange coincidence, a

second Woodcock flew into the same forge where one was taken on Oct. 17th, both of them having chosen exactly the same line, and entered by the same doorway, which, it is true, is wide. For two to have taken exactly the same line of flight seems rather singular, but the wind was in both cases the same. Another flew into the railway station. They were all three caught, and the two in the forge were taken alive to Mr. Barclay, who gave me one of them, but I was not very successful with it. On the same day continuous flocks of Fieldfares were seen by Mr. Caton Haigh arriving in North Lincolnshire, their "passage" lasting from daylight until the afternoon, but it probably began long before daybreak.

13th.—Bittern "booming" at Catfield, and quantities of Jackdaws arriving about this date (Bird). The Bittern's "booming" is generally considered to be a spring cry.

14th.—E.N.E. Three Martins at Keswick, one scarcely full-grown. November Martins are of such annual occurrence as to excite but little comment; probably it is in consequence of so many of their earlier nests being usurped by Sparrows, which make their broods very late.

19th.—E., 6. Female Eider-Duck picked up in a meadow near Downham Market (W. Clarke), no doubt carried inland by the high wind.

23rd.—Swallows at Raveningham (Gray).

DECEMBER.

9th.—Shoveler near Yarmouth (Dye).

13th.—Pied Wagtail at Keswick.

15th.—W. A Dartford Warbler, which has always been a rare bird in Norfolk, on the sea-bank at Wells (A. Napier).

19th.—S.S.W., 4. An arrival last night apparently of Woodcocks, Snipe, and Jack-Snipe. A few days afterwards (D.U.) forty-two Woodcocks were killed at Haverland, the best bag of the season. It is marvellous how their numbers keep up, for there is no bird in Europe so persecuted; from two thousand to four thousand are usually killed in Norfolk every year. There is an idea that when they arrive they are very thin, but as a matter of fact the reverse is generally the case.

21st.—Grey Shrike seen at Swaffham (W. Clarke).

26th.—Norfolk Plover at Ridlington (C. Gurney); an even later one than that recorded last year.

The year 1905 has passed without the record of a single Wild Swan; neither has the Waxwing shown itself, without which a winter seldom passes.

VARIETIES.

Notices have been handed in of the following varieties:—

Jan. 3rd.—Pied Sky-Lark at Runham (Lowne). *7th.* Yellow-hammer† with canary-coloured head and wings of the same at Booton (Cole). *?18th.* Tawny Moorhen† at Bury (J. Tuck); young bird without frontal shield or garter; plumage of the usual hair-like texture (*cf.* Norwich Nat. Trans. iii. 581; plate of this variety). *30th.* Pied Moorhen† at Mautby; feathers of the usual texture (Roberts).

February.—A white Moorhen at Stoke Ferry (W. Clarke).

April.—Cock and hen pied Blackbirds seen at Ingham (R. Gurney).

August.—A white Sand-Martin sent to Norwich (Roberts). Pied Wheatear (D.V.) near Thetford. White Swallow at Sheringham.

September.—White Hedge-Accentor at Stoke (E. Gunn).

October.—White-winged Partridge and white-winged Rook (B. Dye).

November.—French Partridge with white breast at Barningham (Barclay). Pied Chaffinch at Fleggburgh.

ROUGH NOTES ON DERBYSHIRE ORNITHOLOGY,
1904-1905.

BY THE REV. FRANCIS C. R. JOURDAIN, M.A., M.B.O.U.

(Continued from 'The Zoologist,' 1905, p. 62.)

1904.

Addendum.—Mr. A. F. Adsetts informs me that a Little Auk, *Mergulus alle* (L.), was shot on the River Trent, near Donington Park, on Nov. 24th, 1904, by a keeper named Hallett. Some six or seven specimens have been previously recorded for the county.

1905.

From Jan. 16th to 28th the weather was very severe, and the thermometer fell several times nearly to zero. The 16th was an especially bitter day, for, although no snow fell till night, a piercingly cold wind was blowing all day. Most birds suffered much during this time, but the Dippers were apparently quite indifferent to the cold, and were singing merrily on Jan. 26th. On March 12th bees were noticed at work for the first time.

Of late years the Stonechat (*Pratincola rubicola*) has become a very scarce visitor to the county, and it was with much pleasure that I recognized a hen bird perched on a dead thistle close to the River Dove, near Rocester, on March 13th. Curiously enough, a cock bird was observed at Thorpe, eight or nine miles higher up the Dove Valley, on the 18th. As a rule, our summer migrants hardly ever put in an appearance before the first days of April, but on March 20th two Sand-Martins were noticed at the cutting just above Clifton Station, where many of these birds breed, and a week later about a dozen birds were to be seen there; but the main body did not arrive till the 30th. On the 18th Wrens were busy building their nest by the roadside at Clifton, and a nest of young Thrushes was found in an evergreen hedge at Stramshall (Staffordshire) on March 31st. Even these were not the earliest nests of the season, for Mr. W. T. Mynors came across a nest of the Brown Owl which contained young in down on Feb. 23rd, while another was found with one young

bird and an addled egg on the 19th, quite a month earlier than the usual laying-time of this species!

On March 25th three Sandpipers were noticed at Repton by Mr. J. E. C. Godber, and about March 27th the Wheatears returned to their breeding haunts on Thorpe Cloud. A Dipper's nest at Ilam had four eggs on March 27th, and another at Sturston contained fledged young on April 12th. By April 4th Wild Duck, Blackbird, Robin, and Thrush had laid, and several Mistle-Thrushes were sitting. Several small flocks of Goldfinches were reported from the Ashburne district about this time, and on April 10th six large Gulls (sp. ?) were seen flying eastward over Clifton about 7 p.m.

On May 22nd we had a very sharp frost in the morning, which killed all the foliage on the copper-beeches, and seriously injured many of the ashes, chestnuts, and beeches in the neighbourhood of water. Owing to the provision of nesting-boxes the Great Tits have increased in numbers in this village, and four or five pairs now haunt my garden. A hollow oak, which has occasionally been inhabited by Brown Owls, and frequently by White Owls, contained five eggs of the latter species on May 26th. An extraordinary Blackbird's nest was placed on the ground in the middle of a small clump of rushes, right out in the middle of a pasture-field. The eggs might have passed for rather lightly-marked Thrush's eggs. A Nightingale was heard for two nights (May 22nd-23rd) at Thorpe Rough, but apparently moved on, for it was not noticed subsequently. The two Merlins' nests found on the North Derbyshire moors have already been recorded in these pages (*Zool.* 1905, p. 267). Mr. C. E. B. Bowles also informs me that a single Merlin was noticed by his son on Abney Moor this year.

A good deal of timber has been felled lately in the Ramsor Woods, and the Great Spotted Woodpeckers seem to have deserted the locality. However, we found another pair breeding in a dead and very rotten tree in a hanging wood not far from Dovedale. This year's nest-hole was about thirty-five feet from the ground, and above it were the remains of two older nests. On June 6th the six eggs in the lowest nest were perfectly fresh. Mr. Storrs Fox states that a young bird was brought alive to him on June 25th from Manners Wood, near Bakewell.

The White Owl's nest, which contained eggs in May, was again utilized for a second brood in July (six eggs), and later in the month a Nightjar's nest with two eggs was found while cutting bracken near Wootton, Staffordshire. At Osmaston Manor the Great Crested Grebes successfully brought off a brood of four young.

On the whole the weather of the summer and autumn of 1905 was extraordinarily fine and dry. From many parts of England reports of the exceptionally late stay of both Swifts and *Hirundinidæ* were received. Most of our local Swifts had disappeared by the middle of August, but on the 24th Mr. A. Evans saw one go into a nesting-hole at Rocester; and on Sept. 3rd I saw one hawking about, together with a number of Martins and Swallows, near Bradbourne Mill.

The House-Martins, as usual, were still feeding their young long after the young Swallows and Sand-Martins had left the nest. Mr. G. Pullen noticed a single Swallow at Darley on Nov. 6th, and several were seen at Repton about the same time. The most remarkable note on the subject reaches us from Burton, where Mr. H. G. Tomlinson reports that a single House-Martin flew out of an old nest which was being knocked down on Nov. 25th!

A new species was added to our county fauna on Sept. 30th, when Mr. Herbert Tomlinson shot a fine Curlew-Sandpiper (*Tringa subarquata*) on the sewage-farm near Egginton, from whence so many scarce birds have been recorded. Another bird of the same species was also seen, but not shot. The specimen has been preserved, and is in Mr. Tomlinson's possession; it is apparently a bird of the year. The number of species definitely recorded for Derbyshire, excluding those which are believed to have been artificially introduced, now stands at two hundred and thirty-five. Another interesting visitor, which was shot on the same day and at the same place as the Curlew-Sandpiper, was the Little Stint (*Tringa minuta*). Only one of the two previous records can be regarded as satisfactory, so that this is the second definite record of the species for the county.*

On Nov. 4th an enormous white bird was seen flying over the Derwent Valley, near Little Eaton. It was apparently attracted

* A Green Sandpiper (*Totanus ochropus*) was killed by Mr. R. G. Tomlinson on the sewage-farm early in September.

by the sight of the water, and settled in a field close to the river, causing a stampede among the cattle and sheep grazing in the meadows. A local innkeeper, Mr. S. Stevens, stalked and shot the bird, which turned out to be a fine male White Pelican (*Pelecanus onocrotalus*). According to the local papers, it measured twelve feet in expanse of wing, and weighed fifty pounds. I saw it in Mr. Hutchinson's shop, and the plumage was clean and in good order, and, as the nearest place where these birds are kept in captivity is at least fifty miles away, it must have possessed considerable powers of flight. Up to the present no information as to the escape of any captive bird has reached us.*

After high winds on the preceding day a very large flock of Gulls visited the Dove Valley, and rested for a short time in the meadows above Okeover on Nov. 27th. Mr. J. Henderson, who estimated the number of the flock at one hundred and fifty at least, believed that most of them were Herring-Gulls (*L. argentatus*). The same observer also informs me that a pair or two of Nuthatches are to be found in Okeover Park.†

Possibly the herd of Bewick's Swans (*C. bewicki*, Yarr.), which visited this district in 1904 (Zool. 1905, p. 58), may have returned in 1905, for on a Sunday afternoon early in December (probably Dec. 3rd) Mr. J. E. C. Godber and a friend heard in the distance loud trumpeting notes, and soon afterwards nineteen Swans came into sight, crossing the Trent near Willington, and flying northward. An interesting feature of the last few seasons has been the decided increase in the number of Herons, which are now quite a feature on the upper part of the Dove Valley, and in that of the Manifold. These birds seem to have benefited by the protection orders, and are certainly more numerous now than formerly.

* It is perhaps worth noting that the White Pelican has recently been recorded from Bavaria in a wild state, as well as the Flamingo, which is admitted to the British list by Mr. Howard Saunders on somewhat similar evidence to the above.

† He also informs me that he had a good view of a Black Rat, not a melanistic Water-Vole, but a long-tailed animal with pointed head, by a small barn not far from Hanging Bridge. We have no properly authenticated instance of the occurrence of *Mus rattus* in the county, though probably at one time it was common.

ICHTHYOLOGY IN JAPAN. (ECONOMIC SPECIES.)

By Prof. McINTOSH, M.D., LL.D., F.R.S., &c.

THE second part of the popular account of the Economic Fishes of Japan, by Messrs. Otaki, Fujita, and Higurashi,* contains a description of five edible fishes, viz. *Scombrops cheilodipteroides*, Blk., the Mutsu; *Scomber colias*, Gmel., the Speckled Mackerel; *Trachurus japonicus*, T. & S., the Maaji; *Decapterus muroadsi*, T. & S., the Muroadsi; and *Paralichthys olivaceus*, T. & S., the Hiramé (proper).

Four imperial quarto coloured plates accompany the text, one containing two figures, and all are exquisite representations, apparently from life, by the same artist, Kumataro Ito.

The first fish in the present part is *Scombrops cheilodipteroides*—the Mutsu—one of the *Percidæ*, an edible fish of some size, which abounds on the Pacific shores of Japan, has pelagic eggs—spawned in January and February, when it comes to shallower water from its usual haunts in two to three hundred fathoms on rocky or sandy ground. Like the young Cod, the young Mutsus are found swimming off the rocks in three or four fathoms, and are supposed to attain maturity in three or four years. It is used chiefly in the fresh state, and its roe is also much esteemed.

The "Spanish" or Speckled Mackerel (*Scomber colias*), which recently was included in the able Report on the Japanese and European Mackerels, by Prof. Kishinouye,† forms a very important fishery with nets and lines along the south-eastern coast, finely chopped Squids or Shrimps being thrown into the water to allure the fishes. In dark nights also torches are employed in the boats. The food of the species consists of a great variety of pelagic invertebrate animals, and has been carefully investigated by Prof. Kishinouye. The wide distribution of the Mackerels is a feature of both interest and importance.

* No 2, vol. i. Shokwabo, publisher, Nihonbashi, Tokyo, Japan.

† 'Rept. Imper. Fisheries Bureau,' No. v. vol. ii. 1894.

Trachurus japonicus—the Maaji—among the Horse-Mackerels (*Carangidæ*), is another food-fish, used either fresh or dried. It would therefore appear to be superior to the Scad or Horse-Mackerel of our shores, which is but rarely used as food, though from the days of Pennant it has been “firm and well tasted,” especially when it reaches the shores and estuaries in spring.

The Muroadsi (*Decapterus muroadsi*), a closely allied form, is very common, frequenting the warm currents in shoals from May, its spawning season till October, and near the shores.

Paralichthys olivaceus—the Huramé—a flat-fish (Pluronectid) of some size (83 cm.) ; indeed, it is exceeded only by the Ohio (*Hippoglossoides*). It is a valued food both in the fresh and dried condition. Before spawning it comes into shallower water (five fathoms), and is ripe in May and June, the female having about two million pelagic eggs with an oil globule. It is stated to become mature in about five years, and that the sexes can be distinguished by the position of their genital openings, a feature sometimes overlooked in the fishes of our own country. It appears that the catch of this fish has been increasing since 1899, and the fishery is carried out on or near sand-banks, and with trawl and gill-nets. Hooks are, however, used in water of thirty fathoms, and the usual bait is “brined” sardines.

This part contains, like the former, a series of illustrations of the apparatus and methods of fishing of the Japanese—such as sheet-nets for capturing fishes in shoals ; lines with attached wire-cage near the sinker, as a lure, so that the fishes are attracted first and then captured by the hooks ; besides figures of lines and hooks, the methods of setting, and boats at work near the coast.

The excellent character of the work is maintained in this part both as regards text and illustrations.

THE FLIGHT OF FLYING FISH.

BY LIONEL E. ADAMS, B.A.

ONE would think that the method of flight in Flying Fish had been the subject of observation sufficiently long to enable naturalists to come to some definite opinion thereon, especially as the phenomenon is of such common occurrence in tropical and subtropical waters. We find in the 'Royal Natural History,' vol. v. p. 402, the editor's summing up of the question as follows: It is "well ascertained that the continuance of the flight is due to the original impetus of the leap from the water, and is not prolonged by the flapping of the fins." This statement is thus qualified further on: "From my own observation I am, however, of opinion that the pectoral fins are vibrated rapidly on first leaving the water for a few seconds, doubtless from a continuation of the swimming motion while in the water, after which they become entirely motionless," the writer suggesting that this vibration is due to the continuance of the action initiated while the fish was still immersed, and that this movement does not assist the flight.

After this pronouncement from so high an authority I should not venture to trouble you on the subject, if the evidence of my own repeated and often prolonged observation did not differ materially from what has just been quoted.

One rarely has the opportunity to observe adult Flying Fish swim, as they are very shy of a boat; but I have often picked up fish just as they have come on board, and put them into a bath to study their movements. When in the water they never use their wings (I use the term "wings" for convenience) to swim with, but hold them close to their sides; the tail, however, vibrates, sending them with a rush against the side of the bath, which generally stuns them, and they never recover; but I have noticed that if their rush takes them along the length of the bath, and they have room to show an attempt to rise from the

water, they only begin to spread their wings just as they are about to leave the surface. The shoals of fry that one often passes through seem to flap their wings in abortive attempts to rise, but to swim with the tail alone. I think, as a rule, that most fish of all sorts use the tail and not the pectorals when swimming fast, but when swimming slowly the pectorals are slightly employed, and then more as guides and checks than as propellers.

Dr. Möbius, quoted on the same page (*loc. cit.* p. 402), says : "Flying Fish often fall on board vessels, but this never happens during a calm, or from the lee-side." I have, though rarely, known Flying Fish come on board in a calm at night, when they fly at the lights, but in rough weather I have known them come on board from both sides alike.

In 1882 I had special opportunities for watching the flight closely, and I give the substance of notes made at the time. It was on the way home from the Persian Gulf in a tramp steamer, and we had to face an exceptionally heavy south-west monsoon from Maskat to Aden, especially after rounding Ras al Had. We battled for nearly a fortnight amid waves like hills that kept piling up against us, and out of these waves shoals of Flying Fish used to start like flocks of Starlings. These shoals used to fly all day at short intervals quite close to the ship, and very frequently across it, within a yard of my position, and I was often able to see them against the sky. Once, after dark, one struck me on the back—a somewhat severe blow. Often they would strike the rigging and fall down, when they were eagerly snapped up for next morning's breakfast. I used to watch them for hours as they kept flying past, and I could see quite distinctly that their tails were vibrating very rapidly from side to side during the whole of the flight, and that the wings would vibrate with an intensely rapid shivering motion for a second, then remain outspread motionless for one or two seconds, and then vibrate again. This vibration of the wings is not up and down as is the case when birds fly, but in an almost horizontal direction. Often, however, the period of soaring with motionless wings appears longer than two seconds, especially towards the end of the flight, just before they fall into the water with a splash, though the vibration of the tail always continues throughout the

entire flight, the whole flight being performed very much like that of the Starling as far as the wings are concerned.

Since making the foregoing observations in the Arabian Sea I have had numerous opportunities of watching Flying Fish in various parts of the world, and all my observations confirm my first impressions.

As to the length of the flight, the following from my personal observations noted on the spot may be taken as not excessive. The longest flight of which I have a record is from Sunda Straits, where the fish run large, it was "quite three hundred yards, often with several dips of the tail, and changes of direction." I have notes from Perim to Pulo Wey of flights of two hundred yards. In the Mediterranean, along the Algerian coast, where the fish run small, one hundred and fifty yards is a long flight. In the Adriatic, where I have seen them as far north as Poma Island, one hundred yards is a long flight. In the Atlantic, south of the Newfoundland Banks, two hundred yards is not an uncommon flight. I think the length of the flight is alone sufficient to refute the possibility of its consummation without the initial velocity being renewed. One theory is that they keep up the flight by going against the wind, soaring like sea-birds; but, as a fact, the fish will start off in all directions from the bows of a vessel, or when chased out of the water by enemies—as often in a calm as in rough weather, against, across, or before the wind, and, as I have mentioned above, will often change the direction of their flight, which is done by touching the water with the lower tip of the vibrating tail. I once spent the greater part of a distinctly warm afternoon, in a dead calm in the Gulf of Aden, watching schools of the Sailors' Dolphins (*Coryphæna*) bounding out of the water, chasing the Flying Fish as greyhounds course hares; and, to complete the similarity, the Flying Fish would dodge in the manner described—by touching the surface with the tail—often almost at a right angle, thus letting the pursuing enemy shoot past. Now, imagine what impetus would be necessary to start the heavy body of a fish on a flight of two hundred yards to be maintained by soaring alone, in any direction to the wind, or in a dead calm, the direction changing two or three times, and often following the undulating surface of the waves! By the way, it is always in a dead calm when the longest flights occur.

I am perfectly well aware that a casual glance at Flying Fish from the lofty deck of a liner gives the impression that they soar like birds with motionless wings, but watch them at close quarters from the deck of a low-waisted tramp, and the vibratory motions of tail and fins will be quite plain.

It is truly amazing to contemplate the countless millions of these fish in tropical waters. Often for weeks together one may every few minutes see startled shoals scatter from the ship's bows. I have watched for hours the sea thick with myriads of juveniles from a couple of inches in length. These do not fly, but flap on the surface; the flight begins when the fish are about three or four inches long, and increases in length as their size increases. The adults come on board chiefly at night, and mostly in rough weather. As I have said, they are often collected and fried for breakfast. The flesh is very white and firm, but somewhat dry, and the bones are particularly hard; but after living on "salt horse" and tinned tripe one regards them as a distinct relief. Fishermen bring them for sale to ships in the Japanese ports, but I have never seen them in the fish-shops there.

Of course, for anything I know, different species may have slightly different methods of flight; indeed, I am inclined to think they have. I have a note made fifty miles south-east of Cape Race to the effect that the Flying Fish appeared to have four wings. As I was watching them through a glass a fellow-passenger, to whom Flying Fish were familiar, came up, asking me if I had seen four-winged Flying Fish before. I never had, but I have thought since that these must have been of a species with large ventral fins, which may be spread in flight.

NOTES AND QUERIES.

AVES.

Fire-crested Wren in Dorset.—On March 28th a Fire-crest (*Regulus ignicapillus*) was seen near Charmouth, flitting about the base of a hedge by the River Char, three hundred yards from the seashore. A strong north-east wind was blowing, but the afternoon sun shone warmly on the sheltered side of the hedge, where six or eight Chiffchaffs were also disporting themselves; they were constantly fluttering in the air after flies, and occasionally uttered a few notes of their simple song, but in such weak tones as to suggest they had recently arrived on our coasts. A Golden Crest appeared for a time about the same bushes, and once or twice made a dart at the Fire-crest, when the difference in the plumage of the two birds was strikingly contrasted, the black line through the eye of the Fire-crest and the bright yellow-green of its shoulders giving it a distinguished appearance. We watched the bird through our telescopes at a distance of ten yards for about twenty minutes. It is the first time we have seen it in this country, though we are familiar with it in the woods around Baden-Baden.—G. LISTER (Lyme Regis, Dorset).

Fire-crest near Tunbridge Wells.—On March 3rd, near Tunbridge Wells (in Kent), I saw a small bird in a place where Gold-crests have been fairly numerous this winter, which I supposed to be of that species; however, it approached so near that I was able to see distinctly the black eye-stripe and white eyebrow which are characteristic of the Fire-crest. Since then several others, including a well-known local ornithologist, as well as myself, have several times observed this bird, and a second—no doubt its mate—has also been seen.—H. G. ALEXANDER (3, Mayfield Road, Tunbridge Wells).

Continental Long-tailed Tit in Yorkshire.—Near Kirkham Abbey, in Yorkshire, on March 18th, 1905, I saw a Long-tailed Tit, of which I obtained an exceptionally near view, enabling me clearly to see that it entirely lacked the black line over the eye, the whole head being pure white. It was in company with birds of the ordinary British type.—H. G. ALEXANDER (3, Mayfield Road, Tunbridge Wells).

The Breeding Range of the Twite.—I shall esteem it a favour if Mr. E. P. Butterfield will justify his remarks in the last issue of 'The Zoologist' (*ante*, p. 112) by pointing out where I have stated that the Twite is "generally distributed" in any part of the British Islands. The statement that this bird "breeds in most parts of the British Islands where moors, mountains, and exposed heathy places are found" seems to me to be a sufficiently broad and indefinite one, and fairly to represent the distribution of this species in the nesting season. I have nowhere asserted that it breeds on all moorlands, nor even in all parts of the country where moors, mountains, &c., are found. A reference to my first note (*Zool.* 1905, p. 390) will show that after making the general statement I proceeded to point out exceptions and limitations, one of these being that the bird is much less common on the eastern side of our islands than on the western; and it is curious that Mr. Butterfield should fail to see that his want of success in searching for this bird on the moors near Whitby is a mere illustration of what I have just said. If Mr. Butterfield was acquainted with the West of Ireland he would probably know of districts there where Twites are far more common than in Yorkshire. Future researches and closer scrutiny may reveal this bird as occasionally nesting even in parts of the country where it has been declared not to breed. It is difficult to prove a negative, and the Twite is a species which is both sporadic and local. I did use the words "wide distribution" (*ante*, p. 29) in speaking of this bird's range, some dim recollection of which may have been in Mr. Butterfield's mind. But this expression has a different meaning from "generally distributed," and would seem particularly appropriate to a species which breeds in various localities from the Shetlands to Kerry, and from the Outer Hebrides and Donegal to Derbyshire and Devonshire. Surveying Britain as a whole, we may find considerable tracts of country in which the Chaffinch, the Blackbird, the Robin, and the Rook do not breed; yet it would be pedantry to object to the statement that these are widely and even generally distributed species.—ALLAN ELLISON (Watton-at-Stone, Herts).

The Geese of Europe and Asia.—In the review of Alphéraky's "The Geese of Europe and Asia" (*ante*, p. 118), an impression of the reviewer appears to me to be somewhat misleading. At the commencement it is stated that the author of the book "is not disposed to lay too much dependence on the dimensions of the bill as a specific character, and which he regards as largely dependent on age, and also practises the greatest caution in using the colouring of the bill for the same purpose." From my careful reading of the book the reverse is

certainly the case; if not so, upon what characters does Alphéraky depend for establishing the numerous new species, such as *Anser arvensis*, *A. neglectus*, *A. arvensis sibiricus*, &c., &c.? As to the specific validity of *A. gambeli*, it may be noted that in a note on page 42, at the commencement of his article on the White-fronted Goose, Alphéraky refuses to recognize *A. gambeli* as a species; on page 57 he admits the large size of the bills of my birds, but erroneously gives my largest measurement as 2.0 instead of 2.24—I have since secured larger ones—but on page 56 he makes the curious assertion that I have not measured my bills correctly, that I must have measured round the curve of the nail instead of taking a straight line! This is wrong. For measuring my bills I use best quality fine steel tryers and steel measure, and do not—cannot with tryers—go round the curve of nail, but take a straight line from base of bill to end of nail. If I adopted the practice of some ornithologists, and put the point of the tryers amongst the feathers at base of bill, I could very nearly reach the maximum 2.35 of American measurements. To return to the question of *A. gambeli*. Since the publication of my paper in 1902, I have secured specimens to fill all gaps, which now make my series of this bird a perfectly complete one. In all the new specimens the extra length of neck as compared with *A. albifrons* was unvarying. This important character is utterly ignored by Alphéraky! As to that author's supposition that my specimens may not be identical with American birds, I may state that on my return journey from my recent expedition to Central British Columbia, I visited the United States, and examined all specimens of *A. gambeli* in museums from Victoria, British Columbia, through the chief cities of Canada to New York, where at the National Museum, through the kindness of Dr. Allen and his courteous assistant, Mr. Miller, I was enabled to study the entire series of this bird, and had no difficulty whatever in determining the whole as being referable to *A. gambeli*, and identical in all important characters with my series of birds. I did not find a specimen on any portion of the American continent I visited that I could have referred to *A. albifrons*. On the question of the translation of Dr. Radde's description of the colours of bill in *A. rubrirostris*, there is a footnote on page 49 stating that Radde referred to "the bright rufous-coloured feathers at base of bill." Whatever Radde did say, or intended to say, is beside the fact that there is a rusty red semicircular band at base of bill, not the feathers, in this bird, which can be seen only in the living or freshly killed specimens. It is clear that Alphéraky has never seen such. Mr. Stuart Baker has studied living specimens of this bird in the market at Calcutta, and instantly recognized this rusty-red band when

he examined one of my birds. Surely nothing more need be said on this much-debated question. Mr. Alphéraky, on page 57, expresses regret that he had not time to communicate with Mr. Gurney and myself. I share that regret, for it would have given me the greatest pleasure to have co-operated with him, and I think a little friendly interchange of views might have removed what appear to me to be blemishes in an otherwise excellent book.—F. COBURN (7, Holloway Head, Birmingham).

[Anyone perusing pp. 3 and 4 of Alphéraky's book must certainly be in no doubt as to that writer's emphatic opinion on the little reliance to be placed on the length and colouring of the bill as a specific character. Whether he has been consistent in these views throughout his book is a matter which Mr. Coburn evidently questions.—THE REVIEWER.]

Avocet near Rye. — On March 21st, near Rye, I saw an Avocet. Others have seen it since with me, at the same place, and we have been able to get near enough to see its curved bill and blue legs quite clearly. When settled it looked quite white at a little distance, except for the black on the head. It flew with its legs stretched out behind, and then the black on the wings gave it a pied appearance.—H. G. ALEXANDER (3, Mayfield Road, Tunbridge Wells).

Knot (*Tringa canutus*) in Wiltshire.—As the Rev. A. C. Smith, in 'The Birds of Wiltshire,' only mentions three instances of the occurrence of this bird in Wiltshire, it may be worth recording that on Feb. 27th last I caught a Knot (female) in a field about half a mile from Salisbury. It had lost part of one wing, no doubt from flying against a telegraph-wire, and was very thin and weak. — ARTHUR BANKES (Leadenhall, The Close, Salisbury).

Great Skua at the Færoes.—In the last issue of 'The Zoologist' (pp. 81 *et seq.*) I read that two English collecting ornithologists visited the Færoes in the summer of 1905, and on one of the southern islands they found the eggs of three pairs of the Great Skua (*Stercorarius catarrhactes*). It would be right, I think, to inform your readers that the few remaining Great Skuas have been fully protected by Act of the Danish Parliament of Dec. 18th, 1897, renewed in 1903; so that no collecting is allowed. The inhabitants of the Færoes deserve great praise for having done their best to preserve these magnificent birds on their islands; it would be a pity if their efforts should be frustrated. In spite of all protection the number of breeding Skuas diminished considerably from 1897 to 1903.—HERLUF WINGE (Vice-Inspector at the Zool. Museum, Copenhagen).

Ornithological Notes from Lewes.—A Chiffchaff spent March 9th in the hedges near this rectory; it then disappeared, and I saw no other till March 23rd. Every winter for the last five years a pair of Grey Wagtails have taken up their quarters along a tiny ditch near the rectory; this year I saw them last on March 14th. The vast flocks of Starlings which have roosted in our woods broke up this nest. I noticed that the resident Starlings roosted about the farms, &c., as usual, and never seemed to mix with the aliens. On May 2nd, 1901, at the edge of Blunts Wood, in this parish, I watch from a very short distance a bird which at the time I thought, from the description in Saunders's 'Manual,' to be a Woodchat Shrike. I have recently seen the specimens of that bird in the Museums at South Kensington and Brighton (Booth), and am now absolutely convinced that I was right. I took a careful note of this at the time, and spent most of the morning watching it. The ordinary Red-backed Shrike is quite common here.—CLIFFORD TOOGOOD (Barcombe, Lewes, Sussex).

Some Notes on Birds of Donegal.—In 1905, Mr. Theed Pearse and myself spent the latter end of May and first few days in June visiting the locality around Narain. In 'The Zoologist,' 1892 (pp. 128-131), I made some notes on the birds observed in this district, and it will not be uninteresting to compare and add to such after a lapse of fourteen years.

WHINGHAT.—Carefully sought for in a former nesting haunt, but found absent.

GOLDFINCH.—Apparently not nearly so plentiful.

RAVEN.—A pair have nested for several years after an absence of many previous years. This year the young flew from a nest in Scoutalting, near Dunmore Head.

HOODED CROW.—Nested previously, but not met with in its former haunts.

JACKDAW.—Numbers nesting on the headlands.

WATER-RAIL.—Two seen on the Sheskinmore, probably birds of different pairs. One evidently had young, as it became very excited at my approach, and refused to leave the vicinity of a small patch of rushes.

LAPWING.—A pair nesting on Roaninish Islands.

DUNLIN.—Some half-dozen or more pairs nesting on the Sheskinmore, and several were heard uttering their love-call on Roaninish.

REDSHANK.—One pair and their eggs found on the Sheskinmore.

PURPLE SANDPIPER.—One picked up dead on Inishbarnog, and another seen at Roaninish, May 25th.

TURNSTONE.—Small parties still in evidence up to May 25th.

WHIMBREL.—A few remained on the Sheskinmore, and at Inishkeel.

HERON.—About six pairs were nesting on Lough Aderry. As in former years, only eggs were found; none then with young.

GOOSE (? species).—A solitary Grey Goose observed May 21st at the Sheskinmore; it appeared to be a strong bird on the wing, and would not allow too near an approach.

RED-BREASTED MERGANSER.—A small party frequented Dawros Bay. One pair found nesting on Lough Aderry.

LESSER TERN.—The colony formerly nesting on Cashelgolan Strand have evidently now ceased to breed there; only the smaller numbers at Ballyiriston remain.

ARCTIC TERN.—The considerable colonies that used to nest on Roaninish and Inishbarnog islands seem to have been harassed, causing them to forsake these haunts. Large numbers now breed on some of the islands of the fresh-water lake, Lough Kiltorris, and on one of the islands of the Gweebarra Bay, near Ballyiriston.

COMMON GULL.—Many pairs now nesting on certain of the islands in Lough Derryduff.

HERRING-GULL.—Numbers found nesting on the low rocks of Roaninish Island, and one pair we found with eggs on an island in the fresh-water lake, Lough Kiltorris. It is possible that the nesting of this bird in the former locality may account for the absence of the Arctic Tern nowadays.

ICELAND GULL.—An immature bird shot about five years ago near Inishkeel, now preserved at the rectory.

POMATORHINE SKUA.—One picked up dead at Lough Kiltorris, May 29th, 1892, was presented by the writer to Dublin Museum.

MANX SHEARWATER.—A few were seen between Dunmore and Roaninish.—J. STEELE-ELLIOTT (Dowles Manor, Shropshire).

BATRACHIA.

Pugnacious Propensities of *Rana esculenta*.—In June, 1904, I chose a particularly wet day for a Frog-hunt along the ditches round the paddy-fields on the outskirts of Kobe. There were plenty of Frogs, chiefly *Rana esculenta*, also the pretty little *Hyla arborea*, and a few *Rana rugosa*. I had secured one or two, and was pointing to another with the point of my umbrella to draw the attention of a friend who was with me, when, to our great surprise, the Frog made a snap at the umbrella. This it did several times, following the point of the

umbrella as I drew it towards me, till it came within reach, and I secured it with my hand. I then repeated the experiment with another, which acted in the same way, as did several more. All were *R. esculenta*. This action surprised me very much, as I had never heard of Frogs being pugnacious, and I should much like to know if this is characteristic of the species.—LIONEL E. ADAMS (Reigate).

PISCES.

The Pearlsides (*Maurolicus pennantii*) up River.—An unusually high tide on the 11th March overflowed the banks of the River Bure at several places not far from this town. A new railway-bridge spans the river, and here the "wall" has not been properly restored, so that the rising water found easy access to the neighbouring ditches and gardens of the lower level on the other side, into which it poured like a mountain torrent. I visited this spot some few days after, and was surprised by finding a $1\frac{3}{4}$ in. specimen of the above silvery little fish lying on the railway-bank just on the edge of a gully formed by the rushing water, about three miles from the harbour mouth. It was shown to Mr. Patterson, who first recorded this species locally.—J. E. KNIGHTS (87, Churchill Road, Great Yarmouth).

OBITUARY.

CANON HENRY BAKER TRISTRAM, D.D., F.R.S., &c., &c.

IN Canon Tristram, who passed away at Durham on the 8th of March last, we have lost one of our oldest and best known ornithologists. Canon Henry Baker Tristram, D.D., F.R.S., &c., &c., was born on the 11th of May, 1822, was ordained in 1846, was appointed Master and Vicar of Greatham in 1857, and Canon of Durham in 1870.

He commenced the study of ornithology early in life, and was from the beginning an ardent collector. His first experience of outdoor work outside Europe was at Bermuda, where, as army chaplain, he remained from 1847 to 1849. In 1855 he went to Algeria on account of his health, and, in fact, his lungs were so greatly affected that he was sent there as a last resource, and was scarcely expected to return; but he soon recovered sufficiently to be able to do some excellent work in ornithology, and collected largely, both birds and their eggs, as can

be seen from his papers contributed to and published in the first volume of the 'Ibis,' in which he described nine new species of birds from the Sahara ('Ibis,' 1859, pp. 57-59). It is remarkable that in this volume Canon Tristram wrote as follows (p. 429):—"Writing with a series of about 100 Larks of various species from the Sahara before me, I cannot help feeling convinced of the truth of the views set forth by Messrs. Darwin and Wallace in their communications to the Linnean Society, to which my friend Mr. A. Newton last year directed my attention—'On the Tendency of Species to form Varieties, and on the Perpetuation of Varieties and Species by Natural Means of Selection.' It is hardly possible, I should think, to illustrate this theory better than by the Larks and Chats of North Africa." From this extract it will be seen that Canon Tristram was one of the first ornithologists to recognize the importance of the Darwinian Theory. Besides the sojourn in Algeria, which extended from 1855 to 1857 Canon Tristram visited and made collections in the Holy Land, Moab, Egypt, the Canary Islands, and even Japan, which he visited in 1891. Canon Tristram's large collection of birds, which is especially rich in island forms, he disposed of to the Liverpool Museum, but even after having parted with it he continued to collect almost as ardently as ever until a few months previous to his death, and has left a collection of about five thousand birds. His collection of eggs he sold some years ago to the late Mr. Philip Crowley.

Canon Tristram was a most industrious writer, and contributed largely to the 'Ibis' from 1859—when the British Ornithologists' Union, of which he was an original member, was founded—to 1904. His first paper in vol. i. was on the Ornithology of Palestine, and in the 1904 volume—his last communication to that Journal—a long letter will (p. 164) be found, which treats also of the 'Birds of Palestine.' His chief works are as follows:—"The Great Sahara," published in 1860; 'The Land of Israel,' published in 1865; 'The Land of Moab,' published in 1873; 'The Natural History of the Bible,' published in 1873; 'The Fauna and Flora of Palestine,' 1884; 'Rambles in Japan,' &c., 1895.

He married in 1850, but lost his wife just three years previous to his own death, and leaves a large family of daughters, but only one son, who is the headmaster of Loretto College.

H. E. D.

NOTICES OF NEW BOOKS.

Darwinism and the Problems of Life. By CONRAD GUENTHER, Ph.D., &c. Translated from the Third Edition by JOSEPH McCABE. A. Owen & Co.

THIS book should be read by all who wish to keep abreast of evolutionary literature; it advocates what has been called "the all-sufficiency of natural selection," but carries Darwinism into ethics, and makes it a dominant factor in the "social contract." The author, however, makes fair admissions, such as "Hence those who accept the theory of evolution are not at all compelled to subscribe to the theory of selection; in fact, there are many evolutionists who reject it." This is not always understood, and there are many, again, who recognize selection as a factor, or the dominant factor, but not the sole factor in evolution. The method of the work is to dispense as far as possible with referring to authorities, or giving biological references, but rather, as one may say, to treat the whole subject *de novo*, and to deal with animal life direct. This has its advantages in not bewildering an ordinary reader with constant references to a literature he will neither have the time to consult nor the knowledge to grasp; on the other hand, it sometimes produces the appearance of personal dogmatism in statements that without authority are at least bald. Thus, in discussing the effect of "isolation," and dealing with fishes that may have passed into waters not usually connected with rivers, and which would be cut off when the rivers fell once more, Mr. Guenther remarks:—"Selection had another effect in their new home. In the hot season most of the water dried up, and this was the occasion of the conversion of the swimming-bladder into lungs." Now, surmising that death was an equally probable concomitant of these conditions, such a conversion of bladder into lungs, which must on evolutionary principles be admitted, is not well advanced by such an illustration, nor is the biological metamorphosis understandable by

blank assertion. On the other hand, no evolutionist can grasp the whole detail of the evolutionary campaign, but an adequate conception of which often becomes possible by the thorough study of some biological division. This idea of conception rather than simple definition is well expressed by our author when he writes: "But while Darwin has destroyed species as *realities*, he has at the same time fully established the *idea* of the species."

This book is informative and suggestive to the last degree, however much the reader may dissent from some arguments in the discussion of a problem, which is really the highest that can engage the limits of the human intellect, or, as might be said, the sensations derived through our few senses. It is novel to find Nietzsche brought into court, and his "egoism" described as "built up rigorously on a basis of selection." One error of fact is at least put forward when it is stated that in the case of Moths as well as Grasshoppers, "there is not a very great difference in habits between the larva and the imago"; and at p. 194 "*callima*" should be written "*Kallima*."

The Birds of the Isle of Man. By P. G. RALFE. David Douglas.

As Mr. Ralfe remarks in his Preface, "The fauna of an island, with its sharp definition, must usually be of greater interest than that of a mainland area of equal size," and a standard book on the birds of Man is a very welcome and useful publication. The genuine Manx birds number one hundred and thirty-eight, which, with forty-five occasional visitors, brings up the total to one hundred and eighty-three. Of these, seventy-five are resident (breeding), eighteen regular summer migrants (breeding), and forty-five regular autumn, winter, or spring migrants (not breeding). Among the birds not found on Man may be mentioned the Jay and the Tawny Owl.

There is very much more in this book than the enumeration and narrative of the birds. The introductory portion is very full, and the peculiarities of the vertebrate fauna well described; while, besides the "Manx bird-names" appended to many species, there is also a short glossary of Manx words used in the volume. Another very pleasing and attractive feature is to be found in the numerous photo-plates of Manx scenery; this might be

followed in other local ornithological books, for we seem to recognize the haunts of various species, and the tourist, as well as the ornithologist, should take this volume with him when visiting Man.

The Twite has been found breeding both in the north and south of the island, and is described by Mr. Ralfe as "an inhabitant of mountains and high wild coast-lands." *Corvus frugilegus* is now an abundant species, and our author enumerates twenty Manx rookeries. The Chough is reported "as more frequent in Man than is perhaps generally supposed," the account of this bird being given in a very full and interesting manner; and we re-echo the plea made by Mr. Ralfe who, recognizing its may be inevitable extinction "in the course of natural law," earnestly asks "all professing interest in the ornithology of Britain to abstain from the encouragement of any action (punishable also by Manx law) which may accelerate that extinction in this perhaps the most easily accessible of its British haunts."

Report on the Immigrations of Summer Residents in the Spring of 1905. By "The Committee appointed by the British Ornithologists' Club." Witherby & Co.

THIS publication, which forms vol. xvii. of the 'Bulletin of the British Ornithologists' Club,' is to be obtained separately, and should be in the hands of all students and lovers of British birds. The Committee consisted of Dr. F. G. Penrose (Chairman), M. J. Nicoll, N. F. Ticehurst, H. F. Witherby, and J. L. Bonhote (Secretary). The immigrations of twenty-nine birds are reported, illustrated by thirty-two maps, and the outlay made by the Club should be returned, for it is almost a duty to acquire this information on an intricate subject, and to support by purchase so excellent a Report. For this reason we have thought it unfair to make quotations from its pages, merely confining ourselves to the remark that one may gain a very considerable appreciation of the method and extent of this immigration by a study of the maps alone.

EDITORIAL GLEANINGS.

DURING the calendar year (1904) 330 mammals and 271,342 birds were imported into the United States under permit. Among the mammals were 11 Beaver from Canada, and 106 Squirrels from Europe. Of the birds, 232,617 were Canaries, 942 Pheasants, 3568 Quail, 1043 other game birds, and 33,172 miscellaneous species. Among the last-mentioned species were several from India seldom brought to the United States, a Horned Screamer and several other rare species from South America, and a Somali Ostrich (*Struthio molydophanes*), the first ever brought to that country. Two shipments of fifty Madagascar Weavers (*Foudia madagascariensis*) are also of interest, as they belong to a species which might become injurious should it once gain a foothold in the country.

Several entries, both of eggs and birds, show the progress of efforts to stock covers with foreign game birds, chiefly Pheasants, Partridges, Quail, Capercaillie, and Black Grouse. The total number of eggs imported was 2858, of which about 660 were those of Partridges, and the remainder those of Pheasants. Among the consignments of game birds was one containing 192 Hungarian Partridges, destined for South Carolina. In spite of repeated attempts, the introduction of the European Partridge into the United States has not yet been satisfactorily accomplished, and experiments with eggs are not more successful than with birds, less than fifty per cent. of those imported in 1904 having hatched. The importation of Chinese Quail for market purposes in California was practically stopped early in the year by the enforcement of a provision in the State law prohibiting the sale of these birds. Two shipments of Mexican Quail—one for California, the other for Bowling Green, Kentucky—also deserve mention. By far the most interesting game birds imported, however, were about 100 Capercaillie and 25 Black Grouse. These birds were liberated on Grand Island, Michigan, which a private corporation is converting into an important game-preserve. This experiment marks a notable step in the introduction of the Capercaillie into America, and its result will be watched with even greater interest than that made by the Fish and Game Commission of Ontario in 1903.—T. S. PALMER ('Year-book,' Dept. Agricult. 1904, U.S.A.), p. 609.

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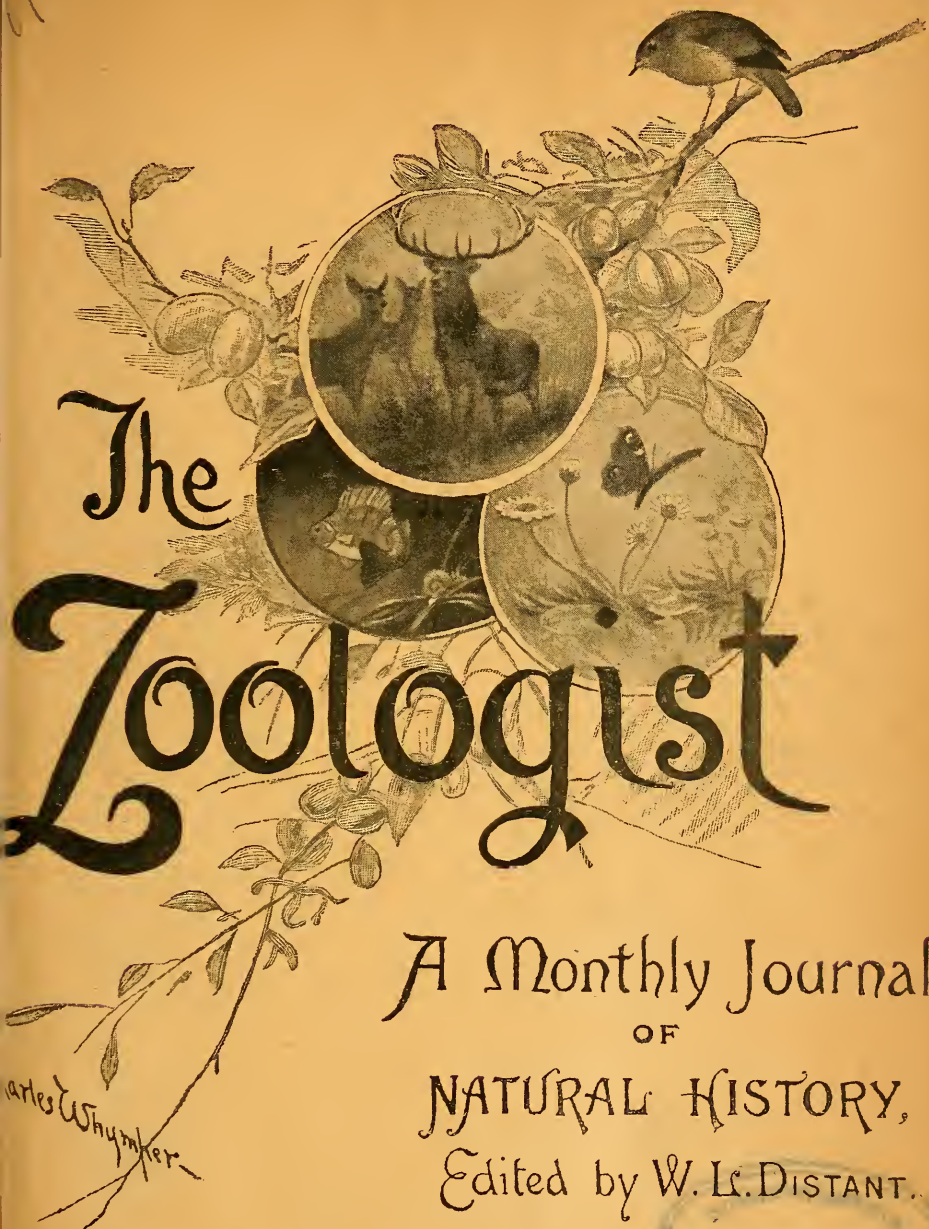
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THE ZOOLOGIST

No. 779.—*May, 1906.*

EXTRACTS FROM CHURCHWARDENS' ACCOUNTS OF BEDFORDSHIRE.

BY J. STEELE-ELLIOTT.

BEFORE placing on record the following extracts from the Churchwarden Accounts for the county of Bedford, I should like to acknowledge my indebtedness to the clergy and others who have so willingly given me particulars of such extracts from their parish books—frequently a voluminous undertaking, covering several centuries of entries. In such parishes that are omitted altogether, either no records of such payments exist, or do not appear to have been made; or, as in a few instances, the parish has only been formed in recent years after such payments ceased in the county. I have endeavoured to obtain fac-simile entries, but possibly these have not always been given.

Many interesting points are derived from a consideration of the extracts as a whole. The entire absence of any mention of the birds of prey is noticeable; also the very few instances in which Rats are included. Stoats and Weasels appear much less frequently than the Polecat, but this is more easily accounted for by the greater destructiveness of the latter in the poultry-yards and rabbit-warrens; in fact, in most parishes the former were probably not considered worthy of "head money" being paid. Hedgehogs seem to have suffered invariably, most likely owing to their destructiveness to the eggs of poultry, and possibly also to the superstitious belief of their sucking dry the cows'

adders. Where payments were made for Bats, they would, I think, only relate to such when destroyed within the church-buildings. Of greatest interest are the few payments for Marten-Cats in the parish of Roxton, a species of which very few records indeed can be given of its former occurrence in this county.

It will be noticed with what frequency payments are made to women; undoubtedly many such—as widows, for instance—earned useful sums of money in the destruction of vermin; others no doubt would be merely the receivers of the money on behalf of their husbands.

The earliest records we have appear in 1665 under Northill, and the last—with the exception of Sparrows—at St. Pauls of Bedford in 1838. Sparrows are first recorded in 1714, at Houghton Regis, and the most recent at Sandy in 1860.

The following entries under their respective parishes are selected to show the various kinds of vermin destroyed, with prices paid for same, the variation of spelling, and other payments of peculiar interest:—

		AMPTHILL.	
		1719.	s. d.
June.	Pd. for Baggers & Hoghogs & Polcatts	15	0
		1721.	
Apr.	Pd. for 5 hedghogs	1	8
	Pd. Mr. Wool's man for a pole catt	0	6
	Pd. for kiling 4 Dozn of Sparrows	0	8
	Pd. Richd. Uptin for killing Sparrows and a pole catt	1	0
Novem.	Pd. for killing of Varment	1	0
		1729.	
Novem.	pd. for 2 poole Catts	0	8
		1730.	
Aprill.	pd. for 2 poolcats		8
Decem.	pd. for 4 poll Cats	1	4
		1731.	
June 22.	pd. for a Hedge Hog		4
		1735.	
	Pd. Robt. Gray for 2 foxes	2	0
	Pd. Stephen Bolding for a fox	1	0
		1741.	
June ye 28.	Payd Robert taylor for 4 heghogs	1	4
	Payd John Paynter of Milbrook a hegghe.....	0	4
Nov. 25.	Payd tho ^m . Gandy for a hegghog	0	4
Nov. 25.	Pd. John Johnson for killing a Bager	0	6

1746.		s.	d.
Feb. 18.	Paid Henry Gray for a pole cat.....	0	4
July ye 29.	pd. Francis Coalman for a heghhog	0	4
Sept. ye 21.	pd. Henry Gray for a polcat	0	4
Oct. ye 24.	pd. Richard Sandy for 2 polcates	0	8

1753.			
Oct. 16.	For killing a Stote.....		6

1766.			
	Paid for Hedgehogs.....	1	6

Entries commence in 1719, and continue until 1772, the total of slain being—Badgers 3, Foxes 3, Polecats 75, Hedgehogs 197, Stoats 1; Sparrows only being included in a few years. In some few items only the money paid is stated without number of the various vermin being given. The prices given continue the same throughout the entries, with exception of the two instances included above of Polecat 6d. and Hedgehogs 1s. 6d.

ARLESEY.

1751.		£	s.	d.
Nov. 18.	Pd. for a pol-cat and hedge-hog	0	0	8
Nov. 28.	pd. Richd. Phillpps for 9 Moles	1	1	½

1752.			
Feb. 19.	Hooper. Pole-cat		4
June 12.	paid W. Robinson for Killing a Fox	0	2

1753.			
March 24.	pd. R. Phillips 6 Moules.....		9
August 21.	pd. Ruals for a Haghog		4
Sept. 22.	pd. Ruals boye for a Haghog		4
Dec. 19.	pd. R. Phillips for 3 Mouls		4½

1765.			
June 18.	paid for Sparrows and eggs		3
Aug. 8.	paid for 2 doz. Sparrow's eggs		2
16.	paid for 2 doz. Sparrows.....		3

The Churchwardens' Accounts are in three volumes—A, 1735 to 1758; B, 1758–1775; C, 1775–1793; the first entry for killing vermin being in 1751 (as already given), and the last in July, 1775, for the destruction of Polecats. The payments include Foxes, Polecats, Hedgehogs, Moles (about 450 were paid for from 1751–53), Sparrows, and their eggs. The prices paid show no variation.

BARFORD PARVA.

	1780.	s.	d.
3 Hedgehogs			9
2 Polecat.....			8
3 Moles			6
Sparrows		11	4
	1785.		
4 Clubsters*		1	0
	1788.		
1 Clobster*			3

The earliest entries commence in the Churchwardens' Accounts book in 1779, and continue down to 1848. In the former year the amount paid for Sparrows was 8s. 4d., but in the accounts dating from 1804 the yearly charge becomes higher, in one instance as much as £2 18s. 8d. being paid.

BARTON-LE-CLEY.

	1781.	£	s.	d.
Oct. 10th. Paid for Sparrows and polecats		17		9
	1791.			
April 3. Paid Tho: Harris for Mole Catching		1	10	0
	1798.			
Dec. 25. For Sparrows and polecats		17		6
	1803.			
Paid for Sparrows and Polcats		18		
	1813.			
6 doz. Sparrows				2
	1820.			
S. and p.		1	11	0
	1825.			
June 25. pd. for Sparrows and eggs at Sundry times ...		12		6
	1826.			
April 19th. pd. for 7 dozen Sparrows		3		6
	1828.			
Aug. 15. 6 doz. young S.		1		6
	1832.			
March 28. For Polecat.....				6
July 23. 3 young Polecats				6

The accounts commence in 1781, and continue until 1837. No entries appear other than for Polecats, Sparrows and eggs, and the one entry for Mole-catching. In the majority of instances the payments are put into a lump sum, Polecats being

* Evidently Stoats.

mentioned in twenty instances. Payments in all amount to £46 9s. 10d. Rates of payment seem to have been—for old Sparrows 4d. per dozen, and for young 3d. per dozen; but a few exceptions occur. No separate payment for eggs is given.

BATTLEDEN.

	s.	d.
1782.		
Paid Byway for mole catching	10	6

This appears to be the only entry that occurs in the Vestry Minute Book, dating from 1764.

BEDFORD (ST. PAULS).

	s.	d.
1808.		
Dec. 27th. Pd. for 2 dozen sparrows	6	6
Pd. for 2 Poll'd Cats	1	
1809.		
May 6th. A Hedge Hog.....	4	
1816.		
July 20. Pd. for 6 young Hedge Hogs, and 1 old one	1	4
Aug. 5. Pd. for 3 Pold cats.....	1	6
Sept. 26. Pd. for a Stort.....	6	
Nov. 12. Paid for a Pole cat	4	
1819.		
March 11. Paid for a Polecatt and Stoot	1	
1821.		
Jan. 28. Paid for a Wisel	4	
1822.		
Aug. 14th. Paid for a Stourt	4	
1838.		
Sept. 29. Paid Fitzhugh for killing Bats	4	

Entries in the parish accounts date from 1808 to 1838; but I have before me only a complete copy until 1816. Herein are payments—for Polecats 11, Stoats 3, Hedgehogs 68, Sparrows 18½ dozen. There do not appear to be any entries between 30th September, 1811, and 19th July, 1813. The prices of Polecats and Stoats seem to have varied at 4d. or 6d. each, Hedgehogs 4d., except in the one entry as given, where young are included. The first payments for Sparrows are at 3d., but latterly only 2d. per dozen was given. After 1825 the modern spelling of Polecat is principally used.

BIDDENHAM.

The Churchwardens' Accounts are very incomplete. There are numerous entries between 1836 and 1849, but only for the

destruction of Sparrows, and at the rate of 6d. per dozen, an unusually high price. No payments appear for eggs. In the former year £3 3s. 11½d. appears to have been paid.

BILLINGTON.		
	1697.	£ s. d.
Pd. to John Hargett for the powder in frightening the Crows, etc.		00 02 06
	1699.	
Payed to Hargett a years wages for mole takeing		01 00 00
	1700.	
Payed to Hargett a yeares wages for mole takeing at Mymys* last.....		01 00 00
	1701.	
Pd. to John Hargett his moletaking wages.....		01 00 00
	1702.	
Pd. to him his years wages for moletaking		01 00 00
Agreed that the moletaking wages shall be pd. no more out of the Towns rents.		

Hargett's name reappears in 1704. I understand that the overseers of this parish used formerly to pay for the destruction of Sparrows and their eggs.

BOLNHURST.		
	1676.	£ s. d.
2 Polecatts killed in the P.		0 0 8
	1679.	
pd. to John Rug 5 polcatts and a hodgh.....		0 1 10
	1710.	
pd. to Mr. Petty for killing of 2 foxes		0 2 0
	1777.	
Dec. 26. pd. for 2 polcats		6
	1794.	
Dec. 25. Pd. for Sparrows.....		4 0
	1799.	
Pd. at diffrant times for Sparrows		3 6

Only a few payments for killing vermin appear, the first in 1676; additional single entries for a Fox and a Polecat are included. Sparrows first appear in 1794, and continue irregularly until 1805, and where stated they were paid for at the rate of 2d. per dozen. Small sums only appear to have been paid.

BROMHAM.		
	1680.	£ s. d.
For killing a hedghogg.....		00 00 04
	1684.	
For a fox's head.....		00 01 00

* Evidently Michaelmas.

The earliest entry in the Church Book appears in 1680. Killing of Hedgehogs—often spelt “hoghog,” and sometimes “hedghoogg” and “hedgehoges”—seems to be a regular yearly item thenceforward until 1692.

CARDINGTON.

Payments for the destruction of Sparrows appear in 1836, when 7s. 6d. was paid; in 1837, £3 7s. 7d.; 1838, £2 0s. 2d.; 1841, £1; 1842, £2.

COPLE.

Entries for Sparrows only appear, the earliest being 9th April, 1812.

DEAN.

	1797.	s.	d.
For 2 doz. Bats		1	0
For a Fox		1	0
1810.			
13 doz. Battes at 6d.....		6	6

The payments appear to commence in 1797, and the last entry of any vermin is in 1834. The payments for Bats are of particular interest, no less than 852 being killed, all at the rate of 6d. per dozen. There are also entries for 25 Foxes at 1s. each. The precise dates of payment do not appear to be given.

1815.

		s.	d.
May 29. Pd. Paine 4 doz. Spars		0	8
4 old ones		0	1
Aug. 9. John Gurney 2 Hogs.....			4
Oct. 30. Pd. Merrewether 4 Poll Cats		1	4

1816.

Jan. 8. Merryweather and others for fox caught in trap ...		3	
May 27. Housed 3 Egoges.....		0	6
June 16. Chambling boy 3 dozen spears $\frac{1}{2}$		0	7
„ Jas. Waring one dozen of Speores		0	2
July 27. Houlet boy one snake 2 Hegogs.....		0	6
Nov. 6. Pd. Housed 5 Poll Cats		1	8

1817.

Mar. 8. Pd. C. Disher 2 Dozen old Spors.....			6
--	--	--	---

1821.

June 27. Paid Saml. Sage for fifteen dozen sparrows	3	9
Do. for a viper		2

1824.

Oct. 20. Pd. for a Notter		10	$\frac{1}{2}$
---------------------------------	--	----	---------------

(To be continued.)

FIELD NOTES ON SOME OF THE SMALLER
BRITISH MAMMALIA.

By GORDON DALGLIESH.

DURING recent years a great deal of interest has been taken in our native mammals, the result of this being that we now have some good and useful books on the subject, besides numerous papers thereon. That our knowledge is by no means complete has been shown lately by the discovery of two new Voles, viz. *Microtus orcadensis** and *Evotomys skomerensis*,† and two new Mice from St. Kilda.‡ For some two or three years I have been collecting small mammals, and have carefully kept notes on any information I have gained in doing so, and I venture to think that these may prove of interest to naturalists and readers of 'The Zoologist' in general. The means I employed for getting together a series of Mice, Voles, and Shrews being, of course, traps; these being the ordinary "break-neck" mouse-trap sold for a penny by all ironmongers. The only bait I have used for the above mammals has been cheese. By far the commonest mammals caught were Shrews, next to these being Wood-Mice and Bank-Voles, and the rarest—strange as it may seem—the Field-Vole. The traps were placed indiscriminately and anywhere where I considered there was sufficient cover to shelter "small deer." I found that on very windy or rainy weather I never caught anything at all.

NOCTULE BAT (*Pterygistes noctula*).—Although Gilbert White named this species "*altivolans*," it does at times fly very low—so low, indeed, that last summer I was able to knock several over by means of a stick whilst they were engaged in catching cockchafers. This Bat makes its appearance early in the

* Millais, 'Zoologist,' 1904, p. 244.

† Barrett-Hamilton, 'Proceedings,' Royal Irish Academy, vol. xxiv. sect. B, art. 4, pp. 315-19 (1903).

‡ Barrett-Hamilton, Proc. Zool. Soc. 1899, p. 81.

evening ; I have seen several on the wing at 5.30 p.m., flying in bright sunshine, and it goes to roost comparatively early, as I have never seen it on the wing after 9.30 p.m. It disappeared altogether after the end of August. That it hibernates at this early date seems hardly possible, and I feel sure that it is to a certain extent migratory, visiting other places. In supposition of this I can only say that I had never seen this Bat in the village of Milford, Surrey, until the year 1902, when I obtained a few specimens in a hollow elm-tree formerly inhabited by a pair of Barn-Owls. I did not see one during the summer of 1904, whilst last year they were very common there. These Bats have a strong and disagreeable odour, which is perceptible some way off, and I have constantly "winded" them when passing along a country road in the daytime.

PIPISTRELLE (*Vesperugo pipistrellus*).—This little Bat I do not think hibernates at all in the true sense of the word, as I have notes on its appearance in every month of the year, and I have frequently observed it flying and catching gnats on a winter's afternoon. It is remarkable how very easily these little creatures are killed. One flew into my bedroom one evening, and, wishing to keep it alive, I caught it in a butterfly-net, and found, to my surprise and regret, on taking it out, that it was quite dead.

DAUBENTON'S BAT (*Myotis daubentoni*).—As before stated in 'The Zoologist,' a friend and I caught several of these Bats one year at Teddington by angling for them over a bridge by the river. The following year the same place was tried again, but without success (A. H. Bishop, *in lit.*); not a single specimen was seen or obtained. From this I conclude that this species is migratory, and changes its quarters. I found them very regular in their habits. They appeared flying over the water punctually at 8 p.m., and their numbers gradually increased until 9 p.m., when every one disappeared, and, although I waited quite two hours, they did not put in another appearance that night. Not only once, but several times this occurred. I never could discover the resting-places of this Bat—whether they resorted to buildings or trees, though I think most probably it was the latter. I did not observe them on the wing after September. Their flight was very pretty, and quite unlike that of any other

Bat I know, being Swallow-like, and occasionally hovering over and picking some insect off the surface of the water.

HEDGEHOG (*Erinaceus europæus*).—The following is a note I wrote, which appeared in the 'Field' for Nov. 19th, 1904:—"Most writers on British Mammalia agree as to the hybernation of the Hedgehog. Bell says: 'The hybernation of the Hedgehog is perhaps as complete as that of any animal inhabiting this country'; and adds: 'It retires to its warm soft nest of moss and leaves, and, rolling itself up into a ball, passes the dreary season in a state of dreamless slumber, . . . and only rendered the more profoundly torpid by the bitterest frost.' Lydekker, in his 'Handbook of the British Mammalia,' remarks: 'During the winter the Hedgehog passes its time in a state of complete torpor, apparently never awakening, and therefore requiring no store of food.' This in a certain sense is true, but that it does awake occasionally I know, for in the winter of 1900-01 I caught a Hedgehog running about on the snow late one afternoon, and a few days later saw another one. Two writers in 'The Zoologist' for 1896 (pp. 76 and 98) affirm this. Now, these three incidents all took place in bitterly cold weather, and are opposed to what Bell states. In the island of Guernsey, where the winters are not so severe, I frequently found Hedgehogs (where they are very common) in the cold months of the year. That our hibernating mammals do sometimes awake is well known, . . . but the Hedgehog being abroad on cold winter days is remarkable, and worth noting." Last year, whilst I was staying in Somersetshire, I found the back skin only of a number of Hedgehogs lying about a field, and a friend tells me he had observed the same thing in Shropshire. I think this must have been the work of Foxes.

MOLE (*Talpa europæa*).—On going through a large series of Moles, I have come to the conclusion that these animals have no regular time for shedding their fur; but certain individuals moult throughout the year, though the fur is poorest in some specimens collected in June. They do not appear to put on a thicker winter coat, and this may be due to their subterranean habits. Living as they do below the surface of the earth, they would not feel the cold like terrestrial mammals. I picked out specimens collected in January, and on comparing them with some collected in July,

I could not see there was any marked difference in the thickness of the fur. In many June specimens parts of the body, especially the back, appeared as if the tips of the hairs had been cut off with scissors. I regard this abrasion of the hairs due to the constant movements of the animals in their underground passages. Moles, as a rule, retire deep underground in hard weather, though I have a specimen taken alive in February, above ground, during a hard and prolonged frost at 10 a.m. Moles have a partiality for wet swampy soil. I have often found their runs in these situations, and in some places where the water fairly—if I may use the term—"squelched" over my boots.

COMMON SHREW (*Sorex araneus*).—I have nothing further to add to my note on this species published in a previous number of 'The Zoologist,' except that last year I caught a Shrew in the act of devouring what would have been a very fine specimen of a Bank-Vole caught in one of my traps.

PIGMY SHREW (*S. minutus*).—I have never trapped this species, but found two dead ones last year in the neighbourhood of Godalming.

WATER SHREW (*Neomys fodiens*).—With regard to the moulting of this species, I cannot say how often it takes place, as I have found the species scarce, and have been unable to obtain many specimens; but that it *does* moult at least once a year I know, as I have found them in this condition in April. I find it has a great partiality for ditches and slow running streams, and it also is less aquatic in its habits than is generally supposed. I once saw one running along a perfectly dry ditch covered with dead leaves a long way from any water, and have several times picked up dead ones on the high road. The finest specimen I have ever seen is one in my possession, which was caught at Esher, Surrey, in November, 1904. The fur is extremely long and thick, and as soft and glossy as that of a Mole, while the stiff hairs on the feet and tail are greatly developed.

WEASEL (*Putorius vulgaris*).—I have on more than one occasion watched Weasels at play. Their actions then are extremely pretty and graceful, reminding one of kittens. They will when thus engaged bound up a couple of feet or so into the air in sheer exuberance of spirit.

DORMOUSE (*Muscardinus avellanarius*).—I once found a colony

of Dormice in a wood a few miles away from the Crystal Palace, and could have taken scores of them. Their nests were built on low bushes. One I caught was asleep in a Thrush's nest, where it had sucked the eggs, three in number. Round Godalming, in Surrey, the Dormouse is yearly becoming rarer, no doubt in consequence of the toll levied on them to supply London dealers, and I heard of one man in that neighbourhood who made a living out of catching Dormice and Squirrels.

WOOD-MOUSE (*Mus sylvaticus*).—I have taken every intermediate variety of this Mouse, from the typical *sylvaticus* to the so-called "Yellow-necked Mouse," *Mus flavicollis*. Some specimens showed no trace whatever of the yellow pectoral band, and others were nearly *flavicollis*, but not quite, having the band slightly broken in the middle. I took one specimen of *flavicollis* on Richmond Hill, and another at Milford, Surrey. I have trapped these Mice in a variety of situations in hedges, under bushes, in outhouses, round corn-ricks, and on the banks of streams, and in my opinion they are every bit as common as the House-Mouse. I found one asleep in a nest during November. The nest was a round structure, made of grass, and placed in a hazel-bush, but whether this was built by the animal itself, or was the deserted nest of a Dormouse, I am unable to say.

BANK-VOLE (*Evotomys glareolus*).—This Vole I have found to be quite common, at least in the south. I have trapped them among ivy-roots, and also in damp marshy woods, and in this last situation I found a nest composed of leaves, and placed in a thick tuft of grass at the foot of an alder-bush, containing five naked young. This was in May. I have found them breeding throughout the summer months, and killed a pregnant female in September, and one was caught on Nov. 5th that would have shortly given birth to five young (A. H. Bishop, *in lit.*).

FIELD-VOLE (*Microtus agrestis*).—I would like to draw attention to the great variability in size of the Field-Vole. According to my own experience those in the South of England are, on the whole, smaller than those of the midland and northern counties. Specimens I have examined, collected in Surrey, Hampshire, and Middlesex, were quite typical; whilst some collected in Warwickshire and Yorkshire were very large indeed, quite above the average. Whilst I was in Guernsey I was shown some Field-

Voles that were very nearly as large as half-grown Rats. I very much regret now I did not obtain some of these, as they might have proved to be an undescribed species or form. It is worth noting that—in the case of Voles, at least—those found on islands are larger than those of the mainland. Thus we have the Orkney Vole considerably larger than its near ally, the Field-Vole; and the Skomer Island Vole, which may be compared to a large Bank-Vole; and, lastly, the Guernsey Voles I have alluded to above. Mr. Drane, of Cardiff, was the discoverer of the Skomer Vole, and in a letter he wrote to me he says:—"The island is off Pembrokeshire, of some six hundred acres. There is not a tree on the island, the largest shrub is the common furze, . . . and it was there I first recorded the Vole as *Microtus skomerensis* in 1896." There is no doubt that the Voles of the British Isles until lately had been very imperfectly worked out, and even now I feel sure that close attention and careful collecting would reveal many more interesting points.

WATER-VOLE (*M. amphibius*).—In a former volume of 'The Zoologist' (1902, p. 66), I drew attention to the carnivorous tastes of the Water-Vole, which was confirmed by Mr. Patterson (p. 111). Another case came under my notice a year ago, when I saw one in the act of devouring some Moorhen's eggs. I have shot several of these Voles, which appeared to be suffering from a disease in the form of a hard scaly scab on the sides of the body. The animals appeared to be otherwise healthy; but this I have noticed many times, and the fact may be worth noting.

NOTES ON MARINE CRUSTACEA IN CONFINEMENT.

BY ALBERT H. WATERS, B.A.

(Concluded from p. 57.)

ALTHOUGH individual specimens were got from elsewhere, every one of the species kept by me in aquaria have been obtained from the eastern shore of the Wash—that is, from Hunstanton; so that I may be said to be practically writing a list of the Crustacea of that place, the fauna of which I have been observing for forty years. Thirteen years ago I entered into negotiations with the object of starting an aquarium close to the beach, and hoped to make of it a marine laboratory of scientific benefit. But the necessary outlay proved to be beyond my slender means, and the design was abandoned—for a time, as I hoped; but unfortunately I have met with reverse after reverse, and each has left me poorer than before, so that my project has never been accomplished yet, and I have had to content myself with such observations as I could make when visiting the spot every summer, not earlier than the end of March, or later than October. Yet, even with this more or less casual observation, I have in my note-books a fairly complete list of the fauna of the Wash, especially as it was before the place was so flooded with visitors as it is now in the summer season.

The bygone fauna of Hunstanton, in the days when it was a coral-reef, I have described in the defunct 'Naturalists' World' for 1884. I have collected and studied the fossils of the red-and-white chalk from the day I first went there as a boy, making casts or rubbings of such as I was unable to get out of the hard chalk.

The fauna of to-day is very different from those old Cretaceous times. The Brachiopods are no longer the prevailing Mollusca; Belemnites no longer dart about in the clear water; and although the bivalves are still well represented, it is by quite different species.

I have tried hard to find out what Crustacea lived in those days, but the investigation has not been an easy one for me. It is one I am still persevering with, however, and I may by careful and painstaking work meet with some success yet. I should have a better chance of success if I resided on the spot, and could give more time to investigating the fallen masses of red-and-white chalk.

But I shall be writing a palæontological article if I do not check my pen. To return to the Decapoda I was about to write on in my former article.

Pandalus annulicornis is a pretty creature to have in an aquarium; it looks as if made of tinted glass, with the joints a deeper pink. But I have found it rather tender in my shallow vases. It does not seem happy unless the water is deep, and I have never succeeded in getting it to breed as I have the hardier Prawns. It needs a vase all to itself, as it fights fiercely with its fellows, and a tank full of them will dwindle in numbers as did the "ten little niggers," until, when there are only two survivors, they get fighting, and then there is one. This one may live for months, untroubled apparently in conscience, but a very cold night may prove fatal to it, as it often has to mine.

Palæmon serratus I have only occasionally captured, and always of small size. It, however, makes one of the best aquarium pets I have had, and will live for two or three years—growing, indeed, until it gets too large for my vases. I had one which lived for a long time in company with an *Actinia mesembryanthemum* I brought from Brighton in 1876, and which is still living. The Anemone seems to have killed it in the end, but while it lived it was useful to pick up rejected pieces of food such as the Sea-anemone often seizes with her tentacles and then drops. I speak of it in the feminine gender because it has been the mother of several young ones.

Palæmon squilla I have also found an interesting pet. It soon becomes tame, and will take scraped meat off my finger. I have kept it until it has grown to full maturity, and become a parent. The larvæ, when first hatched from the eggs carried about by their mother, fall to the bottom of the aquarium; then they suddenly give a flap with their tails, and dart upwards through the water, afterwards slowly sinking, and anon repeating the

evolution. They are comical creatures at first, these zoea, but each moult makes them more and more like the adult Prawn. Only a small percentage survive to maturity out of the number of ova there are at first.

Palæmon varians is the easiest of all the Prawns to keep in captivity. It does not trouble much about the density of the water, and if the aquarium be properly made up can take care of itself during its owner's absence from home. I have left these Prawns for a month or more, and found them all right on my return home. I am not sure they do not sometimes eat seaweed; they certainly love to pick the laver about with their pincers. They are the only Prawns I suspect of occasional vegetarianism. I have seen them holding a piece of the green lettuce laver in their pincers, just as if about to put it into their mouths. As they seem none the worse for being left for weeks, they must either eat seaweed or have the power of enduring long fasts.

It is curious how Prawns lose their transparency when they are unwell or dying, and how opaque these crystal creatures are when dead. I can always see if they are ailing or distressed at all by noticing whether they are quite clearly transparent or otherwise, and generally in time to save their lives. I mostly lose them either by a sudden frost or by their fighting with one another. Some of the large Prawns are very fierce and pugnacious, especially the females when they are carrying ova. One of these contrived to kill a Hermit-Crab in the same aquarium, and another one, in with a Goby, killed the fish. I like to keep them with the fish, as they pick up all tiny morsels of meat these and the Hermit-Crabs reject. With scraped meat there is sure to be some not eaten, and if left it will foul the water; Hermit-Crabs are especially wasteful of meat given them.

The regulation food for my Prawns is scraped beef. This they take off a pointed wooden skewer, and evidently know where their food comes from, as they are eagerly alert at sight of the skewer. At other times they endeavour to arrest my attention by coming to the front of the aquarium and palpably begging for food.

Crangon vulgaris.—I have had such success with the Common

Shrimp—keeping them through their entire lives—that I have laughingly suggested it might be possible to breed them in inland ponds of sea-water. They grow very fast, and in three years seem quite old. They are quite tame with me, and feed from the wooden skewer just as the Prawns do. As soon as one has taken a morsel of scraped meat he scoops the sand away, and sinks down into the hollow before eating it. They spend most of the daytime buried up in the sand, which they excavate into a hollow with their feet and tail, and then sweep other grains over their backs by means of their antennæ so as to effectually hide themselves all but their eyes. At night they come out and roam about the aquarium. This is the best time to see them walking. Strange to say, they do not seem to mind artificial light, but walk about just the same when the aquarium is lighted up. They are peaceable things, and a number can be kept together without harming each other.

Shrimps do best with me in broad, shallow earthenware pans half filled with fine, soft sea-sand, and covered with an inch of water. They need plenty of air, and if opportunity be given them will crawl almost out of the water. They appreciate the sand being disposed like a sloping bank just covered at one part. In deeper aquaria—as in vases—I have had them crawl out on to the top of the rockwork. One old one I had a long time was very fond of perching on the top of a stone, with its back quite out of the water.

Mysis chamæleon.—Although I have kept for a short time numbers of the Opossum Shrimps, they need such frequent changes of water that they do not thrive in an inland aquarium. I have never succeeded in so taming them that they will eat scraped meat, and they seem to need something which is only found in the sea. I do not despair of succeeding with them yet, as I have succeeded in feeding Barnacles, and these capture minute particles of food, much as, I think, the *Mysidæ* do.

I fear I shall make this article too lengthy if I enumerate all the species I have kept. I have had four species of Shrimps, but the habits of the others do not vary much from those of *Crangon vulgaris*. Some other Crustacea I must also omit, and, merely mentioning the names of *Cymodocea truncata*—with ways

as amusing as an Armadillo—a species or two of *Arcturus*, and allied kinds, conclude with mention of—

Gammarus locusta. — This crustacean has lived generation after generation in my aquaria. An interesting trait in its nature is the care the parents take of their young. Male and female associate together, and pair off all their lives. The female is especially fond of her husband, and carries him about wherever she goes, until her eggs are hatched, when they both look after the young. The newly hatched ones do not essentially differ from the adult form, as do other Crustacea, unless they develop ere they leave the abdomen of the female. Like Shrimps they grow rapidly. Mine are tamable creatures, and come to a pointed stick or small quill as readily as the Prawns do.

Cambridge.

THE BIRDS OF THE DISTRICT OF STAINES.

BY GRAHAM W. KERR.

THIS list is made up from my note-books which I have kept for the last twelve years.

First, let me give some idea of the country included in these notes. On the Thames, Old Windsor Lock to the village of Laleham is the limit; across the river I have ranged to Thorpe, and all around Virginia Water; on the Middlesex side I have worked as far afield as Stanwell, taking in the new Staines reservoirs. The building of these reservoirs has had great effect on our bird-life, attracting many species formerly quite unknown to these parts.

Unfortunately the reservoirs are a very difficult place to successfully observe birds; there is an entire lack of any cover, the expanse of water is very great, and, owing to the height, the least breeze lashes it into an open sea. So that, even with good glasses, it is most difficult to approach near enough to satisfactorily identify the ever-increasing number of Waders, Duck, Geese, &c., that occur on spring and autumn migrations, or that remain to winter on the waters. The Duck and Gulls always keep well out towards the centre, and the Waders that run along the concrete slopes take alarm long before one can get anywhere near them.

MISTLE-THRUSH (*Turdus viscivorus*).—Of late years has increased considerably; in the autumn many birds of a very light plumage make their appearance, and, I think, must be migrants.

SONG-THRUSH (*T. musicus*).—Common.

REDWING (*T. iliacus*).—A good number pass the winter.

FIELDFARE (*T. pilaris*).—Common during the winter, but of late years there have not been so many, probably owing to the weather having been more or less open.

BLACKBIRD (*T. merula*).—Common.

WHEATEAR (*Saxicola œnanthe*).—In April, 1895, numbers occurred for the first time in the district, and were seen for one day only. In spite of a keen look-out every spring it was not until the autumn of 1904 that the bird was rediscovered. About a score of birds were then found frequenting a rabbit-haunted plateau in Windsor Park, and I thought had probably bred there. In spring (1905) half a dozen birds returned to the same spot, but, although one or two remained throughout the summer, I could find no trace of their nesting. With the exception of one or two recent individual appearances of the bird around the reservoirs on migration, this is the only spot where they are likely to be found. The country around Staines is not suited to their needs.

WHINCHAT (*Pratincola rubetra*).—A summer migrant, breeding round the sides of the reservoirs, but seeming to avoid the parts occupied by the Stonechat.

STONECHAT (*P. rubicola*).—A resident that has considerably increased in numbers. Frequents the sides of the reservoirs, nesting in the grassy slopes, often quite close to the road. The bird is remarkably tame, and pays no heed to the traffic, though very wary in approaching the nest. Two broods are reared, the first nest being commenced early in March.

REDSTART (*Ruticilla phœnicurus*).—Never very plentiful around Staines, and is becoming rarer. In Windsor Forest, however, it breeds regularly, and this spring I saw one there as early as the 19th March—an exceptionally early date.

REDBREAST (*Erithacus rubecula*).—Common resident, subject to considerable local movements.

NIGHTINGALE (*Daulias luscinia*).—Not so many as formerly, but still occurs in large numbers. The bird returns year after year to the same spot, and, if it has not been disturbed, rears its young within a few yards of the previous season's home. The song is often not commenced until some days after arrival. Sings quite as much during the day as at night, and it has struck me that the Nightingale must need much less sleep than many other birds. When the young birds are in danger the male utters a hoarse croak somewhat similar to the Red-backed Shrike's.

WHITETHROAT (*Sylvia cinerea*).—Common during summer; sometimes the foster-parent of young Cuckoos.

LESSER WHITETHROAT (*S. curruca*).—Not so conspicuous as its relative, but its skulking habits are apt to cause it to be overlooked until it brings its young into the gardens at the beginning of the fruit season.

BLACKCAP (*S. atricapilla*).—Sparsely distributed. The little red-capped hen is a most devoted mother. Once when I disturbed one from her nest, she flew at and brushed my face with her wing. On another occasion the bird only just left the nest, and remained on a branch within a few feet, quivering all over with anxiety, absolutely fearless for herself.

GARDEN-WARBLER (*S. hortensis*).—In early spring great numbers occur, and for some days the country-side is full of their song; but they gradually move away again, and comparatively few remain to nest. I have several times found the Garden-Warbler and Blackcap nesting close together.

GOLDEN-CRESTED WREN (*Regulus cristatus*).—More often seen in winter and early spring; sometimes joins the family parties of Long-tailed Tits. Not known to breed.

FIRE-CRESTED WREN (*R. ignicapillus*).—Of rare occurrence only.

WILLOW-WREN (*Phylloscopus trochilus*).—The song is heard from every copse in spring, and again in autumn there is a great revival of its notes. I have heard it singing cheerily until well on towards the middle of October.

REED-WARBLER (*Acrocephalus streperus*).—There are large numbers along the river-banks, but they are curiously local, and seem to breed in small colonies, for where one nest is found there are sure to be several more in the immediate vicinity. From early in June the Cuckoo shows great partiality for this bird's nest, and it must be quite convenient for her to deposit her eggs all around the same spot. That the convenience is appreciated is shown by my having frequently found several Reed-Warblers' nests, each containing a Cuckoo's egg, within a distance of a few hundred yards.

SEDGE-WARBLER (*A. phragmitis*).—More evenly distributed than the Reed-Warbler, and during May this is the favourite nest of the Cuckoo. The Sedge-Warbler is an untiring songster, and its babbling notes continue far into the night. Two broods are reared, but I have never found a Cuckoo's egg in the second

nest; by that time the Reed-Warbler has become the first favourite.

GRASSHOPPER-WARBLER (*Locustella naevia*).—There are a good many along the river, but they are more often heard than seen. The note, to my ear, very closely resembles the winding in of a fisherman's reel, and is often hard to locate precisely.

HEDGE-SPARROW (*Accentor modularis*).—Resident.

DIPPER (*Cinclus aquaticus*).—Yarrell observes:—"The nearest spot (to London) in which I heard of a Dipper being seen was a watermill-tail at Wyrardisbury, on the Colne, about two or three hundred yards above the place at which it falls into the Thames, just below Bell Weir." I know the spot well. The water is really private, and runs rapidly over large boulders. It is, indeed, a likely place, but I have never been fortunate enough to be able to record a second example.

LONG-TAILED TIT (*Acredula caudata*).—Has considerably increased, but is by no means numerous.

GREAT TIT (*Parus major*).—In winter this bird comes close to houses, and at feeding-time other members of the family must wait until he is satisfied; but with the return of spring he retires to the woods, and is seen very little of until the following autumn.

COAL-TIT (*P. ater*).—Not a very great many.

MARSH-TIT (*P. palustris*).—Uncommon, but one or two broods are hatched each year. Fond of fruit, the red berries of the mountain-ash, and sunflower seeds.

BLUE TIT (*P. cæruleus*).—Numerous. In the autumn these birds split open the dry heads of the garden poppy, and in an amazingly short time clear out all the seeds, the opium apparently having not the slightest effect on them. They are also very partial to sunflower seeds.

NUTHATCH (*Sitta cæsia*).—Quite common in the woods.

WREN (*Troglodytes parvulus*).—Very plentiful.

PIED WAGTAIL (*Motacilla lugubris*).—A resident, though the number is increased during summer. Three broods are reared.

WHITE WAGTAIL (*M. alba*).—Only an occasional migrant.

GREY WAGTAIL (*M. melanope*).—A regular autumn migrant. In some years old birds with their young families arrive towards the end of September, and remain by the river for some days.

As a rule, however, the first birds appear about the middle of October, and one or two always remain for the winter.

BLUE-HEADED WAGTAIL (*M. flava*).—In June, 1903, a single bird frequented a flooded meadow for some days.

YELLOW WAGTAIL (*M. raii*).—Fair numbers are well distributed along the banks of the river throughout the summer. On the autumn migration great numbers of family parties arrive, and remain for some days, feeding and playing about together. During this time each family appears to keep to itself, and I have not been able to discover if the final migratory movement is undertaken in these separate parties, or if at the very end of their stay they unite and depart in one flock. Certainly, on migration, I have seen *M. lugubris* in flocks. One such movement towards evening brought many hundreds of the birds into the district, and when night fell every bush was full of them. The female sits very closely, and the male usually has a resting-place some twenty yards away. He spends nearly the entire day perched at this same spot, and if he flies away returns again in a very few minutes; he rarely approaches nearer the nest, and when doing so displays great caution. When the female comes off to feed he accompanies her. I wonder if others have noticed the increased playfulness and good spirits of birds about to set out on the autumn migration. Yellow Wagtails dart at each other, and follow each other on short flights, calling the while, just as if the courtship of spring were renewed. Whinchats, Pipits, and Larks also do this.

TREE-PIBIT (*Anthus trivialis*).—Unusually scarce. I have only met with one nest in twelve years.

MEADOW-PIBIT (*A. pratensis*).—During winter large numbers are seen, but with the return of spring they vanish, and I have never seen one during the summer.

TREE-CREEPER (*Certhia familiaris*).—Fairly common.

RED-BACKED SHRIKE (*Lanius collurio*).—This handsome bird is well distributed, and is fond of perching on telegraph-wires. The hen sits closely, but the male is apt to betray the nest by his too evident anxiety and harsh croak of anger when an intruder is nigh. I have found nests containing seven eggs, which is rather unusual. The bird frequently eats

worms, as I have found from examining many of the so-called "larders."

SPOTTED FLYCATCHER (*Muscicapa grisola*).—Common all along the river during summer, nesting in niches in old willow-trees. The nest is commenced almost immediately upon the bird's arrival. After rain-showers the Spotted Flycatcher often comes down on to the ground and walks about.

SWALLOW (*Hirundo rustica*).—Common.

MARTIN (*Chelidon urbica*).—Common.

SAND-MARTIN (*Cotile riparia*). — There is no nesting colony within several miles of our part of the river, yet the birds fly to the stream every day, and are always in greater numbers in gusty and windy weather. Then they fly low down over the water just clear of the waves. In the upper reaches of the Thames the bird commonly nests in the banks of the river itself.

GREENFINCH (*Ligurinus chloris*).—Common. Another of the birds that are partial to sunflower seeds.

HAWFINCH (*Coccothraustes vulgaris*). — Still rare, but undoubtedly slightly on the increase. In Windsor Forest it breeds annually.

GOLDFINCH (*Carduelis elegans*).—Exceedingly scarce. I have had reports of the bird at Staines, but the only times I have personally seen it were on two occasions in Windsor Forest last spring (1905).

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Bats in Berkshire.—The artificial cave at Park Place, in Remenham parish, on the Berkshire side of the Thames, about a mile and a half from Henley, became known to zoologists through a note by Mr. J. G. Millais in P.Z.S. 1901, ii. p. 216, announcing the capture there by Mr. Heatley Noble and himself of an example of Bechstein's Bat, which was said to be only the second occurrence of that species in Great Britain. Apparently, however, this was in reality the fourth occasion on which the species has been identified in this country. The first record is that by Bell (both editions), of "specimens taken by Mr. Millard in the New Forest, and now in the British Museum." From the date of publication of the first edition, this took place previous to 1837. The second record is by Mr. E. W. H. Blagg, in 'The Zoologist,' 1888, p. 260, who found about a dozen of these Bats in the New Forest, in July, 1886, one of which was submitted to, and identified by, Mr. Oldfield Thomas.* In 'The Zoologist,' 1887, p. 162, and 1888, p. 260, two Bats in the collection of the late Mr. F. Bond, from Preston, near Brighton, are stated to be of this species; but Mr. W. C. J. R. Butterfield, in the 'Victoria History of Sussex,' i. p. 301, states that they are "undoubtedly assignable to *M. nattereri*." But on July 28th, 1896, he shot "an old male" Bechstein "near Normanhurst, Bath," "and its identification was confirmed by the late Sir William H. Flower. The specimen is now in the Hastings Museum." On Feb. 14th last, I met Dr. E. A. Wilson, late surgeon, zoologist, and artist of the 'Discovery' Antarctic Expedition, at Henley Station, and drove him on to Temple Combe, whence Mr. Heatley Noble guided us to the cave on the adjoining property of his mother, Mrs. Noble, at Park Place. On the way Mr. Noble pointed out a hollow beech frequented by Noctules; also a nest-box quite close to his house, generally tenanted by Dormice. Subsequently, on March 26th, Mr. Noble found five Noctules in a beech which was felled. The cave was excavated in the chalk on the high bluff forming the edge of the river valley some time between 1751 and 1795 by General Conway, who then owned the

* See also the 'Victoria Histor' for Hants, i. p. 240; and for Bucks, i. p. 155.

property. It is about a quarter of a mile in length, averaging perhaps eight feet in width, and the same in height. There are in addition two or three subsidiary caves. We examined one side of the cave on our outward way, taking the opposite side on the return, and throwing the light of the tapers, a supply of which Mr. Noble kindly brought with him, on to every little irregularity in the chalk on wall and roof, and into numberless chinks and crannies. We captured more than thirty Bats, the majority of which were Natterer's; seven Whiskered, about as many Long-eared, and three Daubenton's. I regret that we kept no exact count of the numbers, as we replaced on the roost all the Long-eared, and a good many Natterer's, when we had become sufficiently familiar with the species to be sure of their identification by the imperfect light of our flickering tapers. We brought out just twenty Bats. Dr. Wilson reminds me that the Whiskered were all at either end of the cave, north and south, near the entrances, and none in the centre. The Long-eared were all near the north entrance. We found throughout the cave an abundance of sleepy Herald Moths and spiders; and one large broad-winged Geometer moth was found by Dr. Wilson. A month later (March 14th or 15th) the Hon. N. Charles Rothschild sent one of the Tring Museum staff to Park Place, by permission of Mr. H. Noble, in quest of Bat fleas; Mr. Noble could not go with him, but sent his gardener as guide. Only four Bats were found, of as many species—Long-eared, Natterer's, Whiskered; the fourth was a Lesser Horseshoe, a species which, even if not new to the county,* is, at any rate—so far as present knowledge goes—not a resident therein. In an excellent article on the distribution in Great Britain of this species (*Zool.* 1887, p. 89), the Rev. J. E. Kelsall concludes that it does not occur as a resident species to the south-east of Warwickshire and Gloucestershire. The latter county just touches Berks for a length of some half-dozen miles (near Lechlade), but that nearest point is fully forty miles in a straight line from Park Place. Mr. Noble has since written me word that his lodge-keeper reports numerous Bats in his roof; one evening he counted over sixty come out. Mr. Noble kindly suggests that I should come over there for a night, and that we should endeavour to rig up some kind of net, and catch at least a few for identification; an offer, I need hardly say, I hope to avail myself of. Mr. Noble has noticed that the Bats desert the cave during the summer, only a stray individual or two being

* I have not seen the account of the Mammals of Berks in the shortly-expected first volume of the 'Victoria History' of the county, and do not know who the author of it is.

then to be found. On March 25th a Daubenton was the sole occupant.—ALFRED HENEAGE COCKS (Poynetts, Skirmett, near Henley-on-Thames).

Pigmy Shrew (*Sorex minutus*) in Surrey.—On April 29th I trapped a Pigmy Shrew. It was caught in a field, where it had made extensive runs, just outside its burrow. What struck me at once was the great length and breadth of the snout, which was, comparatively speaking, greater than that of the Common Shrew; its ears also were more pronounced than those of that species. It had a very rank and offensive odour, resembling that of a Stoat. The animal (a male) gave the following measurements in millimetres: Head and body, 55; tail, 38; hind foot, 10; ear, 7. This is the third Pigmy Shrew that has come into my possession from this county during the past four years, and the first I have trapped, the other two being picked up dead. On comparing the Pigmy Shrew with the Common one, besides its much smaller size the differences I have pointed out above are most remarkable, and the two species cannot possibly be confounded with each other. — GORDON DALGLIESH (Brook, Witley, Surrey).

Stoats in Winter Dress in South-western Hants.—During the past winter, was it observed that the change in colour of this evil-smelling little beast was more frequent than usual? In this neighbourhood I knew of quite a score being killed—six in one week in early January—and several others seen; two at least were killed on the railway, and one was found in a brook apparently drowned. The first I saw was in September, and to-day (April 10th) I saw one with much white about it. The permanently black tip to the tail, I need not say, was retained by all, and I saw none that were perfectly white, the dark summer coat being more or less visible along the back, and especially about the crown of the head, as if the white gradually crept up the sides, absorbing the darker colour, lastly reaching the head. One was curiously marked, having a large patch of brown on both hips, and a collar-like mark of the same colour about its neck, whilst the head and face were very dappled, which gave it a peculiar appearance. I may remark that all I saw were of comparatively small size, and, with one exception, females. It seems strange that under (as we suppose) exactly the same conditions some individuals should change colour, whilst the greater proportion do not alter from their summer pelage—and it has been observed many times in these pages—that the lighter ones are more frequently seen in a mild winter than when the weather is severe; and at the same time it has been pointed out that a protective colour amidst the snow becomes conspicuous when the landscape is snowless,

and thus in a mild season more parti-coloured Stoats are observed.—
G. B. CORBIN (Ringwood).

Harvest-Mouse (*Mus minutus*) in Surrey.—For several years I had been on the look-out for this pretty little Mouse, but without success, and doubted its occurrence in this county. Yesterday (April 9th), however, I had a pair brought to me that had been caught in a corn-rick. I have not seen this species recorded from Surrey before, and think it must be very rare here.—GORDON DALGLIESH (Eashing, God-alming, Surrey).

Hippopotami in Rhodesia. — It is reported from Rhodesia that two Hippopotami have taken up their abode in the Matopo Dam, a few miles from Bulawayo. How they got there is somewhat of a mystery, for the lower regions of the Umzingwani River, from which it appears they must have come, are over one hundred miles from the dam. This is the first year in which the dam has been quite full of water, and if, as is supposed, the animals began to move early in the season, when the rains were backward and the river was in consequence low, the instinct displayed by them is perhaps worth investigating by those interested in such matters. The Hippopotamus is seldom found in Rhodesia, except in the larger rivers, such as the Zambesi, where in the lagoons above the Victoria Falls one may often see several at a time.—
THE SECRETARY (The British South Africa Company).

A V E S.

Fire-crest in Sussex. — Seeing in last month's 'Zoologist' (*ante*, p. 149) that the Fire-crest (*Regulus ignicapillus*) has occurred in Dorset and Kent, it is worthy of note that it has likewise occurred in Sussex. I met with one of these little birds at Maresfield on Feb. 14th, the first under my notice, though often looked for.—ROBERT MORRIS ("Fernhurst," Uckfield).

Late Stay of Bramblings (*Fringilla montifringilla*) in Cheshire.—Between the 11th and 18th April last I watched a small party of Bramblings of both sexes in a plantation of young larches at Blacon, near Chester. They were feeding on the so-called larch-aphis (*Chermes laricis*). Mr. R. Newstead kindly identified the insect, and informed me that, to the best of his knowledge, he had no previous record of this particular insect-pest being taken by birds. Although the plantation adjoined a high road, the birds evinced little alarm at passers-by, so intent were they in picking off these insects. They occasionally gave utterance to a guttural note, "tuk, tuk," or "tchuk, tchuk,"

somewhat similar to that of the Corn-Bunting; only once did I hear the winter call oftenest heard, the long-drawn "qua-a-a-tch." I should like to know if this species has been noticed in April in other localities this year, for it seems to be an established fact that the bird leaves this country not later than the end of March, as a rule.—S. G. CUMMINGS (Chester).

The Breeding Range of the Twite.—Referring to Mr. Ellison's remarks (*ante*, p. 150) regarding the breeding range of the Twite, the statement that it "breeds in most parts of the British Islands where moors, mountains, and exposed heathy places are found," to my mind, hardly sufficiently represents the status of this species during the breeding season. It is more local in its distribution than seems to be implied in the above description of its range, and is apparently absent from vast tracts of moorland; especially is this the case in Wales and the north-east part of Yorkshire. I quite agree with Mr. Ellison that future researches and closer scrutiny may reveal this bird as occasionally nesting even in parts of the country where it has been declared not to breed; but, on the other hand, a closer investigation may prove that it is absent from districts which have been considered hitherto as suitable breeding haunts. *En passant*, may I ask is Mr. Ellison quite sure that this species feeds its young so exclusively on seeds, as stated in 'The Zoologist' for 1905, p. 391?—E. P. BUTTERFIELD (Bank House, Wilsden).

Crossbill in Captivity.—In November last I obtained, by the kindness of a friend, a fine male Crossbill in the yellow-green dress, which had been in captivity more than a year, and probably longer, as he was in the same plumage when purchased from a dealer. "Gyp," as we call him, from his sharp note, soon became quite tame, and would freely take larch-cones from my hand. It is very interesting to watch him at work with the cone firmly gripped to the perch with one foot, the scales being forced open by the powerful beak, and the seeds extracted with the tongue. This process has been admirably described by Prof. Newton in Yarrell's 'Birds' (4th ed., vol. ii. pp. 205, 206). About this time of the year the cones become practically useless for food, as they expand and shoot their seeds, and, from the specimens of "Gyp's" work enclosed, it would seem that the young buds of the Scotch-fir form part of the Crossbill's food in spring and summer, as a small branch inserted in the wires of his cage is always bitten to pieces, and stripped of every bud by the next day. His movements, as he climbs about the cage or hangs back downwards from his

fir-branch, are very pretty, and it is curious to see how he can extract the kernel of a hemp-seed without crushing the husk. His perches are changed occasionally for a fresh branch of pine or larch, and, though he bites the bark from these, he does not attempt to injure the wood or wirework of his cage. Early in the year he began to warble a pleasant but not powerful song, rather like that of a Bullfinch. Having had in the winter an offer of Crossbills of both sexes, I was rather inclined to get a hen-bird as a mate for him, but we rather feared that after so many months of bachelor life he might maltreat her; so he is still in sole possession of his cage. Mr. Patterson, in his 'Nature in Eastern Norfolk' (p. 139), mentions a Crossbill which lived in a cage for more than six years, so we hope that "Gyp" may, with care, be retained as a member of the household for some time to come.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Varieties of Yellow Bunting and Chaffinch.—Early in January I saw a variety of the Yellow Bunting in which the whole plumage was very much lighter than usual, except two or three of the middle tail-feathers, which appeared in consequence to be very dark. The usual yellow markings were more or less white, the larger quill-feathers of the wings being much bleached, the "secondaries" alternately white and dusky, which must have made it very conspicuous when the bird was flying. The other variety of which I made a note was that of a cock Chaffinch, shot in December last, and very much mutilated. The head and neck were pale primrose colour, shading to deeper yellow about ear-coverts and lower neck; but the brightness of the tints faded considerably in a few days after death. Under parts paler vinous than usual, dappled with yellow; bars across wings conspicuous, the larger quills white; back shading from the yellow of neck to pale green towards the tail, the feathers of which had much white about them. One at least of these varieties, I understand, was used for the cruel and foolish fashion of decorating a lady's hat.—G. B. CORBIN (Ringwood).

Notes from Ringwood.—Last winter was very unprolific in the records of any rarity amongst the wildfowl frequenting the valley of the Avon; a considerable number of Wigeon and Teal were constantly upon the river (on one "shooting" ninety-eight Wigeon and one hundred and thirty Teal were accounted for in one day by, I believe, five guns), and the usual number of Wild Duck, with a few Pochard and Shoveler, and an occasional immature Pintail and Golden-eye, with Coot and Moorhen, especially the former, scarcely up to the average number; but I heard of few Woodcock, and no Bittern, Gadwall, or Goosander. Wood-Pigeon and Bramblings were not so abundant here

as they were both east and west, whilst a few Golden Plover were reported. The most abundant species were Snipe and Lapwing, both of which were unusually common. On one estate over five hundred Snipe were killed, but comparatively few Jack-Snipe; and as to Lapwings, they were continually passing to and fro in very large flocks. Two or more Green Sandpipers were seen throughout the winter frequenting the meadows, and at times Hooded Crows were in evidence far more than was desired by the wildfowl sportsmen. The Short-eared Owl seems to have been seldom seen in this immediate neighbourhood for several past winters, although it used to regularly visit us. It is gratifying to be able to record that Goldfinches are certainly increasing, and Kingfishers are no scarcer than they were some years ago; but the enormous flocks of Sky-Larks which formerly were to be seen in the upland fields are sadly diminished in numbers, the craze for bricks and mortar no doubt contributing its quota to the decrease of Larks and other species, as it is certain that the Yellowhammer, and its larger relation, the so-called "Common" Bunting, are much less frequently seen than they were formerly.—G. B. CORBIN (Ringwood, Hants).

Upupa epops in Norfolk.—It will doubtless be of interest to the numerous ornithologists interested in the fauna of the above county to learn that a Hoopoe, in good plumage, frequented a newly-dug kitchen garden at 'The Meal House,' Holkham, during Easter; it was first seen on the 13th and again on the 14th of April. The wind was blowing from the south on the first day, as well as the latter part of the preceding day; previous to which it had been from the N.N.E. or N.E. for some little time. Referring to 'The Zoologist' (*ante*, p. 123), I see Mr. J. H. Gurney states that there are no records of this species for 1905; so the above occurrence is the first since March, 1904, when one was seen at North Walsham (Zool. 1905, p. 91).—L. B. MOURITZ).

The Hoopoe.—On May 5th I received, from G. Myford, Esq., Beaver Hall Gardens, Old Southgate, N., a fine specimen of the Hoopoe (*Upupa epops*).—JAMES GARDNER (Oxford Street, W.).

Strange Death of a Hen-Harrier (*Circus cyaneus*).—From time to time during the autumn and winter months I heard of one or more large brown Hawks, "with much white about the tail," having been seen in widely separated localities, and I naturally surmised they were female Hen-Harriers. About the middle of February a gamekeeper brought a bird for identification, with the statement it had been

“picked up dead”; but I suppose my apparent acquiescence in his assertion appeared somewhat sceptical, as he assured me in very emphatic language he was quite ignorant of how the bird came by its death. It evidently had been dead some time, and exposure to the rain that had recently fallen had not improved its appearance, but otherwise both in body and plumage it was in very fair condition. I skinned it, and found there were no bruises or marks of any kind—either trap or shots—upon any part of the body, and in its stomach were the remains of a small bird, the head and leg of a Meadow-Pipit indicating what these remains were. From the throat of the Harrier a white paste-like substance had exuded, and this had rather injured the appearance of the characteristic Owl-like ruff around the face; but it seemed to me the best part of the plumage was the splendid tail, with its conspicuous bars of brown and buffish white, most aptly applied to the old name of “Ringtail.” Is it possible the death of the bird was caused by natural poisoning, or are birds liable to any form of apoplexy? Judging from what I once saw of a Peregrine Falcon (which doubtless had been poisoned), the Harrier’s death was not from the same cause, as its legs and bare spaces about the beak were as bright as in life, whilst the corresponding parts of the Falcon were changed to a pale livid green; but this might have arisen from a different poisoning.—G. B. CORBIN (Ringwood, Hants).

A Small Sparrow-Hawk (*Accipiter nisus*).—In March last a poultry-keeper, having lost several of her early chickens, blamed Weasel or Rat as the thief, though she had seen neither quadruped in the vicinity; but one day, when watching the brood, she saw a bird dash, like “a bolt from the blue,” into the midst of them, with such impetus that, striking its head against a log of wood lying near, its skull was fractured, which caused its death. This proved to be a male Sparrow-Hawk, and was the smallest and least in weight I had ever seen. The length of wing from carpal joint to point of longest quill was not much less than ordinary, but from head to tail it measured barely ten and a quarter inches, and its weight was only three and a half ounces, although in very fair condition. He was a handsome little fellow, the breast and thighs having wider rufous bars, the back and tail more tinged with brown than is usually the case, but destitute of the reddish tint so often diffusing the under parts at this season—are these marks of immaturity?—the whole plumage was bright and clean, except the much battered head. I recollect a somewhat similar incident. When in the forest I once saw a Sparrow-Hawk chasing a Green Woodpecker, and dashing itself with such force against an oak-tree as to fall

to the ground, but only to be stunned for a short period.—G. B. CORBIN (Ringwood, Hants).

Whooper Swan at Carlisle.—In December, 1904, the keeper of Carlisle Park noticed that a strange Swan had arrived on the Eden, and joined the flock of Mutes under his care. The bird was in the brown plumage of the cygnet, and the bill was of a blackish hue, similar in colour to that of a Mute cygnet, but of a different shape. Some time elapsed before this bird was brought to the notice of any ornithologist. Mr. Losh Thorpe was the first to hear that a stranger had arrived, and, together with Mr. L. E. Hope, of Carlisle Museum, he visited the river, and the bird was at once identified as an immature Whooper (*Cygnus musicus*). The bird remained on the river in company with the other Swans until May 8th, 1905, and when last seen was fighting down the Eden in company with two Mutes. At this time the bird was almost entirely white, and the yellow on the bill was also beginning to appear. No more was heard of the bird until Nov. 16th, when it again put in its appearance on the Eden, and rejoined the Mutes, being, of course, in full mature plumage. The bird appears to be the leader of the flock, and chases the Mutes away from any scraps of food which may be thrown to them. This is contrary to the experience of the late Rev. H. A. Macpherson, who, in the 'Victoria History' of Cumberland, says of this species:—"They are timid birds even with their own kind. I have seen them disperse in haste before the threatened onset of a couple of tame Mute Swans. On the other hand, they willingly tolerate lesser fowl to swim close to them." The bird under notice is very fearless, and will come within three yards of anyone feeding the birds. The date of its return (Nov. 16th) corresponds with the passage of Wild Swans in the Solway district, shortly before a pack of twenty was observed fighting down the Solway. At the present date (April 12th) it is still on the river, and a magnificent bird it is, the yellow on the bill contrasting well with its snowy white plumage. The upright carriage of the neck is noticeable, and the head is carried at right angles to the neck, not, as in the Mute, at an acute angle. If a pinioned Whooper could be obtained, and introduced to the flock, it might induce the wild bird to remain through the summer. Cases of this sort must be very rare, and it would be interesting to know whether a similar one has come within the experience of any of your readers.—ERIC B. DUNLOP (Carlisle Museum).

Pelicans reported in Oxfordshire.—In the Rev. F. C. R. Jourdain's notes (*ante*, p. 142), I was interested to read of the occurrence of a
Zool. 4th ser. vol. X., May, 1906.

White Pelican (*Pelecanus onocrotalus*) in the Derwent Valley on Nov. 4th, 1905, and in a footnote on same page the statement that the species has recently occurred in Bavaria in a wild state, because Pelicans (sp.), whether wild or escapes, seem to have passed over this neighbourhood last summer. Mr. A. England, one of the partners in the large Pheasant farm at Greenfield, between the border of the south-west corner of Bucks, and Watlington (Oxon), told me, on Sept. 1st last, that "four or five weeks" previously he had seen four Pelicans flying over Greenfield in about a north-west direction. Mr. A. England is not an ornithologist, but a keen-eyed practical observer; and a Pelican once seen in the "Zoo" or a travelling menagerie, or even in a picture, is a bird for which it is hardly conceivable that anything else could be mistaken—at any rate, when, as in this case, they passed close by Mr. England; and he particularly noted the enormous bills. Greenfield is just in the line of flight for waterfowl passing up the Thames, if they avoid the bend beginning at Spade Oak, Little Marlow, and strike the river again a short distance below Oxford. — ALFRED HENEAGE COCKS (Poynetts, Skirmett, near Henley-on-Thames).

Crane near Great Yarmouth.—For about three weeks, until April 13th, a Crane (*Grus communis*) frequented some fields bordering two parishes not far from this town. Its plumage was immature, the long dark coloured inner secondaries only just showing. Why it remained so long I do not understand, as it appeared unhurt. — J. E. KNIGHTS (87, Churchill Road, Great Yarmouth).

Leach's Fork-tailed Petrel (*Procellaria leucorrhoea*) in the Isle of Man.—On the afternoon of 5th December last a specimen of the above species was picked up in Well Road Hill, a steep narrow street not far from the sea-front of the town of Douglas. It was still alive at the time of capture, but had one leg broken. It is now in possession of Mr. George Corlett, of Douglas. — P. G. RALFE (Castletown, Isle of Man).

Colour of Birds' Eyes (*cf. ante*, pp. 75 and 112).—Is it not the case that most, if not all, birds' eyes differ with age, and how comparatively few species come under observation sufficiently close that the eye can be examined in life? I have never had the rare pleasure of seeing old or young of *Fuligula nyroca* in the flesh (though it has once occurred in this locality), nor Pochards in a living state, except upon the river; but I have frequently seen specimens of the latter species soon after they have been shot, and I have often remarked that the finest plumaged birds had the brightest crimson or scarlet eyes; and

yet with some other species—as Golden Pheasant, &c.—I have often thought the best plumaged birds had the palest straw-coloured eyes—almost white. That anger or excitement in any degree alters the colour and consequent expression of the eyes is well known. I recollect a Parrot which had normally yellow eyes, but when angry or very pleased a red zone appeared around the black pupil. Those who have reared any of the *Falconidæ* must have noticed how the colour of the eyes differ from infancy to maturity. It may be a rule that all birds of the same species and sex, at any stated age, may have eyes of a similar colour, but I have met with exceptions that prove the rule. It is well known that in the adult Green Woodpecker the eyes are usually white, or very pale bluish grey; but on one occasion I saw a bird in which one eye was normal and the other a *dark brown*, and in another instance *both eyes were brown*. It may have been only a coincidence, but in each case it was a female thus marked, and it was quite surprising how the dark eyes altered the general appearance of the whole bird. When I say the eyes were brown, I am not alluding to the discoloured appearance sometimes caused by rupture of blood-vessel or otherwise, as is sometimes the case when certain parts of the head have been injured. The quotation from the ‘Handbook of British Birds’ of the change in colour from red to yellow is interesting, and, although there may be no connection whatever between bird and insect, yet all of us know the fact that in some species of Lepidoptera—burnets, tigers, &c.—the variation is usually from red to yellow, or from scarlet to orange.—G. B. CORBIN (Ringwood, Hants).

Spring Arrivals near Canterbury.—The following notes collected near Canterbury during the Easter holidays show the advent of spring in that district:—

April 13th. Swallow seen, and stated to be the first this year. 14th. Heard a Wryneck. 15th. While walking in a small wood with two friends, I heard and saw a Nightingale, but, as I had only just come from town, I cannot state if it was heard earlier. Found two nests of young Thrushes. 16th. Saw a Swallow. Found a Wild Duck sitting on her nest. The bird allowed me to stroke her, hissing the while. Once when she moved slightly I counted seven eggs, but there must have been quite a dozen. The nest was made entirely of down, and the bird fitted into it most beautifully. Peewits were nesting on the marshes, and two pairs of Redshanks kept circling round us, whistling to each other at times. Moorhens were very abundant. Found a Blackbird’s nest with one egg. 17th. Saw a Swallow out at sea at Whitstable. Heard four Nightingales in

Thornden Wood, at different parts. On one afternoon last week two friends found seventeen Song-Thrushes' nests, containing either eggs or young. The Nightingale I heard on Easter Sunday was singing beautifully.—DUDLEY F. WARDE (40, Charleville Mansions, Charleville Road, West Kensington, W.).

Migratory Notes from Aberdeen.—Ring-Ouzel (*Turdus torquatus*), April 8th. Three Wheatears (*Saxicola œnanthe*) seen April 8th; unusually early. Cuckoo (*Cuculus canorus*), April 26th; very early, and I have no recollection of hearing one with so many remnants of snow-wreaths in the locality—about 9 a.m., with abundance of song. It was stated one evening that the voice was hoarse, while the frosts were very severe.—W. WILSON (Alford, Aberdeen).

NOTICES OF NEW BOOKS.

A Treatise on Zoology. Edited by E. RAY LANKESTER, M.A., LL.D., F.R.S., &c. Part V. Mollusca. By PAUL PELSENER, D.Sc. Adam and Charles Black.

THE present volume of this series, so indispensable to every student of zoology, will probably attract more readers of this Journal than did its predecessors, for we have now reached in the Mollusca a phylum which has always interested, and often been the study of, very many naturalists. A perusal of these pages may prove to be a revelation to many collectors of shells, and show that pure conchology is merely the husk of molluscan zoology, or, in the words of Teufelsdröckh, a "Philosophy of Clothes." When we read that descriptive zoologists have enumerated more than 28,000 species of living molluscs, of which more than half are Gastropods, and that fossil representatives of molluscs are found in all deposits from the Palæozoic onwards, it is evident that here indeed is a field in which a specialist should obtain no uncertain view in the unfolding or evolutionary development of one great division of animal life. Not only of the external characters, but in anatomy and embryology, the reader and student may rely that what is not told is not worth telling; while what will probably interest the readers of 'The Zoologist' the more, is a section devoted to bionomics and distribution, which, though small compared with the preceding subjects, is one, particularly as regards bionomics, which the pages of this Journal are mainly intended to promote. And thus we come to the reason why this book should be on all our shelves, not because as general naturalists, and not as more fundamental zoologists—as would we all were—we shall follow every page with the necessary animal dissection, but because we can find a last and reliable statement on those matters which are beyond our purview, and can procure a safe guide and a trusty reference when we go beyond our own standpoint. We are not

alluding to the purely zoological student, to whom, as we have said, the series of volumes is indispensable as a course of study, but feel that to very many readers of 'The Zoologist' this 'Treatise' will be of encyclopædial value, where many biological difficulties may be solved, and it will in fact prove a frequently consulted zoological lexicon.

The Natural History of Selborne. By the Rev. GILBERT WHITE, M.A. Re-arranged, and Classified under Subjects, by CHARLES MOSLEY. Elliot Stock.

To have given the world a classic, and to have published it in the seventieth year of his life, has been the lot of few naturalists, and in the present demand by publishers for zoological matter, this will in the future be a still more unlikely circumstance. Gilbert White has had many disciples and imitators; a charming series of volumes are now found on the shelves of most naturalists' libraries—books written often by better equipped observers, but still lacking the vitality of this literary gem, which will probably survive them all. What is the secret of this ever vernal composition? It certainly owes much to its dignified simplicity in diction, and to its patient method of observation, qualities pre-eminently found in the greater classic which appeared seventy years afterwards—'The Origin of Species,' by Charles Darwin. Sermons are sometimes somewhat dull to hear or read, but who would not like to have some familiarity with the addresses given by this naturalist vicar to his rural congregation? There must have been much natural theology.

Nearly one hundred editions of the 'Natural History of Selborne' have been already published, some of which have been little read, and the existence of others only known to librarians and collectors; to edit White has always been the pious wish of a sometimes weak disciple. This edition strikes new ground, and serves a useful purpose; it gives a summary of White's observations arranged under subjects and species, so that we may at once, by the aid of this condensation, know all the writer had to say on each animal and plant he referred to in many letters. It is thus a book for the student, but the original arrangement will still be the delight of most naturalists and literary readers. Mr. Mosley has perhaps done no inconsider-

able service, and his volume will prove a very handy source of reference to those who wish for an easy introduction to the bionomical observations of Gilbert White. Of course this publication lacks some valuable notes contributed by certain other editors.

The British Woodlice. By WILFRED MARK WEBB, F.L.S., and CHARLES SILLEM. Duckworth & Co.

THIS small volume supplies one of the desiderata to all naturalists, *viz.*, a book of reference to a small and, in a general significance, little-studied group of animals. These terrestrial isopod Crustacea—represented in Britain, according to our authors, by twenty-five species—are each beautifully illustrated on separate plates, which renders their identification a matter of little difficulty. Of these no fewer than seventeen have been found in the county of Essex, where the authors' investigations have been principally made. This monograph originally appeared in the 'Essex Naturalist,' and is a further example of the great stimulus given to all naturalistic studies—we will not say *local*, but county studies, and we might well give a larger definition—by the foundation of the Essex Field Club. This publication is not intended to be the last word on the subject, but it certainly is the best to work with, and should be largely used in other counties than Essex. How many local societies can give offhand the number of species of Woodlice which occur in the area of their investigations?

The Eggs of European Birds. Part I. By the Rev. FRANCIS C. R. JOURDAIN, M.A., &c. R. H. Porter.

WE quite recently (*ante*, p. 40) called attention to the appearance of another book on this subject by Mr. Dresser, and we have now before us the first part of Mr. Jourdain's publication. This is announced to be completed in about ten parts, containing about one hundred and forty coloured plates. Geographical races are fully recognized and described, and the nomenclature recommended by the Fifth International Zoological Congress has been adopted. This instalment contains fourteen beautifully coloured plates, and the text is very full and informative. We reserve further remarks to a notice of the work when completed.

EDITORIAL GLEANINGS.

Voracity of the Pike.—Mr. F. Schroeder, writing recently to the editor of 'The Fishing Gazette,' says:—

"Perhaps you remember in 1898 we had a conversation about the best way to mark fish, as I caught then such large numbers of Pike I did not know what to do with, and intended to mark a number of them so as to determine their growth and wanderings. The outcome of our conversation was, I got some numbered labels to be attached by a wire to the gill-covers. Looking over my diary, I find the following interesting items:—

Pike No. 5.—Weight, 3 lb.; 22 in. long. Recaught by Mr. Moseley the following week. Feb. 21st, 1899.

Pike No. 6.—Weight, 3 lb.; 23 in. long. Recaught by Mr. Woodhouse six days later. Feb. 21st, 1899.

Pike No. ii.—Weight, 4 lb.; 25½ in. long. Recaught and killed by Mr. Woodhouse in March. Feb. 21st, 1899.

Pike No. 15.—Weight, 2½ lb.; 23 in. long. I caught him again March 14th, 1899. Recaught by Mr. Woodhouse the following day about a mile away.

Pike No. 61.—Weight, 3½ lb.; 24½ in. long. I recaught him an hour later on the same spot without having moved my boat. March 14th, 1899.

Now, you must bear in mind that each fish—they were all caught spinning—after having been landed, was put into a narrow open box, with one side movable, which was screwed up to the fish placed in it so as to hold it in position. A large hole was cut in the movable side so as to enable me to get easily at the gill-cover. I then pierced the gill-cover with a pair of specially made pliers, and inserted a ring with label attached. Finally, I closed the ring with another pair of pliers. The fish was then taken out of the box, weighed, measured, and carefully returned to the water.

In this way I registered some seventy fish, but, finding that I kept on catching the same fish day after day, I gave it up. On many fish I could clearly see that my label had been torn out of the gill-cover."

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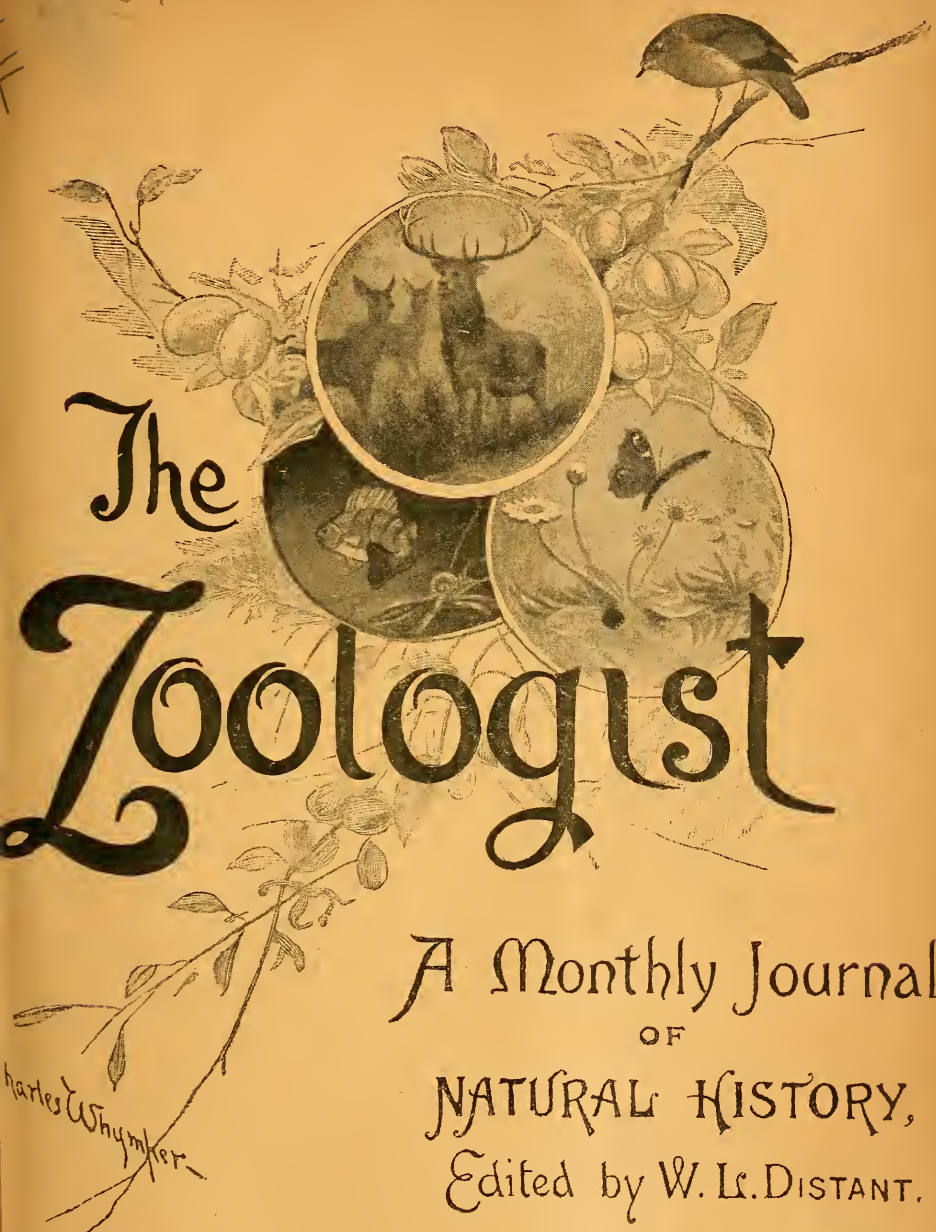
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OBSERVATIONS TENDING TO THROW LIGHT ON THE QUESTION OF SEXUAL SELECTION IN BIRDS, INCLUDING A DAY-TO-DAY DIARY ON THE BREEDING HABITS OF THE RUFF (*MACHETES PUGNAX*).

BY EDMUND SELOUS.

THE following observations were made in a part of Holland by no means difficult of access, and which can be approached by any of the ordinary routes. My object in making them was to get some first-hand evidence in regard to sexual selection, but, though for the most part they come under the title which I have given to this paper, I have not wished to hamper myself by a too close limitation to the main subject of inquiry, or to exclude what might have only an indirect bearing upon it. With respect to the Ruff, in particular, I have described all I saw, and should anyone think that I had better have left out certain things which I saw, I can only say, frankly, that I am not of that opinion, and that it is not my habit to do so. With this short preamble, I commence my record.

April 9th, 1906.—I have now twice seen the pairing of Mallards—each time a different couple. The commencement, unfortunately, escaped me in both instances, but immediately after its accomplishment the drake swept proudly through the water, whilst the female dipped and ducked excitedly, then rose in the water and flapped her wings, as did her husband also a

moment or two afterwards—at least, in one instance. Out of materials such as this—pure physical excitation of a certain kind—the most elaborate actions of sexual display may possibly have grown. It is curious, at any rate, that in some birds, in which this latter has not attained a high degree of development, the two things are closely similar.

Why, after the pairing, does not the male fly away from the female, or *vice versa*? Both birds have satisfied their sexual instinct, so that, if this was the only impulse which kept them together, they should now, for the time, be nothing to one another. Yet, instead of separating, they continue to swim side by side in the most affectionate manner, and whichever of the two may take the initiative in going anywhere is closely followed by the other. This continues hour after hour, right through the morning, deep into the afternoon—for the whole day, there can be no doubt, were one to sit it out, and so for day after day. Moreover, the intervals between the performance of the nuptial rite are considerable—several hours, it would seem. Envisaging these facts, and observing the whole manner of the two birds, to me it seems evident that friendship and affection, irrespective of sexual appetite, keep such pairs together. Their married relations are, in fact, very like our own, at their best, and if it be said that we cannot argue from ourselves to other animals, it is certainly less scientific to *assume* a difference in kind, in spite both of appearances and the known facts of evolution. This, however—with some naive contradictions, usually—seems to pass with many for *the* scientific attitude. Well, so be it. Assume the difference, dispense with observation, talk evolution, and think like a special-creationist!

Oystercatchers are birds that one may watch for hours, without succeeding in tearing out the heart of their mystery. That they pipe together in pairs, I have already mentioned—it is a salient feature—and also that one pair will chase another pair, both—*i.e.* all four—piping. That such pairs represent mated birds is not to be doubted, for that the female as well as the male pipes I have had conclusive evidence. But what is the feeling which produces these quartettes? Is it hostile or social? This is not always easy to tell. Two pairs, for instance, on the open fields, are behaving in this manner now. They race after one

another, each couple going side by side, then turning, as Partridges do, the two that were pursued now pursuing in their turn. This may be enmity, but it has more the appearance of social excitement—whichever of the two it is, it looks most *bizarre*. As I say, as yet there has been no unmistakable sign of hostility, but now two of the birds, belonging to opposite pairs, fly twice or thrice at each other, in a way which should settle the question. Yet this, too, *may* be social excitement, or the one thing may pass into the other. Say, however, that it was fighting—as, whatever its origin, it was—and it follows that these birds fight in couples, which is surely an interesting characteristic. True, the females may not actually come to blows—the sexes unfortunately are indistinguishable—but, at any rate, they help in the leading-up part. I am sure that both sexes were represented in the above episode. This, however, is an important point, for if the female bird is able to drive off any male she may not care about, or to help a successful rival to do so, we can the better see how her choice—assuming her to have one—might be made effective. I will therefore quote from my notes of last year, in which the co-operation of the female with the male—her own husband—in a case somewhat similar, is demonstrated.

July 5th, 1905.—Whilst I watch I have a good illustration of how a pair of married Oystercatchers may act, together, against any third party. Twice has such a *de trop* individual, by associating itself with the male, got close to the nest, on which the female, leaving it, walks up to them, and, placing herself beside her mate, they both, as it were, pipe a warning, whilst advancing upon the intruder. This, if he does not go, develops into an attack. In the first case, here, it did, when he soon flew off. In the second this happened before an actual attack was necessary. Having watched this pair of birds for many days, I could feel assured that the one then, and almost always, on the nest was the female. If, then, it be asked, “How, in bird life, can the female get rid of a distasteful suitor, who is yet stronger than a more attractive rival?” we can answer, “By joining with this rival against him,” for the facts above noted make this, at least, possible.

April 11th, 1906.—Two Redshanks, after pairing, run, in an

excited and curious-looking manner, over the sand, following one another. This action was a good deal like that of Avocets under similar circumstances. Compare both with the Peewit's, in which the run is followed by a performance in which each of the two birds may join, which performance is constantly to be seen, during the breeding-time, quite independently of the nuptial rite. It is then assumed to be in the nature of a display by the male before the female, though very often—indeed, I think, most commonly—no second bird is to be seen near about. My own view (held, however, with an open mind) is that it is in process of passing into this, and still bears clear traces of its origin.

Have just had a very salient example of the pairing of Redshanks. The male, advancing to within some two feet of the female, continually waved and fluttered his wings above his back, holding them well aloft, whilst, all the while, uttering a little tremulous note, and nervously moving his red shanks. He did this for a considerable time—perhaps a minute—the effect, of course, being very striking; and then, rising on the wing, fluttered, for a little, just over, and about a foot above, her, before dropping down for the actual performance of the rite. This did not seem altogether successful, and the fact that it was gone through again only a few minutes afterwards is perhaps evidence that it was not, though it would not be with some birds—for instance, the Sparrow. Birds, however, seem often to perform this act with a good deal of difficulty. Nature has given the male adornments and antics in connection with it, but not special organs of prehension, which he often seems to be in want of. This should make the co-operation of the female the more necessary. Success, I think, in this instance would have been impossible without it. There was no special run, here, immediately after the act of coition, but, in the interval between the first and second time, both the birds walked, for a little, about and very near each other, fanning out their tails, whilst bending them inwards, so that, had their legs been short, they would have swept the ground at intervals, as does that of the courting Pigeon.

Have been watching, now, for a considerable time, the actions of a pair of rival male Redshanks, as I suppose them to be. Flying or running, these birds chase each other interminably—

but for short intervals—over a certain area of the strand and water, beyond which they do not go. The pursuit, though often vigorous, cannot be said to be sustained, since when one bird settles, the other will often make a circle, or rather an ellipse or two, round about, before alighting near him, which, however, he always, before long, does, either to pursue or be pursued. Again, whilst flying after one another, one will sweep away, or purposely slacken his speed, should he be the pursuer, thereby increasing the distance between them. The thing, therefore, has more the appearance of sport than earnest; but all at once the birds close, and there is a struggle—violent, prolonged, unmistakable—after which all goes on as before.

The above account does not describe all such contentions. Another pair, for instance, simply run after each other in the ordinary way, going backwards and forwards, and fly only when they fly at each other. Then, for a little, there is a close pursuit on the wing, but they come down very quickly, and continue to chase one another on foot, as before. Here, then, we have the fighting part of the courtship of Redshanks; but where is the female, for whom it is all about? Either she is not there, or, feeding at some distance along the shore, she is, or appears to be, entirely indifferent. All at once, however, a third bird flies upon the scene, and this—for she does not stay long—occurs now and again throughout this prolonged but tame campaign.* Is she *the* female? The sexes being alike, it is impossible to say whether she is one at all, for neither in her manner nor in that of the two males, whilst she stays, is there anything that can be caught hold of. Still, these successive appearances, suggesting that each time it is the same bird, are significant.

When the males, in these affairs, actually fight—and this is seldom, at present, compared to the time they spend in running after, or often by the side of, one another, and, as it were, offering to do so—then each springs into the air, and endeavours to strike down with his feet upon the other, who of course tries to do likewise. Thus there is a tendency for the two to mount one above the other, alternately, as so many birds do. No doubt there is scope for great things, but as yet there has been nothing very redoubtable.

* I watched it for more than an hour.

April 12th.—Another pairing of Redshanks. This time it is not followed by any distinctive actions on the part of either bird. The curious set run, therefore, immediately after coition, which I have noticed on several occasions, is not invariable.

April 13th.—For at least an hour, but I think longer, I have now watched the courting arrangements of the little Kentish Plover. In all to do with the two males it resembled extremely a similar episode which I have described in the case of three Wheatears, but there was nothing in the nature of an antic. The birds continually followed one another about, and at intervals flew, sometimes at, but more frequently over, one another. Often they were within an inch or two of each other, sometimes side by side, but generally in single file, without any violence being offered on the part of either, and anyone watching them, even for a considerable time, might have thought them quite friendly, and taken them, without good use of the glasses, for a mated pair. It was only through more lengthened observation that the true position of affairs became apparent, or at least certain. It was the conduct of the female,* however, that made this observation a much more interesting, and indeed important, one than that of the Wheatears. She remained on the scene the whole time, sometimes at a greater, sometimes at a lesser distance from it—this largely in accordance with the direction in which the rivals ran. Sometimes she was apparently indifferent, being turned away, or preening herself, or both; at other times she might very well have been watching. Whether she really was it would have been impossible, from these facts alone, to say; she might or she might not have been, but her real interest in the matter was made known to me in a very striking and quite convincing way. She was not satisfied with being a witness of the scene; she took, upon several occasions—perhaps a dozen—an active part in it. Running down to where the two were contending, she made little flies to one or another of them, but whether to both, or one only, or one more especially, I cannot say. The effect of these approaches, on the two males, was always to make them more bellicose. They then flew at each other, time after time, delivering, as it seemed to me, little pecks, and sometimes grappling, or, at least, falling over one another.

* The sexes are distinguishable, and I distinguished them.

After a little the female would retire, and, the conflict then sinking, all would go on as before, till her next participatory visit.

After this had continued for more than half an hour another interesting thing happened. A third male was seen approaching, and, after a while, he entered into the area of the conflict, with a view, as it seemed, of joining in it. But the female now came running up, and flew, in what seemed a hostile manner, at one of the birds. Which it was I could not say, as a certainty, not being able to keep the three distinct; but, as a result of her conduct, the intruder—for it must have been he, and as such he was evidently considered by the female—was driven from the lists. Now there could be no confusion, and the hen bird, after a short interval, flew at him again, and continued to do so till she had driven him quite away, when she returned to where the other two were still contending, and continued to act in the way I have described. At last the three birds flew away together, one separating itself from the other two when they had got to some distance. Which was the one it was, of course, impossible then to say. No interpretation, therefore, can be placed on the fact, and, later on, I saw them all back, as before, the two males near one another, and the female standing some little way off. The rivalry, however, seemed to have burnt itself out—at least, till 4 p.m., when I was called elsewhere.

So far, therefore, from being an indifferent spectator, or non-spectator—as it is so often asserted that the hen bird, in such cases, is—this hen Kentish Plover not only took a keen interest—at least, by fits and starts—in this long contest, but apparently considered that two rivals was the proper number, driving off another bird when it seemed to contemplate making a third. This may have some bearing on the common sight, in spring-time, of three birds, and no more, flying together—three Larks, three Meadow-Pipits, three Fieldfares, three Peewits, &c., &c. Also, if we think of the female bird as able and ready, on occasion, to drive off any male, *vi et armis*, we shall the less easily regard her as the mere passive submitter to the latter's superior force.

Have watched again, for a good half-hour, the continual chasings—varied with one real combat—on foot and wing, of two

Redshanks. This was a closer and more pertinacious dogging, and the fight a fiercer and more prolonged affair than I have yet seen. It was in the shallow water, and the birds flew at and one above the other, as I have described, grappling more than once, and falling over together. As I say, I must have watched these actions for quite half an hour, and they may have been going on for much longer—possibly, as I believe, for hours. They ended, however, at last—at least, for the time being—and that in an interesting manner. All at once, as the two were chasing one another with the greatest obstinacy, a third bird ran up, as it were, between them (if not literally so, yet it had that effect), and, on this, one of the two flew right away, retired from the *partie*—intentionally, I mean, so it appeared to me—on which the other, running to some way off, began to wave its wings, much as before pairing,* at the same time uttering a continuous, thin, piping note. This it went on doing for some minutes, and, though to the human ear (which is nothing) the sound was plaintive and querulous, yet I cannot help thinking it was really a note of victory. I thought the whole thing was over, but all at once the rival bird reappeared, and, flying at the *soi-disant* victor again, it all went on as before. How long it lasted I cannot say, for it soon became too dark for the glasses.

Who was the third bird? After the episode of the Kentish Plovers, I cannot but suppose that she was the female, and cause of strife. If so, then she was not indifferent to, but interested in it, though anyone who, coming when I did, had stayed only twenty-five minutes, would not have supposed so, or even, perhaps, have noticed her. This brings some thoughts into my head. Why is the assertion so frequent that the female bird takes no interest in the contentions of the males on her account? It must rest, I suppose, on frequent observation, and twenty-five minutes is a good long time. If the female not only takes interest, but may put a male to flight, we see her with enlarged powers. The question even arises whether she may not have more power in this way than another male would have.

* With this exception, I have never seen the Redshank wave its wings continuously, and as of set purpose, except before and in obvious connection with the performance of the nuptial rite. When chasing one another the males often extend and give them a flap or two, but there is no sort of resemblance here.

April 15th.—Looking up from my note-book some little while ago, I saw a Redshanks hanging in the air on rapidly waving wings, immediately above another one—the immediate prologue to the performance of the nuptial rite. In another moment it would have taken place, but just as the male bird descended the female moved a few steps forward, entirely frustrating his design. He looked quite disconcerted at this move on her part, and did not make any fresh attempt. This is a good illustration of the power of the hen bird in such matters, and how essential her co-operation is.

Another case of rejected addresses. Here the male, if I give the right interpretation of the matter, was only in the first stage* of solicitation—standing, that is, and waving his wings before the female—when she flew at him, and then he walked away with his tail fanned. This again goes to show the necessity of obtaining the female's consent, and for what other purpose can the wings be waved in this striking and banner-like manner? Here, then, we see an unsuccessful wooing of the female Redshanks by the male. But, if she were indifferent, why should she fly at him? and if she can be irritated, surely she can be won. And what about the male? The unanswered—the seemingly unanswerable—question of why else should he act in this way is presented here, with peculiar force, to my mind. He always acts so, so far as I have seen, as a preliminary to coition, and with that end in view. That he is addressing himself to the female, and to her only, and that she knows that he is, is obvious, quite manifest, not to be doubted by anyone who has seen the thing. It makes no difference whether other males are about or not; nor do males, when fighting or about to fight, act in this way. The war-dance theory, therefore, is untenable here, though not perhaps more so than in other cases where the male bird obviously woos the female. That there are war-dances amongst birds, and that this may have been the origin of some displays, is possible, but, if so, then it is not for nothing that the one thing has been turned into the other.

I cannot be sure, but I think it is these very same two Redshanks—where the attempt, on the part of the male, has twice been frustrated by the female—who have now paired. Afterwards

* As I then thought it. But see on.

the male walked, a little, with his tail fanned, and then made what looked like a little bellicose run at the female—coming, I think, into contact with her. Another Redshanks now came up, on which the female—I had kept them distinct—flew at it, and, putting it to flight, chased it, on the wing, right away. Here, again, we see the female not restricted to the passive part of rejection, if we suppose this new comer, as seems likely, to have been a male. We see, too—if it was, indeed, the same pair, which I think it was—the female Redshanks thrice wooed by the same male, unwilling at first, or even hostile, but yielding to the third display. How like is this to the woings of certain spiders, as recorded in a most interesting and valuable paper by George W. and Elizabeth G. Peckham. For instance: “Once we saw a female eagerly watching a prancing male, and, as he slowly approached her, she raised her legs as if to strike him; but he, nothing daunted by her unkindly reception of his attentions, advanced even nearer, when she seized him, and seemed to hold him by the head for a minute—he struggling. At last he freed himself, and ran away. This same male, after a time, courted her successfully.” In both these cases, as it seems to me, the ultimate surrender of the female is stronger evidence of the efficacy of the display than if it had been successful at once. With the bird, as well as with the spider, there has been more than mere indifference to conquer.

I have spoken of the male Redshanks as waving his wings, in this manner, before the female, but by this I only mean before her eyes and senses. It is behind her, not in front of her, that he commonly stands, and this relative position of the two is retained in the aerial part. This used to seem to me against the theory of sexual selection, but what I have just witnessed shows that the female knows well enough what is going on—in fact, as, in the first case, she moved just at the psychical moment, she must see accurately. It may be said that she moved so by chance merely, but her whole attitude and deportment over a not inconsiderable space of time is against this supposition. A bird's eyes, in fact, are situated very differently to our own. The male bird, though behind the female, need not be directly behind her, and his waved wings are, so to speak, all about him. With an eye on each side of her small head, the slightest turn of this

—and it is always in motion—would enable her to see the whole person of the male.

There has now been prolonged and savage fighting amongst the Redshanks, especially between one pair* which I have watched more particularly. There were several hard grapples and holdings with the bill, and it seemed to me that they always fought more fiercely when, as was often the case, they got near to a certain other bird. (They certainly did, and I do not think it was coincidence.) They got near two birds, widely separated, and the effect, with each, was noticeable, but especially so with this one. Both these birds seemed to me to take some interest in the matter, and one in particular—not, however, the one in whose presence they fought hardest—made, several times, a little run at them. But I do not think it was a very special interest, or amounted to much more than a “get out of my way with this nonsense!” It would seem as though, whilst the female Redshank does concern herself with the wing-waving action specially addressed to her, she does not so much care about the fighting of the males. Is it not possible, therefore, that in the matrimonial affairs of some birds there may be a double process of natural and sexual selection, neither the handsomest nor the most vigorous *only* being chosen, but the handsomest amongst the most vigorous? It is these latter who, by conquering and persecuting the others, would have the best opportunities for sexual display; and, insomuch as motion made a part of this, we should look for the finest displays amongst them. On lines like these we can understand the most vigorous males being chosen, but how can vigour be judged of by the female unless it strike her senses through some definite channel? Otherwise it is a mere abstraction. And if motion can appeal to her, why should not colour and form? When, for instance, a strongly marked preference in the females of a certain spider (*Astia vittata*) for one of two types of males is attributed to the liveliness of his dancing alone, and not, also, to his different appearance and the different figures of his dance, this, as it seems to me, is a quite unjustifiable assumption. The opponents of sexual selection must not dower animals with just what is wanted for their views, and no more.

* Either these or two other males sometimes swam after each other.

The following interested me. Two fighting couples of Redshanks got together, and I distinctly saw how one of the combatants of each pair exchanged places, the fighting continuing without the change, as it were, being remarked. This is getting towards the Ruffs, but I suppose, as far as it goes, it is much the same with all birds. Still, I think, there can be special masculine animosities.

The pairing of the Redshanks is now sometimes followed by the set run I have spoken of, and sometimes not, and by nothing particular. Either we have, here, an individual variation, or one dependent on the number of times the act has been performed—I mean that it may produce less and less after-emotion. Is it possible that out of such purely physical actions may have grown others directed, consciously, towards a certain end? I believe it is, and that an extended study of *all* the nuptial activities of birds, throughout the world, would throw light on the question. Almost anything, I think, may pass into an antic—that is to say, an antic may grow out of almost anything.

I have now seen a more perfect example of the Redshank's courtship than any I have yet noticed. The male, approaching the female, ran about her twice or thrice, in so many half-circles, fanning his tail as he did so, and inclining his body towards her. He acted, in fact, much as does the cock Pheasant under similar circumstances, but displayed the tail only, instead of the wing and shoulder. The same conscious look and somewhat hectoring deportment were observable. Having gone through these actions, he next, standing just behind her, commenced waving his wings in the way I have described. Whilst he did this the female turned sideways towards him, so that he must have come into her fullest view, and she most certainly looked not only pleased with, but quite wrapt in the performance—in fact, fascinated by it. After some fifteen to twenty seconds, perhaps, of this waving, the male rose into the air, and hung there fluttering, the female stood to receive him, and the rite was accomplished. Here then, at last, we have the complete courting actions of the male Redshanks,* in which he first shows his white tail to the best advantage, and then makes the most of his wings, the silvery grey of whose under surface can only be seen when they are extended—all this in the most purposeful

* But see p. 213.

and deliberate manner. That the female was, from the first, interested, became absorbed in, and was at last won by, the performance, seemed as obvious as such a thing can be. One can only interpret, but her confession alone could add force to the evidence. This can in no case be obtained, and in the citadel which this want creates the opponents of sexual selection can for ever ensconce themselves. I do not think that the actions above described are always gone through with, in their entirety. This may depend on the particular male, but much more probably, I think, the same bird first does all he can to please the female, and then, as she becomes more and more willing, scamps the preliminaries. This difference is very marked in the Pheasant, and it is a point which ought to be taken into the fullest consideration by those who set themselves seriously to observe.

Another courtship of precisely the same character, but here the female seemed less inclined, from the first, and, though she stood in exactly the same position during the bannering, yet she was not won by it, but suddenly darted away, just as the male was about to rise. The latter looked both disappointed and resentful, but made no further attempt—the power seemed completely in the hands of the female, and, from the beginning, she looked less *attendrie*. There was another point in the courtship, to be remarked on. Whilst the wings were waved the bright red legs were moved, also, in a very noticeable manner, each being brought, somewhat slowly, in advance of the other. This I have already noticed, and it was, I think, the case before—but I had not taken it in so fully. To the white tail and light under-surface of the wings, therefore, as points in the display of the male, must be added the coral-like legs—all the effective things, in fact, which he has to display. Why he should thus produce and enhance them before the eyes of the female, if she cannot be moved by them, why the female should thereupon act as though she were moved by them, in a greater or less degree, if she really is not, and how she can be moved by them, and, at the same time, indifferent to them, are questions which I am quite unable to answer. For these actual, tangible things, as motives to action, we are asked to substitute a mere abstract idea, or something, in comparison, very like it—*vigour*, namely. The bird is to be won less through the eye than through the mind. “All this,” she is

made to reflect, "means *vigour*, but those red legs, that white tail, and pretty, waving wings, *they* are beyond my capacities. I am reflective merely, not *æsthetic*—that belongs to man alone. The brain for me; to be caught through the eye is for my betters." So might a savage, delighted with a scarlet uniform and gold-laced cocked hat, be supposed to think, not of these, but of their properties only. Or does the Jackdaw steal the ring, not because it is a bright object, but as embodying the general conception of brightness, and, through that, of something else?

Besides what I have recorded in regard to the Redshanks, I was witness of a prolonged contention on the part of two males for the favour of a female. The latter, here, certainly seemed quite indifferent during the greater part of the time, but in regard to this, the duration of the thing must be taken into consideration, for when I went, at the end of two hours, it was still going on, after a short interval. She was not altogether indifferent, for in the earlier part of it she herself took a part in the matter—like the Kentish Plover—on at least five occasions; but I think more. She ran up to the rivals, and I noticed a curious little run which she made about one or other of them. Here, too, I was reminded of the hen Kentish Plover, but I cannot, any more than in her case, say if she singled out one bird for this attention, or what, precisely, she meant by it. Moreover, as the fighters got to some distance along the shore, she, on more than one occasion, flew after them; nor am I counting such followings with the more intimate visits which I have noticed. Now, all this is not indifference, but, as the thing went on, she certainly seemed to weary of and lose interest in it, nor is it very remarkable if she did. Would not many a woman do so too, even though she had, say, a slight preference? Anyone, however, who had come during the second hour of the affair, must have noticed the apparent complete indifference of the female, had he been able to identify her, and might have made a great point of it. I, however, was there at the beginning, and saw what I have recorded.

There would appear to be two essential or common features in the more ordinary courtship of birds—first, the contention of two males only for the female; and, secondly, the very long period over which such contention may extend. It may well last, as it

appears to me, many hours during several days, or even for the greater part of each day. Now, the facts go to show two things—(1) that the female, if indifferent during part of the time, is not so all the time; and (2) that neither of the male birds is able to force her to his will. From this it appears to me far from unlikely that she may ultimately choose between them. But how is she to make her choice valid? We have seen that, in the case of the Kentish Plover, the female drove away a third male. Now, if she were to pursue the same course in regard to one of two males, and were the other to join with her, there would then be two to one. It is even possible that the attack of the female might sometimes be accepted by the discredited male as a verdict against which there could be no appeal. In any case, however, it seems probable that he could not long bear up against such discouraging circumstances. The fact that a pair of Oystercatchers will join together against another bird, or pair of birds—that it is, in fact, their ordinary habit—is in support of this supposition.

With the Redshanks, however, as well as with other birds, the fighting is one thing and the courtship another. What are the relations, if any, which the two bear to one another, whether there are many single combats, and if the victor in each, or in several, makes his display before the female—what, in fact, is the whole process of the thing, from first to last, I do not know, nor, I suppose, does anybody. I have some idea, however, of the difficulties which lie in the way of following it, which, indeed, are almost unsurmountable, being made up, for the most part, of the following elements, *viz.* (1) (in this part of the world, at any rate), cold, rain, and the general inclemencies of the weather; (2) the prolongation of the courtship, &c., from day to day, with the consequent impossibility of being sure that you are watching the same birds on any two days; (3) its prolongation on any one day, and the difficulty, greater or less, of keeping the birds concerned, at any one time, distinct from others, and of knowing whether they are the same at different times; (4) the frequent difficulty or impossibility of distinguishing the sexes, and of keeping the individuals of either sex for long distinct from one another; (5) the very different spirit shown by the same bird at different periods of one drama or scene in the drama, or earlier and later in its development—such differences pointing to opposite

conclusions, and making a negative as against an affirmative one of little or no value. Taken all together, these difficulties present an appalling barrier. Here no arrangements are possible, no *markings*, no comfortable study-work. All, or at least the greater part—unless, perhaps, if one is rich, as an enthusiast ought to be—is wretchedness, cold, and discomfort; such, upon close acquaintanceship, are the charms of early spring in north temperate Europe.

One must not hope, therefore, to see anything in the whole of its proper sequence, or to get clear ideas as to all the elements, disturbing or otherwise, which may enter into and complicate the problem. One has to get at it piecemeal, and reason from the main facts thus disclosed. A few of these, I think, are as follows:—(1) conscious and elaborate display of the males of some species before the females; (2) care taken to show and impress upon the female all that is best worth seeing; (3) interest—greater or less at different times—taken by the female in such display, and corresponding effect—sufficient or insufficient—produced upon her by it; (4) repetition of the display when at first insufficient, with results that justify such perseverance and make it intelligible; (5) interest taken by the female—more or less and at different times—in the fighting of males on her account; and (6) her participation, at times, in these encounters, readiness to attack, and competence to drive away one or other of the contending males, or to keep other males from joining in such contention.

Another Redshanks courtship, at 7 p.m., and, the wing-waving on the part of the male first attracting my attention, I am particularly struck by the length of time during which it continues, even after my noticing it. All at once, however, the female darts away—the wooing has not been successful. This suggests that the male may be aware when he has made sufficient impression on the female, in this way, and not rise on the wing till then. Lest it be assumed that the female was indifferent, all this time, and then moved by chance, I just state that this was not the case, and that I have never seen it so. I attribute her conduct either to disinclination at the time, or to not being sufficiently impressed by the male, or to both causes combined. I do not attribute it to coyness, and my own observations might

well lead me to doubt whether the female bird is really more coy than the male—whether there be such a thing, in fact, in nature as coyness, and whether a variety of commonplace real reasons (amongst others, satiety) are not hidden under the mantle of this imaginary poetic one.

April 28th.—Have just seen something which interests me. A duck and two drakes (the Common Mallard), flying together, were joined by a third drake, but one of the three making the original party made a dig at him in the air—very noticeable—on which he turned and flew right off, at a tangent. When the three came down into the fields, this drake, which I had marked down before, flew to rejoin them, but, as he settled, they went off again, leaving him standing alone, and looking foolish. This occurred twice again, and I noticed, now, that the duck and one of the drakes were the real fugitives, keeping close together, and going off first, followed by the second drake, who was not, however, expelled as the third one had been. When the three went down the last time, the drake that was evidently the “third person” would have kept close to the duck—as the other one was—but she, turning and with her head down, made an angry movement towards him, threatening him with her bill, on which he at once went to some dozen paces off, at which distance he remained, and the three settled down thus, the duck and her chosen drake couching, side by side, on the grass. This and my previous observation with the Kentish Plover convinces me that it was the duck, and not one of the two drakes with her, that turned off the third one, whilst flying, in so very effective a manner. Probably such action on the part of either of the latter would not have had the same effect, for the female not endorsing it would have left him a pretendant on equal terms with the others. We must recognize that amongst birds the female can turn upon a male who is distasteful to her, and that her doing so may be very effective—indeed, quite dramatically so. Again, it is interesting that whilst the third drake was driven right away, and afterwards shunned, the number two one seemed to be tolerated as long as too great familiarities were not attempted by him. The pair never flew away, together, from him, but they always did so from the other one, who would have made a fourth party. It would seem that, amongst many

birds, the female looks upon two suitors, but not more, as correct, even though she may snub one of them; or do we have something like the husband and the tame cat?

May 2nd.—I have for some time been making interesting observations on the courting habits of the Kentish Plover. Two males have been fighting, on and off (mostly on) in the usual way for an hour and more. A female (clearly discernible as such) manifested interest in the *partie* by, from time to time, running up, and apparently making a close survey of it. Now, on the other side of the combatants, but further off than the usual distance of the first-mentioned hen, appears a second one; but on her manifesting a similar interest in the contest, and coming closer to it, she is attacked by the other. In the course of the drama's long continuance this occurs two or three times, and on a third male approaching, he too, just as in the former case I have recorded, is attacked and driven away by this same hen. Her own rival, however, is not so easily dealt with. She keeps about, and at last, after perhaps an hour and a half, comes into the immediate sphere of the conflict. Instantly a second conflict, of a far more violent character, takes place. The first hen rushes upon her, and the two, grappling, roll over and over on the ground. At length they disengage, and one is seen to be struggling to escape, but the other holds her by a tail-feather, or some pinched skin near the tail, and she is thus detained for some time before finally escaping. As it is impossible to distinguish the two hens, I can only believe that the first one has been the victress, since things afterwards proceed as before, and she was the aggrieved and more angry party. I was delighted with her conduct, but before this she had pleased me still more by confirming one of my recent surmises, for, advancing to the contending males, she singled out one, whom she attacked, and succeeded, for the time being, in driving away. A little while afterwards, however, he returned, and, running up to his rival, "to 't they went again." And now an Oystercatcher, walking across the area of these proceedings, is so threatened by the hen bird that he is intimidated, and turns out of the way. What, therefore, that this hen Kentish Plover could have done to show her interest in what has been going forward has been left undone by her? She has approached the

scene of the conflict, and watched it, she has prevented another male from taking part in it, she has driven away one of the two fighting males, she has fought desperately with, and conquered, another hen who showed the same interest in the matter as herself, and she has even alarmed an uninterested Oystercatcher who unwittingly came too near. Why, in particular, did she attack that other hen? Notwithstanding those wise cautions, already alluded to, not to read human psychology into the co-descendants, with humanity, from a common, lowly stock, I shall boldly assume that she was jealous of her.

(To be continued.)

NOTES ON THE HABITS OF SOME CAGED BIRDS.

BY W. WESCHÉ, F.R.M.S.

IN the early nineties we had a number of birds which were kept as pets, and their habits and ways were so interesting that notes and records were made, of which this article is a compilation. We began with a young Canary, which was given us in the spring of 1889. This bird became by degrees so tame and intelligent that we took great pleasure in playing with and petting it. We were astonished at its cleverness, and our attention was more particularly drawn to its mental attitude, and from that to the characters of the other birds that we gradually added to our collection.

The individual characters of birds are as various as the individual characters of men and women, or of other animals, and can only be understood by careful observation; but the forces that govern their actions being fairly simple, you may always rely on consistency from your feathered friends. They have certain characteristics peculiar to their species, and Siskins, Goldfinches, or Redpolls are usually more intelligent and more easily tamed than Larks, Linnets, or even Canaries, though the cleverest bird we have met with was a Canary. Nevertheless, the same level of intelligence is not to be expected from all the individuals of a species; as I have said before, it varies as much within its limits as does the intelligence of human beings. To demonstrate this, I shall now relate our experience with different pets, with our estimates of their characters, and then, under the heads of habits, instinct, intelligence, affection, jealousy, memory, mental process, and curiosity, record our observations on these points.

As I said before, our first bird was a young Canary (*Serinus canarius*), which, for the sake of distinction, I will call Canary A. His arrival was not remarkable in any way; he fluttered and seemed desperately unhappy if his cage was approached, but he

calmed down and seemed to get to know us in the ordinary frightened bird fashion. Curiosity and intelligence are nearly equivalent in birds, as in reality curiosity is, in certain forms, a desire of knowledge; so the first sign of intelligence from this bird was a great excitement at a teetotum (top) which was spun near his cage. He ran from side to side; he stood up and craned his neck to see. As an experiment, the door of the cage was opened, and after a little hesitation the Canary came out and went to the spinning top. He then touched it lightly with his beak, but retired very nervously and quickly on feeling the contact. We were struck by this unusual conduct on the part of a bird, and opened the door of his cage and let him out several times a day. His education progressed rapidly; we soon tempted him to feed from our hands, then to fly on our fingers and shoulders. Finally he would perch on our heads, hands, or shoulders, and remain quiet while we walked from room to room; play with and pull out a handkerchief from the breast pocket of a coat; fly on to a finger when he was called. The greatest proof of tameness he gave was in his allowing himself to be caught with the hand without the least difficulty; birds greatly dislike contact with the hand. In short, he was as entertaining a companion as an intelligent dog.

Encouraged by our success with the Canary, we bought a Red-breasted Linnet (*Linota cannabina*). We never succeeded in teaching him to do anything, except to give a very pretty call of satisfaction on receiving a hemp-seed, which we had to place on his perch, and even then he would not eat it till we had retired to a safe distance. After some time he struck up a friendship with the Canary; but he was a heavy unintelligent bird, who liked to sit still and think. It was amusing to watch the two birds together; the Canary would wait till the Linnet was quiet, and then gently sidle up to him and nibble his toes. The Linnet would placidly retire to another perch, and again the same process was gone through, till the Canary was tired. Sometimes they were placed in separate cages, and then if one was allowed out he would go and visit the other; if both were out, they would hop about the floor picking up stray seed, but always keeping close together.

To these we added a Redpoll (Lesser Redpoll, *Linota*

rufescens), introducing, as it turned out, a most discordant element into the family. This bird, whom I will call Redpoll A, had a remarkable character. Though a very small bird of his species, he was exceedingly fierce, and yet sometimes an arrant coward, full of tricks and exceedingly knowing; he nevertheless was so distrustful that it was over two years before we succeeded in taming him. He would at once attack any strange birds that had been introduced into the cage, though the visitors were perhaps twice his size, and by sheer force of impudence, and the terror produced by his raised plumage and angry appearance, drive them away. He was also excessively sly; if he had lived in these post-Boer war days he might have been described as exceedingly "slim." When in an aggressive mood, it could be guessed by the twinkle of his small beady eye that he was up to mischief; he looked up in the air, or over his shoulder, or anywhere except in the direction of the bird he meant to attack, gradually approaching him till within reach of his tail. When he was satisfied that his victim was looking the other way, he would pull his tail sharply, and retire in a quiet unostentatious manner, looking the picture of innocence, while some other and nearer bird came in for the resentment of the injured one. We were convinced that Redpoll A had a sense of humour.

Though Redpoll A was so small, it was curious that in the winter the other Redpolls gave way to him; but the "General," as we called him, had to succumb to superior force in the spring. After one or two severe fights—real combats, in which the superior size of the other birds told—he had to play second fiddle. I have counted as many as fourteen feathers torn out by one stroke of the beak.

He soon learnt to draw up a little bucket with his water, and a box with his food, and seemed proud of the accomplishment. Indeed, it is not very difficult to teach them this, the birds soon understanding the apparatus. The bucket is at first kept full of water at the top, then half, and later an inch away, so that it has to be pulled up a little to enable the bird to conveniently drink the water, and finally in the water-tank at the bottom. On the other hand, it was more than two years before we could overcome the repugnance of the "General" for settling on and

feeding from our hands. He was determined he would not, but we kept on trying, and the first time he flew on he as promptly flew off, the contact with the flesh of the finger seemed to give him a shock.

Another bird, Redpoll B, was greatly excited when he saw the "General" pull up his bucket. He was in a different compartment of the cage, and he forced himself through the wires and made his way to the bucket, which he examined with curiosity, and even tried to pull up. Redpoll B was in other respects a timid bird with us, though fierce and cruel at times to his own species.

Redpoll C was a favourite, and took life very easily; he seldom or never fought; he would dare a great deal for a favourite seed, but it would be arrived at by artifice and not force. He was delightfully and consistently tame, the tamest bird we had had with the exception of Canary A. He was very clever, much too clever to pull up a box for inger (thistle) seed when he had only to fly on to the bars of his cage and attract his master's or his mistress's notice. Or if he was out, he would fly on the shoulder or the hand, knowing his reward. Sometimes he would not return into the cage, and then it was a matter of starving him "in." He tried every trick he knew so as to obtain food without going into the cage for it; he would fly on to the head or the shoulder of his master or mistress, he would go to the closed box in which the seed was kept, and then back to the hand, and repeat these blandishments for many times, showing remarkable perseverance, till at last, unable to endure further, he walked into the cage with an air of discontent, and suffered the door to be closed on him. Even then he was not always conquered, as occasionally he would endeavour to snatch a morsel, and directly a movement was made flew out again.

Redpoll C cherished an admiring affection for the "General," which I am sorry to say was not reciprocated; he liked to sleep near him, and though driven away many times, would still return, waiting till Redpoll A was too sleepy to object, and usually his efforts were crowned with success. The "General" very seldom really hurt Redpoll C, as the latter was quick in movement, and ready to take the hint of the other's threatening beak.

We had several other Redpolls—one, whom I will call D, was a powerful bird, who knew how to take care of himself; he was not aggressive, but could peck very hard, and consequently was usually made way for. He was not amusing, and passed most of his time tapping his beak against the wires and polishing his toes, which he kept in excellent order.

Redpoll E was a clever, sharp, and amusing bird, whom we had when quite young. Redpoll F was also a young bird, but wild, fierce, and cunning. Redpoll G was the contrary, timid. F and G were often billing and cooing, therefore we concluded that they were male and female, but we had no further evidence of this, as they did not mate or build a nest.

We had another Canary—Canary B—for a long time. She was a silly stupid bird, who methodically and decidedly refused to learn anything, and yet from her greediness and clumsiness was occasionally amusing. She appeared to have a cold and be ill, and was in consequence fed on sponge cake dipped in wine (sherry). Redpoll E stole some of this in spite of her angry remonstrances; finally both birds were decidedly overcome with alcohol, as they remained stationary on the perch, hissing at each other, but totally unable to resort to movement or aggressive action.

A young Goldfinch (*Carduelis elegans*) soon became very tame, and had pretty ways and manners. He learnt to pull up his water, and showed forethought in the way he stood the bucket up in a corner till it was empty, thus saving himself the trouble of drawing it up every time he wished to drink. He was twice the size of the "General," but used, to fly on his approach, though not afraid of the other Redpolls; his angry hiss would always drive them away.

We had a pair of Siskins (*Chrysomitris spinus*). They were very quick and intelligent, and practically learnt tameness from seeing the tameness of the other birds. The female followed us all over the cage to be fed, and drove away the birds whom we might have been feeding. The male was more timid, though when we first had them early in January, he so ill-treated the female, pulling out half her feathers, that they had to be separated; yet such is the inconsistency of the female mind

that, when later she thought I had ill-treated him (I only cut his claws), she flew to his rescue, and would not have anything to do with me for a whole week.

All these birds have slept their long sleep for many years, and the loss of each was a pang. We have again tempted fate as we now have a Canary, and we are again victims to the fascination of the feathered folk.

Canary C has had a chequered career. He was the plaything of a boy in a small school, and I have heard it rumoured that on occasions he has been taken out of his cage, wetted to prevent him flying, chased, and even caps thrown at him. Our experience of him is this: We have had him for seven months, yet the sight of a boy still discomposes him, and the appearance of a silk hat on the head is objected to. At first he declined to come out of his cage on any consideration, uttering a distressful call, but we have overcome this. He is quite tame with us, but fears the hand exceedingly; it is only with the greatest hesitation that he will take a hemp-seed off the finger while in the cage, and will not take it at all if out, but takes it quite readily from between the lips in or out of the cage. He is a creature of habit, expects his cage to be cleaned, and his bath provided at a certain hour, and utters a distinct protesting call if this has not been done. We can differentiate these calls; in the evening of these lengthening May days he is sleepy before it is dark, and calls for his cover about 7 p.m., and early retires to rest. My little daughter sometimes teases him, but he is not in the least afraid of her, and ruffles his feathers and pecks her vigorously. When she wants him to go into his cage, she makes him hop on her arm, and then carries him to it, when he goes in in a docile manner.

Habits.—As far as our observations have gone, we have come to the conclusion that birds are essentially logical and practical, they never do anything without good reason; they also, in many of their actions, show a strange conservatism and deference to precedent.

Most birds have a favourite sleeping-place, and will try perseveringly to get or keep possession of it. This is for several reasons:—(1) They like to sleep as high as possible, the highest place being probably the safest. (2) Or it may be a matter of

situation, as shelter from draughts. (3) Or it may be that the perch suits the feet.

Birds are always bad-tempered when sleepy. Canary A would peck and fly at us fiercely if disturbed, though directly fully awake was as amiable as ever. Redpoll C could even be provoked into fighting if another bird invaded his sleeping-place. This species very seldom sleep with the head under the wing as almost all birds do; it was only in the coldest weather that I have seen them do this.

Birds are very fond of a variety in their food, and it is by keeping back some special seed—as hemp, or millet, or thistle—and offering that as an inducement, that we have tamed them. Redpoll F was fond of hemp, but was at first too wild to take it from our hands; watching another bird being fed, he would take it out of his mouth, or chase him and make him drop it.

Redpoll A had a habit of taking two seeds off the finger, and putting one down while he ate the other; both Redpolls F and C knew this, and often stole the hoarded morsel.

Canary B, Redpolls A, C, E, and the Goldfinch all had and used little trays for seed, or to break hemp on. Canary B took everything given her to her tray, as crumbs of cake or pieces of apple or green food.

The birds were let out of the cage and given some thistle-seed the first thing in the morning, and they all went to different places and waited their turns to be fed, and were accustomed to a particular rotation.

There was generally a fight for the bath, except on the part of the "General," who almost invariably bathed last, and waited for fresh water. Redpoll F turned round three times in the bath before throwing the water over him. We never found out the reason of the action.

The cage was a large one with several doors. Some of the birds were very particular as to which door they came out of and went in. Redpolls E, F, G all used the top one to fly out, and entered at the lower. The cleverer birds were not so particular; but Redpoll C invariably flew on to my right shoulder and not my left. It took some time before our pets got used to perching on the finger; they seemed to experience some shock on both

claws clutching the flesh, and were seized with panic and flew off, but patience and kindness conquered this.

Cleverness.—We taught Canary A to tap the handle of his cage-door when he wanted to come out. We could make him go into the bath as many times as we wished by calling to him. If he had not been attended to, if his bath or fresh food or sand had not been provided, he would run along the bottom of a long cage, beating his wings and uttering peculiar loud cries. One day he was going through this performance without any apparent reason. I looked at his cage and tried to find the cause, till the bird put his head through the bars, and pointed with his beak to his sugar, which had fallen on the floor. Carpentering or needlework he took great interest in, and a favourite occupation was to throw all the pins, needles, studs, &c., off a dressing-table on to the floor.

All the Redpolls pulled up little buckets for their water, and fed from our hands. Redpoll C would fly across the room to the finger if called; the others were not so dependable, but would do so sometimes. Redpoll C would fly on to a paper or an open book to attract attention if the reader was too pre-occupied to notice him. None of the Redpolls were nervous at strangers.

If the little well was empty, or the bucket caught, the birds would shake the cord or pull the bucket up, letting it fall with a noise to attract attention.

I mentioned a Goldfinch's cleverness with regard to his water. It is interesting that he worked this out himself, as at first he invariably spilled all the water out of the bucket, and drank from the little puddle thus made.

A hen Siskin justified the reputation of her species by at once coming on my hand from only seeing the other birds do so. Redpoll C was the first of his species to fly on to our hands. After he had done this for the first time, the "General," who had been watching carefully, flew at him, and chased him over the cage; it had evidently offended his sense of propriety.

Affection and jealousy.—Canary A was very fond of us, and showed his affection in many ways; he would mope in a corner when we were away, greet us when we came back, showing pleasure by his animation and movements, and call after us as

long as he could hear our retreating footsteps. He was jealous if we took notice of another bird. A stuffed Canary was carried into the room, and he at once attacked it with rage and fierceness. On one occasion he was alarmed during the night by a very severe thunderstorm, and we could hear him fluttering in the dark. On calling to him he at once settled quietly down, and answered with his usual note. When ill he preferred to perch on our hands or shoulders, and sleep there.

Our impression is that there is not much affection in Redpolls, though they are so clever; but Goldfinches and Linnets certainly prefer one person to another.

Memory.—I used to have a little food-trolley fixed on the cage; this was removed for about three months. On fitting it on again, it was pulled up within five minutes by Redpoll A, though he originally took several days to learn the trick. I may explain that it was our practice to keep a different kind of seed in the trolley from that in the ordinary boxes of the cage, which were always kept full, so it was not the incentive of hunger that quickened his memory. Redpoll D taught himself this trick from seeing Redpolls A and B do it. We left the birds under the care of a friend for three months, during our absence in the country. When I went to fetch them home, I found the cage in a large dimly lighted room. On hearing my voice, Redpolls A and B were greatly excited, and uttered their peculiar "call" many times, and later went through a similar demonstration on seeing my wife.

When I bought Canary B, we had Redpolls A, B, C, D. On putting her into the same cage, Redpolls B, C, D were greatly alarmed, and continued to be frightened of her for several days; but Redpoll A, who was familiar with the appearance of Canary A, was not at all disturbed, and promptly attacked Canary B. A whole year had elapsed since Redpoll A had seen a Canary.

The mental process of birds is slow; if called they do not at once respond unless stimulated by hunger, the idea seeming to work for a few seconds before suggesting the action. It requires, for this reason, patience in teaching them; all actions and movements must be deliberate; a sudden turn of the head or hand will frighten and destroy for a time the groundwork of all training, confidence.

Curiosity.—I have already mentioned Canary A and the top, and Redpoll B and the bucket. The most extraordinary instance of curiosity that I have experienced is not in the limits of this paper, as it does not refer to a caged bird, but I will ask the indulgence of my readers in including it. In August, 1901, at Wood Farm, Welland, at the base of the Malverns, as I was returning from a collecting excursion and carrying a butterfly-net, a bird, a Pied Wagtail (*Motacilla lugubris*) flew down to my feet, uttering its call. I look around to see if a Hawk was about, or if any other cause for this strange conduct was visible. I then turned my attention to the bird to see if it was wounded or ill, but it was unhurt, quite young, in beautiful plumage, and apparently in excellent health; it flirted its tail, and looked up into my face with curiosity and without the least fear. To my extreme astonishment it even allowed me to take it in my hand. I called to my wife (who is even more interested in birds than myself) to come out of the farmhouse and see this strange behaviour. The bird was as tame with her as with me, and she also took it in her hand. We petted and played with it for a considerable time, it not showing the least desire to leave us, but, on the contrary, manifesting pleasure in being with us. Finally, as we had to go indoors to lunch, I placed it on the roof of the cowshed. About an hour later we were passing a barn in a field about three hundred yards from the farm, I still carrying my net, when we heard a call, and the same bird again flew down, and remained a long time with us. I caught a fly in the barn (*Musca corvina*, L., to the best of my recollection), and this the bird took from my fingers, not with avidity, but with an uncertainty, a kind of air of not refusing from politeness. The only reasonable explanation that I can give is that the unusual sight of a net, and my waving it to capture an insect, so excited the curiosity of an abnormally clever young bird, that it quite overcame its habitual fear of man. We looked for our little friend again on many days, but were never quite certain that we recognized him, and he never repeated his strange behaviour. Since then I have always taken particular notice of this species, but have found them rather shy, never permitting me to approach at all close.

THE BIRDS OF THE DISTRICT OF STAINES.

BY GRAHAM W. KERR.

(Continued from p. 184.)

SISKIN (*Chrysomitris spinus*).—Distinctly rare. Its appearances are few and far between, and have all been during hard winter weather.

HOUSE-SPARROW (*Passer domesticus*). — Common. I have been amused at watching the Sparrow driving the Thrushes and Starlings away from the red berries of the mountain-ash. As it does not eat the berries itself, this is done from sheer mischief.

TREE-SPARROW (*P. montanus*).—Numbers fluctuate in an extraordinary manner. Some years it is quite common, and then again the following year there will be hardly any. This spring it was plentiful, and I came across several nests in the sides of a haystack, a site that surprised me greatly. As a rule the nest is placed in holes in old willow-trees. It is remarkable that there is invariably in every clutch one egg much more lightly marked than the others. To argue that this is the last egg laid, and is due to exhaustion of colour-matter, might meet the case of individual birds, but does not seem sufficient to explain the whole of a species having the same trait. Nor does the fact that the light egg is as often fertile as any other in the clutch point to any loss of power.

CHAFFINCH (*Fringilla cœlebs*).—Common.

LINNET (*Linota cannabina*). — The increase of the Linnet has been the most remarkable feature of our bird-life. Ten years ago in all the country-side there was only one spot (a fine patch of gorse) where the bird could be found, while now we are overrun with them, and every bush and hedge contains a nest.

LESSER REDPOLL (*L. rufescens*).—In 1903 the Lesser Redpoll bred in the fork of a pyramid apple-tree in my garden. I

considered this remarkable, as there are but few recorded instances of the bird breeding in Middlesex. This year I again found the nest in the fork of a tall osier, some fifteen feet from the ground, on the Berkshire bank of the river above Boveny Lock. It would seem from this that the bird is increasing its breeding range along this part of the Thames, as it has undoubtedly done of recent years over most of the south-eastern counties. The great increase of the Linnet in our district also probably has bearings on the Lesser Redpoll's appearance.

BULLFINCH (*Pyrrhula europæa*).—Quite plentiful, though, as a rule, one only obtains just a glimpse of the bird as it flies from some high hedgerow.

CORN-BUNTING (*Emberiza miliaria*).—Curiously local. In a few fields near the reservoir there are a good many, the birds being resident, but in no other part of our whole district does it occur. It certainly breeds at this spot, but I have never been able to discover the nest. It is of more sluggish habits than any bird I know, and will remain for hours on the telegraph-wire, or some other perch, uttering its monotonous notes.

YELLOW BUNTING (*E. citrinella*).—Common.

CIRL-BUNTING (*E. cirrus*).—Only of rare occurrence.

REED-BUNTING (*E. schoeniclus*).—Resident in good numbers, but subject to large migratory movements in spring and autumn. This year enormous numbers arrived in the spring, and for fully a month the movement went on, and then gradually waned away, leaving our resident birds undisturbed. During winter they roost in flocks, and it is interesting to see them coming in by twos and threes, and dropping into some reed-bed for the night. The Reed-Bunting more than any other bird will attempt to lure an intruder from the nest by trailing the wing as though it were broken, and fluttering just out of reach. This trick is invariably resorted to, and it is curious that it should be so strongly developed in all birds of this species.

STARLING (*Sturnus vulgaris*).—Common. When the young of the first broods leave the nest they go into the fields, and make a most unpleasant noise with their screechings. The Starling merely gobbles its food, and is a terribly greedy bird. I have seen it in company with Thrushes, stripping off the ripe berries of the mountain-ash. One evening in the autumn of 1904 I was

walking in the fields, when I heard a vast whirring of wings and a low indescribable twittering from thousands of throats. On looking up I saw countless thousands of Starlings, wheeling in regular order, before settling for the night. The following morning I could find no trace of the birds.

JAY (*Garrulus glandarius*). — Numerous in the well-wooded parts. It undoubtedly destroys many Pheasant eggs, and for this reason is much persecuted in Windsor Forest, falling a ready victim to the pole-trap; but I was glad to hear from a ranger that “for every bird killed a dozen come to the funeral.”

MAGPIE (*Pica rustica*). — Sparsely distributed.

JACKDAW (*Corvus monedula*). — Common.

RAVEN (*C. corax*). — Once seen feeding in a field with Rooks. Although it flew away strongly, I think it must have been a bird escaped from confinement.

CARRION-CROW (*C. corone*). — Rare.

ROOK (*C. frugilegus*). — There are rookeries of various sizes all over the district.

SKY-LARK (*Alauda arvensis*). — A common resident. During winter its numbers are heavily reinforced by birds that only winter here.

WOOD-LARK (*A. arborea*). — A summer migrant, and then only found in a certain part of Windsor Forest, where it is fairly common, and breeds.

SWIFT (*Cypselus apus*). — Common.

ALPINE SWIFT (*C. melba*). — One occurred on spring migration, 1895.

NIGHTJAR (*Caprimulgus europæus*). — Rare.

WRYNECK (*Ijnx torquilla*). — In early spring this bird may be commonly seen perching on fences or tops of hedges. When nesting commences the notes are still frequently heard, but the bird is rarely seen.

GREEN WOODPECKER (*Gecinus viridis*). — Very numerous in Windsor Forest. Sits closely, and one bird actually allowed me to take her in my hand, and even then made no effort to fly away. The wood chips thrown out in excavating the nesting-hole are not removed from the ground below.

GREAT SPOTTED WOODPECKER (*Dendrocopus major*). — Rarely seen.

LESSER SPOTTED WOODPECKER (*D. minor*). — Egham, 1881 (*vide* Zool. 1902, p. 228).

KINGFISHER (*Alcedo ispida*).—The Kingfisher is by no means as uncommon as is generally supposed—at least, not in any part along the Thames. Between Penton Hook and Romney Locks there are never in any year less than a dozen nests, and in many of the higher reaches of the river the birds are quite as numerous. Having lived all my life on the river, I have had full opportunity to study the Kingfisher in all seasons, and the most remarkable trait in the bird is its wonderful conservatism. Floods drive the birds from the main stream, and they are then often met with far inland fishing in the flooded ditches and meadows, but as soon as the waters abate they return to their old haunts. During hard weather they suffer severely, and are seen on the cold frosty mornings flying low over the water, and uttering their loud shrill cry. Probably at this time the fish keep well on the bottom of the river, and the bird is almost starved. The flight, as a rule, is low and arrow-like, but is capable of being sustained at a good altitude, and for a considerable distance. Two broods are reared, and the nest may be found from March to the middle of July. A clay bank in some quiet reach is chosen, and the bird spends about ten days scooping out its nesting-hole. One rarely sees the bird at work, even though the spot, as is often the case, is devoid of any cover. The straight narrow passage, smaller than any Water-Vole's hole, slopes upward, and runs three feet or more into the bank, leading into a circular chamber that always bears away slightly to the left. Here, on a ground of powdered fish-bones, are deposited the round white eggs, from five to ten in number. When fresh the yolk gives the eggs a delicate pink tint, like large pearls; when blown they lose this, and become pure glistening white. After being in use for some time the passage to the nest becomes very foul, being sodden with droppings and disgorged fish-bones. The droppings frequently make the nest conspicuous, and are of peculiar character, being always white and liquid. The inner chamber, or nest itself, is, however, kept scrupulously clean. It is essential that some root or snag grows from the bank within a few feet of the nest, for the bird never flies direct to its home, but perches for a few minutes outside,

and then flies in. The fishing-spot of the Kingfisher is never near the nest, but generally in some quiet nook where the sun slants through overhanging boughs on to the water. The depth of water is usually eighteen inches or two feet, and the bird continually uses the same spot. It remains motionless on some bough about two feet from the surface, and, as a fish passes beneath, darts down with its wings held closely to the sides of its body. In early spring, when the birds are pairing, they become very noisy, flying to and fro after each other with shrill cries. Once the nesting-site is chosen, nothing will induce the birds to abandon the spot, which is used year after year, though a new hole is made each spring. If the first nest is disturbed, within a week the birds will commence a new tunnel within a foot or two of the old one, and will do the same thing time after time. When the young are full-grown they are slow to leave the nest, but sit inside, uttering a low humming noise, like a swarm of bees. If one taps the bank from outside they become silent, and only recommence after some minutes have elapsed.

(To be continued.)

NOTES AND QUERIES.

AVES.

Blackbird Laying Twice in same Nest.—I would like to draw your readers' attention to a rather out-of-the-way performance of a Blackbird (*Turdus merula*) in a friend's garden. She laid some time back the usual four eggs, sat well, and brought out the young birds; they were all fledged, and had left the nest. A few days later my friend looked into the old nest again, and found four fresh eggs, presumably laid by the same hen; she is now sitting. Is this not a rather unusual occurrence?—W. H. WORKMAN (Windsor, Belfast).

Accident to Young Crow (*Corvus corone*).—On May 10th, in the vicinity of Ashted (Surrey), I found a Carrion-Crow's nest, upon which the old bird sat close. When she was disturbed a young bird fell with a heavy thud at my feet. As this youngster was but a few hours old, it is evident, I think, that in some unaccountable way the parent bird's feet must have become entangled with the young bird. This seems a somewhat unusual occurrence to happen to a bird at such an early age, and taking into consideration the fact that the nest is so substantially built.—P. W. HARVEY (66, Broughton Road, Thornton Heath).

Hoopoe at Lundy Island.—About May 15th I watched a Hoopoe (*Upupa epops*) for a considerable time on Lundy Island. It was finding plenty to eat in the thick grass, but, although I had strong glasses, and the bird allowed me to approach to within twenty yards of it, I was unable to see the nature of its food.—NORMAN H. JOY (Bradfield, near Reading).

Song of *Cuculus canorus* at Night.—Between eleven and twelve on the night of May 10th, when it was pitch dark, a Cuckoo was singing loudly in my garden. The bird was evidently on the wing, although it remained close to the house. So far as my own recollection goes, I do not remember ever previously having heard a Cuckoo singing in the dark. Can any of your readers inform me whether this is an unusual occurrence?—R. H. RAMSBOTHAM (Elmhurst, Garstang).

Wild Swans in Norfolk.—The statement that the year 1905 passed without a single Wild Swan being seen in Norfolk (*ante*, p. 138) is incorrect, for Mr. Pashley tells me that three Bewick's Swans (*Cygnus bewicki*) were seen on the coast on Oct. 18th, and that two of them were shot—adults with very frayed plumage. A supposed Wild Swan, however, shot on Barton Broad, proved to be a Mute Swan, and was omitted intentionally.—J. H. GURNEY (Keswick, Norfolk).

Colour of Pochard's Eyes.—Regarding Mr. C. B. Corbin's note (*ante*, p. 194) on the colour of birds' eyes, he says he has never seen old or young of *Fuligula nyroca* in the flesh. The following, therefore, may prove of interest to him. I have been more fortunate than Mr. Corbin, and scores of living and dead *F. nyroca* have passed through my hands, for this was one of the commonest of migratory Duck in a certain part of Bengal where I resided for some years. It was only the fully adult males that exhibited the white iris, those of the immature birds and females being brown. In a paper I contributed to 'The Zoologist' for 1902 (p. 452) on Indian birds, I touched briefly on the phenomenon of Pochards' eyes changing colour. This occurred in one (a male) I shot, which was only slightly wounded, and whilst giving it the *coup-de-grâce* I distinctly saw the blood-red iris change to pale yellow. I thought this very remarkable at the time, but believe the occurrence is not uncommon.—GORDON DALGLIESH (Brook, Witley, Surrey).

Ornithological Notes from Plymouth. — I think that a few of the rare birds I have seen around this neighbourhood are worth recording. In some marshy ground less than a mile from this town an Egyptian Goose has been staying for the last nine months. I have seen it on many occasions, and when approached it takes wing at a little more than gunshot range, always flying into the River Plym. As Egyptian Geese are kept in Bicton Park, and also near Crediton, this may be an escape, and has failed to find its way back again. The bird has failed to find a mate all this time. In September, 1903, I saw a pair of Glossy Ibises (*Plegadis falcinellus*) in Chelson Meadow (Plymouth race-course), a flat swampy piece of ground. I could observe them well at about a distance of one hundred yards. They had disappeared the next day. Last year a pair of Hawfinches successfully reared a brood in a garden at Mannamead. But the most interesting of all was a Marsh-Harrier (*Circus æruginosus*), which I saw on Caters Beam—a boggy part of the southern half of Dartmoor. This bird was put up by the Dartmoor foxhounds in November, 1905. The bird flew low

over the ground across our line. I noticed it had spaces in its wings, as though it had been shot at. This was remarked on by several riders, but it might have been in moult. A pair of Peregrine Falcons nested in some woods on the edge of the moor last year. The Buzzard is not infrequently to be seen on Dartmoor. They are known to nest in several places, and seem to hold their own pretty well. I have recently paid three visits to Wembury Cliffs, one of the breeding stations of the Gulls, about six miles from Plymouth. I was glad to see a pair of Ravens still there. They have bred in these cliffs from time immemorial. There are five young just fledged. So far as I could see, the eggs were hatched towards the end of March. The nest is built in an inaccessible position, unlike last year's, which could be easily reached. I saw the remains of this nest. The birds appear to use one nest one year, and the other the next. I also saw Rock-Pigeons fly out on all three occasions, as well as a pair of Kestrels, and a local man showed me where they nest. The positions seem pretty secure. He also showed me a Fox's earth in these cliffs. He stated that they swim across the River Yealm from the big woods on the opposite side, and one year he secured three cubs, and transferred them to the moor, where they could be better hunted. A pair of Ravens also nest at Rame Head, on the Cornish side of the entrance to Plymouth Sound, and another pair can always be seen about Trowlesworthy Tor, though I failed to find their nest.—H. P. O. CLEAVE (18, Leigham Street, Plymouth).

Winter Ornithological Notes from Barnstaple.—

Nov. 20th, 1905.—Frosty. Redwings very numerous near the town; hundreds can be seen throughout the winter in Acland Woods, and towards evening these numbers are increased by others coming in to roost from all directions in parties of from three to thirty. They make a pleasing chattering noise, and occasionally utter several flute-like notes, as if half inclined to sing.

Nov. 22nd.—This winter I have seen the following birds with only one leg apiece:—Dunlin, Ringed Plover, Peewit, Coot, Rook, Black-headed Gull, and Curlew. The first three of these all lopped about by themselves alone, but once or twice I noticed the Dunlin with a mate trotting about with it.

Nov. 26th.—A flock of Siskins, with a few Lesser Redpolls, feeding on the alders at Venn Quarry. They all disappeared in a few days. The Siskin is not very common in North Devon.

Dec. 17th.—Snipe and Wigeon very numerous in the marshes.

Dec. 18th.—Observed a Cormorant on the topmost branch of a tall

but withered oak-tree by the River Taw, near Tawstock Woods. This has been a favourite resting-place with these birds for the past twenty years, and often three or four can be seen perched up against the skyline with their wings held out to dry. Occasionally one will betake itself inland to a Trout-stream, where it plays havoc with the fish if not shot or driven away. A fine male Pochard on the river near Bishopstawton. On being disturbed it flew away upstream in the direction of Newbridge. Several Teal and Water-Rails in the marshes. The Heron is one of the most nervous birds I know. If it does not see you, it will hear you approaching. Immediately it shoots up its long neck, and, with a frightened turn of the head, it spreads its wings and swiftly sails out of sight. I have seen a Heron seek safety by flight once from an excited bullock, once from a little Red-deer calf, once again from an inquisitive lamb, and even from an impertinent Rook; but when really angry they fight savagely.

Dec. 21st.—A white-headed Blackbird seen near Barnstaple. Little Grebes plentiful on the river.

Dec. 28th.—A Cormorant this morning was struggling with a large Fluke (*Pleuronectus flesus*), which had stuck in its mouth. It was in the middle of the river, and was swimming round in a small circle, shaking its head, and stretching its neck. After some minutes it suddenly shot its head up, and I saw the fish disappear, and a big swell roll down its gullet. It then wagged its tail like a Duck, cleansed its beak, and flew off, apparently by no means impeded by its extra heavy breakfast. Sometimes, when in a difficulty of this description, they will go ashore, where I suppose they have a better opportunity of dealing with the obstinate fish.

Dec. 29th.—Saw a stuffed specimen of an Arctic Skua, in immature plumage, which was shot on our river in September, 1904. During Christmas week a Great Northern Diver was shot here by a fisherman; also a Red-breasted Merganser, but I did not see it. A flock of about twenty Siskins feeding on the alders by the River Yeo, near Ivy Lodge.

Jan. 2nd, 1906.—Stormy. A flock of six Grey Phalaropes on the Taw, near Pottington Point. Rough weather usually brings in one or two.

Jan. 7th.—Observed a flock of four or five Sanderlings on the mud-flats. Very wild. I am told that there has been a flock of Wild Geese "in over" this week.

Jan. 11th.—Numbers of Scaup Duck off Baggy Point and Down End, Santon.

Jan. 17th.—Cased a Pomatorhine Skua in immature plumage, shot in November, 1901, by a fisherman at the mouth of the River Taw.

Jan. 19th.—A flock of Coal-Tits at Tawstock Woods. This is a very uncommon Tit in North Devon, and is not often met with. However, West Buckland, nine miles from Barnstaple, is the exception which proves the rule, for here it is numerous in the thick plantations, and breeds. The Marsh-Tit is very common.

Jan. 24th.—The keeper of the Hospital Ship at the estuary of the Taw has cared for a Herring-Gull (once shot in the wing) so long now, that, though quite well and allowed its liberty, it refuses to leave the neighbourhood. Every morning it comes aboard for a breakfast, which is always given it, and during the day picks up its own food from the river with one or two other Gulls, but it mostly prefers its own company. A whistle or a signal with the arm will bring him up almost immediately, sailing round the ship, but he will not pitch if there is a stranger about.

Feb. 24th.—Saw a solitary Wader on the river up by the South Walk. I thought at first sight it was a Common Sandpiper, but I believe it must have been the variety of Dunlin known as "Shintz's Dunlin." Its bill was short, but in size like a Dunlin with the same plumage. It was very tame, so I was able to examine it well. I have never seen a Dunlin so far up the river, and especially not where townspeople are passing up and down continually on both banks.—
BRUCE F. CUMMINGS.

NOTICES OF NEW BOOKS.

The British Freshwater Rhizopoda and Heliozoa. By JAMES CASH.
Assisted by JOHN HOPKINSON, F.L.S., &c. Ray Society.

To many zoologists the subject-matter of this book must prove the limitation of much of our knowledge. How little we know of living creatures as a whole! and the more we specialize our studies the less we know of animated nature in a comprehensive view. It is this narrowness in purview that vitiates our theories, and causes many of the evolutionary systems, so frequently propounded, to rest on the advocacy of circumscribed observers and to lack finality. With these minute and lowly organized creatures, only to be studied by the aid of a microscope, has arisen

a question of the most transcendental importance, the universality of death (?). The well-known theory of Weismann and others, supported by the weighty enunciation of Prof. Ray Lankester, as to the "deathlessness" of the Protozoan cell, can only be referred to, and not argued here; but at least it can be proposed that the mystery of death is at least equal to that of life, of which we hear so much more.

The main object in the preparation of this work, we are told, "was to bring together, as concisely and accurately as possible, in a single manual, all that has been so far discovered regarding the British Freshwater Rhizopoda and their near allies, the Heliozoa." It is thus a distinct addition to the means of studying another branch of British zoology, and we are promised a bibliography of these organisms by Mr. Hopkinson, which will appear as a future volume. In classification, the term *Conchulina* has been substituted for *Testacea*, which is preoccupied in *Mollusca*. There are sixteen excellent plates, and in this, as in previous volumes, the members of the Ray Society act as pioneers in the still very far from exhausted field of British zoology.

A Pocket-Book of British Birds. By E. F. M. ELMS.
West, Newman & Co.

THE contents of this little book have been so clearly and tersely stated on the cover of our last issue as to leave little more to be said on the subject. It is to a very great extent a compilation, which is a necessity if any work of the kind is to be comprehensive, and compilation is a word which frequently bears a wrong signification. Mr. Elms has endeavoured in a small compass to give, in a condensed form, very much information regarding our British birds, and he has succeeded in producing an inexpensive volume which well deserves to be a "pocket-book" for those who wish to become field ornithologists. We are quite certain that if this publication is rightly used and faithfully consulted, any field naturalist may obtain a thorough introduction to a knowledge of the birds he may meet on his rambles, and it should be slipped in the pocket by those taking a summer holiday, who are not in the strict sense of the word already ornithologists. If its readers also endeavour to supplement its notes, and test its information, it will not have been written in vain, and will thoroughly achieve its object.

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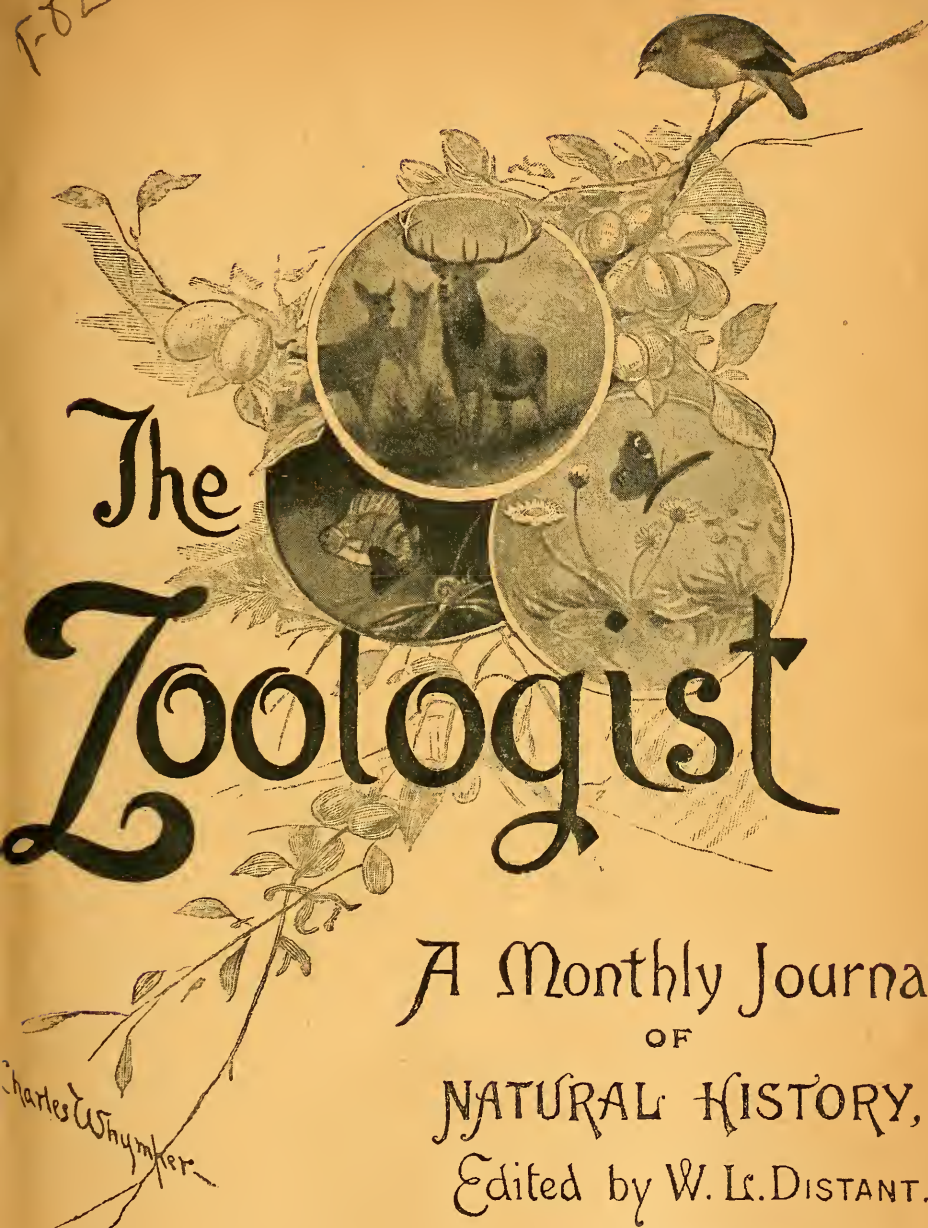
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YOUNG CORMORANTS (*Phalacrocorax carbo*) AT SCILLY.

THE ZOOLOGIST

No. 781.—*July, 1906.*

THE BIRDS OF SCILLY.

BY JAMES CLARK, M.A., D.Sc., and FRANCIS R. RODD, J.P.

(PLATE III.)

THOUGH the peculiar geographical position of the Isles of Scilly makes them one of the most important ornithological centres of the west, the literature of the bird-life there is remarkably scanty. Accidental visitors have from time to time received due recognition in the pages of 'The Zoologist' and elsewhere, but, with the exception of a short appendix to Rodd's 'Birds of Cornwall,' and a compilation by the Rev. R. W. Smart in the 'Transactions' of the Penzance Natural History and Antiquarian Society for 1885, no general account has yet been published of the birds of these islands.

The material for the following annotated list has been drawn from various sources. Mr. Augustus Pechell visited the islands every year during the autumn or winter from 1849 to 1870, and the rare Scillonian birds obtained by him were sent direct to the late Mr. E. H. Rodd, and, with few exceptions, are still in the Rodd collection at Trebartha. Mr. F. R. Rodd paid five lengthy visits to Scilly during the shooting season between 1859 and 1870, and not only sent birds and frequent ornithological notes to his uncle Mr. E. H. Rodd, but during the last three months of 1870 kept a bird diary there, that was afterwards published in 'The Zoologist.' In 1863 he drew up an annotated list of
Zool. 4th ser. vol. X., July, 1906.

Scillonian birds, in which he was helped by Pechell, but it was never published; and in 1871 he made a number of marginal notes on the birds of Scilly in a copy of 'Yarrell.' Both of these records are fortunately still preserved. During the last sixty years Mr. J. H. Jenkinson has paid many visits to the islands, chiefly during the autumn and winter, and with his son, Mr. F. Jenkinson, has very greatly increased our knowledge of the local fauna. Some years ago he prepared a manuscript list of the birds of Scilly for use at the Abbey, which has been added to from time to time by Mr. T. A. Dorrien-Smith, the lord-proprietor of the islands, who for the last twenty-five years has taken the keenest interest in local ornithology. Since about 1880 almost all the rarer birds secured at Scilly have gone into the Abbey collection there, so that the Rodd and the Abbey collections between them contain examples of nearly all the accidental visitors and rare casuals that have been shot at Scilly since about 1849 to the present time. Another valuable source of information is the Tresco game-book, which goes back to 1856, and contains many jottings of great value.

When preparing his 'Tentative List of Cornish Birds,' published in 1902, Dr. Clark was struck by the paucity of records from Scilly for the spring months, and, to obtain material to fill up the gap, took over a party of his biological students for the Easter holidays of 1903. Since that date he has visited the islands seven times, and, through the kindness of Mr. Dorrien-Smith, has not only ransacked the treasures of the Abbey, but has been able to study the bird-life of Scilly under most exceptional circumstances. Thanks also in great measure to the help so kindly given by Mr. F. Jackson, Mr. C. J. King, and Mr. L. R. George, of St. Mary's, and by the veteran ex-gamekeeper, David Smith, of Tresco, he has been able to obtain a fairly complete record of the more important ornithological events at Scilly for the last six years.

The Mistle-Thrush is a fairly regular winter visitor, usually in small parties, but at long intervals in flocks. The first birds generally come with the Redwings, and others may appear irregularly up till the beginning of March. The Song-Thrush is a common resident, breeding on all the inhabited islands, and (in

1903) on Annett, Samson, St. Helen's, and Great Ganilly. Its numbers do not appear to increase in the winter, but it has been seen several times in the autumn coming in on the north end of Tresco from a north-easterly direction, not in close flocks, but following each other in ones and twos for hours at a time. The Redwing is more abundant than the Fieldfare in most winters, and arrives earlier, appearing, as a rule, about the second week in October, when the Larks and Starlings make their great movement to the islands. Large flocks of both occasionally pass over without landing, particularly at night, in late autumn and winter. Some of these are certainly going eastward out to sea, but it is not uncommon to see from Bryher or the northern point of Tresco scattered flights of Redwings flying overhead from the north-west to the south-east, even in the teeth of a south-easterly wind. A single specimen of White's Thrush was shot by George Britton in the Abbey Gardens on Dec. 2nd, 1886. Blackbirds are commoner at Scilly than anywhere else in the county. They breed almost exclusively in the furze-brakes, to which they always fly for shelter. They are remarkably wild and wary, and outside the Abbey Gardens are very rarely heard to sing. There does not seem to be any notable increase in their number in severe weather, though small parties arrive from the mainland with other migrants in autumn. The Ring-Ouzel is a bird of passage, frequently seen on the rocky eminences of St. Mary's, Tresco, and Bryher in autumn. On April 12th, 1903, a flock of over a hundred came in on a south-easterly wind on the north side of Old Town Bay, St. Mary's, and several were seen on April 19th, 1904, so that it is probable they are regular spring migrants. The Wheatear breeds sparingly, but is common during autumn migration. On April 9th, 1903, several hundreds arrived in three successive flocks above Old Town, and either remained till the 17th, or else fresh arrivals maintained the numbers up till that date. The Whinchat is an autumn migratory casual that has been noted altogether about a dozen times between the second week in August and the first week in October. It always occurs singly, and is probably often overlooked. The Stonechat is common in all the furze-brakes and on most of the waste land throughout the summer, but is not so conspicuous in winter. In the first week in May, 1903, there must have been

about thirty pairs on St. Helen's, all evidently breeding. The Redstart is observed every year in autumn in pairs or in small flocks, usually perched on the granite blocks by the seashore. The Black Redstart, generally in immature plumage, occurs regularly in pairs during autumn migration, and frequently during the winter. Like the Redstart, it has a decided *penchant* for sea-worn granite boulders. The Robin is in evidence all the year round, and breeds on all the inhabited islands. It appears to look on the Redstarts as intruders of a more than usually objectionable nature, and in the autumn fierce combats on the rocks are by no means uncommon.

The Whitethroat has been noted in the autumn. It occurs irregularly, and is probably a frequent migratory casual. The Lesser Whitethroat has only once been obtained, namely, in October, 1857. Rodd believes he saw a pair on Castle Downs, Tresco, in 1863. The Blackcap is an autumn and winter casual in the Abbey Gardens. It was obtained by Pechell in September, 1850, and again in October, 1854. Since then it has been noted altogether over a dozen times, including twice in December and twice in January. The Garden-Warbler is evidently a rare autumn casual. It was first obtained by Jenkinson in 1849. The only other authenticated occurrences are a single bird in October, 1874, which seemingly came over with a flight of Redwings, and a pair on Sept. 29th, 1900, of which one was shot. The Dartford Warbler has not been observed. The Goldcrest does not breed on the islands, but arrives in large flocks in autumn and winter, and is often common in the spring. On Tresco great numbers at times spend a considerable portion of the winter in the fir-plantation about the Abbey. In January, 1904, the trees were literally alive with them. These flocks appear to be entirely composed of birds of the year. Adult birds do occasionally occur, but singly, in pairs, or at most in flights of eight to ten, and seem to be almost always associated with Chiffchaffs, and often with Siskins and Redstarts as well. The Firecrest was first obtained by Pechell in 1851, but in 1871 Rodd writes that it is sometimes as plentiful as the Goldcrest. Though not observed in great numbers during recent years it is certainly a regular autumn and winter visitor, coming, as a rule, in the month of October, with Goldcrests, Chiffchaffs, and Red-

starts. In November, 1903, there were several pairs, with a number of Goldcrests, at Tresco, among the pines between the garden and the monument. Two specimens of the Yellow-browed Warbler were shot on St. Martin's Common by Pechell in October, 1867. One was too badly mutilated for preservation, but the other was kept as an immature Firecrest, and was not identified till 1890. On Oct. 1st, 1905, an adult male was obtained at Tresco by David Smith, who knocked it down with a stick as it flew out of a hedge. The Chiffchaff is a common visitor to Tresco and St. Mary's every autumn, and is occasionally seen on St. Martin's. It has been noticed several times at Tresco in November and December, and frequently heard in song in January and February; so that it is probable a few remain most years during the winter. Rodd, in 1863, speaks of a pair that frequented a corner of the Abbey Garden from the middle of November till the end of December. In January, 1904, several were in song among the Goldcrests, and David Smith says that Chiffchaffs had been there continuously from the 4th of November. The Willow-Wren has been occasionally noticed on autumn migration, for the most part singly, but in the first week in October, 1903, it was fairly common among some gorse near Holy Vale, St. Mary's. On Nov. 22nd, 1904, two were seen and heard in the Abbey Gardens, Tresco. The Wood-Wren was occasionally observed by Pechell and Rodd in the autumn, for the most part early in September, but once on Nov. 8th. Since 1870 it has evidently been overlooked. It is probably at least an occasional visitor in the spring, for in May, 1903, several were seen and heard among the trees near the duck-pond at Tresco. The Reed-Warbler was obtained in September, 1849, in the autumn of 1852, in October, 1864, in September, 1868, and in the autumn of 1871. Then, probably from lack of observers, there is no further autumn record till Oct. 6th, 1903, when it was seen on St. Mary's below Holy Vale. On April 11th, 1904, there were several in song by the Long Pool, Tresco; so that, like the Wood- and Willow-Wrens, it is probably at least a casual spring as well as autumn bird of passage. The Sedge-Warbler is a common summer migrant, breeding freely on Tresco. The Grasshopper-Warbler was heard by the Rev. H. D. Astley on Tresco on May 12th, 1901, and two

were watched for over an hour on Samson on April 13th, 1903. As it is not recorded by Pechell, Rodd, or Jenkinson, it is evidently not an autumn migrant. Before leaving the Warblers it should be mentioned that David Smith had a conspicuous Warbler under observation for a fortnight during the latter part of September and the beginning of October, 1883, in the reed-bed below the Abbey Road, which he identified as the Rufous Warbler. He was too ill at the time to handle a gun, and the bird was not seen by any other observer. Smith also shot what was evidently a Great Reed-Warbler in the reeds on the Long Pool, Tresco, about the end of September, 1884. He had it in his hand, where it lay quietly for a moment spreading out its tail like a fan; but before he could kill it, it suddenly slipped over and went away like a mouse. His description of the bird left no reasonable doubt of its identity. The Dipper, as might have been expected, has not occurred at Scilly. The Hedge-Sparrow is common in every suitable locality all the year round. Its numbers do not seem to be increased during the autumn or winter by immigration.

In some manuscript notes drawn up in 1863, Rodd says that the Bearded Tit has occurred once on St. Mary's Moors. In October, 1876, David Smith shot three Long-tailed Tits out of a family of seven, and on Sept. 28th, 1903, he saw a family of five. In the autumn of 1905 it was fairly common at Tresco. The Great Tit has been occasionally observed in the autumn, and twice in January, generally singly, but twice in small parties. Single specimens sometimes linger in the autumn for two or three weeks in the Abbey Garden. By a slip it is marked in E. H. Rodd's 'Birds of Cornwall' as breeding in Scilly. So far it has not been observed in the islands in the spring at all. The Blue Tit is seen occasionally, for the most part singly or in pairs, during the autumn and winter, probably blown off the mainland by storms, as may, indeed, be the case with all the Tits recorded from Scilly. The Coal-Tit was obtained by Pechell in the autumn of 1851, but has not been recorded since. The Marsh-Tit was obtained about the same time, and was twice seen about 1863 by Rodd. Augustus Smith, the late lord-proprietor of the islands, told Rodd that at one time the Marsh-Tit was the commonest of all the Tits at Scilly. The Wren is an abundant resident, much

in evidence on almost every island, including even Mincarlo and Castle Bryher. The Nuthatch has not been seen, and there is no certain record of the occurrence of the Tree-Creeper. The Pied Wagtail is common all the year round, and nests on all the larger islands. In the autumn large flocks arrive from the mainland. The White Wagtail is a not uncommon casual autumn visitor, coming over with the migrant flocks of Pied Wagtails. In a large flock of the latter, which arrived on St. Mary's early in October, 1903, seven of the former were counted. David Smith saw several on Tresco about the same time. The Grey Wagtail is a regular autumn migratory visitor, sometimes in large flocks, as in October, 1903. It has not hitherto been recorded as a bird of passage in the spring, but in 1903 it was common about Hugh Town, St. Mary's, from April 10th to 18th. Two specimens of the Blue-headed Wagtail were obtained by Pechell in September, 1871, but it has not been recorded since. The Yellow Wagtail is a somewhat uncertain bird of passage, but in the autumn of some years—notably 1900, 1903, and 1904—has been fairly plentiful.

The Tree-Pipit has been observed occasionally in the autumn both on Tresco and on St. Mary's, once on St. Martin's, and twice on Bryher. It is probably often overlooked, and may be a regular autumn visitor. An adult male was found dead on St. Agnes early in June, 1902. The Meadow-Pipit is an abundant resident. Occasionally, as in the autumn of 1899 and 1904, large flocks pay the islands a passing visit. A single specimen of the Tawny Pipit was shot by Pechell near Old Grimsby, Tresco, on Sept. 19th, 1868. Richards's Pipit is an occasional accidental visitor, one having been killed by Pechell in October, 1849, and three others at the same time as the Tawny Pipit just mentioned. On May 16th, 1903, a pair were watched for a considerable time flying backwards and forwards over the marshes at Porthellick Bay, near Holy Vale, St. Mary's. The only specimen of the Water-Pipit so far recorded for the county was obtained by Clark at Porthellick Bay on May 17th, 1903, the day after the appearance of Richards's Pipit. The Rock-Pipit is an abundant resident, very much in evidence during the spring and summer months. It nests in considerable numbers on nearly all the available islands, including Guthers and Round

Island. The Scandinavian form (*A. rupestris*) was shot by J. G. Millais on May 11th, 1903.

The Golden Oriole appears to be an almost regular spring visitor to Tresco, and an occasional one to Holy Vale, St. Mary's. Some years ago the Rev. F. D. Astley heard five singing at one time round Tresco Abbey, but as a rule they occur singly or in pairs. The Broad Walk in the Abbey Gardens is one of their favourite haunts, and a pair were much in evidence there in May, 1903. It has never been obtained in autumn, but Pechell and Rodd pursued a bird for some time on St. Martin's at that season, which the former was convinced belonged to this species. No specimen of the Great Grey Shrike from Scilly has been preserved, but in manuscript notes by F. R. Rodd in 1871 it is stated that it had been observed and shot by Pechell—generally as birds of the year. The vague printed references to its occurrence on the islands are probably based on a note by E. H. Rodd in 'The Zoologist' for 1851 (p. 3300), to the effect that a female was shot by Pechell early in November of that year. A detailed examination of the specimen by E. H. Rodd and Jenkinson caused them to doubt the identification, and in 1867 the bird was sent to Gould, who figured it in his work on 'The Birds of Great Britain' as the Lesser Grey Shrike. This bird, the first recorded for the British Isles, is the only example so far obtained in the county. The Red-backed Shrike is a rare autumnal visitor, shot occasionally by Pechell, and reported altogether about half a dozen times by F. R. Rodd and others, probably always in immature plumage. A specimen was shot near Holy Vale, St. Mary's, late in November, 1905. The Woodchat-Shrike is a very rare accidental visitor. In September, 1840, an adult male in an exhausted condition was caught in a boat, and in the autumn of 1849 Pechell shot several in immature plumage. Since that date it has not been recorded. A carefully executed water-colour of a Scilly-killed specimen of the Waxwing in a book of bird-paintings at the Abbey, Tresco, executed by Miss Frances Mary Isabella Smith prior to 1849, is the only evidence of the occurrence of this bird on the islands. The Spotted Flycatcher is probably a regular autumn visitor in immature plumage, but on July 7th, 1903, a nest with four young birds was found by Clark in an outhouse on the west side

of Bryher, and on May 28th, 1905, an adult female was caught near Holy Vale. Young specimens of the Pied Flycatcher occur not infrequently in twos and threes during autumn migration. A single bird was seen on April 16th, 1903, near Hugh Town, St. Mary's. A Redbreasted Flycatcher was obtained by Pechell in the Abbey Gardens on Nov. 2nd, 1863. F. R. Rodd and he were watching some Chiffchaffs, when some young Pied Flycatchers appeared, accompanied by a strange bird, whose white tail-feathers, flycatcher habits, and general resemblance to the Chiffchaffs puzzled them considerably. The bird was identified by Vingoe as a male in immature plumage, and afterwards by Gould (*Zool.* 1863, p. 8841). On Nov. 5th, 1865, Jenkinson obtained another specimen in the same locality.

The Swallow is common throughout the summer, and has been recorded for every month of the year. The sunny side of the Abbey is a favourite resort during the winter, and so, too, is the Broad Walk. On Dec. 10th, 1903, five birds were hawking gnats beside the Abbey during the whole morning. The Martin does not breed, but is not uncommon throughout the summer, and, like the Swallow, is not infrequently seen during the winter months at Tresco. In the Abbey game-book one is mentioned as having been picked up on St. Mary's, Jan. 20th, 1881, shot through the beak. In the autumn of 1903 all Swallows and Martins had left St. Mary's by Oct. 20th, but on or about Nov. 29th they were back again in considerable numbers, and for over a week the Martins were much commoner than they usually are at any time during the summer. The Sand-Martin is for the most part a casual bird of passage in spring and autumn, but sometimes—as in 1848, 1863, 1867, 1894, and 1901—flocks of several hundred birds may pause on their southward journey.

The Greenfinch is a winter visitor, usually in small parties, and sometimes singly, but occasionally, as in 1849, 1894, and 1904, in large flocks. The St. Mary's flock of October, 1904, was over four hundred strong, and rested only two or three days, though a few remained till after Christmas. In the third week of April, 1903, there were about a dozen at Holy Vale, but none of them remained to breed. The usual small flocks of autumn and early winter generally frequent one particular spot in the Tresco Gardens for some weeks at a time. The Hawfinch is an

occasional autumn visitor at Tresco in immature plumage, and has been several times recorded in April, and once, in 1868, on June 11th. The Goldfinch appears in family parties in the autumn, and not uncommonly at Tresco in March, in flocks of twelve to twenty. The Siskin not infrequently appears at Tresco in autumn and winter, sometimes singly, usually in small parties of four to seven. In January, 1904, a tame but restless party of five spent some days among the *Pinus lambertianus* on the Abbey drive. In the beginning of November, 1905, some half a dozen separate parties arrived at Tresco, evidently at the same time as a flight of Goldcrests, accompanied by several Chiffchaffs. The House-Sparrow is a common resident on the inhabited islands. In July, 1903, it was abundant between the two hills of Samson. The Tree-Sparrow, in the list of Scillonian birds at the end of Rodd's 'Birds of Cornwall,' is said to be occasionally met with, but no authentic specimen or definite record can be found. Small parties of Chaffinches often visit the islands with flocks of Linnets in the autumn, and generally remain for the winter. Large flocks occasionally appear in the autumn, but depart in the course of a day or two. In March flocks, usually of females, come not infrequently with a south wind, and a little later mixed parties of Linnets and Chaffinches are fairly common, but the latter have never been found nesting. The Brambling is an occasional visitor in autumn and winter, usually rare, but at long intervals fairly plentiful, as in the autumn of 1863, and in the winter of 1890-91. The Linnet occurs in large and frequent flocks, often mixed with Chaffinches, in autumn and spring, and irregularly throughout the winter. It has not hitherto been recorded as nesting at Scilly, but in 1903 nests were found on Garrison Hill, St. Mary's, and on St. Martin's, and in 1904 on Tresco. Bullfinches do not appear to have been seen on the islands till the last four years. They were first recorded by Clark in his "Birds of Cornwall" ('Journal' of the Royal Institution of Cornwall, vol. xvi. 1902). In the spring of 1903 they were plentiful on St. Mary's, Samson, and Bryher; and in April, 1904, a flock of about twenty spent several days in the churchyard at Old Town, St. Mary's. No nest has so far been discovered. A large flock of Crossbills, together with Greenfinches and Hawfinches, appeared on Tresco in June and

July, 1868, and several were seen in 1901. The Corn-Bunting nests at Scilly, but is very much commoner as a visitor late in the autumn, when it occurs in flocks. The Yellowhammer is a very rare autumn casual at Scilly. Pechell shot one in October, 1849, and saw another some years later. Only three specimens of the Cirl-Bunting have been obtained—one in November, 1857, one in December, 1859, and one at St. Mary's, Nov. 16th, 1905. A single specimen of the Ortolan Bunting was shot by Pechell on the top of a wall at Tresco Abbey on Oct. 7th, 1851 (Zool. 1851, p. 3277). The Reed-Bunting is an occasional visitor from October to January, sometimes singly, sometimes in small parties. It was last seen on Jan. 8th, 1904, near Tresco Abbey. The Snow-Bunting is a regular bird of passage in the early autumn, sometimes in pairs, usually in small flocks of six to twelve, and on three occasions in parties of twenty-five to thirty. Stray birds and small parties are not infrequent during the winter months, and are occasionally noticed in March, April, and the first week in May. The birds, as a rule, settle on the barest and most exposed headlands, and their arrival appears to be independent both of wind and weather. They are, as a rule, remarkably tame, and show little restlessness or uneasiness on being approached. About four-fifths of the birds are young, and, with the exception of a splendid adult male in full breeding attire, shot by Dorrien-Smith on April 29th, 1890, have all, so far as observed, been in autumn plumage. In this condition the term "snowflake" is strikingly descriptive, for when a flock pitches on an exposed headland on a dull grey day it looks exactly like a scud of snow.

The Starling is one of the earliest of the winter birds to appear in the autumn. It arrives in long straggling irregular flights, at times composed of many flocks, with smaller parties intervening. Occasionally, on Tresco, towards the close of a winter's afternoon, these birds for an hour or more make a veritable cloud as they wheel over some reed-bed or low plantation selected for their resting-place. Their numbers, however, fluctuate considerably from year to year, and also during the course of the winter. As a rule, only a few stragglers are to be seen after the middle of April, but some years ago, in the month of May, a flock of about four hundred came from the direction of

St. Agnes to Tresco, together with a number of Lapwings. The Starlings roosted for the night, the Lapwings scattered to feed, but came together again next day, when the entire mixed company flew off. The Rose-coloured Pastor is a rare summer visitor, but may be overlooked when in immature plumage. An adult bird was obtained previous to 1848, one was killed and another seen by Pechell in the fifties, and one killed by David Smith in June, 1899. A Chough was seen by Dorrien-Smith on St. Martin's, in November, 1870, and one was shot by some fishermen on St. Mary's in Christmas week, 1899, and afterwards secured by L. R. George, of Holy Vale. The Jay has not been recorded for Scilly, but two Magpies were blown over from the mainland at the same time as a flock of Rooks during a violent gale in October, 1859. One was shot on St. Agnes, and the other on St. Helen's, by Pechell. The Jackdaw is occasionally carried over to the islands by storms, now and then in the company of Rooks, as in November, 1870, January, 1885, and November, 1901. On Nov. 1st, 1905, a flock of about four hundred Jackdaws came in on Tresco. On the 8th of the same month four birds were seen on St. Martin's, and on the 15th seven were counted near Giant's Castle, St. Mary's. In 1889 Dorrien-Smith found a nest with two eggs on Annett Head, which A. E. Newton thought belonged to the Jackdaw.

(To be continued.)

EXTRACTS FROM CHURCHWARDENS' ACCOUNTS OF
BEDFORDSHIRE.

BY J. STEELE-ELLIOTT.

(Concluded from p. 167.)

EVERTON.

In the old register of the parish numbers of entries occur between the years 1810 and 1825. Hedgehogs were paid for at the rate of 2d. each; as many as 108 were destroyed between April, 1810, and April, 1811, and 328 in all. Polecats at the rate of 4d. each, eight were paid for in 1816, and eighteen altogether. Snakes at 2d. each; the most were destroyed in the twelve months from April, 1811 to 1812, when 49 were paid for, a total of 204 were paid for altogether from 1810 to 1820. From 1819 Vipers are entered, but we may conclude the before-mentioned payments were for this species in every instance. Sparrows varied from 2d. to 3d. per dozen, and eggs at 1d. per dozen; 301 dozen birds and $9\frac{3}{4}$ dozen eggs were destroyed.

FLITWICK.

	1709.	£	s.	d.
ffor tu ffoxes		0	2	0
payd Richard powell ffor on ffoskes		0	1	0

1711.

pd. Joseph Tillcock 4 foxes heads	0	4	0
pd. Amridg for killing one Hedghogg.....	0	0	4
pd. Jo. Collman for killing one Pollcat	0	0	2
Paid Goody Ramerig 3 hedghogs.....	0	1	0
pd. the Widow Bayley 1 hedghog.....	0	0	4

1719.

Ped Rich. dee for 4 polcats	0	1	4
Ped heney Bresher 5 hegok	0	1	8
Ped Jon. Sebrook for 11 pollcat	0	3	8

1725.

paid to wido sebrook for mold cachin	2	11	
paid to william fiary for mold cachin	4	0	

1730.

pead will Seabrook for 2 bagougs heds	0	2	0
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The entries relating to these payments commence in 1705, and continue up to 1731. Hedgehogs are very plentiful, and at an uniform rate of 4d. each. Polecats, very frequent payments from 1710 onwards; for the first four years 2d. each, and afterwards the reward seems to have been raised to 4d. Foxes, fairly plentiful, paid at the rate of 1s. each. Badgers not so numerous, but at the same price. There are very few entries for Moles, and they appear to have been paid for by the quarter, half-year, or year. Sparrows appear altogether absent.

HARLINGTON.

Payments for vermin extend over two hundred years, commencing 1678. I am unfortunately unable to give any extracts of same.

HARROLD.

From Steward's history of this village we glean that the churchwardens' accounts date back to 1759; that a molecatcher used to be employed at a salary of £2 a year. The reward for a Fox or Fox's head a shilling. Year after year there are entries of considerable sums paid for Sparrows.

HENLOW.

Payments for Sparrows only occur, the earliest entry appearing in May, 1843.

HOUGHTON REGIS.

	£	s.	d.
1714.			
Paid for Sparrows and other charges	1	8	
1715.			
Paid Will Harris f Six sparrows		1	
Paid Ralph Burges for a hedghog		4	
Richard Dine for a polecat		4	
1719.			
Polecats, Hedghogs, pd for sparrows	7	9	
For vermin	5	0	
1743.			
Paid to Mr. Fossey his Disbursements for Vermin	1	7	0½
1744.			
Paid for Vermin—as appears per bill	1	8	2
1746.			
Richard Gosbill my son for 3 hedgehogs.....		1	
1759.			
Mr. Fossey's bill for Sparrows and Vermin	1	8	
1763.			
Paid for Ninety Six doz. of Sparrows		16	

	1777.	£	s.	d.
To Sundries for Sparrows			6	
Do.		1	0	4
	1780.			
To Sundry persons for Sparrows		12	6	
	1786.			
To Sundries for Sparrows and a Thanksgiving.....		1	7	5
	1797.			
To a Bill from Branson for Sparrows, and that should have been brought by Eames into Jno. Anstie's Year		7	9	
	1798.			
To a bill brought by Branson the other ChurchWarden for a Visitation and Sparrows.....		12	11	
	1807.			
79 Doz. Sparrows at 3d. per doz. young ones.....		19	9	
75 Doz. do. 6d. old ones		1	17	6
	1817.			
Sparrows, young ones 4d. doz., old ones 6d. doz.....		5	8	3½
	1819.			
Mr. Fossey for Sparrows.				
Young Sparrows, 3d. per doz.....		5	5	2½
Old do. 6d. ,,				
	1821.			
For year ending Easter.				
126 doz. and 5, old Sparrow heads at 6d. per doz.		3	3	2½
61 doz. of young do. at 5 per doz.....		15	3	
10 heads do.				2½
	1830.			
296 Dozen Sparrows at 3d.		3	14	0
	1832.			
14 Hedge hogs			2	

Payments date back to 1714, and continue, with certain blank years, until 1836. Polecats and Hedgehogs appear commonly in the earlier years, but, with the exception of the latter in 1832, neither are particularized after 1768. The term "vermin" is frequently used in the earlier years, and until 1774. After that date Sparrows seemed to have received undivided attention for destruction. Payments for the latter varied considerably— from 2d. per dozen in 1715, to as much as 6d. per dozen in 1807 (young at 3d.); and, after several fluctuations, reappear in the last year (1836) again at 2d. per dozen, the former price.

KNOTTING.

Payments for the destruction of Sparrows only. These are spread over the years 1838 to 1856, with the omission of four

separate years; the greatest amount, £3 15s., being paid in 1850—a total of £33 11s. in all. Price per dozen is not given.

LEIGHTON BUZZARD.

		1757.	£	s.	d.
Sept. 12.	Paid Chrisr. Samuels Wife 1 pole Cate		0	0	4
Oct. ye 24.	Paid Jn. Case 1 pole Cate		0	0	4

These two payments are, I understand, the only ones to be found in the accounts.

MAULDEN.

		1803.	£	s.	d.
60 doz.	Sparrows at 3d. doz.		15	0	
1810.					
April 23.	To 70 dozen sparrows at 3d. doz.		17	6	
„ 14.	Do. do. 2d. „		2	4	
„ 7.	„ „ 1½d. „				10
1811.					
Feb. 28.	2½ doz. Sparrows		10	½	
April 11.	To Jas. Smith for 3½ doz. Sparrows at 3d.		10		
1816.					
Pd. for 11 doz. and ½ Sparrows at 3d. doz.			2	9	
Pd. Mr. B. Clarke for catching a mole					6
Between Easter 1816 to 1817.					
Pd. for Sparrows and eggs.....			18	5½	
Pd. Mr. B. Clarke for catching moles			1		
1824.					
May. 86 doz.	Sparrows at 6d.		2	3	1½

The accounts date 1803–1834. Many of the entries appear to be incorrect. Various prices seem to have been paid for Sparrows, and possibly, taking the entries for 1809, if these are quarterly payments, the prices have varied according to the time of the year. The first payment for eggs seems to be in 1816, and after this date they become frequent. During the above years over 33,000 Sparrows appear to have been destroyed.

MILLBROOK.

		1794.	£	s.	d.
For Sparrows					6
1806.					
To 18 doz. Sparrows					3
1819.					
Paid for Sparrows and eggs					12
1829.					
March 30th.	Mr. Weeler for Sparrows		1	11	8
	Do. for last year		1	7	
Sparrows to Easter, 1830			1	17	2
Do, do. 1831			17	11½	

Churchwardens' Accounts date from 1754, but entries relating to Sparrows do not occur until 1794, and continue, with exceptions of a few years, until 1832. No other entries of vermin appear. The first payment for eggs appears in 1819, and frequently after that year. In almost every instance only a single entry for the year occurs, and that generally at Easter. A total of £17 11s. 4d. seems to have been paid in all, the rate per dozen being omitted except in a few instances, and then at the rate of 2d. per dozen.

MILTON BRYAN.

Ano. Dm. 1678.	£	s.	d.
Paid to Samuell Gray for a fox head.....	00	01	00
1679.			
Paid for powder for shouting the Crows	0	1	0
169-.			
Paid for catching of Birds	0	1	4
Paid to Nicholas Clark for shouting and catching 3 mowlds	0	3	6
Paid for catching a polcat.....	0	0	4
1692.			
Paid to two men for the catching of Birds	0	1	0
1703.			
Pd. for a dozen of Sparrows	00	00	02
Pd. for a Hedghog.....	00	00	04
Pd. for Polcat	00	00	04
1705.			
For fore hedhogs	0	1	4
Paid for polcats	0	1	8
1709.			
August ye 31. ped for a fox hed one.....	00	01	00
1721.			
paid to Thomas Hall for a polt catt	00	00	04
paid to William Clark for spares	00	00	1½
pd. to Cemson Gall for sparos.....	00	00	1½
August ye 17. ped to George Monch for a polt cat	00	00	4
ped to Colmans man for a wisel.....	00	00	2
May ye 20. William Gans and Georg Nash, 4 pence for soame sparos	00	00	04
ped to Thomas Garner a peny for sparos	00	00	1
1752.			
29 Novr. Paid to Eliz. Cooper 2 years Molecatching ...	1	4	0
(Undated.)			
Pd. John price for a whisle.....	0	0	2
Pd. Thomas Johnson for two whizols	0	0	4
for 2 Duzzen of Spraes and a half	0	0	5
for a polcat	0	0	4

(Undated)— <i>continued.</i>		£	s.	d.
for a bager hed		0	0	6
for 2 wehsels		0	0	4
for a stoat		0	0	2
July 17. paid to Thomas Nash for a hedghoge		0	0	4

There appear to be no whole books of wardens' accounts extant, but many single leaves are now carefully mounted and preserved. These entries for vermin appear to date from 1678 until about 1800. In them we can trace payments for 1 Badger, 3 Foxes, 13 Polecats, 1 Stoat, 9 Weasels, 11 Hedgehogs. In addition the items for Moles are given. A large number of payments for Sparrows were made, but only for small numbers at a time, the largest payment being for four dozen only, and 10s. 1½d. paid out in all—prices at a rate of 2d. per dozen, but varies in one instance to 1d. per dozen only.

NORTHILL.

1665.

Item. payed unto William Throughegoode and William Ravensden of Warden ffor ffoure ffoxes heades. And for one Badgers Head sett up in the Churchyard upon Whitsunday, 1665	£	s.	d.
	00	05	00
Item. payed more unto the sayd William Througheed ffor one other ffox heade sett up in the Churchyard...	00	01	00
Item. payed unto James Day of Warden for ffoure Hedgehogges Heades set up in the Church Yard.....	00	00	08
Item. payed unto the Huntsman of William Spenser Esquyer ffor one ffox Heade sett up in the Churchyard	00	01	00
Item. payed unto Ellis Megoose of Hatch ffor ffoure hedgehogges Heades sett up in the Churchyard	00	00	10
Item. payed unto the Widowe Burgess of Hatch ffor seaven Hedge hogges Heades killed in the parishe of Northill	00	01	00
Item. payed unto women of Sandey for one Otters Heade killed in the parishe of Northill, and set up in the Churchyard	00	00	02
Item. payed to John Spencer of Iekwell for six hedges heades	00	01	00

Several other similar additional entries for Hedgehogs, at a rate of 2d. each, occur in the above year. In a summary for that year the following entry occurs:—

The Vermine: ffoxes: Badggers. Hedgehogges	£	s.	d.
	00	14	02

1681.

Item paid to Will Saffron for ffoure polecatts	00	00	08
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The Churchwardens' Accounts date back to 1563, but no vermin are mentioned until 1665, and then follow similar entries

for many years, continuing until the nineteenth century, but the payments then are chiefly for Sparrows, and cease in 1833.

PERTENHALL.

	1727.	£	s.	d.
For a Dog Fox		0	1	0
For 7 Polcats & Hedghogs		0	1	2
For a bitch Fox		0	3	4
For a Bitch Fox		0	3	4

1728.

Foxes, Polcats, etc., & Travelers	0	10	0
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1729.

32 Polcats & Hedghogs.....	0	5	4
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1730.

39 Polcats & Hedghogs	0	6	6
Powder & Shot & Gun to Keep the feild 2 years	0	6	10

1731.

A Bitch Fox	0	3	4
A Badger	0	1	0
34 Polcats & Hedghogs	0	5	8

1732.

33 Polcats & Hedghogs	0	5	6
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1737.

Paid for three Otters	0	3	0
Paid the Mole Catcher.....	0	5	0
Paid the Mole Catcher	0	3	0
Paid for the Use of a Gun	0	1	6

1741.

Paid for two Otters	0	2	0
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The accounts for 1733-6, 1738-40 are missing, and in 1742-74 no details are given.

1775.

	£	s.	d.
July 6th. Pd. hue Jorden 8 Doz. sparrows			8
Taken out of the sparrow book		7	2

1776.

June 24th. Pd. Tom Jorden for sparrows 6 doz.			6
Pd. Charls our boy			6

1778.

Four entries occur for 31 dozen Sparrows in all.

1779.

	£	s.	d.
June 13. Pd. Jane Bodington 2 Hedghogs			8
July 13. Pd. John Bodington 2 Hedghogs			8
Dec. 20. Pd. Ed. Briers 2 hedghogs			6

Altogether 39 Hedgehogs (with exception of the last entry), all at 4d. each, and 34½ dozen of Sparrows at 1d. per dozen.

1780.		£	s.	d.
March 5.	Pd John Bodington 3 hedghogs			6
March 25.	Mr. Walker Bill for powder & shot	14	0	
May 8th.	Pd. Mast Hollis son & Boy 2 hedghogs			4
May 30.	Pd. fulfor for 2 Doz sparrows.....			2

In this year 25 Hedgehogs are paid for at a rate of 2d. each, and cease to occur in the accounts afterwards.

1781.		£	s.	d.
April 16.	Pd. Mr. Walkir for powder and shot	14	5	
June 4th.	Pd. Wm. fulfor 4 Doz Sparros			4
Oct. 12.	Pd. for mending the gun	2	0	

Other entries for 39 dozen Sparrows; no other vermin are included.

1782-3.

For the two years items for 78 dozen of Sparrows are given. After this year Sparrows are paid for at a rate of 2d. per dozen.

The usual Easter entries of bill for powder and shot also occur, slightly varying in the amount.

1788.		£	s.	d.
March 24.	ped to Mr. Lucock his Bill for powder shot	0	11	0
Dec. 30.	paid to William Limar two penc for half a doz. of old spars		0	2

1790.

Nov. 5.	ped for Repairing two guns	0	4	6
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1792.

	paid for sparos	0	1	6
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1793.

July 3.	for the youse of a gun	0	2	0
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1796.

	Paid to Mr. Lynn for the yous of his gun	0	2	0
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Payments similar to above appear until this year; the various entries of Sparrows continue until 1800, with an additional total of about 270 dozen.

1803.		£	s.	d.
	paid for a fox		1	0

1809.

April 25.	Gave Ekens for 4 Foxes	1	0	
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1817.

Apl. 26.	Sanders for destroying foxes			6
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		1822.	£ s. d.
Decr. 17.	Ratcatcher		1 0
		1824.	
Dec. 1.	Marshall hunting rats		6
	Do.		6
		1826.	
Nov. 24.	Ratcatcher		6

Payments for Sparrows continue after 1800, but only the total paid is stated ; but if still at a rate of 2d. per dozen, about 1500 dozen were destroyed.

In the Parish Constable's Accounts are given :—

		1730.	£ s. d.
	Allowed for powder & shot		19 3
		1733.	
	To Mrs. Yarvil for Powder & Shot		16 5½
		1734.	
	Feild keeping & Mend gun		0 4 6
		1737.	
	Willm. Hardinge mending Guns		0 2 6
	Joseph Allen for Gun		0 1 6
		1738.	
	Mole Catcher		0 5 8
	Mole Catcher		0 5 0
		1741.	
	The Mole Catcher		0 5 0
	The Mole Catcher		0 5 0

POTTON.

		1787.	
June 4.	Sparrows and Eggs		6 6
	Sparrows Eggs and hedgehogs		10 2
		1789.	
	Sparrows and eggs from 1 May to Nov. /89 ...		2 14 10½
	Polecats and Weasels, etc.		10 4
Nov. 5.	Polecat and Stote		5
	Polecats, hedgehogs, and Weasels		1 10
		1793.	
	Moles in Churchyard		2 2
		1803.	
	4 Hedgehogs		8
	2 Weasels		2
	2 Hedgehogs and Weasel		6
		1804.	
	5 Polecats		1 8
	2 Hedgehogs and 1 Weasel		3
	1 Hedgehog		1
	Polecat and Hedgehog		6
	Moles		2 2

		£	s.	d.
1808.				
Jany. 23.	Paid for hedgehogs, moles, Polecats, Weasels, and Stotes for the whole year	11	6	
1817.				
Mar. 22.	Hedgehogs, weasels, stotes for the whole year	8	9	
	Mr. Ellis for Sparrows	1	18	9

Entries in the Churchwardens' Accounts appear first in 1787, and continue to 1817. Many similar entries to those given occur. As the various vermin are frequently entered under one total, the number destroyed cannot be ascertained. Polecats are included regularly until 1813, but for the remaining four years are absent from the list. Weasels are of interest on account of the unusual number of entries; they appear practically throughout the accounts. Only the one entry occurs for Stoats previous to 1808; after this year entries appear commonly. Another entry for Moles occurs in 1816. The prices paid for the vermin are rather puzzling, as will be seen in entries given 1803-4; but the usual price seems to have been: Polecat 4d., Stoat 1d., Weasel 1d., Hedgehog 2d. The rate for Sparrows does not appear, and the Sparrow account was evidently kept separate, and total only entered in these accounts.

RIDGMOUNT.

		£	s.	d.
1727.				
	paid Wm. Leighton for three duzen of Sparrows	0	00	6
	paid Tho. Row for 2 Hedgehogs	0	00	8
	Gave George Baker for a Pollecats Head	0	00	4
1731.				
August ye 10.	paid to Larence Crips for a Wheesel ...	0	0	2
October ye 12.	paid to Will. Whitbread for 3 hedghogs	1	8	
1732.				
Jan ye 7.	Paid to Jon. Parker for a polcatt	0	0	4
April ye 30.	paid to a man for a hedghog.			

Only a few fragments of these old accounts now exist, and I am only able to refer to the three years given, and but one complete year altogether. Entries for 3 Polecats appear, 1 Weasel, 24 Hedgehogs. Between May, 1731-32, 39 dozen of Sparrows are recorded. Rates of payment do not vary.

		ROXTON.	
		1740.	£ s. d.
	3 Polcatts		6
		1741.	
	1 Hegg hogg		2
		1742.	
May 18th.	two Foxes		4 4
	1 Hedghogg		2
		1743.	
	A nater*		3 6
		1747.	
April 4th.	2 addurs		2 0
		1748.	
Oct. 5.	A shee Foox		3 4
		1749.	
	Hedghog		2
		1754.	
Nov. 5	A dusen and half of Sparrows		3
		1755.	
	2 Haggghogs		4
	12 Sparrows hags		1
	6 Sparrows and aggs		1½
	1 Hedhog		2
		1756.	
May 31.	1 dusen of aggos		1
	A foox		3 4
		1757.	
	3 heggghogs		6
		1758.	
	3 foxes		3
		1761.	
	bitch fox		3 4
	dog fox		1
		1765.	
	1 martin cat		2
		1766.	
	6 peats		1
		1767.	
	1 bitch fox		1
	1 fox		1
		1768.	
	1 polcat		4
		1770.	
March 9.	1 martin catt		2

* Probably Otter.

	1772.	£ s. d.
March 28. for a she adder		3 4
	1776.	
1 martin cat		2

The accounts date 1740-76. The 3 Marten-Cats herein recorded are the only instances for the county that I have as yet been able to obtain from the Churchwardens' Accounts. Polecats are very numerous; there are entries for 163, at prices generally of 2d. each, but a few of those paid for from 1767 were at 4d. Hedgehogs 336, at an uniform value of 2d. Sparrows are included from 1755, at 2d. per dozen, and eggs 1d. per dozen.

SANDY.

Although the parish books date back to 1636, no payments seem to have been made for destruction of any other vermin than Sparrows—old, young, and eggs. The first entry appears in 1804, and the payments were made with the greatest regularity until 1860. During these years a sum of £111 12s. 11d. had been paid over. The largest entry for any single period being 6th May, 1859, to 20th March, 1860, £5 3s. 9 $\frac{3}{4}$ d. Rate of payment does not appear.

SILSOE.

Payments for Sparrows are given from 1821-1836, in 1821 the rate evidently being 2d. per dozen, and the following year onwards increased to 3d. In all, 360 dozens appear to have been destroyed.

STAGSDEN.

Only payments for Sparrows are included, and but four years occur in all. In 1831 four entries show a total of £2 12s. 7 $\frac{1}{2}$ d.; 1832, eight entries, £4 7s. 3 $\frac{1}{2}$ d.; 1833, six entries, £6 13s. 6d.; 1834, two entries only, £1 2s. 5d. There is no entry showing rate of payment.

STEPPINGLEY.

Payments appear 1850-57, but only the total paid for the previous year being entered up in the accounts at Easter. No rate per dozen appears. The total amount paid being £15 12s. 2d.

STUDHAM.

The accounts begin in 1750, but no entry of payment for vermin until 1819, when 3d. per dozen for Sparrows was given that year; 42 $\frac{1}{2}$ dozen were paid for. In 1834 as many as

68 dozen were killed, and the following year it fell to 40 dozen, and after that date no further entries appear.

SUNDON.

There still exists a book in the vestry of 'Payments for Destruction of Vermin.' Under the heading 31st March, 1767, appear seven entries showing a total of 173 dozen Sparrows, paid for at a rate of 2d. per dozen; and in 1770, 93 dozen. Then a break in these records appears until 1811, and continues with a few blank years until 1833; these latter annual payments varying from 14s. to 1s., prices not being given.

WILLINGTON.

1804.		£	s.	d.
Easter.	Mole Catchers Bill	2	2	0
	14 doz. Sparrows at 2d. doz.		2	4
	4 Hedgehogs		1	4
	2 Polecats			8

There are no other entries than these, except for killing Sparrows, and these occur for many years in the church rates.

WOBURN.

1757.		s.	d.
Sept. 2.	Paid John Ince for eight edge Hoggs	2	8
1759.			
	For 3 Hedge Hogs		1

The accounts date back to 1753, but the above are the first entries of vermin given. I am unable to add for the present any additional payments.

WOOTON.

There do not appear to be any payments made, but I understand there was formerly in the parish an official, Hayward, who took straying cattle to the pound, and was also mole-catcher. He held, in virtue of his office, a small plot of land.

From the following parishes I have been unable to obtain any information at present:—Aspley Guise, St. Peters, Bedford, Chellington, Clapham, Clifton, Clophill, Cranfield, Dunstable, Dunton, Eaton Socon, Edworth, Eversholt, Farndish, Felmersham, Haynes, Hockliffe, Houghton Conquest, Kempston, Melchbourne, Milton Ernest, Oakley, Odell, Pavenham, Ravensden, Renhold, Sharnbrook, Shefford, Shillington, Stanbridge, Streatley, Thurleigh, Tilbrook, Tilsworth, Tingrith, Westoning, Whipsnade, Wilden, and Wilshamstead.

TWO DAYS WITH THE BIRDS OF THE SOMME.

BY W. WARDE FOWLER, M.A.

ABOUT half an hour after leaving Boulogne the fast trains to Paris run into the valley of the Somme not far above its estuary, which can be seen from the train window on the right, crossed by a long viaduct. In a few minutes the town of Abbeville is passed, standing on the left of the line, with the broad valley between it and some chalky hills to the west, and with other heights to the north and east, well cultivated, stretching away to the forest of Crécy and the battlefield. After leaving Abbeville Station the train almost at once passes into that region of reedy marsh and swamp, broad *marais* fringed with willow and poplar, which characterizes the Somme Valley most of the way to Amiens, looking almost repulsive to the traveller as he rushes through it, but in reality, on a fine day in June, so full of beauties that artists as well as ornithologists might do well to visit it.

Ornithologists, at any rate, will see from this brief description that the country round Abbeville, which can be reached in less than six hours from London, and is, in fact, hardly seventy miles from Hastings, should be worth special attention. In May, 1898, Mr. A. Holte Macpherson and myself spent a single day here, and saw quite enough to suggest a second visit. In particular, I may recall the fact that on the hill to the west we found the Meadow-Bunting (*Emberiza cia*), and in the 'Transactions' of the Norfolk and Norwich Naturalists' Society for that year I ventured to suggest that it might before long be met with on our own coast—a prophecy which has since been fulfilled. We also, by a piece of good luck, discovered the right way to get among the marshes in search of water-loving birds—by no means an easy thing to do, for the river here flows in several streams, which are liable to cut one off completely from the region which looks most promising. This year, on June 1st, we made our second descent upon Abbeville, with some acquaintance with the lie of the land, and also with the knowledge (which I

mention for the benefit of others) that a certain showy hotel is to be carefully avoided, and that the 'Tête de Bœuf' in the town is the best to go to.

Arriving at four o'clock, we had a walk before dinner, but a very strong and cold wind kept the birds very quiet. In a sheltered spot, however, we found the Marsh-Warbler (*Acrocephalus palustris*). There were two, and they seemed to be courting. Both were singing, as we thought; "one loudly and almost continuously, the other only to a slight extent" (A. H. M.). During thirteen years' experience of this species in England, I have never been able to satisfy myself that the hen utters anything more than alarm-notes, though I find the question raised in a diary. Those who wish to study this species without going far will find it tolerably common in the Somme Valley, but it must not be looked for among reeds or very wet places, but in bushes or thickets on tolerably dry ground. What it really loves best, I think, and what it rarely finds in England, is a large space of flat alluvial ground, with convenient bits of cover, such as bunches of tall plants or osiers, scattered here and there.

Another fact which became obvious during this walk, and was fully confirmed during our stay, was the great abundance of House-Martins, which might almost seem to prefer to remain in France rather than cross the Channel to the land of Sparrows. The Sparrows of Abbeville, I may remark, were both less numerous and more cleanly-looking than with us; some of the cocks looked quite handsome. The House-Martins were certainly the most abundant here of the *Hirundinidæ*. Swifts also were very plentiful, Swallows less so, and of Sand-Martins we only saw a few. We noticed that the Crow tribe, with the exception of the Magpie and the Jackdaws which frequent the towers of the Abbey, was conspicuous by its absence, and it was astonishing to see hardly any Starlings. It may be worth while recording here that, while looking up Froissart's account of the battle of Crécy on my return, I find that "there came flying over both armies a great number of Crows, for fear of a storm which was coming."

Next day (June 2nd) we took the road across the valley to the west, and got under the shelter of the hills, as the wind was still strong. The road runs at the foot of these hills, with the gardens

of red-tiled cottages on one side, and high hedges and timber on the other. Here—and in the same place the following day—an Icterine Warbler (*Hypolais icterina*) sang to us without any shyness. The song is most charmingly varied, and in this case included obvious imitations of the Sedge- and Reed-Warblers, the Blackcap, and the Greenfinch ; it is, however, rather weak, and does not carry far. “ A Nightingale on the other side of the road was audible a hundred yards away, but the Icterine was inaudible until we were within twenty yards or so ” (A. H. M.). Why Dresser, or Collett, whom he quotes, should compare the song of this bird to that of the Nightingale, we cannot understand. When the two are heard together there is really no comparison between them as regards volume and power. Nevertheless, the song of the Icterine is to me extremely sweet and pleasing, and he is a pleasant bird to watch ; a little difficult to catch in the foliage, owing to his dull greenish colouring, but he sits there quite still and serene, only quivering his wings when he moves. The orange-red gape is the only conspicuous point of colour about him.

Along this road we also heard Tree-Pipits, Garden-Warblers, Blackcaps (singing with a peculiar intonation which I have never heard except once in the Alps), and here and there a Willow-Wren ; but this last was far less common than in England, and the same may be said of the Chiffchaff. My observations for the Migration Committee of the British Ornithologists' Club this spring show clearly that the Willow-Wren is by far the most abundant of our summer migrants at present, but nowhere on the Continent have I found this to hold good. The reason is perhaps not far to seek ; England abounds in exactly the kind of country that this species loves—the country of hedgerow-timber, grassy banks and nooks, woods surrounded by pasture-fields, and so on. It cannot do without trees with plenty of thick foliage, nor without tufty grass for nesting purposes ; but in the great cultivated plains of France these things are not to be had in the same abundance. Whether this is also the reason why the Thrushes are less plentiful than with us, I will not undertake to say, but on both our visits we noted the paucity of Thrushes of all kinds, the Blackbird being the commonest. There was at least one comfort in this, *viz.* that while listening to interesting

singers such as the Marsh-Warbler or the Icterine, we were not irritated by the continual outpourings of the Song-Thrush.

A little further along this road we found a Cirl-Bunting singing with a much more rapid succession of notes than we had ever heard in England—so rapid, indeed, as to become almost sibilant, and to suggest the presence of a Wood-Wren ; but the bird flew down on to the road, and left no doubt as to its identity. This is only one instance among many of local variation in song. I have already mentioned the Blackcap, and the Chaffinch, too, was constantly attracting our attention by the new character of his utterance. This bird, I may mention, by the way, was to be seen picking up refuse in the streets of Abbeville, or perchance in a cage over a shop-door.

Near this same spot we were lucky enough to find a Hoopoe in search of food for its young, in a small field among the gardens. This was a beautiful sight, which we shall not forget, for the bird kept hovering just above the grass like a huge butterfly—a “Painted Lady,” as Macpherson aptly suggested—the black and white of its drooping wings showing brilliantly in the sunshine, and contrasting most strikingly with the pale brown of its other parts. After hovering about in this curious way for a while it found a caterpillar (so far as we could see), and carried it into an adjoining field, into which we could not well trespass ; it then returned, and, chancing to alight on a piece of freshly-dug earth, folded its wings, and instantly became almost invisible.

After a wet afternoon and evening the morning of June 3rd was luckily fine, and we spent it among the marshes. The only good way to get there is to take the same road across the valley to the west which we had followed the day before, *until you have passed both river and railway*. Directly after crossing the latter an insignificant-looking path turns to the left, separated from the line by a broad ditch full of water. This path seems to lead for miles along the edge of the swamps and lagoons into the heart of the country of the Great Reed Warblers (*A. arundinaceus*). Picturesque sheets of reedy water come right up to the path, and here these amusing birds keep on their loud croaking song within twenty yards of the trains. One of them flew up into a poplar, and gave us a good look at him, though, as a rule, they are well concealed in the reeds. Sitting there, he looked very

like a Thrush, and Macpherson tells me that his colloquial French name is *Grive d'eau*, the Water-Thrush.* He abounds in all this region of the Somme, and may, in fact, be heard within ten minutes' walk of the station at Amiens—a fact we learnt from Mr. J. H. Gurney, to whom we are indebted for our first introduction to this district. With these were Sedge-Warblers, and a single Reed-Warbler (*A. streperus*). For Marsh-Warblers, as I have said, you must look in drier ground, but they were not far away. The Reed-Bunting was here, but not, as we might have expected, in numbers.

On our return to the suburbs, Macpherson descried a Black Redstart sitting on a chimney very placidly, and uttering occasionally his plaintive strain, which is rather shorter and more high-pitched than that of his cousin. The position was appropriate, for the bird's head and shoulders, which alone were visible, looked as black as the chimney-pot itself. Next day, just before leaving, we found another, also on a chimney, which presently flew on to the roof of St. Paul's Church (an interesting old building), and allowed us to examine him without bringing a crowd round us. Both species of Redstarts here frequent houses, and the Common one is more numerous than this year at home. Why the Black Redstart should breed regularly within sixty-five miles of our coast, and never cross the Channel for the purpose, is indeed a mystery.

In the afternoon we walked a long way up the road to Amiens, into the high chalky country to the south-east. The Crested Lark was what we were in search of—another species that rarely, if ever, crosses to our island to breed—and there were, of course plenty to be seen, together with the Sky-Larks. Here we found almost the only Wagtail we saw during our stay—a Yellow Wagtail, nesting apparently in the growing corn, which, so far as we could see, was *M. raii*, not *M. flava*, as we might perhaps have expected.

On leaving this delightful region with regret next morning, we felt that a fortnight at least would be needed to do justice to it ornithologically. In order to contrast its avifauna with that of the opposite coast, leisure for exploration in various directions is absolutely necessary.

* The specific name given to this species by Meyer was *turdoides*.

NAMES OF BIRDS OF UNCERTAIN ORIGIN OR
MEANING.

BY J. R. McCLYMONT.

Ruc is doubtless a French equivalent of *ruk*, which is a Persian, and perhaps also an Arabic word having sundry meanings; it is, for example, "the name of a bird of mighty wing." The word is employed by Marco Polo, who tells us that at some seasons of the year the *ruc* visited certain islands or mountainous places near that part of the coast of Southern Africa which is under the influence of a strong sea current, owing to which it is almost impossible for vessels to return thence to India. The allusion is evidently to the Mozambique current. The *ruc* which Marco Polo describes certainly possessed some characters which are purely fabulous, unless, indeed, the text of the narrative be grievously corrupted, or the narrative itself be mistranslated. Other of the attributes of the *ruc* are credible enough. As, for example, that it resembled an Eagle—we are not told which of the Eagles—that it fed upon flesh, and that it possessed the power of flight in a remarkable degree. Its wings were thirty *pas*, its beam-feathers twelve *pas* in length. *Pas* may perhaps be an error in transcription; the word which was written by the amanuensis may have been *pous*, a Provençal word which has the same meaning as *pouce* and *pouces*. If this be the case, thirty paces shrink to thirty thumbs, and twelve paces to twelve thumbs—"Il prent un olifans à ses piés."* For *prent* we ought perhaps to have had *apprent*, meaning *learns* (understand, "the existence of"), *discerns*—"Et le porte moult haut, et puis le laisse cheoir et ainsi le tue et descent sus lui." If we read *se* instead of *le* before *porte* and *laisse*, assume that the Elephant is

* 'Le Livre de Marco Polo publié d'après trois manuscrits inédits par Pauthier,' p. 678.

dying or dead when it is detected by the *ruc*, and that the clause *et ainsi le tue* is an interpolation by another hand than that of the author, there results a fairly accurate description of the movements of a Vulture when it detects carrion, and flies down towards it. I submit to the impartial reader the conclusion at which I have arrived, namely, that the oral narration of Marco Polo was imperfectly translated into French, that it has suffered detrimentally in subsequent transcriptions, and that the *ruc* of the traveller is an African Vulture, such as, for example, *Gyps kolbi* or *G. ruepelli*.

Albatross is said to be derived from the Spanish word *alcatroz*, which occurs in the journal of the first voyage of Columbus, wherein it is employed for the Booby. But no truly intermediate form is known, and it is, I think, more reasonable to hold that if *albatross* has been adopted into English from a Romance language, it has been so adopted from the Portuguese word *albatroz*. Etymologically, however, if not in meaning, *alcatroz* seems to be connected with *alke* and *auk*. Further than this, the word, I believe, cannot be traced. A lost late Latin word *albatrus* may have existed. *Antennal* is another Portuguese name of the Albatross. This word is connected with *antenna*, "a ship's yard"; the French word *envergure*, "breadth of sail"; and, in a secondary sense, "expanse of wing" has also been employed to denote a sea-bird, probably one of the Albatrosses.*

Pijlstaart is the Dutch name which was bestowed by Abel Tasman, in 1643, upon a small island situated to the south-west of the Tongan Group, because of the large number of *pijlstaarten* which were seen by him near the island. Burney was of opinion that the *pijlstaart* was the Tropic-bird, and Dr. Heeres holds the same opinion. But lexicographers define the *pijlstaart* as a small duck with a long and pointed tail, evidently desiring thereby to indicate the Pintail or the Long-tailed Duck, or possibly both of these ducks. *Glaucium* is said to be the Latin, *negrette* the French equivalent of *pijlstaart*. The former word is evidently the Latin form of the Greek *γλαύκιον*, concerning which I can only find that it was a water-bird with grey eyes; whilst of

* 'Nouveau voyage à la mer du sud,' p. 16.

negrette I find no explanation whatsoever. *Negrette* occurs in a dictionary of the Dutch, French, and Latin languages, entitled 'Kilianus ductus.' I suspect that the correct reading is *une aigrette*; if so, the *pijlstaart* is an Egret, and may have been employed by Tasman to denote the Reef Heron. *Pijlstaart* is also the name of the members of a family of fishes—the Sting-Rays (*Trygonidæ*)—and is, I think, more likely to have been employed by Tasman in this than in any other signification.

Hobart, Tasmania.

NOTES AND QUERIES.

MAMMALIA.

Notes on Surrey Mammals.—During last month (June) I caught several young Moles about half-grown above ground, and found several dead—this usually after a heavy shower of rain. They had probably been washed out of their runs. Country people about here seem to be able to distinguish three kinds of Weasels, *viz.* the Stoat, which is known as the “Brush-tailed Weasel”; the Common Weasel; and the female of this, which is usually very small, the “Cane.” In White’s ‘Selborne,’ the author there speaks of the “Cane,” and this, of course, is now known to be only an abnormally small Weasel. I have lately examined several of these “Canes,” and was much struck by their small size. Gamekeepers tell me they make use of Mole runs to get into the Pheasant coops. It is perhaps not generally known that Hedgehogs visit patches of cow-dung in the fields in the evening to eat the beetles found therein. Gilbert White says that in his garden at Selborne the Hedgehogs eat the roots of plantains growing on the lawn. This is nowadays denied by most naturalists, who say it is the work of a nocturnal caterpillar. Last year I found a number of plantains rooted up on a grass-plot by some animal or other, and feel convinced this was the work of Hedgehogs, as I could find no trace of an insect whatever. If the Hedgehog does not eat the roots, might it not visit the plants for the sake of this said nocturnal caterpillar, and to get at it thus uproots the plantain? The Common Shrew, here, goes by the local name of “Pig-mouse.”—GORDON DALGLIESH (Brook, Witley, Surrey).

AVES.

Blackbird Laying Twice in same Nest.—A similar event to that recorded (*ante*, p. 235) occurred in our garden last year. The female commenced to sit on four eggs March 26th, and the young left the nest April 20th. During the first week in May five more eggs were laid, and ultimately hatched out, but the young birds never lived to leave the nest. I found all five of them dead May 21st, which may

be attributed to the male bird having been killed, probably by a cat. I have not the slightest doubt that these eggs were laid by the same bird.—ROBERT MORRIS ("Fernhurst," Uckfield).

White Wagtails in Co. Mayo.—The White Wagtails (*Motacilla alba*), on their northern migration this season, as usual, visited Bartragh Island on several occasions. The long continuance of northerly gales caused birds to drop down on the island to rest and feed, when tired out from battling against adverse winds. Some remained for only a few hours, others for a day or two, before resuming their northern flight. Capt. Kirkwood informed me that two birds appeared on May 1st, but remained only a few hours; on the 5th six arrived, of which he obtained a pair for me. This little flock disappeared next day, and were replaced by four birds on the 9th; these were joined by a fifth on the 10th, when I had the pleasure of seeing them, and watched them for nearly an hour running about, feeding on the grassy flat adjoining the rabbit-burrow, and taking an occasional flight to perch on the paddock-wall, and run along it picking up insects. Four of these birds were in very fine plumage, the light grey backs contrasting so strongly with the black of the throat and the white cheeks. Captain Kirkwood also observed a few birds on May 12th and 13th.—ROBERT WARREN (Moyview, Ballina).

White Wagtail and Common Redstart in the Isle of Man.—The White Wagtail (*Motacilla alba*) has again appeared on the shore of Castletown Bay. I saw the first this year on April 14th, and the last on May 18th, the largest number of birds seen at any one time being about twelve. These Wagtails invariably frequented the neighbourhood of high-water mark. On the night of May 12th–13th a female Redstart (*Ruticilla phæniceus*) was killed, along with a number of Sedge-Warblers, at Langness Light. The species has seldom been recorded in Man.—P. G. RALFE (The Parade, Castletown, Isle of Man).

Some of King James's* Laws against Rooks.—I send you an interesting note—against Rooks. It is from J. J. Jusserand's 'Romance of a King's Life,' appendix v. :—

"Item forthy that men consideris that rukis bigande (building) in Kirkis yardis orchardis or treis doith great skaith apone cornis it is ordaynt at thai that sik treis pertenyys to lat thame to byge and suffer on na wyse that thar birdis fle away, and quhar it be tayntyty that thai bige and the birdis be flowin and the nestis be fundyn in the treis at

* King James is King James I. of Scotland.

beltane the treis salbe forfaetit to the King" (Parliament of Perth, 1424-5).—ERNEST BLAIR (4, Thorney Terrace, South Shields).

The Cuckoo and its Eggs.—One evening late in May I saw a dead bird lying in the weeds in a meadow-dyke, which proved to be an unlucky Cuckoo recently shot by some ignorant keeper or prowling gunner. I brought it home and mounted it, and, as we happened to have two unblown Cuckoo's eggs in the house, an opportunity was afforded for experimenting with the egg and the bird's beak, which opened widely enough to hold the egg easily with the smaller end downwards, but not sufficiently to allow of its passage into the throat. The effect was rather like that of an egg in an egg-cup. The Cuckoo was a year-old cock, and of course I am unable to say whether the hen-bird has a wider gape. So far as one can judge from the Cuckoo's eggs laid in East Anglia, their resemblance to the eggs of the foster-parents seems to be a matter of pure accident. On more than one occasion I have taken eggs of a pronounced Reed-Warbler type from nests of the Sedge-Warbler, and the only egg I ever found in a Reed-Warbler's nest is a reddish-tinted one. Another egg in a Cuckoo-Reed-Warbler clutch saved for me two seasons ago from a Norfolk fen is of the Pied-Wagtail type. It would be easy from our collection here to "make to order" some very good examples of assimilation, and perhaps there are few things to which the principle of *caveat emptor* or *caveat mutator* could better apply than to the purchase or exchange of Cuckoo clutches.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Three Cuckoos' Eggs in one Nest.—On June 23rd a nest of the Meadow-Pipit was handed to me containing three Cuckoos' eggs and no others. I have not the least reason to doubt the statement of the man who took it, and if further proof of the genuineness of this curious clutch were needed, it seems to be supplied by the facts that all the three eggs were quite fresh, and evidently laid by three different Cuckoos. Two of the eggs are the same as those in a clutch of two Cuckoo's eggs with four of the Meadow-Pipit, which I took myself in the same locality about ten days previously. About the middle of June a photograph was reproduced in 'Country Life,' illustrating a nest of the Hedge-Sparrow, which contained three Cuckoo's eggs and four of the owner's. If the process of incubation had been successfully gone through in either case, the question of "the survival of the fittest" would have been an interesting one.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Common Scoter (*Edemia nigra*) in Cheshire.—On April 1st my friend Mr. T. Hadfield saw six Scoters—five adult drakes and a brown-plumaged bird—on Tatton Mere. On the next day, when I went with him to the mere, one of the birds, an old drake, was diving for food close to the bank. It did not associate with the Tufted Ducks and Pochards which were swimming near it, and when we put the birds up it still kept apart, and settled on the water again at some distance from the other fowl. The other Scoters had apparently left the mere, but the single drake remained—at any rate, until April 3rd, when it was seen by Mr. T. A. Coward. This species is a rare visitor to the Cheshire meres; indeed, I know of only one previous occurrence, and that, oddly enough, was at Tatton. An adult drake is preserved in the Grosvenor Museum, Chester, which was shot on the mere, after heavy weather, in October, 1890.—CHARLES OLDHAM (Knutsford).

A New Irish Breeding Haunt of Sandwich Terns.—Up to the 24th May last the only known breeding haunt in Co. Mayo of this species of Tern (*Sterna cantiaca*) was that on the small Lough of Rathroneen, between Kilalla and Ballina. However, my friend Mr. H. Scroope, of Ballina, when Salmon-fishing on Lough Conn, occasionally saw an odd bird flying about, that gave no clue to a breeding-haunt. In 1903, Mr. Hugh S. Gladstone, being over here photographing nests and eggs, found two or three nests, with eggs, of Sandwich Terns amongst a lot of Black-headed Gulls' nests on an island in Lough Conn, but these were evidently only straggling birds from some larger haunt, for last summer Mr. Scroope failed to find a breeding-haunt anywhere on the lake. However, this season I decided on trying my luck in a quest, and, arranging with young Mr. C. Scroope for the use of his boat and men, on May 24th we drove to the lake, and began our search. The first island we came to had a large colony of some five or six hundred Black-headed Gulls, but no Terns. We then rowed to another island, when we found a small colony of ten or twelve pairs of Common Gulls, with nests and eggs; but no Terns either. Our next visit was to a long low island holding a colony of perhaps one hundred and fifty to two hundred Black-headed Gulls; but still no Terns. I then quite despaired of finding the Terns, though Mr. C. Scroope said that we had one more chance of seeing them on an island a mile or so away; so we rowed on, and when the boat approached the island quite a swarm of seven or eight hundred Black-headed Gulls rose from the shores and points, among which I was delighted to recognize a few Sandwich Terns. We landed, and walked among hundreds of nests with eggs, but until we passed the stony shore and came to a flat

grassy spot we saw no Terns' nests ; but there, on a little space of about four yards square, we found thirty-five nests with eggs, and two more a little apart from the group of nests. Most of the nests had only two eggs, while several had only one, evidently showing that the full clutches of three had not been laid yet, and also that probably many more pairs had not begun to lay so early in the season ; so I expect that in the course of another week the number of nests and eggs would be largely increased.—ROBERT WARREN (Moyview, Ballina).

NOTICES OF NEW BOOKS.

Bombay Ducks ; an Account of some of the Every-day Birds and Beasts found in a Naturalist's Eldorado. By DOUGLAS DEWAR, F.Z.S., &c. John Lane.

THE chapters which compose this most readable and vivacious book are reprints of articles, mostly on Indian birds, which have appeared in the Indian press, and cannot fail to be enjoyable to those numerous readers who desire entertaining natural history, for there is not a dull page, and all is, in journalistic phrase, "good copy." But the careful reader will find scattered here and there much weighty contribution to current evolutionary thought, for Mr. Dewar is not a blind follower of theoretical opinion, and can think on these matters for himself. Thus, as regards the theory of protective coloration as applied to birds' eggs, our author considers this has been carried much too far, and that in many cases the protection is derived from the pugnacity of the defenders of the nest, for under such circumstances a Great Kite will fly ignominiously from a pair of diminutive King-Crows, and we read that "an ounce of good solid pugnacity is a more useful weapon in the struggle for existence than many pounds of protective colouring." Again, with reference to the whitish colour of so many eggs which are found in nests concealed in holes, &c., Mr. Dewar has a theory of his own: "If a bird nest in a dark place, it is important that its eggs should be as conspicuous as possible, for a bird cannot count, and if the hen is unable to see her eggs, she will not be able to tell when some of them get separated from the others"; and this prompts his opinion "that natural selection has caused the eggs of birds which nest in holes to become white."

As regards the intelligence of non-human animals, Mr. Dewar appears to largely accept the Cartesian or "mere automata philosophy," which he regards as proved by birds during the nesting season. And the relations of instinct and intelligence are considered in the account of the Solitary Wasp (*Rhynchium*

brunneum), “an insect toiling all day long for her offspring which she will never see,” working by “that strange internal force which we call instinct”; and the question is then asked as to the higher animals: “How much of their solicitude for their offspring is due to affection, and how much to blind instinct?” However, do not all workers in science or social reform recognize that the net result of their labours can only accrue long after they have passed away, and on a stage that most believe they will never see?

A number of excellent illustrations are from photographs of living birds, taken by Capt. F. D. S. Fayrer.

The Butterflies of the British Isles. By RICHARD SOUTH,
F.E.S., &c. F. Warne & Co.

SINCE the publication of Edward Newman’s ‘Illustrated Natural History of British Butterflies’ this is decidedly the best book on the subject that has appeared. It is outside the pure discussion of system or evolution, but, like its predecessor, may be consulted with the frequency with which we turn to our well-thumbed ‘Illustrated Manual of British Birds,’ by Howard Saunders. There are no fewer than four hundred and fifty coloured, beside other figures, in a volume the size of which will not distress a pocket; and the Editor of the ‘Entomologist’ is one who knows the habits of his living butterflies and moths, as well as he does their cabinet arrangement.

In our early collecting days we remember well the delightful assistance afforded by Mr. Newman’s first publication on the subject in ‘Young England.’ Much water has flowed under London Bridge since that time, and publication on publication has appeared. What should we have thought of this inexpensive book, with its coloured figures, in those days? The young naturalist is well catered for now!

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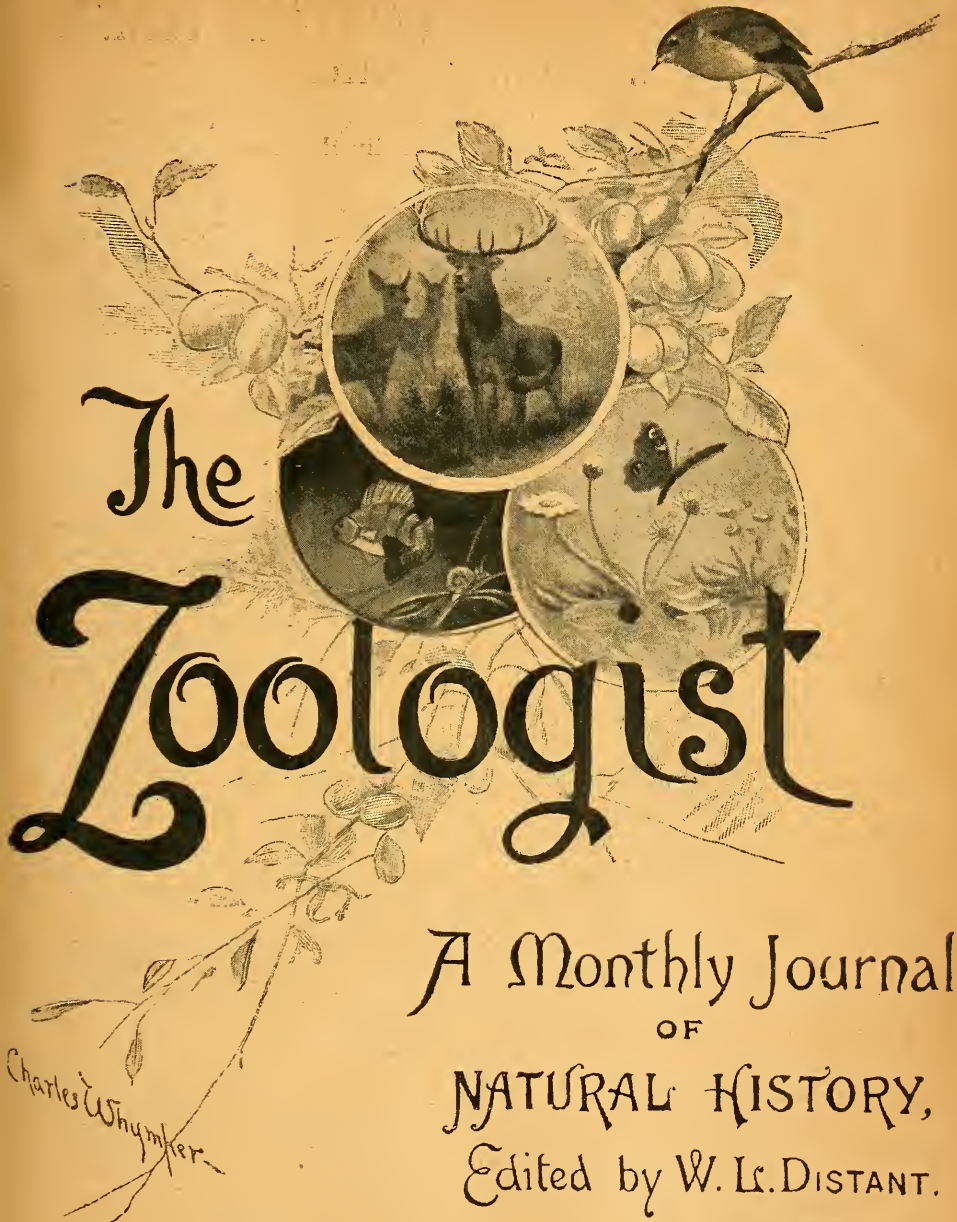
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June 1, 1906.

E. RAY LANKESTER, *Director*.



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THE ZOOLOGIST

No. 782.—August, 1906.

OBSERVATIONAL NOTES ON THE WILD DUCK (*ANAS BOSCAS*) AND THE LITTLE GREBE (*PODICIPES FLUVIATILIS*).

BY GORDON DALGLIESH.

ACCORDING to my own observations, the Wild Duck begins to pair off about January 25th, and, contrary to the general rule, the ducks court the drakes, uttering their well-known cry of "kaka, kaka, kak, kak," and sidling up to their consorts with bobbing heads. The drakes, however, appear quite unconscious of this display of affection, and indeed seem rather to try and avoid it. The Mallard at this date is now in his full beauty. His metallic green and purple head, deep claret-coloured breast, grey back, blue-black rump, and purple speculum, all blend together in exquisite harmony, and tend to make him the loveliest of water-fowl. It is worth noting that in the true Wild Duck when arising from or alighting on the water the female invariably leads the way; in the domestic Duck this is just the reverse, as it is the drake that leads his harem down to the pond for their daily swim.

In Surrey I have frequently found Wild Duck's nests a long way from any water, built among the heather. I was for a long time puzzled as to how the old duck would convey her numerous brood to the water when hatched. This was explained to me this year by a friend, a naturalist of keen observation. He told

me that when the young birds are first hatched they do not require much water, and that if they had it, to put it in his own words, would "swim themselves to death." Scattered about the heather-covered moors of Surrey are small pools of water, formed by the rain and fringed with bog-moss or sphagnum. It is to one of these pools the old duck will at first take her brood by slow degrees, the young ducks in the meantime living on gnats and flies—if anyone watches a young duck they will see how eagerly they snap at these—until they reach this pool. Here they will remain, perhaps for some days, always making for the shelter of the heather at the slightest approach of danger. As the young birds grow, the old duck will lead them to a larger pool, which empties itself into a stream. Down this stream the brood will wander until their haven is reached in the shape of a large pond or mere, and by this time the ducklings are big enough to swim at will, with no fear of overdoing it. The sitting duck, as a rule, exhibits no fear during incubation, and I have seen one bird lifted right off her nest, and not make the slightest attempt to escape. Though not addicted to polygamy, I have my strong suspicion this occurs sometimes. I have known three sitting ducks all within a few yards of each other, while hard by on a small pond swam a solitary drake, and I have frequently seen one Mallard with five or six ducks. The Mallard commences to moult about April 3rd, some of the feathers on the fore breast beginning to go first. The sitting duck is carefully guarded by her mate, and if a stray Mallard should approach too near the nest is at once driven away.

The Little Grebe, or Dabchick, in some individuals assumes its summer dress as early as February 17th, and starts building about April 18th, but the eggs are seldom laid before the end of that month. The earliest eggs I have seen were on the 30th. Three, according to my experience, is the usual number, and I have never seen a nest with more than four. On May 1st this year (1906) I went round a piece of water on a large private estate, and found several nests but no eggs, and it was not until May 7th that I found one with three eggs, and another with one. These eggs, strangely enough, were not covered up by the sitting bird, as is the usual custom, but were fully exposed to view. The Dabchick builds the most untidy nests I have ever seen.

One was a large floating structure, not fastened to any reeds, nor was any attempt made at binding the materials together in any way; it was simply a rotting mass of weeds and leaves. Another nest, on the other hand, was neatly put together, and quite a nice cup-shaped affair. It is not always easy to see if the nests contain eggs or not, and one I pulled about, thinking there might be eggs hidden, and found one. What was my surprise on visiting the same nest two days after to find the bird had put it together again and laid another egg. It is a mystery to me how some of the eggs are even incubated, lying as they do in a nest soaked through and through with water.

In India, I feel sure, the eggs are mostly incubated by the heat of the sun, as I never saw the old birds sitting during the day. The eggs were always kept covered over with damp weeds, and these, combined with the heat of the sun, no doubt set up a sort of fermentation that aided incubation.

The piece of water mentioned above is strictly preserved for Trout, and as the Dabchick is supposed to feed largely on the young and ova of these, it is not encouraged, and sometimes gets rather a bad time, but owing to its natural cunning and marvellous powers of diving is not often shot. Constant persecution makes these birds exceedingly shy and wary; but in places where they are not molested they get comparatively tame. A few days ago I was sitting by a large pond when I saw a Dabchick swimming straight towards me. I remained perfectly quiet, and the bird then entered a clump of reeds within a few feet of my position. I walked at once quietly and quickly to the spot and found the nest, which contained one egg. Quick as I had been the bird had been quicker, and when I arrived the egg was covered up with an oak-leaf, and the bird gone. Quite small ponds are chosen by this bird for its breeding quarters, especially those thickly covered with rushes and water-buttercups (*Ranunculus aquaticus*). The nests I have never found placed far out on the water, but quite close to the edge, and within easy reaching distance. In England I have but few times seen the Dabchick on the wing. On one occasion this was in the breeding season, and it was flying quite rapidly and fairly high up round and round a small pond. One I knew of used to fly every day up a small stream and alight on a piece of mud, for what purpose I

could never discover, unless it was to feed on something. I do not think the Dabchick is capable of walking or resting on its feet. The legs are not able to support the weight of the bird, and are placed so very far back as to render walking an impossibility. Anyone who has ever handled a living Dabchick, or one just shot, will understand what I mean. A captive Dabchick I had, which was pinioned and kept on a large tank, rested with both tarsi on the ground, the legs being very wide apart. It used its wings frequently when swimming under water, guiding its way as easily as a bird in the air. The Dabchick always appears larger on the water than it really is, owing to its habit of raising its wings in exactly the same way that a Swan does. My own experience goes that the females are slightly darker (in summer plumage) than the males. Their bills, too, are shorter. But of course this must not be accepted as a general rule. In colour the iris varies very much, being brown, yellow, and, in one specimen I saw, blood-red.

These birds are most pugnacious, and I have at times seen them drive Coots right off the water. Their curious cry, uttered chiefly in the nesting season, sounds like "chrr, rr, rr, wee, wee," but it is hard to put it into words, but once heard can never be mistaken for that of any other bird.

OBSERVATIONS TENDING TO THROW LIGHT ON THE
 QUESTION OF SEXUAL SELECTION IN BIRDS, IN-
 CLUDING A DAY-TO-DAY DIARY ON THE BREEDING
 HABITS OF THE RUFF (*MACHETES PUGNAX*).

BY EDMUND SELOUS.

(Continued from p. 219.)

April 7th, 1906.—The Ruffs are now here—so, at least, the inhabitants tell me—and fighting should begin about the middle of April. I have not yet seen any, and the place where they meet is, as yet, quite tenantless. Now, therefore, is the time for preparation. By the time it begins to be frequented, let me have something like a good observatory. Fired with this idea, I come down with a spade, and, giving myself up to unmitigated toil, have converted already my little last-year's rampart of turfs, which was still standing, into a sort of round turf-hut, minus a roof, in a hole inside which I can sit and look through a loop-hole, commanding a splendid view of the *lek*-place, the distance to the middle of which is only twenty-four of my paces—about sixty feet. This, when roofed over in some way or other—I hardly know how—will be perfectly dark inside, so that I must be invisible to the birds, as I sit, comfortably, with my face at the embrasure, on the edge of which the glasses of intellect (as against that needless weapon, the gun) can rest; just as I watched them before, except that it will be comfort—luxury almost—instead of a very great want of it, and an impossibility, so far as I can see, of being observed myself, or even suspected. I doubt if Ruffs will ever have been provided for like this, or even last year, but then, in June and July, the fighting was on the wane, the pairing, as I imagine, over;* whereas now, in the latter half

* Though I watched the birds, on and off, during a month, from June 11th, I never once saw them pair, though the male seemed, at least, as excited as now by the presence of the Reeve. This is evidence of the power exercised by the latter, in addition to that which, in the course of this paper, I shall bring forward.

of April, both should be in their prime. "Sweet bodements! good!"—and, striking out the comfort, they were realized. All, at any rate, that there was to see, I think I saw, but under such conditions of cold, wind, water, and sand in my eyes, that I am glad now to think it is over. The first and second of these drawbacks (to which I now add cramp) were almost constant, the third came in after rain, when the excavation in which I sat had to be baled out, in the first place, and then again, at intervals, as it slowly refilled, and the last asserted itself whenever the wind was from the east, and blew straight through the opening. On such occasions I wished I had made the latter face otherwise so as to get a milder quality, at least, of blasts that were almost perpetual; but this could only have been done by placing my observatory somewhere else, and was not now to be thought of. For the cold, it was most severe precisely at the times when most was to be seen—the early morning, namely, and the latter part of the afternoon—nor could the sun ever reach the cheerless vault in which I sat. True, I could only manage to roof it about a quarter over, which I did by laying turfs on a few sticks and spars that I was able to find, only one of which would bridge the chasm—a feat I was proud of every time that I looked at it. My other arrangements, however, effectually excluded the light, and were as follows—the very soul of the business: over the loop-hole I fixed, by means of sharpened sticks, driven into the turf, a piece of sacking, and in this cut a square hole so as to leave a flap that might be raised or lowered at pleasure. When I came to watch, I first fastened my plaid, with safety-pins, to the upper part and sides of the sacking, and then, putting it over my head, let it fall down all about me, so that when I raised the flap—which I always left lowered—I looked out from a veritable *camera obscura*. Not even an Eagle, as I suppose, could have seen me under these conditions, but as long as the light shone through the aperture, the Ruffs, as I had found last year, were quick to detect any movement behind it. This watch-house of mine came, in time, to be talked of in the neighbourhood, and when I considered the many turfs of which it was made—most of which I had had to cut myself—and gazed on the huge pit or tank from which they, and the sand also used in its construction, had been taken, I sometimes almost wondered

whether I had really had anything at all to do with it, and if it had not been there before I came.

And now, having described my own place, I will describe the Ruffs'. In Lincolnshire their gathering-ground is, or was—for the collectors with the guns have done their business—a “*hill*,” or at least it was called so. Could it be so termed here, I might call it “the hill of Venus,” for assuredly she reigns upon it—but of that hereafter. But there are no hills in Holland, even if there are in the fens of Lincolnshire, and this particular one—for I have no doubt the word is equally applicable here or there—is, if anything, a little lower than the dead level of the surrounding country. It is on a narrow strip of land, where turfs, cut from an adjoining trench—one of many that traverse these shorelands for the purpose of draining them—lie strewn upon the grass, amidst which they have again become rooted, that the gathering-place is situated. The space principally occupied by the birds is oblong in shape—some ten paces long by six broad—and within it the grass, though shorter, generally, than round about, grows thicker and, in parts, more tuftily. Within this area, amidst the turfs and grass-tufts, are as many as thirteen circular depressions, about two feet across, where the grass is worn away, and the bare earth appears, more especially in the centre. Eleven of these are very distinctly marked, giving the place its character and at once striking the eye. They are stained with excrement, and feathers, as time goes on, accumulate in them, though the scantiness with which these are shed is, under the circumstances, matter for wonder. It is evident, in fact, that here, from season to season, the birds have stood and fought; one season—or perhaps several—would not suffice to make such a series of depressions. This is the most frequented portion of the tourney-ground—the lists proper, so to speak—but beyond it a further area has extended itself, which is not nearly so plainly marked in any way. In the later spring and summer the Ruffs show a tendency to stand in this adjoining territory or *hinterland*, rather than in the more trodden part. Sometimes, indeed, they keep right outside the wider limit even, but generally get into it before long, and the inner shrine, too, as soon as they begin to fight. Of this tendency, however, I saw little or nothing during this earlier visit. All the birds, at any rate, who

had inside places—and each has his own—represented by the depressions aforesaid, kept to them. The Ruffs are never molested by the Terns in this resort of theirs, though, from the end of April, these are all about, and some have their nests quite near. They would not be let alone, I think, under ordinary circumstances, but they have their established place, and it is recognized as theirs.

April 14th.—A very cold, stern day, with hardly any sun, and a continuous, strong north-east wind. At about 7 a.m. a solitary Ruff was at the *lek*-place, which, as I came up, of course flew away; but though I waited behind my ensconcement till past nine—three of the weariest and most comfortless hours I have ever passed, cold, cramped, uncomfortable, and my eyes full of sand—no other bird came. I hope to goodness the size of my place has not alarmed them—fearful thought! but down!

April 15th.—Whilst still watching these Redshanks (this was not from behind anything) a band of Ruffs—some eight or nine in all, all males—came right down on the strand, and immediately began to fight. Their tremendous activities had quite a disturbing effect on other species. Oystercatchers were alarmed, and ran out of the way, and the commonplace affairs of Redshanks were lost and confounded in these more heroic-blustering ones, sweeping like a tornado amongst them. I immediately recognized all their actions of last year, their crazed racings over the ground—not always at one another—their sudden illogical full-stops, with heads bent forward, feathers out-ruffled, and a look of almost comic surprise. It was not all fighting, however—rather, indeed, rant than achievement—and then, all at once, off flew some five across the water, and, pitching on the smooth stretch of muddy sand beyond it, raced and ranted again. They were followed by the rest, and, a few moments later, the entire flock were off, and disappeared behind the straight line of an embankment. There was not a female amongst them. Here, then, are the Ruffs, and their nuptial plumage looked well grown; but when will they go—or will they ever again go—to their accustomed tourney-ground?

I do not think the lists are abandoned. Going there this evening, I find three feathers, all of which look quite new, nor do I think they were there before. Very probably the birds I saw

to-day had come from fighting in the lists. Though Ruffs fight so, yet they do not seem to knock out many feathers, and the opinion held here is that they do each other no harm.

April 16th.—Getting up early—though not early enough—I was on the shore-lands, as I may call these parts in contradistinction to field and pasture, before seven, and soon saw, through the glasses, that the Ruffs were foregathering; but coming nearer, inconsiderately, than I had intended to do, a party of them went up. Others, however, remained, but, though I came up carefully, behind my fortifications, first on my hands and knees, and then crawling flat, these, too, took alarm, so that when I at last got into place no more remained. I had not waited there long, however, before three came down into the tourney-ground, where, after a very little fighting, they sat quietly. This state of things continued, nor was the peace interrupted except by a few short and several abortive campaigns. In the first, two who sat near each other rose, as by a mutual impulse, and made a spar or two, but, in a moment, sank down again, and sat, dozing, side by side, in the most amicable manner. Another two, before long, flew in, and afterwards one, their arrival, in each case, making that stir and excitement which I had noted last year; but not, I think, leading to real fighting—or, at any rate, in but a slight degree. Of real fighting there has been, up to the present—it is now eight o'clock—very little. The birds—all three, or five, or six of them—have sat, almost the whole time, basking in the sun—for it is a splendid sunshine day, though the air is bracing, to say the least of it—or else stood preening their feathers. At longish, rather than short, intervals a sudden impulse would seem to seize a bird, and rising, for no apparent cause, he would erect his feathers, and turn to this or that side, but meeting with no response—no other bird being close to him—would sink down, and bask again. Or two, separated by but a foot or so, would rise in the same way, and do the same things, yet not fight, but only threaten, before again subsiding, or else there would be a very short, though sufficiently violent, sparring-match. Otherwise—when not fighting, that is to say, or threatening to fight—they were most sociable; and, indeed, the very contentions of these birds may almost be said to be a part of their sociability. It is most

curious to see two ruffle, crouch, even spring at each other, then snooze down, side by side, in the closest proximity, almost, or even quite, touching. If there can be friendly fighting, here, I think we have it, but sociable fighting—or fighting which is part and parcel of a most sociable gathering—it is. On one of the little outbreaks of the above-described nature, not coming, in this case, to blows, I noticed, I think, both the birds—but, at any rate, one—strike the ground two or three times with his bill, turning his head from side to side as he did so, as though this were a preliminary of battle. Yet this action, so striking in itself, and which looked like a characteristic one, was not forced, afterwards, upon my notice.

All at once an immensely tall, gaunt figure of a bird, with an immensely long bill, stalked stiffly over the tourney-ground, going at a foot's pace. For a moment I thought another Ruff, whose show-feathers had not yet appeared, was there, but it was a Bar-tailed Godwit (*Limosa lapponica*) that stood before me. One might have thought that he challenged all present, but, if so, it was not taken up by any of the six. Really, however, the Ruffs were quite indifferent to the tall stranger, as was he to them.

Before this I had been interested by the excited actions, on the same stage, of a Titlark or Meadow-Pipit (*Anthus pratensis*). This little bird, either in love, as one would suppose, or defiance, though I could see no other one near it, executed, at intervals, a little dance or stampede on the ground, fanning the tail and quivering the wings the whilst, and uttering at each little paroxysm a full, trilling note. Were a Titlark as big as a Ruff, such a display would be quite as effective, or even more so, than anything the latter does.

I left not long after this, and it was 4.45 in the afternoon when I got to my watch-place again. A number of Ruffs went off as I came up, but when I put up the glasses one was standing on the grounds, and he was shortly joined by five others, I forget whether in one or two relays. There was nothing of interest—except the seeing them—the birds being more quiescent even than this morning. Fighting certainly did not seem the object of their meeting, and the few short spasms, in no case leading to actual conflict, which shot through one or another of them, had more the appearance of some nervous malady to which they

were subject than acts of intention and meaning. If this be the fighting-place, it might almost as well be called the sleeping-place, the birds doze so persistently on it. Their silence is a very noticeable feature—they utter no note whatever.* They had not, I think, the faintest suspicion of my presence, but first three, then two, and finally the last, went off in the course of an hour. A man, perhaps, who was looking for Peewits' eggs—having bought the right of search during April—may possibly have alarmed them, but this is more or less their natural way of leaving, when not in a flock. All at once one or another of them looks up with a surprised air, half erects himself, extends his wings, and in a moment darts away.

It was past 7.30 when I left the watch-house, but no Ruff had returned. Before coming up, this last time, I had seen them through the glasses from a distance, and noticed that they several times all flew up together, and, after a short flight round in the near proximity of the place, came down on it again.

April 17th.—Lying down in my harness, like old Bernal Diaz, who could not sleep otherwise, I was up at three, and got to the watch-place a little before four. No Ruffs went up as I came, nor did any come till a little before five, when I saw the first three standing there. Then they began to fly in rapidly, one after the other, for the most part, and I counted, sometimes, as many as fourteen. No two of these were alike, and, whilst some were almost fully decorated, others were only just beginning to be. These stood, mostly, aside, and were altogether less demonstrative. I noticed more than once that when a comparatively full-maned one demonstrated at any of these, the latter held up its beak to it in a deprecating way—it had, at least, that appearance—and the other then ceased the assault, and sank quietly down beside it. However, to make the mere show of an assault, and then for both parties, though well-plumed, to act in this way, was a quite general feature. At other times, especially when any Reeve was on the scene, two would rush and leap high into the air against each other, rushing away, and not leaping again, as they came down; whilst once, at

* On one occasion only I heard, as I thought, a very low note as this or that bird, or small party of them, went off. This occurred twice or thrice, but I am now very doubtful as to the Ruffs having uttered the sound.

the last, there was a duel which lasted much longer, and may, for aught I know, have been considerably prolonged, as the parties scrimmaged out of sight.

When a pair or two leap at each other, in this way, the interest of the scene, as a whole, is generally enhanced by other birds rushing wildly about in a state of the greatest excitement. They rush for some yards, then stop suddenly in a crouching attitude with the head extended forward on the ground, the legs bent, the feathers ruffled. In this position they remain for some time motionless, the body brought suddenly into a state of rigidity, which, however, is of the bent bow order, threatening each instant a renewal of energy. This may issue, shortly, in another furious run in a reversed direction, but often there is nothing further, and the bird, sinking more and more down till it lies along the ground, becomes gradually quiescent. With the appearance of the Reeves—some flew in after an hour or so, but I was unable to jot down the details of their arrival—more interest was imported into the scene. At first, indeed, the effect was not very marked, but as more came it became evident that they were the centre of attraction, and their movements, which were but few and quiet, were the principal signal for the bouncing and flurrying about of the males, accompanied with a certain number of pitched battles, some of which were more violent—that is to say, lasted longer than the present average one, for all are violent whilst they last. During the latter part of the time there were six Reeves present—outnumbering the Ruffs at one time—and by the motions of the latter about them, they were sometimes driven about in a little flock. But, though the Reeves often hurried out of the way of their turbulent admirers, yet they were quite cool and collected, seeming accustomed to the scenes they created, and to know what it all meant. This, however, I confess, was more apparent to me after it had been demonstrated, in an interesting manner, by the first, or one of the first, of the Reeves to arrive—there was one other there, I think, at the time, whose conduct was quite irreproachable. The Reeve in question, after she had walked about a little, occasioning the usual excitement on the part of the males, pressed close to a certain one of them, in a way the friendliness of which was not to be mistaken. In response to this advance the bird ruffled

about her, when she crouched, and it seemed now as though the nuptial rite would be performed, for, pressing up, he was several times on the point of assuming the position necessary to that end. All at once, however, and in the very midst of these beginnings, he sank down at her side, in that prostrate attitude which I have before alluded to, the characteristic point of which is not that the bird merely sits or lies along the ground, as in incubation, but that he also bows his head upon it, and remains thus, for a longer or shorter time, motionless. The hen now, rising, began to offer towards this prostrate male in exactly the same way as he had been doing towards her, the only difference being that she was a little less emphatic. The intention or idea, however, was unmistakable. She even took hold of the back of his neck with her bill, but all in a hesitating and, as it were, half-hearted manner, which, if we call it *coy*, will not more obscure the real truth of the matter than does the employment of that word upon other occasions. True, upon the whole, it might be better applied to the male, but the world itself is circular, or, at least, elliptical.

The Ruff thus preferred—for preferred he certainly seemed to be—was a handsome black-maned one in full, or almost full, plumage. Throughout there was no interference on the part of any of the other Ruffs, but after the incident was closed the hero of it fought with one of them. I remained at my observatory till past eight, by which time, in spite of a thick motor suit, warm underclothing, woollen face-protector, sheepskin gloves, two Scotch plaids, and a Shetland-shawl comforter, I was almost frozen to death. What I had seen, however, was worth it, for here, as it would seem, we have the Reeve actually selecting a husband from amongst the ten or a dozen Ruffs present, whilst those not selected do not interfere even whilst the nuptial rite is on the point of taking place, though not actually accomplished. Why it should not have been it is difficult to say, but perhaps the failure may be attributed to the earliness of the season.

After breakfast I had to sleep a little, but was in hiding again about 2.30. Some Ruffs were there on my arrival, and soon things seemed to be in full swing. In about half an hour the first Reeve came down, and shortly afterwards there was an incident similar to the one I have just recorded. As this Reeve

—a wretched-looking little creature, with the neck in great part naked—moved forward amongst the crowd, there was a general commotion, and then all either lay prostrate, or crouched, with the head bowed down, in the way I have described. Going up, now, to one, she showed evident signs of partiality, caressing it, though slightly, on the neck with her bill, and then made a motion as though to mount upon its back and perform the sexual office. These actions she repeated once or twice, and then stood quietly by this bird's side, turning, after a time, her bill into the feathers of her back, and dozing a little. The Ruff thus distinguished pressed himself more than once against the ground, as though in an ecstasy, and, at the last, rose and ruffled towards her, before sinking down again, when she moved a step or two also, and again stood beside him. All the while—as this morning—the other males remained quiet, not one offering to interfere. The chosen Ruff was a golden-brown one, with his nuptial plumage well grown—a fine handsome bird.

From time to time, both this morning and also in the afternoon, either the whole flock of birds, or some part of them, would fly suddenly off, and, after a short flight, return again—either some or all of them. On one occasion, this afternoon, the Reeve—the only one, I think, at the time—suddenly darted off, and was followed, on the instant, by all the Ruffs. About four a Reeve came flying in, accompanied by a single male. Whether it was the Reeve who had made the advances, and whether the Ruff was the one she had favoured, I cannot say, not having at the time paid the requisite attention. True, no other Ruff can be confounded with this particular brown one, if one thinks of it; but if one doesn't think of it, there are others who are brown more or less. It is possible, therefore, that the actual pairing amongst Ruffs may be accomplished in the open country, the Reeve, with the male she has chosen, separating themselves from the others, who may go off with them from the place of assembly. From what I have seen, however, I should rather think that this latter is the recognized place for the performance of the nuptial rite.*

* As will appear by the story, this is certainly the case.

(To be continued.)

THE BIRDS OF SCILLY.

BY JAMES CLARK, M.A., D.Sc., and FRANCIS R. RODD, J.P.

(Continued from p. 252.)

THE Raven is a scarce casual wanderer to Scilly but has been recorded at all seasons. It appears to have bred on Gorregan about 1840. In May and June of 1893 a couple of Ravens frequented the western islands, but no nest was found. The Carrion-Crow breeds regularly on all the outer uninhabited islands, and in spite of repressive measures, and the apparent absence of immigrant recruits, is sufficiently numerous to be a serious menace to young poultry and broods of game. The Hooded Crow is an occasional visitor from November to May. A few at times spend the greater part of the winter at Tresco, as in 1870-71, 1900-01, and 1903-04. In May, 1900, L. R. George obtained one at Holy Vale, St. Mary's. In the spring of 1901 a party of five spent some days there, and on April 14th, 1903, a solitary bird was seen on St. Martin's, so that it may possibly be a scarce spring bird of passage. A few Rooks are occasionally blown over from the mainland in the autumn and winter, and small parties appear at times from other directions. Such arrivals generally remain till the spring. In squally weather in 1854, and again in October, 1905, several Rooks were driven in on the west of Bryher, and on several occasions stragglers have appeared on the north end of Tresco. In December, 1876, a small flock came in from the north-west on the extreme northern point of that island. The late Augustus Smith, lord-proprietor of the islands, used to tell of a whole rookery that was driven over to Tresco by a violent autumn gale in the early fifties, and not only remained through the winter, but as spring approached attempted to establish itself in the pinasters near the Abbey. The birds, however, gradually disappeared before building operations had been completed. On at least three other occasions they have begun nest-building on Tresco, but so far as known no

egg has ever been laid. In 1865, Augustus Smith attempted to introduce them, but the birds all flew off to the mainland, leaving only some half-built nests behind. In the early nineties a compact flock about eight hundred strong was seen by David Smith coming in from the east. It flew round the island of Tresco, then went out to sea in a north-westerly direction. On the same date a homeward-bound vessel making for Bristol was literally boarded by a similar flock.

The Sky-Lark breeds in small numbers. In the spring of 1903 nests were found on St. Mary's, Great Ganilly, St. Martin's, St. Helen's, Tresco, Bryher, and Samson. During the period of autumn migration, and occasionally in winter during the prevalence of hard frosts on the mainland, it arrives in large flocks, and sometimes in immense numbers. Not infrequently, in October and early November, flocks pass over the islands in a westerly or north-westerly direction without landing at all, and on two occasions large scattered flights have been observed coming in from the east, and, after some indecision, continuing their journey in a north-westerly direction. The flocks that land usually resume their passage in the course of a day, but a large number continue on the islands throughout the winter. In the second week in October, 1903, the arrival of an almost continuous stream of Larks and Starlings, in flocks of a dozen to fifty or a hundred, was observed through the whole of two days and part of a third. The Larks flew with a steady, easy flight, and showed no sign of exhaustion, but hesitated every now and then, as if uncertain whether they should settle or continue their journey. The flocks would come in rapid succession for several hours at a stretch, frequently only a few hundred yards apart, and rarely with an intervening interval of more than two or three minutes. Then would come a lull, and for half an hour or more they would arrive at irregular intervals of three to ten minutes, after which the rush would be again resumed. From twelve to three on the second day the flocks must have averaged about a hundred, and followed each other so closely that in the distance they looked like a dusky band rising out of the sea. The birds apparently came in by night as well as day, and left during the night or in the early morning. On the fourth day several hundred Larks were still about, but were evidently

settling in for a prolonged stay. In October, 1863, F. R. Rodd and Pechell witnessed a similar migration, and, along with another gun, killed three hundred Larks in three days—nearly all single flying shots.

The Wood-Lark is a rare casual winter visitor. Two were shot by Pechell behind the Great Rock, Tresco, on Dec. 5th, 1859; two at the same spot by F. R. Rodd on Dec. 29th, 1870; one by David Smith in 1891; and one by a fisherman near Peninnis Head, St. Mary's, on Dec. 28th, 1904. On Sept. 28th, 1854, Pechell saw two Short-toed Larks at Skirt Point, Tresco, and secured one—the only record for the county.

The Swift is at least an occasional bird of passage in spring and in the last week of July. Curiously enough, it does not appear to have been seen in the month of August. The granite rocks of the islands are identical in appearance with those on which it breeds on the Cornish moors, but there is no record of its having nested in Scilly. The Nightjar is by no means uncommon in autumn, and, though seen on Samson on July 12th, 1903, has never been known to nest. Its favourite haunts are Abbey Hill Downs, Castle and Middle Downs, Tresco, the Higher Downs, St. Mary's, and Bryher Hill, Samson. In August, 1901, Dorrien-Smith saw a large flock of these birds on Annett. The Wryneck is a rare casual. Pechell shot one in October, 1849; one was picked up dead on the Middle Downs, Tresco, in October, 1852; one shot in 1882; and one by Dorrien-Smith in April, 1894. The *Picinæ* are represented by a single specimen of the Green Woodpecker, killed on St. Mary's in September, 1901. Another is reported to have been killed on the north of Tresco in 1872, but the specimen cannot be traced, and the authority for the statement is unknown. The Kingfisher is a casual autumn and winter visitor, occurring, as a rule, singly, but not infrequently recorded. It usually appears near the fresh-water ponds on Tresco, Bryher, St. Mary's, and especially beside the old well, or rather sloping hollow, on the island of Tean. It is also occasionally seen at Newford Pool, St. Mary's, and has been twice noticed among the western islands. The Roller does not seem to have visited Scilly, but two or else three Bee-eaters appeared at Holy Vale, St. Mary's, in October, 1901, and one of them—an immature male—was shot. In June, 1878, one was

repeatedly seen by David Smith at Tresco. In a copy of Carew's 'Survey,' in the possession of the late W. J. Clyma, of Truro, among a number of notes in an unknown hand was one that ran as follows:—"Three of the remarkable birds called Bee-eaters were seen on St. Agnes, Scilly, by my boatman Hicks on the 9th of May (1841) one of which was shot and fell into the sea, but was recovered and brought to me. As far as I could ascertain, it was a young female, but the skin was so much damaged that I did not preserve it."

The Hoopoe is a regular spring bird of passage, singly and in small parties. In April, 1903, five were seen together on Castle Down, Tresco. So far it has not been observed in the autumn. The Cuckoo arrives in fairly large numbers at the time of spring migration, at which time nine have been seen at one time from a window in one of the houses at Holy Vale. The earliest authenticated date for its appearance on the islands is March 29th, 1904, when it was seen by Dorrien-Smith on St. Mary's. On April 2nd of the same year it was seen by two other naturalists. As a rule, it is not observed till the middle of that month, or even later. During the breeding season it is much commoner here than anywhere else in Cornwall.

The only example of the Barn-Owl known to have occurred in Scilly was shot by Jenkinson on Nov. 13th, 1858. Both the Long-eared and the Short-eared Owls are common in autumn and winter, often in small parties in which the two species not infrequently occur together. The former prefer Tresco, and coveys of four or five may occasionally be flushed out of a single tree, but the latter seem to occur on all the islands where the bracken patches are large enough to supply convenient shelter. The Tawny Owl has not been seen at Scilly. The Snowy Owl is represented by a single specimen, shot on St. Martin's in September, 1905, and now in the Abbey collection. The only specimen of Scops Owl known with certainty to have occurred on the islands was captured in an exhausted condition by Christian Holliday on Tresco on April 13th, 1847. It is figured by Gould in his 'Birds of Great Britain,' and is one of the treasures in the collection at Trebartha Hall. All three Harriers are casual visitors at Scilly. Of the Marsh-Harrier, one was seen by Pechell in 1849; one (a female) shot by him towards the

end of October, 1863 ; one was killed on St. Mary's in October, 1871, and one at Tresco by Joe White in April, 1886. A bird of this species, in immature plumage, was watched for some time at Tresco, beating likely spots for game along the reedy margin of the Abbey Pool on the afternoon of the day on which the great flight of Larks already described came to an end (Oct. 12th, 1903). Up till about 1875 female Hen-Harriers were to be met with almost every year, though only one single male had been shot. During the last twenty-five years the species has only once been obtained, namely, in May, 1888, though it was evidently seen by David Smith in June, 1902. Montagu's Harrier was first recorded from the islands in April, 1852, when three were shot. It does not appear to have been obtained again till 1868, but during the seventies it occurred almost every year either in immature or in adult plumage. It is still an occasional visitor, chiefly in spring, and one was seen on St. Martin's on April 9th, 1903. The Common Buzzard is a fairly regular passing migrant in the autumn, usually in pairs, but sometimes singly. In the third week in October, 1903, two pairs were on the islands at one time. F. R. Rodd says this is not uncommon, but he has never seen or heard of a greater number. A pair was seen in December, 1876, but their occurrence during winter is very unusual. No Eagles have so far been observed at Scilly, but there is a tradition of a White-tailed Eagle having been seen near the Seven Stones in 1835. In the copy of Carew's 'Survey,' already referred to, the unidentified naturalist writes :—"My boatman and two other fishermen saw a few years ago a very large bird of prey at the Seven Stones, which they speak of as a Golden Eagle, but I feel satisfied myself that it was a Sea-Eagle, and their description has left no doubt in my mind that this was the bird they saw." The Sparrow-Hawk comes over singly or in pairs with the autumn flights of Larks and Starlings, and more frequently in November than with the first-comers in October. It may often be seen about the reed-beds on Tresco, among which the Starlings roost. As in the case of the Buzzard, its occurrence in winter is unusual. All the specimens handled or seen from a short distance have been birds of the year. A solitary specimen of the Kite was shot on Tresco, Sept. 9th, 1890, and one of the Honey Buzzard by

Jenkinson on Tresco on Oct. 18th, 1866. A superb adult male of the Greenland Falcon was shot on March 27th, 1903, on Tresco, and an adult male of the Iceland Falcon near St. Martin's Daymark on Jan. 15th, 1895, when three or else four others were seen at the same time. One, and in some years two, pairs of Peregrines have nested on the uninhabited islands probably every year since the birds of Scilly first received systematic attention. In 1841 a pair nested on Gorregan. A few years later young Peregrines were taken from a nest on Hanjague. Down to 1854 at least, a pair bred regularly on Round Island. Then the selection of a breeding-site alternated between Round Island and Menavawr. In 1863 a pair bred on Castle Bryher, probably not for the first time. Till about ten years ago Menavawr continued to be their favourite haunt, but they have not nested there since 1896. C. J. King notes that in 1901 a pair bred on Irishman's Cairn, Annett. Though a pair still nests at Scilly in most years, their old haunts are entirely forsaken. As till lately the eggs or young have generally fallen into the hands of collectors, it is not desirable to indicate its recent nesting-sites. As the Hobby is a spring and summer wanderer to the islands, it has probably often escaped observation. One specimen was killed by Jenkinson on St. Mary's Moors previous to 1863; one was found dead near the telegraph-wire on St. Mary's on April 29th, 1897; one was shot on the north of the same island in May, 1899; and one seen by Clark and Jackson on July 11th, 1903. The Merlin is apparently a regular autumn and winter visitor, chiefly to St. Mary's Moors, where it is very active in the pursuit of Snipe. In all cases where details have been visible, the birds have been in immature plumage. The Kestrel is a resident, and is well in evidence all the year round. Among the inhabitants it is often confused with the Peregrine. An adult male of the Lesser Kestrel was shot at Scilly on March 3rd, 1891, and is in the Abbey collection. In September, 1849, Pechell shot an Osprey that used to come to roost on the flag-staff at the beacon on Castle Downs, Tresco. In 1852 Jenkinson obtained another in immature plumage. In the second week of September, 1902, an adult male was seen at St. Mary's. It is interesting to note that a week later an adult male was seen by Clark, and also by T. H. Cornish, at Lelant.

Cormorants nest in considerable numbers on the outer rocky islets, shifting their breeding stations more or less completely from year to year. In 1901 there was a large colony, for example, on Inner Innisvouls, another on Mincarlo, a third on Meledgan, and a fourth on Rosevean. In 1902 only three nests were found on Inner Innisvouls, but there was a big colony on Outer Innisvouls, another on Menawethan, and several nests on Hanjague. Mincarlo was deserted, but there was a group on Castle Bryher, a little cluster on Rosevean, and a new colony on Meledgan. In 1903 there was not a single nest on Menawethan, and none were noticed on Outer Innisvouls or Castle Bryher, and only five on Rosevean. Inner Innisvouls, however, was again thickly populated, and there was a large colony on Meledgan, and one of twenty-nine nests on Roseveare. Shags are much more abundant than Cormorants, and breed in great numbers on all the outer rocks not washed by the sea, and also in small numbers on Annett. The Gannet may be seen on the open sea round Scilly at all times of the year, but rarely comes among the islands, except in very stormy weather. One, however, was captured asleep on St. Helen's Pool on the afternoon of an unusually calm day in May, 1903. The Heron frequents the islands all the year round. The flat-topped Stack Rock between Tresco and St. Martin's, and the curious double-peaked islet of Guthers between St. Martin's and St. Mary's can almost always show a bird or two, especially in the afternoon. Twenty to thirty Herons at a time on one of these favoured spots is by no means unusual, and Jackson has counted as many as sixty. They occasionally fish in the Tresco ponds at night, and their loud call is not infrequently heard from the Abbey terrace on still evenings. Most if not all the birds are immature, and none have been found breeding, or attempting to do so. It was reported four years ago that a pair was building on the cliffs on Inner Innisvouls, but, though two birds may have been frequently seen there together in the months of April and May, no trace of a nest could be found. A Purple Heron in rufous immature plumage was shot by Dorrien-Smith on St. Mary's Moors on Aug. 30th, 1878. Another, also an immature bird, was seen on Tresco, and afterwards secured at St. Mary's in April, 1898. On Nov. 5th, 1858, a Mr. Fylton shot at a Heron on the shore at

Norward, and knocked out a few feathers. One of these he took back to the Abbey, and the unanimous opinion of Pechell and other sportsmen was that it belonged to this species. The Squacco Heron was first recorded in 1849, but has been obtained several times since on Tresco, St. Mary's, and St. Martin's. A solitary example of the Night Heron was knocked on the head by David Smith in a clump of bushes at Tresco on May 15th, 1849. The Little Bittern is represented by an adult male in fine condition, shot about June 8th, 1866. Six or seven examples of the Common Bittern have been obtained on Tresco and St. Mary's—the first in December, 1864, the last on the marshes at Porthellick Bay in 1900. On Oct. 10th, 1903, an American Bittern was captured alive in a most exhausted and emaciated condition on the west side of Bryher. Under careful treatment it gradually recovered, and is still one of the attractions of the aviary at the Abbey. Two Black Storks have been shot at Tresco—one in September, 1887, and one by Dorrien-Smith on May 8th, 1890. The first Glossy Ibis obtained at Scilly was shot by Jenkinson on Tresco in September, 1854. It was evidently a two-year-old bird. Another specimen—a bird of the year—was obtained by Jenkinson at Tresco on Oct. 8th, 1866. In November, 1883, one was apparently seen on Tresco. On Oct. 11th, 1902, two were observed coming in on Tresco from the west, and one of these, a young bird, was shot at the Penzance Gate by Arthur Dorrien-Smith. The other was last seen flying in an easterly direction over Pentle Rock. The Spoonbill has been recorded altogether about a dozen times at Scilly during the autumn and winter, chiefly on Tresco. It was last seen on Oct. 16th, 1898. In 1850 an adult male with well-developed occipital crest was obtained on June 7th. Three were seen together in the early sixties, consorting with the Ducks on the Abbey pond.

All the British Geese are occasional autumn or winter visitors at Scilly, and gaggles are often reported at sea by local fishermen. Of the Grey Lag-Goose, one was shot in November, 1863; one was seen and wounded by F. R. Rodd on the Abbey Green in October, 1870; and two were killed in October, 1885. Two gaggles of the White-fronted Goose visited Tresco in October, 1854, three out of the first gaggle being shot by Pechell, who had killed one at Tresco two or three years previously. Three

more were obtained in October, 1859. The species also visited the islands in October, 1879, in October, 1880, in the winter of 1890-1, and in October, 1895. Down till the sixties the Bean-Goose was not an uncommon winter visitor, but since that time it has put in only an occasional appearance. One was shot in 1876, three on Dec. 9th, 1879, and two on Jan. 15th, 1882. In 1890-1 it was fairly common, several gaggles visiting the islands. It was not recorded again till November, 1905. The Bernacle Goose was not identified at Scilly till 1876. Twelve were shot in September, 1880. In January, 1884, three birds spent some days on the ponds at Tresco, and were allowed to depart unmolested. In January, 1895, a gaggle of fifteen visited the islands. The only record of the Brent-Goose at Scilly is one killed by F. R. Rodd on Oct. 1st, 1860, but several of the flocks of "Sea-geese" reported by the Scillonian fishermen—particularly in 1890-91, in January, 1895, and in February, 1902—were probably composed of this species. Both the Egyptian and the Canadian Goose were obtained at Scilly prior to 1863, the former by F. R. Rodd.

Jenkinson saw seven Whooper Swans at Tresco on Nov. 20th, 1858; F. R. Rodd saw five on Dec. 28th, 1870, and seven appeared in 1871. In 1876 it was again seen at Tresco; in 1879 three settled on the Abbey pond for a couple of days; on Dec. 5th, 1890, two adult birds appeared on the Long Pool at Tresco, and on Jan. 20th, 1891, two were killed out of six. In January, 1895, it is again recorded, but does not appear to have occurred since that time. At Christmas, 1890, twelve Bewick's Swans appeared on the pools at Tresco, of which four were shot, four flew away, and four remained among the tame Swans and other water-birds, and associated with the four survivors out of the six Whoopers that arrived on Jan. 20th. The Whoopers went off on March 21st, whereupon the Bewicks became exceedingly restless, and went off on the 23rd, being last seen by Dorrien-Smith flying over the eastern islands. Five years later four adult Bewicks and five cygnets appeared on the ponds, and were remarkably tame from the first. They stayed five weeks, and were ultimately driven away by the other Swans. Several Mute Swans were shot during the winter of 1870-71.

Eight Sheld-drakes were seen by F. R. Rodd on Tresco Pool

in 1864, one was shot at Tresco in 1876, and one in January, 1895. The Mallard breeds sparingly, but is common during the winter. In 1903 nests were found on Tresco, at Porthellick, St. Mary's, and among the bracken on Samson, St. Helen's, and Tean. A Gadwall was shot on the pools at Tresco on Jan. 1st, 1900, apparently the only record. Shovelers are fairly frequent winter visitors, and are usually most in evidence during hard frost. Pintail appear only in severe weather, as in 1870, 1879, 1886-7, 1890-1, and 1895, and for the most part in small parties. Teal appear every autumn and winter, and in some years are very common. A Garganey was killed by David Smith on the Long Pool, Tresco, March 29th, 1881; five were shot in March, 1883, and one at Porthellick, St. Mary's, at Christmas, 1900. Wigeon are common, and in severe weather appear at times in large flocks. The Pochard is an irregular autumn and winter visitor, occurring singly or in small parties. The Tufted Duck and the Scaup appear occasionally, either singly or in pairs, during winter, the latter being the more regular. The Golden-eye is a frequent winter visitor. It was common during the winter of 1890-1. The Long-tailed Duck was twice shot by Pechell prior to 1852—once on Tresco, and once on St. Mary's. One was obtained in the Abbey Pool in October, 1854, and one in November, 1864. All four birds were in immature plumage. One male and one female Eider Duck were shot by David Smith in the seventies; a male in fine plumage was killed on April 5th, 1882; and three were shot in Tean Sound on Dec. 18th, 1891, after they had been under observation for six weeks. An immature specimen of the Common Scoter was shot behind Bryher in 1854; F. R. Rodd saw one about 1860 between Tresco and St. Mary's; six were killed on Tresco Pools in March, 1881; and at least two others have been obtained at unrecorded dates. An adult male of the Surf-Scoter was picked up half-dead near Carn Thomas, St. Mary's, on Sept. 22nd, 1865, and a young male was shot off Skirt Point, Tresco, by F. R. Rodd, in October, 1867. The Goosander is a rare winter casual. One was killed on Dec. 22nd, 1851, one in December, 1853, and one in November, 1855. On Nov. 28th, 1870, F. R. Rodd shot a female, and saw several males, and on Jan. 5th, 1884, a female was obtained in perfect plumage. The Red-breasted Merganser, in the fifties and sixties,

seems to have been a rare winter casual, but in most years is now a fairly common winter visitor in immature plumage. The Smew is of rare occurrence. One was shot at Newford Pool, St. Mary's, late in December, 1869, and two immature males out of a party of three on the pool on Higher Moors, St. Mary's, on Jan. 23th, 1891. Several others seem to have been obtained at unrecorded times by Pechell and others, but no adult male has ever been identified.

In the sixties the Wood-Pigeon was a rare autumn and winter casual. F. R. Rodd, writing in 1863, says he has very rarely observed this bird at Scilly, and mentions one that had been noticed for several days on Tresco in the autumn of that year, and one, probably the same bird, that had been found dead—killed by a hawk—in the well-covert. The first nest was found on Tresco in 1873, and by that time it was a regular and fairly common winter visitor. Two or three years previous to 1879 it had become established as a resident, and it has greatly increased in numbers since. In April, 1888, a flock of four or five hundred settled for several hours on the trees at Tresco, and did a good deal of damage by eating the young leaves. The Stock-Dove may be constantly seen during the autumn months on most of the larger islands, including Tean and St. Helen's, both singly and in flocks. It seems to have been quite as common in 1863 as it is now. The Rock-Dove has been reported several times, but, so far as can be discovered, no Scillonian specimen has ever been seen by a competent ornithologist. The Turtle-Dove occurs rarely in autumn, sometimes in winter, and frequently in spring. In May, 1871, thirty-four birds were counted in one flock. In May, 1903, nineteen were seen together. It has nested at least once at Tresco.

A male specimen of Pallas's Sand-Grouse was picked up dead on St. Agnes in 1863, and F. R. Rodd says there was a small flock on the island at the time. On May 15th, 1888, eight or ten were seen feeding, and evidently quite at home, in the west side of St. Martin's by C. R. Gawen. The Pheasant was successfully introduced into Tresco over half a century ago by Augustus Smith, and has been preserved in the usual semi-domesticated state ever since. It finds congenial shelter in the furze. Partridges, both Red-legged and Grey, have been introduced several

times, but with little success. The first attempt was made by Augustus Smith in the fifties on St. Martin's, but most of the birds flew out to sea. The few that remained bred, but the hordes of cats on the island must have destroyed many of the young, and, though never shot at, they died out in 1864. A more determined effort was made from 1866 onwards, but, though between twenty and thirty Partridges appear for several years in the Tresco game-book, there were only a few coveys left when the present lord-proprietor succeeded his uncle, and these died about 1879. Since then various attempts have been made, and once as many as a hundred and fifty birds were turned out. In the month of February, however, when they broke the coveys and paired, they set off on a genuine migration by way of St. Martin's, where they are always last seen. A bevy of Quails had been seen and one bird shot by Jenkinson previous to 1863. It has been recorded over a dozen times altogether, usually in be vies in the autumn. It has bred, however, at least twice on Tresco, and once on St. Mary's. The Land-Rail apparently breeds on the islands every year, but is most in evidence as a spring and autumn bird of passage. On Sept. 19th, 1857, Pechell shot eight couples on the Lower Moors, St. Mary's, but this was most exceptional, as it is seldom one sees more than a pair or so in the course of a day's shooting. It is generally common during spring migration than at any other time. In 1903 it bred on St. Mary's, and on Bryher. The Spotted Crake was first recorded in the autumn of 1849. One was seen by F. R. Rodd in the Abbey garden in 1860, and in his notes of 1863 he speaks of its having been "met with in a few instances." He himself shot one on Oct. 8th, 1870. About the end of May, 1903, this bird was flushed on two successive days from a likely nesting spot on the Higher Moors, St. Mary's. The only record of the occurrence of the Lesser Crake is in Rodd's 1863 notes, where he mentions that Pechell had killed one on the islands which had been seen by him. As this bird is not referred to in the Abbey game-book, which goes back to 1856, and is not mentioned in the list for the year 1849, when Pechell first visited the islands, it was in all probability killed in the early fifties.

(To be continued.)

THE BIRDS OF THE DISTRICT OF STAINES.

BY GRAHAM W. KERR.

(Continued from p. 234.)

Cuckoo (*Cuculus canorus*).—During summer the Cuckoo is numerous all along the Thames Valley, and I have already stated that in the earlier part of summer the eggs are deposited with the Sedge-Warbler (*Acrocephalus phragmitis*), and later on almost invariably with the Reed-Warbler (*A. streperus*). In the latter case I have often found it in nests supported only by tall grasses, and it seems remarkable that the Cuckoo is able to balance herself on such slight support sufficiently to place the egg in deep cup-shaped nests. I believe that each female Cuckoo, with her several husbands, occupies a certain area of country (varying in size according to the number of birds in the district), into which no other hen bird intrudes, and that all eggs laid by one bird are of similar type. The nest in which the egg is to be deposited is selected beforehand, and the egg is then laid on the ground near at hand, and carried by the Cuckoo in its gullet, and placed in the nest. As some days elapse between the laying of each egg, it may well be that the bird notes the coloration of her first egg, and spends the few days' interval before the laying of the next one in searching for a foster-parent whose eggs are more or less similar to her own. In support of this theory, I have found a Cuckoo's egg, and always on searching farther in the same neighbourhood have found others of exactly similar type. The following day, perhaps in quite a different part of the country, another Cuckoo's egg is found of quite a different variety to the previous day's, and, searching on, more of these new type of egg are sure to be found. I once thought that the Cuckoo always deposited her egg with the same species of bird as had been her own foster-parent, but that this is not so, I have proved by finding a very distinct type of egg (white, lightly clouded, and blotched with red) in the nest of the Whitethroat (*Sylvia cinerea*), and within

one hundred yards of this an exactly similar egg in the nest of a Blackcap (*S. atricapilla*), the two eggs undoubtedly belonging to the same bird. One egg of the rightful owner is removed by the Cuckoo from the nest she has selected to receive her own, but whether this is done before her own egg is laid or afterwards I am not sure. The fact that only one egg is removed shows that the Cuckoo is no egg-eater; probably the egg is carried away to some distance and then dropped, for I have never been able to find any trace of the remains of the discarded egg anywhere near the nest. I have found (though I think it unusual) a fresh Cuckoo's egg among a clutch that has already been incubated for some days. Such cases point to the Cuckoo's egg requiring a very short period of incubation, for if the other eggs in the nest were hatched some days before the Cuckoo, it seems reasonable to argue that the young receiving warmth and food would gain sufficient strength to resist the young Cuckoo when it appeared; yet we all know that the young Cuckoo invariably becomes the sole occupant of the nest. As a rule, the egg is deposited before the foster-parent's clutch is complete; generally about the time there are two or three eggs in the nest. One nest of a Reed-Warbler I found appeared completed, but contained no eggs. Six days later there were three Reed-Warbler's and a Cuckoo's egg. When blown all showed signs of embryo. The young Cuckoo is by no means a lovable bird; it snaps and mouths around at everything that goes near it, and it is often a most laughable sight to see it when it has outgrown its foster-parent's nest, squatting on the remains, and mouthing in all directions. Yet the foster-parents—no matter of what species—always show the utmost affection for their alien child, whose hunger never seems able to be satisfied. We know that the adult Cuckoo often starts on the return migration while young birds and even eggs are still to be found in various nests. With whom, then, do the young Cuckoos migrate? Do the single nestlings seek out others of their kind, and migrate together in small parties; or is the hereditary instinct so strongly developed in each individual that they undertake the journey alone? They cannot migrate in company with their foster-parents, as these are often resident species, as is the case of the Redbreast, Hedge-Sparrow, Pied Wagtail, &c. These and many other points make the Cuckoo a

unique and fascinating study to all ornithologists, and, although much has been written of the bird, there are still many things yet to be explained.

BARN-OWL (*Strix flammea*).—Of rare occurrence.

SHORT-EARED OWL (*Asio accipitrinus*). — Exceedingly uncommon.

TAWNY OWL (*Syrnium aluco*).—Has considerably increased of late years. In early spring its calling may be heard every evening quite close to the town.

WHITE-TAILED EAGLE (*Haliaëtus albicilla*).—At Virginia Water in 1876 (cf. Zool. 1902, p. 230).

SPARROW-HAWK (*Accipiter nisus*).—Sparsely distributed, but if only left alone I think it would soon become more numerous.

KESTREL (*Falco tinnunculus*).—A decreasing species. Has not been known to breed for many years now.

COMMON HERON (*Ardea cinerea*).—There is a small heronry of about fifteen nests at Virginia Water; the number of nests is always about the same. Although this spot is within a stone's throw of the lake, the birds now fly daily several miles to the Staines reservoirs, and spend the day standing on the sloping concrete sides fishing. The reservoirs have been well stocked, and teem with fish, so that the birds are probably well repaid for the longer journey.

MUTE SWAN (*Cygnus olor*).—There are plenty of these birds on the river. As a rule they do not fly far, or at any great height, so it is curious that one discovered the reservoirs, which are two or three miles away from, and at a much greater elevation than, the reach frequented by this bird. Every morning it would fly right over the houses and railway-station, and settle on the waters of the reservoir, pass the day there, and return to the river at dusk; and in a very short time two companions joined in these expeditions. The object of this behaviour is not clear, for the bird's chief food is the various weeds that grow in the river, but owing to the depth of water such weeds are entirely absent from the reservoir, and it would seem that these birds must prefer an entirely fish diet. In the winter, when the river-weeds have died down, the birds often come ashore, along the banks and in the meadows, to eat fresh green grass. At breeding-time the males fight fiercely if one intrudes on another's

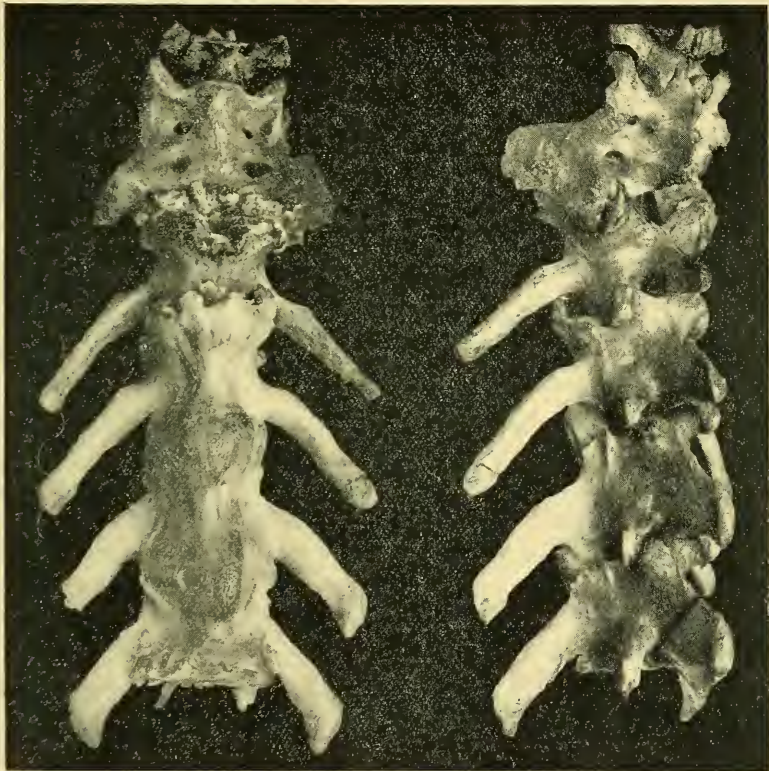
territory, and when the young are fully grown the parents turn on them and drive them away. It is only old males that ever show any hostility to man, and then only at breeding-time, and in exceptional cases at that. Both birds share the duties of incubation, and copulation is performed in the water as well as on land. The largest brood I have seen on the Thames was one family of ten cygnets. As a rule, four or five is the number of a brood. The eggs are laid at intervals of several days, and when both birds are absent from the nest are covered with down and grasses from the finer lining of the nest. Some years ago a houseboat sank at its moorings one spring, and a male Swan swimming by caught sight of its own reflection in the partly submerged windows. For the next fortnight the bird spent the whole of each day swimming to and fro from window to window, giving fierce pecks and thrusts at his imaginary rival. If the houseboat had not then been refloated, I think that bird would have become a raving maniac among Swans.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Anchylosed Spine of Bull-Dog.—The enclosed note and illustration are perhaps sufficiently interesting to publish. The photos show two views of part of the spine of a Bull-Dog (female), said to be eight



years old. Four of the lumbar vertebrae have become firmly anchylosed together, the centra forming a single solid mass of bone; yet the articulation of the pre- and post-zygapophyses is quite normal, the dry bones being quite separate there, as shown in the dorsal view.—
P. E. RUMBELOW (2, Napoleon Place, Great Yarmouth).

Natterer's Bat in Somersetshire.—On June 4th this year I discovered, in a very small hole in an apple-tree at Queen Camel, Somerset, a Bat whose appearance was not familiar to me. I therefore sent it on to the British Museum at Kensington, from whence I learn that it is a specimen (male) of Natterer's Bat (*Myotis nattereri*). In 'The Zoologist' for 1889 (pp. 245-7), Mr. Harting gives a list of counties in which this species has been found, including Devon, Dorset, and Hants, all bordering on Somerset, but states it had not yet been met with in the last-named county. Mr. Millais, in his recent work on British Mammals, has added to this list of counties, but still does not include Somerset; so that the above example is probably the first recorded specimen from Somerset.—ROBERT H. READ (Bedford Park, W.).

AVES.

Thrush Laying Twice in the same Nest.—Referring to the notes on this subject (*ante*, pp. 235 and 274), it may be of interest to record that, on returning home on the 19th June, I found a Song-Thrush sitting on a nest built in a plum-tree trained to a wall in the kitchen-garden, and well sheltered from rain by a wide thatch coping. The young (which may have been hatched when I first saw the nest—I did not examine the contents) were duly hatched, and departed. About three weeks later there were three fresh eggs in the nest, which was then deserted for some reason or other.—O. V. APLIN.

Blackbird Laying Twice in same Nest.—During the present year a very similar instance to those recorded (*ante*, pp. 235 and 274) came under my personal observation. A Blackbird nested upon the ground on the sloping bank overhanging a small quarry in my grounds. A clutch of four eggs were laid, and the young successfully reared. The nest was then partly relined, and a clutch of six eggs laid by May 20th, which unfortunately, owing to my too close attention, were then deserted.—J. STEELE-ELLIOTT (Dowles Manor, Salop).

Does the Blackbird eat Snails?—I have often asked myself, and have also put this question to men I know are keen on birds, and the answer has always been the same: "They may do, but I have never seen them." I know very well that, from its negative character, my case is not very strong, and I am quite prepared to have it scornfully said that "Blackbirds do not eat snails, because, forsooth! you and your friends have not seen them do so." Still, what I want to find is the man who *has seen* them so doing. The weight of affirmative evidence is so strong that it seems hardly worth while arguing the

question. Yarrell and Howard Saunders say specifically that they do eat snails, while Hudson goes farther and says that the bird "hammers the snails against a stone to break the shells," which statement is repeated by Stonham in his 'Birds of the British Islands,' just now issuing. But, I submit, is it not possible that these statements have been made on the natural supposition that *because* the Song-Thrush eats snails, *therefore* the Blackbird must? I should like, however, to give one more piece of negative evidence. A certain lady I know of has a garden where both Song-Thrushes and Blackbirds are common. On the coping round a lawn she has been in the habit of placing all the snails she can find for the benefit of any birds that like that sort of food. The Song-Thrushes visit this coping daily throughout the snail season, and, with repeated hammerings, soon achieve the "in-nards" of the snails; but contrariwise the Blackbirds—not one of them comes near the place. Surely, if it is true that snails form part of the Blackbird's usual food, it would make the most of this easy way of obtaining it. I should be glad to hear what the experience of others is on this question, for I may have been lacking in observation, or at any rate unfortunate in my opportunities.—A. H. MEIKLEJOHN (1, Colville Houses, London, W.).

Pied Flycatcher (*Muscicapa atricapilla*) in Surrey.—A pair of these birds appeared here this year on April 14th. They were very tame, and allowed a quite near approach, frequently darting down from the trees, and settling on the ground a few yards from where I was watching. The male bird was seen most during the day, the hen keeping more apart, and in the shelter of the bushes and trees surrounding a small pond. The place is exactly suited to their nesting habits, and I hoped very much that they would remain, but they moved on during the evening, and were not seen again. The last occurrence of this species in this district, of which I have a record, was one seen at Enton Pond, near Witley, on April 29th, 1891. It is a very rare visitor to this county.—G. H. EASTWOOD (Whitley Manor, Bramley).

Bramblings in April.—Mr. Cummings asks if Bramblings (*Fringilla montifringilla*) were noticed this year in April. On the 11th I was in South Oxon, walking down the Icknield Way from Watlington, in order to see if there were any summer migrants on the banks of the Thames. Just before I got to the corner of Ewelme Cow-Common, I saw a score or more of Bramblings flying backwards and forwards between an empty cattle-yard and an arable field, along the top and back of a tall hedge. There might have been more of them, for the hedge made it difficult to see. Some of those I saw were in fine spring

dress; in others, though the orange-fulvous shone like flame in the brilliant sun, light feather-edges still obscured the black of the upper parts. The notes I heard were a loud "clizip" or "chip" (their usual winter call-note); and (uttered on the wing as well as when perched) a "chutty, tutty-tut"; also, once or twice, the wheezy "weeech." The day was a very hot one, the blackthorn in full bloom just then, and as I watched the birds several brimstone butterflies drifted past; tortoiseshells swarmed during the day, and I saw one peacock butterfly. The only summer birds I noticed all day were two Chiffchaffs, but Fieldfares were about. Altogether, I wondered whether it was summer or winter. When we consider that Fieldfares and Bramblings breed side by side in the Norwegian fir-forests and the Arctic birch-woods, there seems to be no particular reason why the latter should not remain with us as late in the spring as the former. But this does not seem to be the case, for, although in 1903 I saw a male Brambling as late as April 29th, I have never seen them in May, when Fieldfares are occasionally met with.—O. V. APLIN.

Note on the Swift.—Early in May last I found a Swift (*Cypselus apus*) on the upper floor of the dressing-plant at Tywarnhaile Mine, about five miles north of Redruth. The bird was trying to lift itself into the air to fly, but was unable to open its wings fully, as the tips came into contact with the floor. When I saw it, it was only a few feet from the top of a stairway, to which it was struggling as fast as possible. It progressed with difficulty, in a kind of swimming manner, using its wings as paddles; each attempted stroke seemed to lift it forward a short distance on the tips of its wings, and so it fairly quickly reached the edge of the stair, from which it dived and flew out of the open door. I was glad to come across this confirmation of what I had always regarded as a superstition, for the bird was quite unable to rise from the floor; had there been no edge to provide a take-off it might have died of starvation. It probably found its way in through a broken window, and perhaps was dazed by dashing itself against the crowded machinery, which, however, was not in motion at the time.—MALCOLM BURR (Royal Societies Club, St. James's Street, S.W.).

Bittern in Somerset.—On Jan. 10th last I purchased a Common Bittern (*Botaurus stellaris*) in the High Street, Wells, from a turf-cutter's cart. The man was hawking the bird together with his turf, my attention being attracted to the feet, which were protruding from the coloured handkerchief in the man's hand. It was shot at Ashcott Corner on Jan. 6th. I sent the bird to Mr. J. Clarke, of Scarborough, for preservation, and his measurements of it are as follows:—Weight,

2 lb. 8 $\frac{1}{4}$ oz. ; 29 $\frac{1}{2}$ in. from tip of beak to end of tail ; 13 $\frac{1}{2}$ in. from carpal joint of wing to longest primary. — STANLEY LEWIS (Wells, Somerset).

Great Crested Grebe (*Podiceps cristatus*) breeding in Essex.—When Mr. Miller Christy published his interesting ‘Birds of Essex’ in 1890, he was only able to give one record of the nesting of this fine bird in the county, and it may be worth recording that a nest was found, and unfortunately robbed of its three eggs, early in June this year. The lamentable modern craze for “British-taken” eggs, which was as little known thirty or forty years ago as appendicitis or influenza, renders it desirable to give no more definite particulars than that the locality is not a great distance from the Thames.—JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

Black-necked Grebe (*Podiceps nigricollis*) breeding in Great Britain.—In ‘The Zoologist’ of 1904 (p. 417), I recorded the fact that several pairs of Black-necked or Eared Grebes reared their young in Britain during the summer of 1904. From what passed at the time my paper was published, I think it will be interesting to some ornithologists to know the name of one at least of the several observers who have actually seen the birds. I have therefore great pleasure in saying that I have been able to pay a secret visit (with the permission of the discoverers) to the lake, and that I then and there saw (and watched for some time through strong glasses) four or five adult Eared Grebes in full breeding plumage. They had not then, I think, hatched their young, being possibly, like the Crested Grebe, late breeders on some waters, or in some seasons ; and, judging from my knowledge of the habits of that species, I formed the opinion that the mates of some at least of the birds I saw were sitting on their nests. The Eared Grebe in breeding dress is a most beautiful bird. Its back shines in the sun with metallic colours, coppery in some lights. The straw-coloured ear-tufts are conspicuous, and stand straight out towards the back of the head ; the forehead looks very high. The note sounds like “blidder,” many times rapidly repeated, and falling a little in tone at the end of the run of “blidders.” The note is often better toned and more drawn out than that of the Little Grebe, whose corresponding cry may be rendered “klitter.” But much further details, given by the discoverers of this addition to our list of breeding birds, will be found in my paper quoted above.—O. V. APLIN.

Unusual Clutches of Eggs.—On May 20th last I found a nest of the Ring-Ouzel at the Cedars, Wells, containing six eggs—a rarity, I

believe, so far as numbers go. A Goldfinch's nest in a chestnut-tree contained seven eggs on May 25th, all marked with the black streaks and dots—a rather uncommon phase of these eggs. A Lapwing's nest on Easter Monday contained five eggs, four of the ordinary type, but the fifth was the size of a Thrush's egg, with a thick ring of spots round the small end. A Linnet's nest at Tealham Heath, Wedmore, contained seven eggs on May 5th; a Robin's nest on this date also contained seven eggs, very closely resembling eggs of the Red-backed Shrike both in ground colour and markings. On May 27th I found a nest of the Golden-crested Wren rather high up in a yew-tree at Dinder, near Wells, containing six eggs; five of them are the ordinary size, but very pale in ground colour, and sparsely speckled, resembling Long-tailed Tits'. The sixth egg is as large as a Robin's, but exactly the same colour as the five small ones. Can this large one be a Cuckoo's egg? I shall be pleased to send the nest and eggs to any ornithologist who would be likely to pass a sound opinion as to whether the egg is the Cuckoo's or the Golden-crested Wren's.—STANLEY LEWIS (Wells, Somerset).

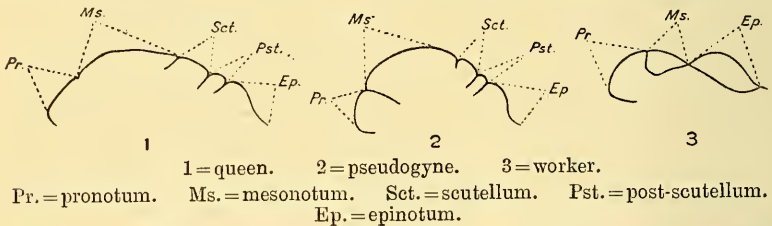
Notes on Nest-Boxes.—During the past season we have had as tenants of our nest-boxes the Great Tit, Blue Tit, Nuthatch, Tree-Sparrow, Starling, Tawny Owl, Kestrel, and Stock-Dove. The Tawny Owl, which had taken possession of an old cask, deserted after the second egg was laid, perhaps owing to the fact that one day when I went to look at her she flew off, and as she went away one of our fox-terriers chased her. Most keepers and watchers have a firm belief that a sitting bird alarmed by a dog will never go back to her nest. However, I believe that two or three pairs of Owls have hatched off in the parish this year, and in one house there was considerable excitement not long ago over an Owl which had found its way into an unused attic, but was got out again without injury. We have never had Kestrels in a box before, and their use of one seems to be unusual, though Mr. Whitaker has recorded an instance at his place in Nottinghamshire (*Zool.* 1904, p. 192). Four eggs of a very Merlin-like type were laid, all of which were hatched, and, though one young bird died in the nest, I believe the others went off safely. Two broods of Stock-Doves were hatched in the same box, and one pair are there now (July 19th). Tree-Sparrows have abounded, but House-Sparrows seem to have quite deserted the boxes, possibly because they are never allowed to hatch out when the nest can be got at. My chief grievance against this bird is the damage it does to thatched buildings, and most cheerfully would I pay "4 pence for soame sparos" (*ante*, p. 257) if the

colony in the gables of the Rectory Farm could be cleared out. In the early spring the Starlings will sometimes enlarge the entrance-hole of a box so as to gain admission, and they have done this to three boxes which were new only last year. We have had three Robins' nests in old kettles, but only one hatched off; the eggs of the second were destroyed by mice or rats; and the third, which was deserted after the third egg had been laid, is now, with the kettle, in the Ipswich Museum. Some marauder also robbed a Pied Wagtail's nest with four eggs in an old saucepan. The Creeper has never built in our boxes, but will nearly always use a place made for it by nailing a piece of wood or bark to a tree. For this purpose the birch is very well adapted by the hollows often seen in its stem, and I have known of two Creepers' nests containing eggs in one birch-tree at the same time.—
JULIAN G. TUCK (Tostock Rectory, Bury St. Edmunds).

INSECTA.

A re-discovered British Beetle (*Lomechusa strumosa*).—In Stephens's 'Mandibulata,' vol. v. (1832), p. 108, the following record occurs of the capture of this insect:—"Very rare: I have hitherto seen two specimens (which are in the British Museum) only; one of which, I was informed by Dr. Leach, was taken by Sir H. Sloane on Hampstead-heath, in 1710; the other was captured by himself while travelling on the mail-coach between Cheltenham and Gloucester, about twenty years since." These are the only two British specimens that have been captured till this year, when the writer took a specimen with *Formica sanguinea* at Woking on May 25th, and six more on May 29th. This just shows how an insect may be found again after a lapse of many years, when it has been left out of our books and lists; and the sceptical coleopterist is ready to assert that it never was British, and never should have been included in our insect fauna. It calls to mind *Dibolia cynoglossi*, taken by us at Pevensey a few years ago sparingly, and in plenty last year; and many other cases could be mentioned. However—*revenons à nos moutons*—the life-history of *Lomechusa* is of extreme interest. It is a myrmecophilous insect, and only lives with its host—the big red slave-making ant, *Formica sanguinea*. It is a true guest, and has aborted palpi, and a broad short tongue, which enables the ants the better to feed it. It is licked by its hosts, as it produces a sweet secretion, of which they are very fond, and is covered with patches of golden hairs where the secretion exudes from. The larva also, which is a fleshy white grub, is fed and carefully tended by the ants; when full-grown it is very like an ant-grub, and, although

it has six legs, it does not use them, but imitates the movements of the ant-grubs. The ants prefer the beetle larvæ to their own, and even place them on their egg-masses (as the *Lomechusa* larvæ devour the ants' brood), as well as feed them by mouth. The too great care taken by the ant prevents the over-increase of the *Lomechusa*, as, after its larva has pupated, the ants dig it up to see how it is getting on, and by this means many are destroyed, as the delicate pupa is killed, or dries up. The most interesting problem, however, concerning *Lomechusa* is the production of pseudogynes, or false females, among the worker-ants, in nests where the voracious beetle has been established for some time, and these nests which possess pseudogynes are the centres from which *Lomechusa* spreads to other colonies. Pseudogynes are produced in nests where the ants have lost their natural instincts as nurses to their own brood, and give all their attention to the *Lomechusa*. In nests where pseudogynes are found collectors may be sure of finding *Lomechusa*; they are workers with a high mesonotum somewhat as in the queens. The following sketch shows the three forms:—



A similar case occurs with the American ant, *Formica sanguinea* subsp. *rubicunda*, Em., and its guest, *Xenodusa cava*, Lec., a beetle allied to *Lomechusa*. Pseudogynes have also been observed with the hill-ant, *Formica rufa*, caused by the continental *Atemeles pubicollis*, Bris.—HORACE DONISTHORPE (58, Kensington Mansions, South Kensington).

NOTICES OF NEW BOOKS.

The Analysis of Racial Descent in Animals. By THOS. H. MONTGOMERY, Jr., Prof. Zool. University, Texas. New York: Henry Holt & Co.

THE argument throughout this book is largely a phylogenetic one, as distinctly avowed by the author in his preface, and requires careful study, many of the conclusions arrived at being based on facts relating to lowly organized animals which are not much noticed in these pages, and therefore somewhat outside the special purview of our readers. Those, however, who do not give the special attention necessary to appreciate its main thesis will find very much to both interest and instruct in more familiar biological subjects, and this remark particularly applies to the first chapter, which is devoted to "Environmental Modes of Existence." Zoological science marches on with giant strides; most of us in our own lifetimes have seen the rise and culmination of the geographical side in the study of the distribution of animals; but a new method based on another consideration has arisen, and, as Prof. Montgomery observes, "It is now a question of environmental distribution, not geographical." Haeckel, for the three main divisions of animal life—terrestrial, fresh-water, and marine—has proposed the terms *geobios*, *limnobios*, and *halobios*, while Prof. Montgomery now adds—and with good reason—two more to the list. For animals like a Mosquito or Toad, which live during a particular period in one medium, and later in their lives migrate into a different medium, he gives the differential name *diplobios*; and for others which at some period of their existence live as internal parasites he proposes the environmental term *entobios*. For a philosophical conception of the distribution of animals, it is as necessary to remember these as well as the more familiar zoo-geographical regions, and it becomes every day more apparent, especially in zoology, that every scientific worker is but a pioneer, and every theory but a suggestion. The observational or bionomic method, on which the

pages of 'The Zoologist' have always been conducted, apparently receives warm approval in this book, for we read: "It is time that the good old-fashioned word naturalist were reinstated in its full original significance, and that there were fewer biologists, zoologists, botanists, histologists, entomologists, physiologists, and other hermit members of the scientific family."

As regards the controversy as to the inheritance of acquired characters, our author has pronounced opinion, and he urges that the "very postulation of the question, 'Are acquired characters inherited?' is absurd. It should read rather, 'What kinds of acquired characters become inherited?'" And he subsequently makes a remark with which every candid and unbiased evolutionist will probably agree: "Fairness to Lamarck cannot in any way depreciate our admiration for Darwin." Lamarck lived and wrote in the environment of thought focused in the great Cuvier; Darwin happily created his great epoch when men's minds were nearing the conclusion that systems, so far as philosophy was concerned, had had their day.

As remarked before, it is impossible, in the compass of our available space, to either do full justice to or adequately describe Dr. Montgomery's thesis or analysis of racial descent in animals, but we will conclude with one quotation, which may serve as illustrative of very much: "Because one animal group is on the whole more advanced than another, as the Mammals than the Birds, it by no means follows that all the members of the first group are either more advanced or more specialized than all of the other. And there is very good reason to consider the most specialized Birds to be racially more advanced than the most generalized Mammals."

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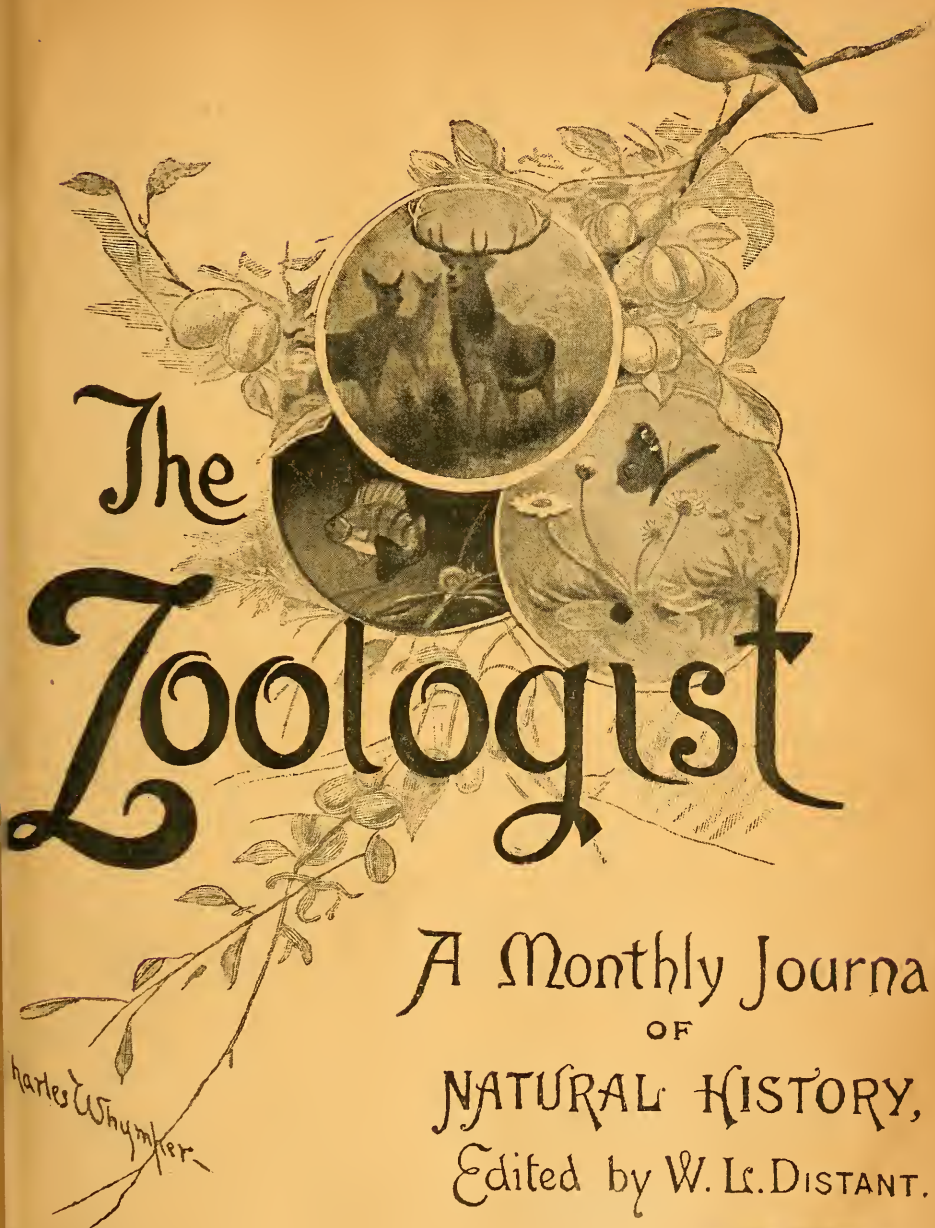
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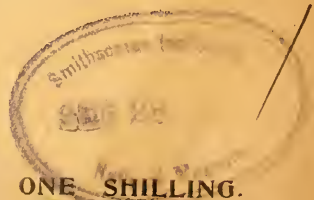
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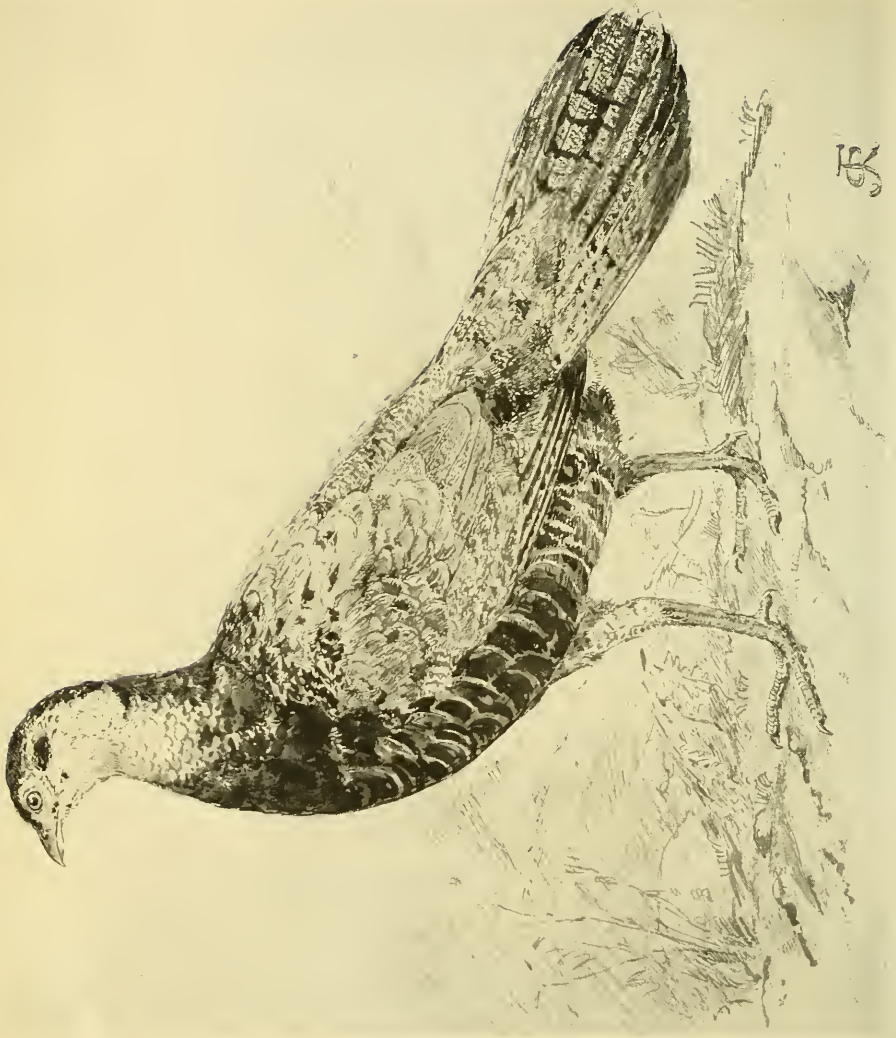
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HYBRID BETWEEN BLACK GROUSE AND PHEASANT.
From a specimen in the possession of the Rev. F. C. R. Jourdain, Shropshire, 1874.

THE ZOOLOGIST

No. 783.—September, 1906.

ON THE HYBRIDS WHICH HAVE OCCURRED IN
GREAT BRITAIN BETWEEN BLACK-GAME AND
PHEASANT.

BY THE REV. FRANCIS C. R. JOURDAIN, M.A., M.B.O.U.

(PLATE IV.)

As a good deal of misconception seems to exist as to the rarity or the reverse of this cross in Great Britain, and as it is undoubtedly of exceedingly rare occurrence on the Continent, it has been thought advisable to bring the list of recorded instances up to date for the convenience of future reference. Hitherto only two lists of such occurrences have been published, of which the first is that in the first edition of Yarrell's well-known work on 'British Birds,' vol. ii. p. 307, where eleven instances are definitely recorded. This list is somewhat curtailed in the fourth edition (rewritten by Mr. Howard Saunders), where only eight occurrences are mentioned. The subject is, however, more fully treated by M. André Suchetet in his work, 'Des Hybrides à l'Etat Sauvage,' published at Lille in 1896 (pp. 87-89). He refers to twenty-six British specimens of this cross, but three of these at any rate were never seen by any competent observer nor preserved, although in all probability they were correctly identified. Short articles on the subject have also appeared in the pages of 'The Zoologist' and the 'Field,' but no serious

attempt has been made of late years to estimate the numbers of these hybrids which have occurred in Great Britain. As will be seen from the following list, there is no doubt that at least fifty occurrences are satisfactorily authenticated, while there is some evidence with regard to several others.

The remarkable fact, however, remains that, though both Black-game and Pheasants are widely distributed on the Continent, no instance of the occurrence of this hybrid was known there until November, 1884, when a hen was shot by a gardener in the park of the Castle of Jeltech, in Silesia. This bird is in the collection of Count Saurma. A second specimen was obtained near Zele, in Bohemia, by Count Harrach, and presented by him to the Royal Museum. This bird (a male), presumed to be the produce of a cock Pheasant and Greyhen, is figured by G. Mützel in Dr. A. B. Meyer's fine folio work, 'Unser Auer-, Rackel- und Birkwild und seine Abarten,' published in Vienna in 1887 (taf. xvii. p. 93). Since then two other occurrences in Bavaria have been recorded by Dr. C. Parrot ('Verhandl. der Ornith. Gesellsch. in Bayern,' v. 1904, p. 14). One (a male) was obtained on Oct. 4th in the forest of Kaufbeuern, and the other has for many years been preserved in the Royal Zoological Museum in Munich. With the exception of these four instances, this hybrid is almost unknown on the Continent, although, as will be seen from the following list, not uncommon in Great Britain. It is, of course, unknown in Ireland, the statement to the contrary effect by the late Rev. H. A. Macpherson ("The Pheasant," 'Fur and Feather Series,' p. 57) being obviously due to a slip of the pen.

1.—The first recorded instance is that mentioned by Gilbert White in the "Observations on Birds," appended to some editions of the 'Natural History of Selborne.' It was killed towards the latter part of the eighteenth century at the Holt, and was supposed by White to be a hybrid between the Pheasant and Domestic Fowl. In some editions of the 'Nat. Hist. of Selborne' a folding coloured plate is given of this bird, and Brown's edition (1835) contains a rude woodcut of it. In 1833 the Hon. W. Herbert, who saw it in the Earl of Egremont's collection at Petworth, assigned it to the Black-game and Pheasant cross.

2.—The second was shot in January, 1829, at Whitey, near Plymouth, by the Rev. — Morshead, and was recorded and de-

scribed by Dr. Edward Moore in the 'Mag. of Nat. Hist.' for 1837. It was the produce of a cock Pheasant and Greyhen, and passed into the possession of Capt. Morshead. [J. C. Bellamy, in his work on the 'Natural History of South Devon' (1839), says that two other instances of this hybrid have also occurred in the same neighbourhood, one at Haldon, and the other on Shaugh Moor.]

3.—One was exhibited by Mr. J. Sabine at a meeting of the Zoological Society (P. Z. S. 1834, p. 52). It was killed in Cornwall in June, 1834, and passed into Sir William Call's collection.

4.—One (probably from the same brood) is mentioned by Mr. E. H. Rodd ('Birds of Cornwall,' p. 77) as having been killed at the same time as the preceding one. It was in Dr. Rodd's collection, and is now the property of Mr. F. R. Rodd, of Trebartha Hall.

5, 6.—Two (out of a brood of five), which were reared near Merrington, Shropshire, in 1834. Of these, Mr. T. C. Eyton mentions one in the collection of Mr. J. A. Lloyd, of Leaton Knolls, Salop ('Rarer British Birds,' p. iv), which was killed in November, 1834. Another (a hen), somewhat smaller than the first, which was shot in the following December, passed into Mr. Eyton's possession, and is figured on the title-page of the 'Rarer British Birds,' and also in the first edition of 'Yarrell,' ii. p. 309 (*cf.* P. Z. S. 1835, p. 62). The three remaining birds of this brood were killed by a farmer and eaten. These birds are believed to have been the produce of a cock Pheasant and Greyhen.

7.—One, also recorded by Mr. T. C. Eyton, was seen by him in the collection of Sir Rowland Hill. It was killed near Corwen, Merioneth, some time previously to 1836 ('Rarer British Birds,' p. 101). This bird is still in the Hawkestone collection near Shrewsbury.

8.—One (a cock) was shot in the autumn of 1835 near Loch-naw, Wigtonshire, and passed into the possession of Sir A. Agnew. It was recorded and fully described by Mr. W. Thompson in the 'Mag. of Zool. and Bot.' vol. i. (1837), afterwards reprinted in the same writer's 'Natural History of Ireland, Birds,' vol. ii. pp. 41-44. This bird was supposed by Thompson to be the produce of a Blackcock and hen Pheasant.

9.—One, shot near Alnwick Castle, November, 1837, and now

in the Newcastle Museum (J. Hancock, 'Catalogue of the Birds of Northumberland and Durham,' p. 91).

10.—One, exhibited by Mr. J. Leadbeater at a meeting of the Zoological Society on Dec. 12th, 1837, also killed near Alnwick, was afterwards presented to the British Museum by the Duke of Northumberland ('Cat. Birds in Coll. of the Brit. Mus.' xxii. p. 58; P. Z. S. 1837, p. 135). This specimen is figured in a drawing by Mr. G. E. Lodge in the 'Illustrated London News' of Aug. 18th, 1906.

11.—One (a cock bird) was purchased in the market at Devonport in 1839 by the Rev. W. S. Hore, and is said to have been killed in Cornwall ('Zoologist,' 1861, p. 7545; 'Yarrell,' first edition, ii. p. 311; 'Birds of Devon,' p. 274). Mr. Hore's specimens were bequeathed to Mrs. Connop, of Bradfield Hall.

12.—One, formerly in the collection of the Rev. T. Johnes, of Bradstone Rectory, near Tavistock. Date unknown, but mentioned by Mr. Hore in 'The Zoologist' for 1861, p. 7545. Possibly this bird may have been one of those referred to by Bellamy (*vide supra*).

13.—One shot by Lord Howick near Felton, Northumberland, at the beginning of December, 1839, was recorded by Mr. P. J. Selby, and figured in 'Yarrell' (first edit. ii. p. 311).

14.—One, shot at Belsay, Northumberland, by Mr. C. H. Cadogan, of Brinkburn, in 1842, is now in the Newcastle Museum (J. Hancock, 'Catalogue of the Birds of Northumberland and Durham,' p. 91).

15.—One, purchased in the Devonport market about 1849-51 by Mr. Cornelius Tripe, afterwards passed into the hands of the Rev. W. S. Hore, who recorded it in 'The Zoologist,' 1861, p. 7545. A full description is given by Suchetet of this bird.

16.—One (a cock) killed Oct. 26th, 1850, was exhibited by Mr. J. Leadbeater to the Zoological Society (P. Z. S. 1851, p. 61). It was shot by Mr. H. Halsey's keeper not far from Frimley Ridges, Henley Park, near Guildford, and was supposed to be the produce of a Blackcock and hen Pheasant. Recorded in 'The Zoologist' by Mr. J. W. G. Spicer (1851, p. 3091; 1854, p. 4294).

17.—One, recorded by Mr. J. J. Briggs (Zool. 1854, p. 4253), was shot in February, 1854, by the keeper of Earl Ferrers at Staunton Springs, near Melbourne, Derbyshire.

18.—One (a hen) killed on Dec. 19th, 1855, in Lord Stamford's coverts at Enville, near Stourbridge (Suchetet, *t. c.* p. 90). Afterwards became the property of Lady Lambert (now Lady Grey). I have not been able to ascertain whether this specimen was destroyed in the fire at Enville Hall in November, 1904.

19.—One (a young cock) shot by Mr. F. R. Rodd on Sept. 24th, 1867, from a brood on the Bodmin Moors. This was the produce of a cock Pheasant and Greyhen ('Zoologist,' 1867, p. 991; 'Birds of Cornwall,' p. 76). Mr. E. H. Rodd states (*l. c.*) that on several occasions he heard of and received specimens of this hybrid from the Bodmin Moors.

20, 21.—Two (a cock and hen), the property of Sir Ralph Wilmot, of Chaddesden Hall, near Derby, were shot by the late Sir Henry Sacheverel Wilmot in Chaddesden Wood,* probably not later than about 1870. The cock has the head, neck, breast, and under surface black, with a violet sheen; back, wings, and tail buff with brown vermiculations, and black barring on the fan-shaped tail. The hen has the crown brown, with black barring; cheeks and neck black; breast deep rufous brown, with black bars and narrow buff edges; abdomen buff, boldly spangled with dark brown. Spurs, as usual, absent in both birds.

22, 23.—Two in the Calke Abbey collection, the property of Sir Vauncey H. Crewe, also from the same locality in Derbyshire, where broods were reared in two consecutive years (Sir R. Wilmot, *in litt.*).

24.—One, shot in Newstead Park, Notts, in 1874; now in the collection at Newstead Abbey (Mr. J. Whitaker, *in litt.*). Cross between Blackcock and hen Pheasant.

25.—One, shot at Papplewick, Notts, in December, 1874, by Mr. Rutter, now in the collection of Mr. J. H. Brown, of Old Moote Hall, Wheeler Gate, Nottingham (Mr. J. Whitaker, *in litt.*). Same cross as preceding bird.

26.—One (a hen) shot in the autumn of 1874 by the late Mr. A. G. Corbet in Shropshire, and now in the writer's possession. This bird, which was set up by Shaw, of Shrewsbury, has not been previously recorded. As the only satisfactory figures of this hybrid represent male birds, it has been thought

* Not on Breadsall Moors, as recorded in the 'Victoria History of the County of Derby,' i. p. 143.

advisable to give an illustration of this bird (*cf.* Plate IV.), showing the light colouring of the throat and sides of the neck, the Pheasant-like contour of the head, and the characteristic fan-shaped tail.

[Mr. W. E. de Winton informs me that the Rev. Josiah Lea, formerly Rector of Wyre Forest, also had a specimen, killed in Wyre Forest, on the borders of Shropshire and Worcestershire, many years ago, but up to the present he has not been able to ascertain what has become of it.]

27.—One, shot near Hunstanton, Norfolk, and preserved in Mr. Hamon L'Estrange's collection. According to Mr. L'Estrange, it was killed "twenty years ago" (*in litt.*, *fide* Suchetet), *i. e.* circa 1876.

28.—One, bought in the Plymouth market by Mr. J. Gatcombe, and said to have been killed on the borders of Dartmoor, Devonshire, in October, 1878 (*Zool.* 1879, p. 60). This bird afterwards passed into the possession of Mr. J. Whitaker, and was sold on May 22nd, 1890, at a sale of duplicate specimens (Lot 111) to Mr. Lamb, of London.

[Mr. E. Cambridge Phillips, writing in 'The Zoologist' for 1883, p. 301, states that some of these hybrids were killed in Carmarthen "some years ago," but were not preserved.]

29.—One, a cross between a Blackcock and hen Pheasant, was bought in Leadenhall Market in 1883, and exhibited by Mr. Burton at a meeting of the Zoological Society (P.Z.S. 1883, p. 578).

30.—One, bought in the Plymouth market in October, 1883, by Mr. J. Gatcombe, which subsequently passed into Mr. F. Bond's collection (*Zool.* 1884, p. 54).

31.—One in Mr. Edward Hart's collection at Christchurch, dated Jan. 16th, 1884 ('Birds of Hampshire and the Isle of Wight,' p. 265).

["Six at least," according to Mr. H. E. Forrest, were obtained in the south-west district of Shropshire, between Bishops Castle and Craven Arms. Of these further particulars are to hand respecting four.]

32-35.—Two were shot in the season of 1884-5, and are now in the possession of Mr. W. F. Plowden, of Plowden Hall, North Lydbury; a third was shot by Major Gregory Knight near Craven

Arms on Nov. 18th, 1884, and is now in the Leicester Museum (M. Brown, Zool. 1885, p. 26) ; while a fourth was shot on Mr. Greene's estate (adjoining Mr. Plowden's property) about the same time (Mr. W. F. Plowden, *in litt.*).

36.—One, shot at Glen App, Ayrshire, some time prior to 1886. This bird was formerly the property of Mrs. Hunter, but is now in the possession of Mr. J. Charlesworth. A fine coloured plate of it is given by Mr. J. G. Millais in the folio edition of 'Game Birds and Shooting Sketches' (facing p. 34).

37.—One (a cock with lyrate tail), killed by Mr. C. R. E. Radclyffe some time previous to 1888, at Encombe, in Dorset. This bird is mentioned by Mr. J. C. Mansel Pleydel in the 'Birds of Dorset,' p. 68, as existing in Mr. Radclyffe's collection at Hyde, near Wareham. It was, however, destroyed in a fire which took place at Hyde House in 1887. Mr. C. E. Radclyffe informs me that other birds of the same brood were seen, and he believes that one or more were shot at the same place.

38.—One, shot by Mr. J. Turner near Sutton Coldfield, Birmingham, in 1888. This bird, supposed to be the produce of a Blackcock and hen Pheasant, was exhibited by Mr. Turner at a meeting of the Birmingham Natural History Society, and was recorded and described by M. Suchetet (*t. c.* p. 91).

39.—One in the collection of the Earl of Home at Douglas Castle, Lanarkshire. Recorded by Lord Walsingham and Sir R. Payne Gallwey in the 'Badminton Library' volume on "Shooting, Moor and Marsh," p. 48, but no date is given.

40.—One shot, near Lyndhurst, Hants, in March, 1891, and recorded by Mr. Bradburne in the 'Field' ('Birds of Hampshire, &c.' p. 265).

41, 42.—Two, shot at Monreith, Wigtonshire, by Mr. J. Henry Stock. The first was killed on Oct. 10th, 1893, when Partridge shooting on a farm called Dowies; the second on Oct. 27th, about a mile from where the first was shot. Both birds are now in Mr. Stock's collection at the White Hall, Tarporley, Cheshire (Mr. J. H. Stock, *in litt.*). Not previously recorded.

43.—One, shot by Capt. M. Murphy at Bunessan, Mull, in January, 1896, was exhibited by Mr. J. E. Harting at a meeting of the Linnean Society on Feb. 20th, 1896. It is apparently the same bird which was subsequently exhibited by Mr. J. G. Millais

at the meeting of the Brit. Ornith. Club on Feb. 21st, 1906, although described in the 'Bulletin' as having been shot in November, 1895. It is now the property of Miss Lees, and Mr. Millais believes it to be the produce of a Blackcock and hen Pheasant.

44.—One (a cock) shot on the moors about six miles from Whitby, Yorkshire, in January, 1897. It was sent by Mr. W. H. Pyman, of Whitby, to Mr. W. B. Tegetmeier for exhibition at a meeting of the Brit. Ornith. Club on Jan. 20th, 1897 (Bull. B. O. C. xli. p. xxviii). A description of this bird will be found in an article by Mr. Tegetmeier in the 'Field' of Jan. 26th, 1897, p. 101.

45.—Mr. T. H. Nelson, of Redcar, also possesses another specimen, which was shot in Cleveland. Full particulars of this occurrence will be found in Mr. Nelson's work on the 'Birds of Yorkshire,' now in course of publication.

[One, shot on the island of Bute in 1900, was forwarded to Mr. Cooke, taxidermist, of Shrewsbury, for preservation, but hitherto no further particulars have been ascertained (Mr. H. E. Forrest, *in litt.*).]

46.—One, shot near Woodbridge, Suffolk, in the autumn of 1901, and recorded by Lt.-Col. E. A. Butler in 'The Zoologist' for 1901 (p. 477). This bird appears to have had more of the character of the Blackcock than is usually the case.

47-49.—Three, recorded by Mr. G. Cooke in the 'Record of Bare Facts for 1902,' issued by the Caradoc and Severn Valley Field Club (pp. 33 and 40). One of these was killed at Berwick, Salop, on Dec. 24th, 1902, and two others were obtained subsequently from different localities in the same district. Mr. H. E. Forrest (*in litt.*) describes one of these birds, apparently a male, as approaching more closely than usual to the Blackcock in type, with semi-lyrate instead of the usual fan-shaped tail. These three birds are now in the possession of Mr. A. E. Perkins, of Sundorne Castle; Mr. W. A. Sparrow, of Albrighton Hall; and Mr. W. G. Phillips, of Berwick Hall, Shropshire.

50.—One, shot by Mr. W. M. Neilson at Barcaple, Ringford, Kirkeudbright, and exhibited by Mr. W. P. Pycraft at a meeting of the Brit. Ornith. Club on Feb. 21st, 1906 (Bull. B. O. C. 1906, p. 54). It was received for preservation by Mr. Rowland Ward on Jan. 22nd, 1906, and had been shot a day or two previously.

This is believed to be a cross between a Blackcock and hen Pheasant, and is fully described, *l. c.* pp. 54-5.

[In addition to the above-mentioned specimens, the Hon. Walter Rothschild possesses one which was purchased from a dealer, but, as nothing is known as to its origin, it is possible that it may be one of those referred to above.]

An analysis of this list shows that by far the greater number of specimens have been obtained in England. The following table will give some idea of the distribution of the recorded specimens:—

No. definitely recorded.	ENGLAND.	
	County.	Notes.
10	Shropshire (Nos. 5, 6, 26, 32, 33, 34, 35, 47, 48, 49).	Some evidence of five other occurrences.
5	Devonshire (Nos. 2, 12, ? 15, 28, ? 30).	Possibly two other occurrences.
5	Derbyshire (Nos. 17, 20, 21, 22, 23).	
4	Cornwall (Nos. 3, 4, 11, 19).	Possibly other occurrences.
4	Northumberland (Nos. 9, 10, 13, 14).	
3	Hampshire (Nos. 1,* 31, 40).	*No. 1 may have been killed on the Sussex border.
2	Nottinghamshire (Nos. 24, 25).	
2	Yorkshire (Nos. 44, 45).	
1	Surrey (No. 16).	
1	Staffordshire (No. 18).	
1	Norfolk (No. 27).	
1	Dorset (No. 37).	Probably other occurrences in same season.
1	Warwickshire (No. 38).	
1	Suffolk (No. 46).	
41—	[Worcestershire (No. 26, note).]	Probably one from N.W. border.
WALES.		
1	Merioneth (No. 7).	
—	[Carmarthen.]	Said to have occurred, but details not given.
1—		
SCOTLAND.		
1	Lanark? (No. 39).	
1	Ayrshire (No. 36).	
3	Wigtonshire (Nos. 8, 41, 42).	
1	Mull (No. 43).	Probably an occurrence also from Bute.
1	Kirkcudbright (No. 50).	
7—		
1	Origin unknown (No. 29).	Also Mr. Rothschild's bird.
1—		
—		
50	Total	

A somewhat remarkable feature of the above list is the paucity of records from Scotland, where this cross might be expected to occur with greater frequency. It is, however, worthy of note that Charles St. John, writing in the 'Natural History and Sport in Moray,' p. 221 (original edition, 1863), remarks that "mules between Black-game and Pheasants are not very rare." It is, of course, possible that he may have referred to English-killed specimens, but at that time only one bird had been recorded from the south of Scotland, as far as I am aware, and none from the north. Probably other instances have been overlooked or unrecorded. It is to be hoped that the publication of these notes may stimulate interest in these interesting birds, and also furnish material for the future study of hybridism.

SOME CRUSTACEAN GOSSIP FROM GREAT YARMOUTH.

BY ARTHUR H. PATTERSON.

It was a dull, lowering August day; it might have been November, but for the temperature. I went up Breydon to the houseboat 'Moorhen' on a big flood-tide, expecting all the way to get a wet jacket, but reached the ancient "tub" while the elements were yet hesitating. The wind had been making all points of the compass, and there was a broken, piled-up jumble of clouds right down to the horizon all round.

After dinner and siesta the tide had gone down to its lowest. The Gulls were noisily prowling on the prostrate *Zostera*, picking up here and there a stranded Goby, Shrimp, or Mudworm, or skulking little Crab. Yarmouth, two miles eastward, was enveloped in an obscuring smoky haze. There was a promise of a thunderstorm, and a smart shower had commenced to fall.

I put overboard the remnants of our dinner for the Shore Crabs, but although the grease spread in enlarging concentric rings, the aroma of it did not reach those skulking among the pendant wrack at the little landing-stage, for the tide carried it away. I have tried *Carcinus mænas* again and again, and find it trusts but little to its eyes—for sight does not stand for much in the muddy water—and it is keener to see above than before it, and trusts almost entirely to its sense of smell and taste, or both.

One Crab happened to be in luck's way, and its eagerness seemed almost diabolical; it ran into hiding with it, as an Alligator hastens with its prey. To see this species working a puddle, hungry for a meal, endeavouring to outwit and capture the Ditch Prawns (*Palæmon varians*) is most interesting; disturb it, and it sinks into the ooze like magic. Immature Starlings, reared in a marsh-mill on a most miscellaneous dietary, were searching for small Shrimps, squirming *Gammaridæ*,

and creeping *Corophium*: this species is fond of a catch of crustaceans.

* * * * *

My first good "Shrimp" find of the year turned up on February 26th. I happened to call on a shrimper friend with a hope of persuading him to preserve for me any strange individuals he might meet with in his shrimp-nets.

"My husband's got something funny here!" said Mrs. Spanton, placing a small scent-bottle in my hand, inside which, swimming in methylated spirits, was an unmistakable Sowerby's Hippolyte (*Hippolyte spinus*), with its stout rostrum and cock's-comb ridge of teeth above. It was the first Spanton had ever seen, and is new to my list of East Norfolk species. This shrimper, who is collecting "curios" for his own amusement, is an exceedingly helpful and intelligent man, and has rendered me signal service.

Early in March I haunted the offices of a number of friendly solicitors and others who do business with paste, and begged all the empty "Gloy" bottles they could let me have. I soon mustered quite a respectable number of these handy receptacles. These I washed and fitted with bungs, half filling them with formalin, and distributed twenty-odd among my shrimper friends, who placed them in their boats, promising to drop in any strange Shrimp, or the like, they might meet with. I also employed, at a small remuneration, a crippled shrimper, who, in his bicycle chair, collected and distributed the bottles at stated intervals. Results have justified the trouble taken. Two fish new to the county, viz. Jago's Goldsinny (*Ctenolabrus rupestris*) and the Megrim (*Arnoglossus laterna*) have come to hand, besides several Prawns and Shrimps hitherto unidentified in this locality, and some other interesting marine invertebrates.

A Hermit Crab (*Pagurus bernhardus*) was brought to me in April that had for its hut the well-polished shell of a Common Snail. *Amathilla homari* has turned up most abundantly this summer; shrimpers know it as the "Sawback," a very appropriate nickname. Several Common Prawns (*Palæmon serratus*) were taken in April and May, one being netted on Breydon on April 17th, a very unusual habitat for this "rough-ground"-loving species. *Palæmon squilla*, known here as the "Breydon

Shrimp," has been extremely abundant this summer. I sat down with Jary, the Breydon watcher, in his Noah's Ark, one afternoon, to a dish of "shrimps," which were mostly *P. squilla* and *P. varians*, and found them not bad eating, considering the odd things they find to feed on in a tidal water, and having been boiled in water that it would hardly do to analyse. *It was getting back to Nature!* Of *Porcellana longicornis* I received several examples, and found *Stenorhynchus tenuirostris* and *S. phalangium* common enough; and on asking a shrimper to get me a few Pear Crabs (*Hyas araneus*), he supplied me with one morning's take of nearly a bucketful! *H. coarctatus* has been abundantly met with, individuals being remarkably weed-adorned.

* * * * *

I rambled along Breydon banks on May 6th, and made a big haul of Shore-hoppers (*Orchestia littorea*); they swarmed under every bit of drift. I also secured some examples of *Idotea pelagica*, a very lively little customer. On the 8th I walked six miles in search of *I. tricuspidata*, and secured—one! *Hippolyte cranchii* turned up several times in May; and on asking one or two of the shrimpers to examine their "riddlings" (they usually drop the small Shrimps through their sieves into the river), they furnished me with dozens! And among the smaller species I was pleased also to detect *Hippolyte varians* a number of times, occasionally in berry. The Banded Shrimp (*Crangon fasciatus*) came to hand sometimes as many as ten in one day. Having urged my friends to watch the Crabs a bit, I had a hairy little fellow, with disproportionately large pincer claws, brought me on May 14th. His sturdy build and brown-barred legs and other "distinctions" satisfied me that I was in the presence of *Xantho rivulosus*, known to our shrimpers as the "ross"-crab ("ross" is local for rough ground, where big stones and *sabella* are abundant). I secured from them a number of this species, both males and females, which did not hitherto figure on my East Norfolk list. Two or three Edible Crabs (*Cancer pagurus*), no larger than horse-beans, have come to hand, with some young Lobsters, no bigger than ordinary-sized "Brown" Shrimps. Whilst discussing Shrimps at the tea-table on May 29th, I discovered *Hippolyte pandalaformis*; length, 1½ in. *Pandalus*

annulicornis, a most abundant local Prawn, known as the "Pink Shrimp," lives only two minutes after leaving the water in summer; in winter it will live two days in a dark cool place. "Yellow" Shrimps (*Crangon trispinosus*, the Three-spined Shrimp) for some weeks evaded me, but "set-in" abundantly in June.

"We don't want 'em," say the shrimpers, "for when they come the pink 'uns say 'good-bye'!" And although there is no need why these should quarrel, there certainly is a falling-off at the season of the "yellow's" advent; this the shrimpers rather absurdly imagine is more than a coincidence. *Crangon spinosus* (the Spinous Shrimp) was added to my list early in June; I have a couple of examples. For the first time, to my knowledge, *Portumnus variegatus* visited Breydon; it shed every leg on finding itself in methylated spirits, and died unrepentant. *Nika edulis* was several times met with; and Leach's Prawn (*Palæmon leachi*) was discovered on July 12th by Mr. Spanton, who knew it for "something new." Next day he kindly brought me two freshly-captured individuals, and on placing one in formalin, it immediately shed all its ova. Soon after I found another boiled example on a shrimper's board. An exquisitely marked and highly-coloured *Palæmon* came to hand, the like of which I had never before seen, but the Natural History Museum people damped my enthusiasm by pronouncing it but a gaudy example of *Pandalus annulicornis*. Several pints of *Crangon trispinosus*, taken on July 18th by Mr. Spanton. Norwegian Lobsters (*Nephrops norvegicus*) have been abundantly on sale this summer. They hail from the North Sea, and are brought in by trawlers; I have two or three curiously malformed pincer claws of this pretty species.

THE BIRDS OF SCILLY.

BY JAMES CLARK, M.A., D.Sc., and FRANCIS R. RODD, J.P.

(Concluded from p. 306.)

THE Water-Rail is a common bird in autumn and winter, but does not breed. In some years—as in 1863, 1869, 1886—it is extraordinarily abundant on the exposed moors of St. Mary's, St. Martin's, and Tresco, in thick furze everywhere, in the orchards at St. Mary's, and on the trees in the Abbey Gardens. Moorhens first became conspicuous in the early fifties, when reeds were planted by the Abbey ponds. Previous to that time they had been noticed on autumn migration, and one specimen had been killed in April or May, 1841. They soon became common, and before 1860 bred regularly at Tresco, and occasionally at St. Mary's. In 1903 they were breeding freely round the Abbey pools, and in some numbers at St. Mary's, while two nests were found on Tean. The Coot was formerly a somewhat scarce and irregular winter visitor, but in the autumn of 1859 arrived in such numbers that as many as a hundred could be counted on the Abbey pools at one time. The following spring two or three pairs remained to nest, and from that time onwards a few seem to have bred every year. They are usually common throughout the winter, especially on Tresco, and are frequently noticed in the autumn coming in on St. Mary's.

A fine example of the Common Crane was shot on the north side of the Long Pool, Tresco, on April 13th, 1881, by David Smith, who had watched it coming in from the south-west. In the winter of 1881 a bird was flushed several times on St. Mary's Moors, that was thought to be a Little Bustard. It was of the right size, and rose like a Curlew. The first recorded example of the Stone Curlew was shot on Bryher in December, 1878; a second was obtained in 1879, and a third by Joe White on May 10th, 1890. The Ringed Plover is abundant on most of the

beaches all the year round, and breeds in considerable numbers. It is one of the most restless of birds, and seems to be in a state of almost constant activity by night as well as by day. The only example of the Little Ringed Plover recorded for the county was shot by F. R. Rodd near the Abbey Pool in October, 1863. The Kentish Plover has never been killed on the islands, but David Smith saw one on the Abbey Pool in September, 1881, and was particularly struck with its black legs, which corrected the first impression that it might be a Little Ringed Plover, as the legs of the latter are yellow. A Killdeer Plover frequented the west end of the Long Pool, Tresco, for several days, and was shot by F. Jenkinson on Jan. 14th, 1885. It was "a female, fat and hearty."

The Golden Plover is common every winter, and lingers through the spring till the month of May, when the last depart. It is generally seen in September, but is not well established till the latter half of October. In ordinary seasons and in ordinary weather from November to March the numbers are remarkably uniform, but there is often a considerable influx when severe weather prevails on the mainland. Throughout the winter of 1903-4 there were forty to fifty on Castle Down, Tresco, thirty to forty on St. Martin's, and about twenty on St. Mary's. They generally leave the seashore at high tide, and collect in flocks on the downs. On May 8th, 1903, three were seen on St. Mary's in winter plumage. On Jan. 30th, 1872, F. Jenkinson killed seventeen on the wing with one barrel (12 bore, No. 7 shot) on Apple-tree shore. The Grey Plover is a not uncommon autumn and winter casual, sometimes singly, sometimes in parties of three or four. It is rarely seen anywhere save on the beaches, and has a decided preference for Samson. The Lapwing is common throughout autumn and winter, but is rarely seen after the middle of April, and has never been known to nest. Except in very severe or tempestuous weather, its numbers, like those of the Golden Plover, are remarkably constant. On Feb. 13th, 1900, a great flock of Lapwings, three miles long, passed over the islands, coming in from the north-west. The rearguard with followers and stragglers settled, and the next day the islands were alive with an extraordinary assortment of Lapwings, Golden Plovers, Starlings, Song-Thrushes, Mistle-Thrushes, Blackbirds, Red-

wings, and Fieldfares. They quietly passed on, but left many dead behind. The Turnstone, in 1841, was evidently a rare bird at Scilly in the month of May, as the unidentified ornithologist, already referred to, whose notes were preserved in Carew's 'Survey,' says:—"A Turnstone in poor condition was brought to me on May 20th—a very unusual date. I was told they were usually common in autumn, and that flocks were sometimes seen crouching together on boulders beside the sea-coast in winter." In 1863 it was one of the commonest of shore birds in autumn and winter, and a few were believed to stay all through the summer. By 1871 flocks of birds in immature plumage were common throughout the summer months, and adult birds had been seen in the third week of May. It is now remarkably abundant all the year round, and Clark believes it has bred there lately, as he has obtained three eggs and part of a shell in local collections, has handled the skins of two young birds shot there on July 23rd, and, along with Jackson, has seen birds in adult plumage on St. Mary's during the first two weeks of July. Jackson and C. J. King—the latter so well known for his charming photographs of bird-life on the islands—both say they have seen the bird nesting on the sands, and have taken its eggs. As Clark, however, has not yet found a nest, he prefers to defer a full discussion of the subject to a later date. The Oystercatcher is abundant round the coast and on the rocky islets throughout the whole of the year, and breeds in considerable numbers. Like the Curlew and various sea-birds with which it associates, it delights to rest in flocks on some low ridge of rock till compelled to leave by the rising tide. Occasionally as many as two hundred of these most beautiful of all shore birds have been counted in a single flock.

The Grey Phalarope is for the most part a rare autumn and winter casual. One was obtained on the 13th, and another on the 23rd of October, 1857; one on Sept. 14th, 1870; one on Jan. 7th, 1893; and one on Dec. 6th, 1902. In December, 1866, however, when Phalaropes were abundant along the south coast of Cornwall, a flock of about seventy appeared on the north end of Tresco. In November, 1905, a party of five came in near Old Town, St. Mary's. The Red-necked Phalarope is still more seldom met with. The first example obtained at Scilly was

shot on the Abbey Pool by F. R. Rodd in or about 1860; a second was killed in 1863, and a third by Jenkinson on Bryher in October, 1866.

From the sportsman's point of view the Woodcock is naturally one of the most important birds of the islands. It begins to arrive some years in the second week of October, but the first great flight usually comes in about the close of the month. By the middle of January in most years it has become somewhat scarce, though during the severe winter of 1880-81 a considerable number appeared in the last days of that month, and nearly fifty couples were killed at a time when under ordinary circumstances the shooting would have come to an end. The latest date on which a stray specimen has been seen is March 1st. The biggest bag for the season since 1856, when the Abbey game-book begins its records, was four hundred and fifteen birds in 1878-79. Indeed, on Nov. 5th that winter no less than forty were killed on St. Martin's. The largest previous record for the season was two hundred and twenty-three in 1860. In one or two seasons the number has been under fifty. Gilbert White's story of his friend killing twenty-six couples in one day within the walls of the Garrison, St. Mary's, is by no means improbable, as the Garrison Hill, with its covering of old furze, is still a sure find for them. The Woodcocks at Scilly are mostly of the small dark race. They are generally in good condition, but not very heavy. Two examples of the Great Snipe have been obtained, and both are still preserved. The first was shot by David Smith on Great Ganilly in January, 1877, and the second between that date and 1879, but the record has been lost. The Common Snipe is not known to have bred on the islands, though on several occasions—as in 1856, 1865, and in 1901—family parties have been seen on St. Mary's in August. The wisps arrive almost invariably during easterly winds; in fact, any point to the east will bring Snipe in late autumn and winter, and, as a rule, the stormier the weather the more numerous will the arrivals be. As the prevailing winds are westerly, the birds are often scarce for weeks at a stretch, and the number naturally varies greatly from season to season. It is astonishing sometimes how a slant of wind from the east will in a few hours bring a bountiful supply of Snipe to favoured spots that may have been deserted for a

month or more. With favourable wind and weather far more birds may be obtained in a single day than in an entire winter when the winds are contrary. One day in January, 1879, for instance, a record bag of ninety-three Full- and fourteen Jack-Snipe was obtained on St. Mary's, where two small bits of marshy ground form the most favoured resting-place in Scilly; whereas in 1868-69 only fourteen Full-Snipe are recorded for the year. It is true there was a considerable difference in the amount of shooting done during the two seasons, but the small return of Snipe in 1868-69 seems to be due to the steady persistence of westerly winds throughout the winter. In 1858—a really fine Snipe year on the islands—three hundred and sixty-four Full- and Jack-Snipe are recorded, and of these Jenkinson obtained ninety-three to his own gun in two days. In 1857—another exceptional Snipe year—the season's total bag for Snipe amounted to two hundred and ninety-nine, and of these Jenkinson and Pechell killed forty-nine in one day on St. Mary's as the birds came in, and at another time a hundred and one in two days, thus accounting for one-half of the season's birds in three days' shooting. On the former of these occasions the wind was coming in from the east throughout the day; on the latter the wind had had a bit of east in it for several days. Jack-Snipe, as a rule, are fairly common during the winter, but are by no means so plentiful as Full-Snipe. The biggest day's bag was fourteen in the winter of 1870-71. As a rule, where Jacks are common, Full-Snipe are scarce.

That rare American vagrant, the Pectoral Sandpiper, was first obtained on Annett, May 27th, 1905, by D. Mitchell, who saw another the following day (Yarrell's 'History of British Birds,' 4th edit. vol. iii. p. 369). In September, 1870, no less than five were secured—one by Jenkinson on Tresco, and one by F. Jenkinson, and three by Pechell on St. Mary's. In October, 1880, one was shot by David Smith; another was killed in September, 1883, and the last recorded specimen by Dorrien-Smith in September, 1891. Bonaparte's Sandpiper has been twice obtained—by Pechell on Oct. 11th, 1854, and by F. R. Rodd on the Higher Moors, St. Mary's, on Oct. 10th, 1870. The Dunlin is common during winter in flocks with other small shore birds. It has been noticed several times in May, but does

not breed. Two examples of the Little Stint were killed on Sept. 19th, 1857. They were at first identified as Temminck's Stint, and this has caused some confusion in the record. Temminck's Stint was evidently obtained several times by Pechell previous to 1863. F. R. Rodd, in the notes drawn up by him that year, not only says that it had been secured by Pechell, but comments on its remarkable tameness, and on its being generally seen by the side of the fresh-water ponds. The first specimen, however, that can be traced was shot in October, 1864. Several have been shot since by Pechell and Jenkinson in the autumn, and for the most part at Newford Pool, St. Mary's. The Curlew-Sandpiper is not infrequently seen in the early autumn, with Dunlins and other shore birds, more especially on Samson and Bryher. Several females with red breasts were shot by Pechell in 1865. The Purple Sandpiper can generally be seen during the winter, either singly or in small parties, about Shipman Head, Menavawr, and Round Island. It usually disappears from the islands about the beginning of April, and sometimes earlier, but a casual flock visited Annett in May, 1877. F. R. Rodd, in the 1863 notes, regards the Knot as a very rare bird at Scilly. At that time he had never seen it on the islands, and Pechell and he knew of only one occasion on which it had been killed, namely, in September, 1857. It is now probably a regular visitor in small flocks in August and September, but has not been recorded in the spring. The Sanderling appears in the autumn in large flocks, and exceptionally, as in November, 1902, several hundred birds may be on the islands at one time. On its first arrival it is remarkably tame. Occasional flocks come in during the winter, and birds are not infrequently seen in May. These May birds are generally immature, but on the 20th of that month, 1903, several specimens were seen in summer plumage. Three examples of the Ruff in immature plumage have been obtained at Scilly—one by Jenkinson in the autumn of 1864, one by Dorrien-Smith on Sept. 2nd, 1878, on the Abbey Pool, Tresco, and one by Jenkinson in March, 1885. A solitary example of the Buff-breasted Sandpiper was shot by Pechell beside the fresh-water pool on the west of Bryher on Sept. 16th, 1870. In 1863 Pechell and F. R. Rodd knew of only a single instance of the occurrence

of the Common Sandpiper on the islands, namely, in 1857. It is still apparently by no means common, but may sometimes be mistaken for the Sanderling. Single specimens and small flocks come in at least occasionally in August and early September. The Wood-Sandpiper is a rare autumn casual in immature plumage, and has occurred both on St. Mary's and Tresco. An adult male was shot on August 29th, 1878. The Green Sandpiper was first obtained by Pechell in 1857. It is an occasional visitor on migration in early autumn, but, like most of the early autumn birds of passage, does not figure much in the Tresco game-book. A single example of the Solitary Sandpiper was shot on the Lower Moors, St. Mary's, by Joe White on Sept. 19th, 1882. The Redshank may frequently be seen from early autumn to mid-winter, in small parties up to a dozen or fifteen, on the ponds at Tresco. It has been killed during Christmas week on St. Mary's. The Spotted Redshank was seen by Jenkinson on Tresco on Oct. 12th, 1865, and one was killed by him on Bryher on Aug. 26th, 1870. The Greenshank may be seen every autumn in parties of three up to a dozen or more flitting restlessly over the surface of the Abbey Pools, or grouped on a granite block by the water. On their first arrival they are very tame. The only example of the Red-breasted Snipe seen at Scilly was killed beside the fresh-water pool on the Higher Moors, St. Mary's, by Pechell, on Oct. 3rd, 1857. It was in immature plumage, and arrived at a time when there was practically no immigration in process, and, so far as known, no other *Charadriidæ* arrived that year during the first week in October. The Bar-tailed Godwit is a regular autumn and winter visitor, occasionally in flocks, and has been several times recorded in May, and at least twice in June, but never in full summer plumage. The Black-tailed Godwit is a much rarer bird. One was shot by Pechell in 1849; one by Jenkinson in September, 1864; one in summer plumage by Joe Smith on St. Mary's in April, 1871; one, also in summer attire, on the Long Pool, Tresco, by David Smith in 1873; and one was repeatedly seen on St. Mary's between April 8th and 12th, 1903. The Curlew is in evidence at Scilly all the year round. In the winter it appears in large flocks on the beaches, on the rocks by the shore, and also on farm-land, where it seems to be continually turning over sheep's droppings in search of

beetles. In the summer it is by no means uncommon, especially about Tean, but it does not breed. The Whimbrel in the forties was fairly plentiful in the early autumn, and a separate column used to be reserved for it in the Tresco game-book, but it gradually became very scarce. In 1843, for instance, fourteen were shot, whereas from 1856 to 1867 only four birds in all were killed. Their number in the autumn is still small, though two or three may frequently be seen, but in May, 1903, there must have been several hundred on St. Mary's, and towards the latter part of April, 1904, several were seen on the beach at Tresco. It is probably, therefore, a regular spring bird of passage. The May birds were astonishingly tame, and permitted a close inspection. The Esquimaux Curlew is a very rare accidental vagrant. The only Scillonian specimen was killed by Dorrien-Smith on Tresco on Sept. 10th, 1887.

Terns seem to have been much more abundant fifty years ago than they are now. Even in 1854 Jenkinson writes: "Terns have all diminished in numbers during the last four years." The Black Tern is seen every now and then on the pools of Tresco in immature plumage in the autumn, and sometimes in August. An adult was obtained in April, 1877; on April 10th, 1903, a party of seven was watched hawking insects at Porthellick, St. Mary's, and on April 26th, 1905, four were seen over the Long Pool at Tresco. Until the last few years this bird had very rarely been recorded as a spring bird of passage on the Cornish mainland, but since 1900 it has been observed there every year in the month of April. A White-winged Black Tern in full plumage was shot by David Smith on the Long Pool, Tresco, on May 14th, 1882, and, like most other rarities obtained on the islands during the last twenty-five years, is in the Abbey collection. A fine example of the Whiskered Tern in immature plumage was shot on Tresco by Pechell on Aug. 2nd, 1851. A Gull-billed Tern was killed on Tresco by Jenkinson in May, 1852. In 1841 there were more than a hundred pairs of Sandwich Terns breeding among these islands. "On the south of the north portion of Annett," writes Dorrien-Smith, "is a large patch of bracken, on the north side of which, in days gone by, as many as forty nests could be found." For more than twenty years now that favoured spot has been deserted, and, though

single nests have been found at odd times, it is feared that this bird is no longer a regular breeder at Scilly. In the spring of 1903 two pairs began to build on Guthers, but five weeks after the nests were begun they were found empty. In that year, however, at least one brood was successfully hatched in a less frequented spot. The Roseate Tern was nesting in considerable numbers when D. W. Mitchell visited the islands in May, 1840. After that date it seems gradually to have forsaken Scilly, and in 1854 Jenkinson says that only one or two pairs were nesting there. In September, 1867, Rodd saw a few in their former breeding haunts, but this is their last recorded appearance on the islands. The Common Tern is not nearly so abundant as formerly, though it is still well represented at the breeding season. It occasionally builds on such low-lying rocks that the nests are floated off by a spring tide. The Arctic Tern some twenty or twenty-five years ago greatly outnumbered the Common Tern, but, though still breeding every year, it is now sadly in the minority. The Little Tern seems to be a casual visitor. One in immature plumage was shot on Guthers, Sept. 14th, 1857. Seven were seen by F. R. Rodd between Tresco and Samson in October, 1863, and three of these were shot. One spent several weeks about the Long Pool, Tresco, in July, 1877, and one was seen on Bryher in April, 1904. In 1883, David Smith saw a strange Tern hawking flies over the ponds of Tresco. As he was barely convalescent after a severe illness, he asked a friend to shoot it, but the latter missed the bird, which flew off, and was never seen again. On being shown the plates in Gould, Smith promptly identified it as the Sooty Tern.

All the Gulls that occur round the Cornish coast have been obtained at Scilly, with the exception of two accidental stragglers from North America—to wit, Bonaparte's Gull and the Ivory Gull. An example of Sabine's Gull was shot by Joe Smith in the autumn of 1893. The Little Gull has apparently been overlooked. It was thought to have been seen on St. Mary's in October, 1905, but it was not till Christmas week (1905) that a specimen was obtained. The Black-headed Gull is usually common in winter, and occasionally appears in flocks in the late spring. On May 25th, 1903, there was a group of fourteen birds on the Abbey Green, none, however, in summer plumage. E. H.

Rodd, in the 'Birds of Cornwall' (p. 169), says it formerly bred on the islands. The naturalist already referred to, who visited Scilly in 1841, speaks of two nests of the Black-headed Gull he saw on St. Mary's; and in a copy of Montagu's 'Dictionary of Birds,' belonging to E. H. Rodd, there is a marginal note, though not in the owner's handwriting, that this bird bred in Scilly in 1845. Though it has several times been seen in the summer months, there is no record of its having nested for the last sixty years. The Common Gull appeared in great numbers in the autumn of 1863, and small winter parties seem to be not uncommon. The Herring-Gull and Lesser Black-backed Gull are most abundant all the year round, and breed in great numbers on most of the uninhabited islands. The Greater Black-backed Gull is a resident, but in limited numbers. Eleven nests were found in 1903, including eight on Menewethan, one on Great Ganilly, one on Little Ganinnick, and one on Inner Innisvouls. Several birds were frequenting the Western Islands, but no nests were noticed there. A young female of the Glaucous Gull was shot by David Smith in Pentle Bay, Tresco, in 1874, and another specimen by Dorrien-Smith at Carn Nea, Tresco, in 1885. The Iceland Gull is a somewhat rare casual, chiefly during winter. One in immature plumage was shot by Jenkinson on Bryher in May, 1852; one was shot by David Smith near Oliver's Castle, Tresco, in 1884; one was killed near the old infant school, Tresco, Feb. 25th, 1885; and one, probably an adult, was seen Dec. 1st, 1890. The Kittiwake used to breed in large numbers on Menavawr, and Jenkinson mentions their doing so in a letter written in 1852. Gradually they forsook Menavawr, and went to Gorregan, where they continued to build for many years. Jackson has seen as many as a hundred nests there closely packed together on the south side of the steep cairn just above the Smugglers' Hole. Their numbers, however, have been steadily diminishing since the seventies, and in 1900 Jackson found only three nests. Since that year no nests have been known at Scilly, and the birds have ceased to frequent Gorregan during the breeding season. They are often seen during the winter, and in small flocks throughout the summer, but at all times of the year they seem to be commoner between Land's End and the islands than on the islands themselves.

The Skuas have to some extent been overlooked. One September day in 1895 Dorrien-Smith fed a Pomatorhine Skua and four Great Shearwaters with bait within two or three feet of the boat on the Powl bank. Jenkinson saw a Richardson's Skua close over his head on Guthers in June, 1852, and one was shot at St. Mary's on Christmas Day, 1901. The Razorbill breeds in extraordinary numbers, especially on the Western Islands, and those to the north and west of Bryher. On the eastern half of Scilly Rock forty-one eggs were found on May 20th, 1903, in less than half an hour. The Common Guillemot was never so abundant as the Razorbill, but formerly nested in great profusion. Of late years its numbers have been sadly diminished. On Scilly Rock, in 1903, only a single egg was found, and that broken. On Gorregan, one of its recent strongholds, only three eggs were discovered, while on Mincarolo, where King says there were nine or ten nests in 1900, no trace of it could be found. It still breeds in small numbers on Menavawr, and may do so on Hanguague, but it is nowhere prominent. A Little Auk was found dead on St. Agnes about mid-winter, 1900. As a species it has probably been overlooked. The Puffin breeds in thousands on Annett alongside the Manx Shearwater. A considerable portion of the island is so riddled with the burrows of these two birds that in walking across one sinks to the knee every two or three steps through the caving in of the roofs. On Scilly and on Menavawr the Puffin lays its egg on the bare rock. It also breeds on Rosevear, Meledgan, Mincarolo, Castle Bryher, Round Island, Innisvouls, Menewethan, and Great Ganinnick.

The Great Northern Diver may be seen in immature plumage, both singly and in small flocks, during the autumn and winter, and occasionally in the late spring. During the winter of 1901-2 it was quite common in flocks of six to ten. On May 20th, 1903, a solitary bird was seen at the south end of St. Helen's Pool. The Red-throated Diver is said, in Rodd's 'Birds of Cornwall' (p. 303), to occur at Scilly in autumn and winter, but the only specimen that can be traced is the one shot by David Smith in the spring of 1894. It may, however, have been overlooked. The Black-throated Diver has not yet been obtained, though it was probably seen by C. J. King in January, 1904. The Slavonian Grebe is an autumn and winter casual chiefly on Tresco, and by no means

rare. It was last recorded in November, 1902. The Eared Grebe is mentioned as having occurred at Scilly in November, 1867. A second example was shot by Joe White beside the Plump Rock, Tresco, on Feb. 14th, 1895. The Little Grebe is not infrequently found at Tresco during the autumn and winter, and has been seen on the Long Pool for several weeks in succession. It has never been known to breed.

The Stormy Petrel still breeds, though in greatly diminished numbers, in chinks and under boulders on the Western Islands. Previous to 1863 it appears to have been fairly common, but only a few pairs seem to nest there now. Its favourite locality is unfortunately only too well known, and one or two eggs are taken almost every year. For the last three years it has bred on Annett. A specimen of Leach's Petrel in poor condition was picked up on St. Agnes late in the autumn of 1869, but the species has not been noticed since.

The Great Shearwater is a fairly regular visitor in flocks during autumn and winter to the seas around the islands, and is occasionally recorded from the Seven Stones. It has probably never been seen among the islands. The Manx Shearwater breeds in prodigious numbers on Annett, and it is not at all uncommon to find this bird and the Puffin sitting side by side in the same burrow. There is also a small nesting colony near Piper's Hole, Tresco, and C. J. King has found dead birds on the south of St. Agnes. During the breeding season the sea in the evening for half a mile out from Annett towards Samson is thick with them, and they are so tame that they will scarcely move out of the way of the advancing launch. In August they go out to sea, but for weeks before that a continuous stream of small parties of six or eight may be seen almost every evening coming up Smith Sound, and collecting into two or three immense flocks on the water to the north of Annett, where they remain till nightfall.

NOTES AND QUERIES.

MAMMALIA.

Strange Disappearance of a Weasel.—The following little incident illustrates so forcibly the astonishing power of hiding possessed by wild animals, that it seems worth recording. On July 7th, when carrying hay here, one of the men saw a Weasel run into a haycock. As it is an unwritten law on this farm that anyone who sees a chance of capturing any small beast acceptable to my menagerie at once gives chase, he and I and another man promptly rushed to the spot. The first haycock was drawn blank, but the Weasel was duly bolted from the second, and I made a dab at it, with my handkerchief held in my hands, with a view not only to in some measure take off the “fiery edge” of its bites, but also to assist in holding the slippery little creature. It was too quick for me; but on again bolting it from the next haycock, I put my hands and the handkerchief fairly down on it. I waited for it to make the next move, which it was to be expected would be a spring, or upward thrust, when the best opportunity would be given me to close my fingers round it. No such movement came, but, on the contrary, I realized within a very few seconds that I could no longer feel the Weasel; so carefully contracting my fingers and the handkerchief, proved to demonstration that no Weasel was there. It was exactly like a conjuring trick, where a cloth is placed over some article in full view of the audience, and on its removal it is found to have been covering nothing. The natural explanation which will probably occur to anyone who was not there is that the Weasel had sunk into the run of a Mole, or of one or other of the various small beasts usually lumped together as “Mice”; but there certainly was no such run there. The grass stubble was quite short, resembling, if not a scrubbing-brush, at least a well-worn bass-broom, and the actual soil was everywhere visible between the stems. I was on my knees, with my eyes therefore probably less than two feet from the ground; the other two men were as close by as they could stand, looking eagerly and intently at my hands; and a fourth man had by this time come up and was within some five yards, and yet not one of the four was aware that the Weasel had slipped. A Weasel, probably but by no means certainly the same individual, was presently seen

to run under a haycock about twenty yards away, but there we finally lost it.—ALFRED H. COCKS (Poynetts, Skirmett, near Henley-on-Thames).

Notes on Bats.—A Whiskered Bat flew into one of the rooms here just before 8.30 p.m. on August 3rd—a bright fine night after a showery day, the moon being nearly full. It was very fierce when handled, holding its mouth wide open in a threatening way, and it bit savagely when I took it up once, but with little strength. By candle-light it was impossible to see its eyes, as the fur was in some way brought over or round them to shelter them; but in daylight next day the small black eyes, like small bright beads stuck on the outside of the face, were very remarkable. It seemed glad of drops of water. When handled, it uttered a shrill squeak, rapidly repeated, like a quick chatter or rattle; but it was a very *small* sound, with very little volume. I let it go the next day. On the 11th another (it was not the same individual) flew into another room on the same side of the house about 8 p.m. These are the third and fourth Whiskered Bats which have flown in at our windows, three of them into the same room. The first two both occurred in the latter half of July, and rather late at night, with a bright lamp burning in the room (*cf.* 'Zoologist,' 1904, 311); but in the two latter cases there was no light in the rooms and it was getting dusk. It would appear from these occurrences that the Whiskered Bat is far from uncommon here. Almost any evening Bats of some kind can be seen flying about the trees and shrubs just outside the window. Two days after the second Whiskered Bat came in, a Pipistrelle flew into the first-named room. I found it was a much harder biter than the former species. Its bites might sometimes be described as painful, but those of the Whiskered Bat could not. This Pipistrelle flew away instantly upon being liberated during the next forenoon; whereas I could not get a Whiskered Bat to fly away in the daytime. Refusing to leave the window sill of its own accord, and merely retreating when touched, it gladly accepted a place of refuge in the Virginia creeper, whence, after dark, I found it had departed. One night at the end of July—moonlight about 9 p.m.—two large Bats, which I think were Long-eared Bats, seemed to be catching moths (many of which could be seen against the light about the tops of the roses, shrubs, &c.) at the back of the house. One or both several times uttered a loud and remarkable cry—a single note sounding something like "squick," and reminding one curiously, though perhaps to some extent fancifully, of the short note of the Swift, but not so loud as that.—O. V. APLIN.

British Distribution of the Whiskered Bat (*Myotis mystacinus*).—The Whiskered Bat probably occurs in every county of England and Wales, but I possess no records from the following, *viz.* Cornwall, Hereford, Leicester, Rutland, Hertford, Bedford, Huntingdon, Nottingham, Montgomery, Radnor, Brecknock, Cardigan, Pembroke, Carmarthen, Glamorgan, Monmouth, Anglesea, and Flint. I should be extremely grateful to any naturalist who can fill up any of the gaps.—G. E. H. BARRETT-HAMILTON (Kilmanock, Arthurstown, Ireland).

A V E S.

Does the Blackbird Eat Snails?—I agree with Mr. Meiklejohn (*ante*, p. 312) that the statement that the Blackbird eats snails has probably been made on the supposition that because the Song-Thrush eats snails therefore the Blackbird must do so. And I must own that at one time I believed and stated (being carried with the tide) that the Blackbird eats snails. But I do not now believe that it does so habitually, if at all. Whenever, having heard a snail being hammered, I have been able to see the bird, it has proved to be a Thrush, and I do not remember having seen a Blackbird hammer a snail. In my garden, as far as I can see, Blackbirds live on fruit from the time the first currants and raspberries ripen, and go on steadily with the plums, pears, &c. The Thrushes take, comparatively speaking, little fruit, and I think only bush fruit and cherries. Later in the summer a few remain in the garden and hammer the snails—probably those with very late young—but most of them go off to the turnip and bean fields. At the end of August hardly a straggler is to be seen here. But the Blackbirds are here in numbers all August, and plenty stay later if it is a good fruit year, and do an enormous amount of damage to the more valuable kinds of fruit. We must no longer mix up “Blackbirds and Thrushes,” either in respect of the good or the harm they do. Their characters, from the gardener’s point of view, are like their colours—that of one is merely spotted, but the other is very black.—O. V. APLIN.

MR. MEIKLEJOHN (*ante*, p. 312) asks the above question, and appears to doubt the authority of certain authors, whom he quotes, *viz.* Yarrell, Howard Saunders, and others, who have stated that Blackbirds do eat snails. We must of course admit that these authorities can scarcely have made this statement without having had instances brought to their notice to justify it, but I must say that after a great many years of constant opportunities of observing the habits of both Thrushes and

Blackbirds, I have never seen a Blackbird eat a snail. This negative evidence is, I admit, only of value according to what my opportunities may have been; on this point I may say that my room, in the window of which I read and write, and have done so continuously almost for the last thirty-five years, looks out upon a lawn, flower garden, and shrubbery, where both Thrushes and Blackbirds abound. On the gravel-walk every season has revealed the Thrushes' sacrificial stones, on which I have frequently seen and heard the usual process of preparing the snail for food by the Thrush, but never by the Blackbird. I will mention, in conclusion, one short episode, enacted before me some little time ago, and in which both birds were concerned. A Thrush had duly prepared its snail, when a Blackbird flew from the adjoining bushes, bowled over the Thrush, and hopped away with the snail in its bill; the Thrush meanwhile looking on quietly at a few feet distance. After pecking about the snail for a few minutes, the Blackbird dropped it and disappeared, on which the Thrush simply hopped up, resumed, and devoured its snail. This is still only negative evidence, but certainly it seems to me that it is of a higher order than any as yet given.—O. PICKARD-CAMBRIDGE (Bloxworth Rectory).

Distribution of the Corn-Bunting in Wales.—From the experience gained in the last thirty years during many summer trips to various parts of Wales, I think there is little doubt that the distribution of the Corn-Bunting (*Emberiza miliaria*) as a summer resident in the Principality is very peculiar. It seems to be confined, at that season, almost entirely to the belt of country adjoining the sea, where I have found it common nearly everywhere, provided the land is cultivated, but have been unable to identify it at a greater distance than a mile and a half from the sea except in one locality, when I found, in July, 1887, two birds singing on Handley's Farm, near Brecon. This Bunting is an easy bird to identify, indulging as it does in a great deal of "bird music" of an unmistakable kind, but I have been unable to make it out again inland. It occurs abundantly in the nesting season in the following localities:—About the corn-lands to the west of Langland Bay (Glamorgan); in the seaside fields about Towyn; along the coast between Barmouth and Harlech; also round Criccieth and Pwllheli (Carnarvon). It is fairly common in summer about Aberystwyth and Clarach Valley; in Anglesea between Menai Bridge and Beaumaris, and round Llandudno. Why it should prefer this strip of country and neglect the fine stretches of inland cornfields, it is difficult to say. Some other species, such as the Nightjar, Red-backed Shrike, and Stonechat, are also commoner near the west coast than inland.—E. A. SWAINSON (Woodside, Brecon).

Snowy Owl (*Nyctea scandiaca*) in Ireland.—A male bird in second year's plumage was shot at Belmullett, Co. Mayo, on July 21st. This is a very unusual time for this species to visit Ireland. Several specimens have been shot during the last ten years in Co. Mayo, but usually in the months of October and December. This specimen was in fat condition, but had nothing in stomach.—W. J. WILLIAMS (2, Dame Street, Dublin).

Eggs of Razorbill (*Alca torda*).—I believe it is generally understood among ornithologists and oologists that by holding a Razorbill's egg up to the light the *membrane* inside the shell appears of a greenish colour. I have often heard this stated by oologists, and have seen the same statement in various books relating to birds and their eggs—for instance, in Mr. Howard Saunders' 'Manual'; but on investigating the matter the other day, I find the membrane or skin inside clearly-blown Razorbills' eggs is as white as that of Guillemots' or domestic hens' eggs and most other kind of birds' eggs. I quite agree that by looking through the shell of a Razorbill's egg held up to the light (whether a white or brown specimen) one can distinctly see it has a greenish colour, but I have come to the conclusion that the green colour is in the composition of the shell itself, and *not* in the membrane. I think genuine eggs of the Razorbill always show green when looking through the blow-hole towards the light, and those said to have a white or creamish-white colour are not Razorbills' but Guillemots' eggs. Sometimes certain varieties of Guillemots' and Razorbills' eggs resemble each other to a remarkable extent, so much so that it is difficult to determine to which species they belong by a superficial or cursory examination.—E. G. POTTER (Bootham Crescent, York).

Notes on the Little Grebe (*Podiceps fluviatilis*).—Some of Mr. Dalgliesh's statements respecting this Grebe (*ante*, pp. 282–284) are so opposed to one's ideas of the bird's habits as to suggest that his experience has been altogether exceptional; whilst his opinion that it is incapable of walking or resting on its feet is not warranted. The eggs are generally said to vary in number from four to six (*vide* Yarrell, Saunders, and Sharpe). My own experience is that five or six are more usual than four; but surely three eggs seldom constitute a full clutch, as stated by Mr. Dalgliesh. It must be borne in mind that with the Dabchick, as with the Great Crested Grebe, a considerable interval elapses between the deposition of each egg, and that the birds begin to sit before the full complement is laid. The eggs, in consequence, are incubated in varying degrees,

and it does not follow that the full clutch has been laid because some or all of three or four eggs are found to be slightly incubated. In October, 1902, my friend Mr. F. S. Graves showed me a Dabchick which he had captured on the previous day. The bird's gait was perhaps not sufficiently dignified to be described as a walk, but it travelled over the floor of the room with a quick pattering run, treading only on the fore-part of its toes. I have never seen a Dabchick mount its nest, but the Great Crested Grebe when doing so usually walks about on the floating mass whilst it removes the weeds with which it had covered the eggs on leaving, and it seems not improbable that the Dabchick when similarly engaged will walk sedately. When stationary, Mr. Graves's bird stood erect, with the body inclined only slightly forward, and the tail—if one may speak of a Grebe's tail—perhaps a couple of inches from the ground; the tarsi were clear of the ground, and formed, with the toes, an angle of rather more than 90° . Altogether the upright pose of the bird was very striking. A Dabchick which I had in captivity for a few days in January, 1905, ran and stood in a precisely similar way. Figures in many ornithological works, and stuffed birds in most museums, represent Grebes with the feet and tarsi resting on the ground; but in Dresser's 'Birds of Europe' the Red-necked, Black-necked, and Slavonian Grebes are figured in the erect attitude which appears to be the normal standing posture of the Dabchick. When resting on land, the Dabchick lies prone, the head drawn back between the shoulders, and the feet spread on either side of the body at angles of about 30° with it. My captive bird, when asleep, had the scapulars raised so as to conceal the neck, the head being pushed under those on the left side. It then looked like a ball of brown feathers. The flexibly-jointed feet are then laid close alongside the wings, and clear of the ground, the tarsus being reflexed against the tibia.* The Dabchick is not uncommon on the Cheshire meres, and when these are frozen the birds are driven to the brooks, where they can still feed. Under such circumstances their actions may be studied at close quarters, and I have often watched them in a broad trench which drains one of the meres in this neighbourhood. I have never seen the wings used under water in the way Mr. Dalgliesh describes; on the contrary, they are, so far as my experience goes, always held close to the bird's sides. Mr. T. A. Coward, who has often watched Dabchicks both with and independently of me, tells me that he has never seen the wings used under water. When a Dabchick is swimming on the surface, the tarsi project on

* Cf. R. Newstead in 'Research' for Jan. 1st, 1889.

either side at an angle of about 45° with the body; but when the bird is under water, the angle, when the legs are at the forward part of each stroke, is about 90° , while at the end of each stroke the tarsi and feet are extended far behind the tail. The appearance of the bird as it traverses the bottom of the trench in an erratic course—now thrusting its head into the vegetable refuse which has collected in the hollows, now disappearing bodily beneath it, with its flattened body, closely folded wings, and apparently disproportioned feet—suggests some huge frog rather than a bird. My observations in the open on the position of the wings and feet under water are borne out by those made upon my captive bird in a bath. It may be of interest to state that this bird, in coming to the surface, often protruded only its head and neck, its body remaining submerged until it dived again. The Dabchick seems loth to take wing, but now and then one may be seen flying low along the surface of the water. In alighting, this species, like the Great Crested Grebe, apparently never thrusts its feet forward to check its course as Ducks and Swans do, but strikes the water with its breast and belly, and glides along the surface for some distance with feet projecting behind its body and above the water. There are several recorded cases of Dabchicks having been choked in attempting to swallow a Miller's Thumb (*Cottus gobio*). On February 21st, 1902, when Mr. Coward and I were walking on the bank of the trench I have already spoken of, on the look-out for Dabchicks, we saw a dead bird floating on its back. It had only been dead for a few hours at most, for its eyes were not sunken, and there were living parasites on its feathers. A Miller's Thumb was firmly wedged, belly upwards, in its mouth. It seems hardly likely that the bird had met its death owing to its inability to swallow a fish seventy-two millimetres in length, for, on dissecting it, we found that the gullet was capable of enormous distention. What was probably the true explanation of the tragedy was apparent on cutting away the bird's lower mandible, for we then saw that the recurved spines on the gill-covers of the fish were firmly fixed in the bird's flesh just below the angle of the gape on either side. This made it impossible for the bird to disgorge, and no doubt greatly increased the difficulty of swallowing its prey. The stomach of this bird contained a few small pebbles, one full-grown and unbroken *Bythinia tentaculata*, several fragments of that mollusc, and fragments of insects, apparently larvæ of beetles or dragonflies.—CHAS. OLDHAM (Knutsford).

Birdsnesting in August.—In some previous issues of the 'Zoolo-gist' (1896-7-8) I have given records of nests found in Cambridgeshire

at the beginning of August. This year I was staying over the August Bank-holiday in the same village, and the following was the result of a few hours' birdsnesting quite alone:—One Swallow, two eggs; House-Martin, many with young; one Wren, young nearly fledged; one Spotted Flycatcher, young fully fledged; five Linnets, with three to six eggs in each; one Linnet, with young; two Turtle-Doves, each with two eggs; five Tree-Sparrows, with four to six eggs each; one Tree-Sparrow, hatching; five Tree-Sparrows, fully fledged young; two Corn-Buntings, each three eggs; one Greenfinch, five eggs; two Hedge-Sparrows, each three eggs; two Yellowhammers, three and four eggs; one Common Whitethroat, three eggs. I also had the pleasure of listening to a Quail for a considerable time on the evening of August 5th. Its incessant call of "Wet, my feet" was very difficult to localize, and although I tried to get close to it, I could not be sure whether it was calling from amongst the standing corn or from the adjoining field of clover.—ROBERT H. READ (Bedford Park, W.).

Curious Experience with a Savage Cock.—At a farm at Leiston, Suffolk, a cock had been reared as a pet, and as sometimes happens with other animals so treated, he not only became very tame and fearless, but also savage and aggressive. He attacked a little boy of about seven, and struck his spur into the child's legs, breaking it off, and leaving it sticking in the flesh. The boy himself pulled it out and brought it to his father.—G. T. ROPE (Blaxhall, Suffolk).

[This occurrence is not altogether unusual. As a young man I kept some very fine white pile, duckwing, game fowls of the Chichester strain. The cock bird was extremely pugnacious, and if I attempted to take eggs from the nests when he was at roost, would fly from his perch to attack me. On one occasion I saw my mother beating a hasty retreat from the fowl-run, with the chanticleer hanging on to her gown with his bill, and actively applying his spurs to her dress.—ED.]

Corrigenda.—P. 314, line 3, for *clizip* read *chzip*. P. 314, line 6, for *then* read *there*. P. 315, line 34, for *often* read *softer*.—O. V. APLIN.

PISCES.

Rare Fish at Yarmouth.—On July 10th I received from a local fish merchant named Beazor a magnificent fish, some two feet in length, and seven pounds in weight, which, after a careful survey, I pronounced to be a Plain Bonito (*Auris rochei*), which it somewhat resembled. It had been taken in a drift-net a few hours previous to coming into my hands by the Yarmouth drifter 'Martha.' Mr. T.

Southwell, who saw it in Roberts, the stuffer's hands, was not satisfied with my finding, the lengthened first dorsal fin attracting his attention; and a photograph taken of the fish immediately it came into my hands still further convinced him it was not *Auaxis*. The Bonito was finally sent to Mr. Boulenger, of the British Museum, who wrote Mr. Southwell to the effect that "The fish . . . is a most interesting addition to the British fauna—*Scomber thunnina*, Cuv. (or *Euthynnus alleteratus*, Raf.). It is a pelagic fish of almost world-wide distribution, which has been taken several times on the coast of Scandinavia, but never on our coast so far as I am aware without making a search in the bibliography." Every credit is due to Mr. Southwell for the pains he has taken with this wanderer, and but for whose keen perception its identity might for long have been undetected.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

Loch Broom Sea Monster.—On seeing an account in the daily papers of a strange monster observed outside Loch Broom by the excise officers, I wrote off to one of them whom I happen to know for the particulars of the adventure, and, as will be seen by his letter given below, I was rather fortunate, as my friend, who is a keen naturalist, taking a special interest in the birds and beasts of his district, was in the boat at the time they came on this strange creature, which was at first thought to be a Basking Shark; but on looking up the description of the Basking Shark, it would seem from the account that the Loch Broom monster was much longer than the usual length attained by this species. I would be glad to hear of further notes on this creature, as it seems to have appeared further south. The following is Mr. Henderson's letter.—W. H. WORKMAN (Lismore, Belfast).

In reply to yours of the 15th inst., I am in a position to state that I saw the fish or monster in question. On August 24th, while cruising between the Priest Island and Glostloch Beg, the fish rose to the surface of the water about eight hundred yards from us. It was then going at right angles to us, but on my shooting at it, it came towards our boat, and only went under when fired at within eighty yards off our boat. I believe it was hit at least twice by Mr. Coffey and myself. I am giving you a roughly drawn sketch of it by myself. It, however, gives but a very poor idea as to the length of the fish as seen. It would measure anything between fifty and sixty feet. Its dorsal fin would be five feet high and four feet wide at base. Its caudal fin was a good deal smaller, bending backward, and more pointed. Its colour was black. Its head never appeared above the surface; and it

remained on the surface continuously all the time—about ten or fifteen minutes. At least twelve shots were fired at the monster. I would have concluded that the fish was a Basking Shark but for its colour and great length. I shall be pleased to have your opinion as to what species you may think it represents. Since we saw the fish I understand it has been seen off the Mallig coast. I shall be only too pleased to give any further information *re* fish required. I am in a small way interesting myself in natural history.—JOS. T. HENDERSON (Ivy Cottage, Ullapool).



[An eminent authority to whom I showed this drawing was of the opinion that a *Balanoptera* was depicted, despite the shape of the caudal fin, which he considered may have been bent or curved on the occasion observed, as is sometimes the case. With this cetacean pronouncement I entirely agreed, but I then submitted the drawing to our contributor, Mr. Southwell, who has so long studied the marine creatures which frequent our shores. He is of a different opinion, and his interesting letter is here printed.—ED.]

I return Mr. Workman's sketch and enclosures. The sketch would, at first sight, seem to indicate that the beast seen was a Killer (*Orca gladiator*), in the rounded black back, high falcate dorsal fin, and the relative position of this with the caudal fin. It would not agree so well with any other cetacean. But you will notice (if the drawing is correct) that the latter fin is in a vertical position; this precludes its being a cetacean, as in all cases that appendage in the cetaceans is attached *horizontally*. Were it a Whale of any description, in a stay of fifteen minutes at the surface it would certainly have exposed the crown of the head, and might have been expected to "blow," and the Killer does not attain more than half the length assigned to

Mr. Workman's monster. I am strongly inclined to the opinion that the creature seen was a Basking Shark (*Selache maxima*), with which, making a slight allowance for imperfect rendering of the fins in the drawing, they would fairly agree. Day says this animal attains the length of forty feet (we know how deceptive the dimensions of creatures in the water appear, and your correspondent, not seeing the whole of the animal, might easily have over-estimated its length), and that the dorsal fin in a twenty-eight foot specimen was four feet high. The fact of its lying motionless at the surface for so long a time, and the dark colour of the back (especially where wet), also accord with the habits and appearance of this Shark. I think, therefore, that its description as a "fish" is correct, and that it is most probable it was a Basking Shark as suggested.—T. SOUTHWELL (Norwich).

INSECTA.

Notes on the Mole Cricket (*Gryllotalpa vulgaris*).— Though generally regarded as a somewhat rare insect, the Mole Cricket is more plentiful in some parts of England than I had supposed it was. Some four years ago I was shown a pair by a well-known London dealer taken in Surrey, who was asking ten shillings each for them. This year the same dealer showed me two or three store-boxes literally crammed full of Mole Crickets, asking this time one shilling per specimen! I was told these were taken in Hampshire. It seems a pity that such a fine and curious insect as this should be thus ruthlessly exterminated. In the Island of Guernsey, Mole Crickets are very common, so much so in some parts as to become a perfect pest to the tomato growers, as they bite off the young plants at the stem close to the ground. I listened to the jarring of them one evening, and their noise closely resembled the summer song of the Nightjar. In a female specimen sent me this year (in July) from Guernsey, I found a number of eggs, yellowish in colour and rather tough in texture. Above ground I have always found them rather active in their movements, running with some swiftness, and not at all sluggish. In some of the river-banks in Bengal a Mole Cricket is common, and is often used as bait by native fishermen. I have taken them at 5000 feet in the Himalayas.—GORDON DALGLIESH (Brook, Witley, Surrey).

THE Mole Cricket is probably rather overlooked than rare; it seems to be still fairly common in the New Forest, but its nocturnal and subterranean habits protect it from discovery. It may be taken

by pouring a little water and oil down its burrow, which quickly drives the insect out. In parts of France they are often a nuisance in gardens. They are sometimes destroyed by watering the ground well and putting down straw or planks; the Crickets come up, attracted by the freshness, and may be found underneath during the following day. It is sometimes found under large stones, and prefers sandy ground. An adult insect is found in spring and summer, but specimens in all stages of growth are often found together.—MALCOLM BURR.

NOTICES OF NEW BOOKS.

Wild Life in East Anglia. By WILLIAM A. DUTT. Methuen & Co.

It is at least doubtful whether East Anglia does not hold an unique position in the annals of British natural history. Its marsh and marine faunas have long found an enthusiastic and competent body of local naturalists to study and describe them, and we cannot realize the disappearance of the one without the passing of the other. Mr. Dutt, in this volume, has written beyond the personal experience, and has gathered together an amount of information which renders his book of permanent value, though we still hold to the opinion that the time has come for the publication of a finely illustrated monograph of East Anglian zoology, and that the men are still living who can write the text. Will this always be the case? The description of an exotic fauna can generally find a sumptuous publication, but this delightful portion of our old English story should be adequately described and figured now before drainage has done its worst to the marshes, before the cockney tourist has called the region all his own, and before some aspects of its fauna have become more strikingly evanescent.

These pages contain several good character sketches, especially of those unknown humbler naturalists who can observe but not write, and whose knowledge is in an inverse ratio to their

notoriety. Such an one appears as "Old Mowl," an upland rover, whose remarks on the Viper are worth reproduction:—"What he knew for a fact, however, was that one Viper would sometimes devour another; for he had seen lying among the furrows of a heath-bordered field a full-grown Viper with the tail of a smaller one protruding from its mouth. He was inclined to believe that occasional acts of cannibalism might be in part responsible for the belief that Vipers swallowed their young when danger threatened them." Another worthy, described as "Old Ben," a marshman, possessed much Cuckoo-lore based on personal observation, and he stated that, as a rule, "one or more of the foster-parent's eggs were removed by the Cuckoo when she placed her own egg in the nest. Once, indeed, he had known one Cuckoo to remove another Cuckoo's egg from a Titlark's nest, and drop it on the 'wall' on the border of the fen."

Mr. Dutt's book will be read with pleasure by all naturalists who are interested in East Anglian zoology.

Illustrations of British Blood-sucking Flies. With Notes by
ERNEST EDWARD AUSTEN. Published by order of the
Trustees of the British Museum.

THE number of blood-sucking flies found in the British Islands, so far as present knowledge will allow a computation to be made, is about seventy-four, comprised in a dipterous fauna of some 2700 to 3000 species. Many of them have a distinct relation to human disease, particularly species belonging to the genus *Anophiles* with ague. The authorities of the British Museum had commissioned Mr. A. J. Engel Terzi to provide coloured drawings of these predaceous flies for exhibition in the North Hall of our great institution, and it was felt that these admirable figures might be reproduced in book form, accompanied by a descriptive text which Mr. Austen has ably contributed. We thus possess a non-technical monograph of a number of dipterous insects, and this will be alike welcomed by naturalists, medical men, and rearers of stock in these islands, and probably farther afield. The British distribution of these insects is given, and much should be added by other collectors and observers. The

coloured figures are produced by the three-colour process, which, apart from some excellent effect, is subject to a most fatal disadvantage, the coated paper hitherto provided and necessary for the production having been estimated as of a most perishable nature, and devoid of permanent durability. This is said to have been overcome by a new process adopted in the production of these plates, and we hope that this result may have been achieved.

British Flowering Plants. By W. F. KIRBY, F.L.S., F.E.S.
Sidney Appleton.

IN this small but amply illustrated book, Mr. Kirby has broken new ground, and left his favourite domain of entomology. But it is not botanical to the exclusion of zoological matter, as, in addition to making the recognition of many of our flowering plants a quest of little difficulty, it refers to the larvæ of Lepidoptera which may be found feeding thereon, and thus enters the zoological purview. A lepidopterist without any botanical knowledge is but poorly equipped, and Mr. Kirby's aim in publishing this book—if that was his intention—is a good one. The angler might also slip this small volume in his creel, and when the fish are not feeding might seek to know a little more about some of the wild flowers that add so greatly to the pleasure of a day by a river.

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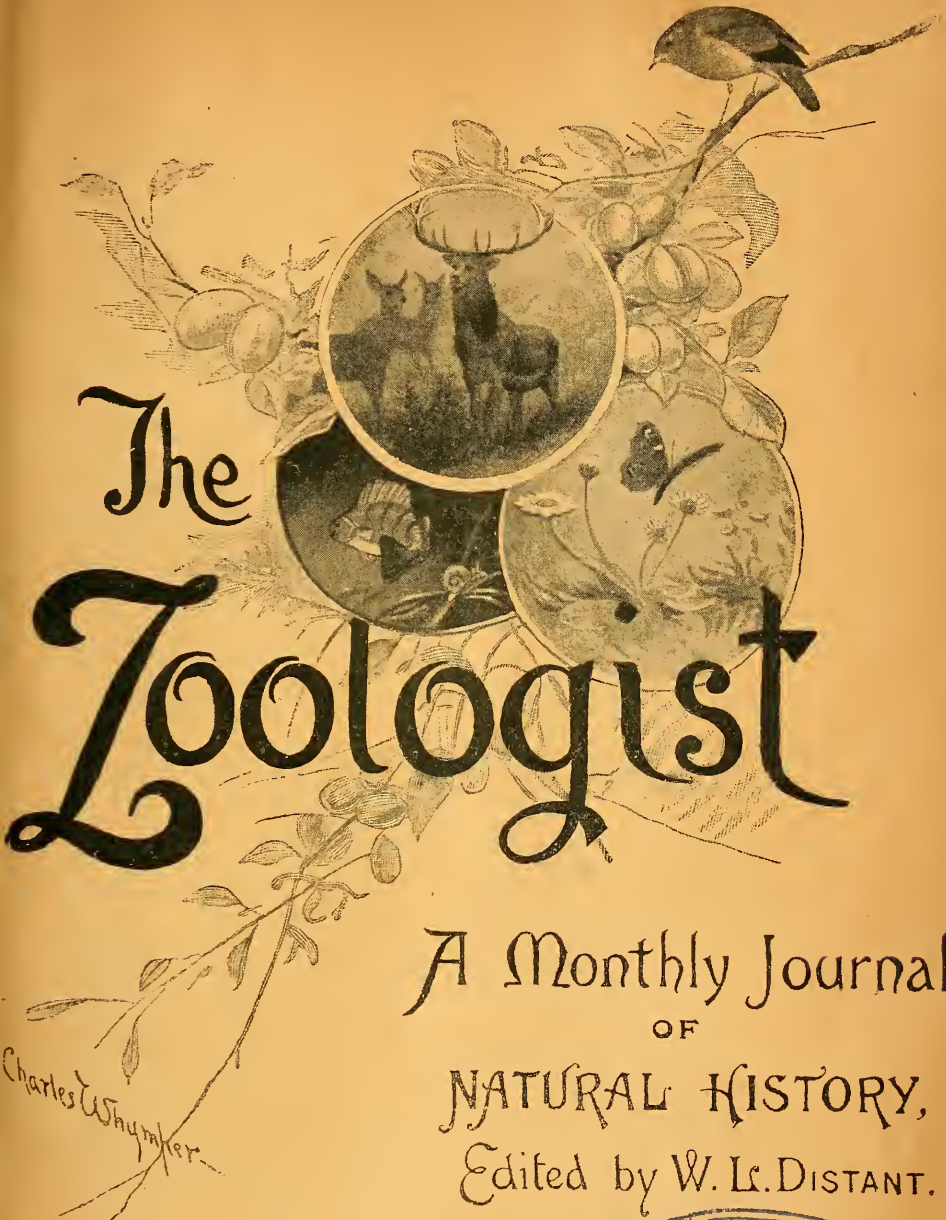
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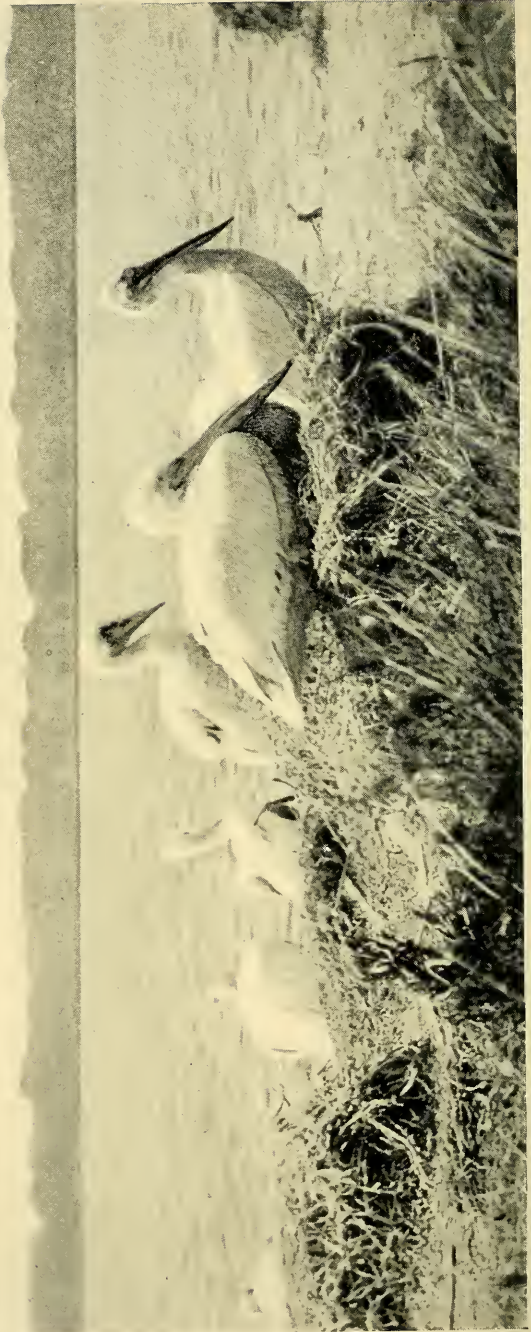
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PELECANUS CRISPUS IN ALBANIA.

THE ZOOLOGIST

No. 784.—October, 1906.

PELICANS AS OBSERVED IN EASTERN EUROPE.

BY R. B. LODGE.

(PLATE V.)

A PHOTOGRAPHIC and collecting expedition to Eastern Europe in search of Pelicans (*Pelecanus crispus* and *P. onocrotalus*) and Great White Herons (*Ardea alba*), in the spring of 1906, proved to be not the least interesting of the expeditions I have made after the rarer birds of Europe. It was successful so far as *P. crispus* and *A. alba*, but *P. onocrotalus* has evaded my search. It was memorable also for several other species met with for the first time, and last but not least, for the great kindness I experienced everywhere, not only from the ornithologists of Budapesth, Sarajevo, and Bucarest, but from many others in various parts of Montenegro, Albania, Hungary, and Roumania.

After short stays at Budapesth and Sarajevo, the train was taken to Gravosa, on the Adriatic. From there the only means of travel is by the comfortable steamers of the Austrian Lloyd or the Hungaro-Croatia lines.

My first destination was to a small town on the Adriatic coast, where, from information received, I expected to find *P. crispus*. On first arrival at this very picturesque and interesting little port, I was unable to speak or understand a single

word ; but after some somewhat weird experiences, and after I had engaged a room at the only inn, I was fortunate enough to make the acquaintance of a Montenegrin law student, who spoke French, besides nearly all the other European languages, English and Spanish being the only ones he did not understand. His assistance was simply invaluable, and by its means I was able to engage men and horses, and to explore the neighbourhood. A small lake was the first place visited, but, though I had been told they nested there a few years ago, I failed to see a single bird. Purple Herons were just beginning to build, being seen carrying sticks and building materials, and Marsh-Harriers were, as usual, very abundant. One Pigmy Cormorant was noticed, and great quantities of Coots and Ducks.

A Marsh-Harrier being seen sitting on what looked at a distance as if it might be a nest, I waded into the reeds to investigate. There was no nest as it happened, but while searching a something on the surface of the water attracted my attention. It looked like a bird, but, being quite motionless, I thought it was dead, and waded up to see. On getting near it proved to be a Little Bittern (*Ardetta minuta*), and alive. The bird was crouching on the surface of the water in a most curious and unbird-like attitude, and allowed me to come so close that I was impressed with the idea to try and catch it alive. Walking slowly through water up to my waist, I succeeded in grasping it round the neck, and astonished my boatmen by taking it back alive. Then it sat on my knee for more than an hour, making no attempt to escape, but towards evening it became more lively. It was probably trying to escape the notice of the Marsh-Harrier in the first place, and then my arrival on the scene caused it to remain as it was for the same reason.

A few days later another locality further south was visited, and here, for the first time, I saw *Pelecanus crispus* in a wild state. On nearing the mouth of a small river three huge birds flying past proved to be Pelicans, and afterwards we saw more of them fishing and resting on the sand. It was not possible to approach nearer than five hundred yards, and, though I tried one photograph at this range, the distance was too great for it to be of any practical use. We found no nests, nor could we see any sign of any nesting colony. It was, however, impossible to

ascertain whether they were breeding, further search being forbidden by three men armed with loaded rifles.

After this stoppage I was particularly glad to receive a pressing invitation from the consul of a place further down the coast to pay him a visit. I heard that Pelicans could be seen from the windows of his house. Such an opportunity was too good a one to lose, and I packed up and departed by the first steamer I could get. I found a hearty welcome on arrival, and, in fact, experienced the advantage of my host's influence and position before I reached his house, for I had to send for him in a hurry to come and rescue me and my belongings from the officials of Turkish custom-house. They had opened all my luggage, and every individual article was strewed about on the floor; my gun and cartridges were seized, and, finally, they wanted to open all my boxes of plates. This was too much to stand, and I managed by energetic protest to stay proceedings until he arrived, and carried us off in triumph to his house. The gun and cartridges, however, had to remain where they were until the governor was persuaded to return them a day or two afterwards. The ordeal of passing a Turkish custom-house is something to be dreaded. Elsewhere some insulated wire for my electric camera was confiscated. I took this away again from the official, but when the battery was found, that was pounced upon, and I had to give up the rescued wires, which were, of course, of no use without the battery. In vain I asserted I had the governor's permission, and that he had received instructions to assist me, and that I should demand from him their return. I got them back the next day, after complaining to the governor and consul. The fact is, they seize anything they do not understand, and, as most things are beyond the Turkish comprehension, the result is annoying for the unfortunate traveller. Books, for instance, are forbidden articles, and will probably be confiscated, and sent to Constantinople for examination.

I found that my host spoke excellent English, besides speaking fluently seven or eight other languages, and was a thorough good and keen sportsman, and also a naturalist; while his official position and knowledge of the people enabled him to show me more of the country than would have been possible for anyone less influential.

It turned out to be quite true that Pelicans could be seen from the windows of the consulate. There were constantly about a dozen fishing or resting on the low islands in the lagoon; but I soon began to doubt whether any were nesting there, for the great majority of the birds were immature. A fortnight's hard work, wading to all the islands, and searching the reed-beds, failed to produce any signs of a nesting colony. The fishermen, too, confirmed this idea, for they told us that no nests had been seen there for very many years.

In the meantime every effort was made to photograph a Pelican by lying in wait for them near their favourite places, and by trying to drive them within range of the camera. The automatic electric-photo trap was also tried, sometimes being left out all night, in the hope of an early morning success, when the birds might be less suspicious of danger. But all these efforts were of no avail; while it was impossible to approach them by stalking with the camera at nearer than five hundred yards, at which distance even such huge birds as Pelicans are not worth photographing even with the telephoto lens.

At this point the map of the surrounding country was consulted, as we felt confident that there must exist some nesting place at no very great distance. Eventually we determined to ride for three or four days, and search two or three likely places, taking with us in pack-saddles just bare necessaries, so that we could travel lightly, and cover as much ground as possible. The first night was spent at the house of an Albanian bey, who entertained us hospitably with a lamb roasted whole, and the many courses of a regular Turkish dinner. The next morning we started early, with two of his followers armed with Martinis as guards and guides. As guides, however, they were not an unqualified success, for towards the afternoon they appeared to have lost their way, and we found ourselves on the wrong side of a big lake. Here we took direction ourselves after a look at the map, and struck out a line across very swampy and treacherous country. Eventually we found ourselves in the right direction, after nearly getting bogged in the swamps, and experiencing some difficulty in crossing a narrow but deep river, and several broad ditches. On the way we put up two Sea-Eagles (*Haliaëtus albicilla*), and two Egyptian Vultures (*Neophron*

percnopterus) from a dead and putrid cow. A very large flock of Glossy Ibis (*Plegadis falcinellus*) was also seen, and on the reedy shores of the lake many Squacco Herons (*Ardea ralloides*), and Little Egrets (*Herodias garzetta*). The whole lake, which was of large extent, appeared to be grown over with dense reeds, except in one or two open places, which could be seen in the distance from the hills. But we could see no signs of nesting Pelicans, and the natives assured us that none nested there.

We turned our backs then on this lake, after a rest and something to eat under the shade of a big fig-tree, and rode for some hours over the hills through a thick scrubby forest, following a narrow track which wound in and out of the trees, until we arrived in the evening at a small village. At the house of the chief inhabitant, a well-to-do peasant, we found an hospitable welcome. My friend, myself, and our host were waited upon, as we sat at dinner on the floor around a low table about four inches high, by six gigantic Albanians, each with a double row of shining cartridges round his waist; their rifles hung ready for instant use on the walls, which were loopholed for musketry fire. It turned out that the master of the house had a blood feud or "vendetta" hanging over him, and had to maintain a bodyguard of ten men as a protection. Nevertheless, in the morning he rode out on his mare to accompany us a part of our way, and to engage for us two fishermen as guides to a neighbouring lagoon, where he thought the Pelicans might possibly be found. These two fishermen were wild-looking fellows, with faces like Eagles, and were clad in loose brown garments. They assured us that the Pelicans were nesting, and that they could take us to the place. As on cross-examination they really seemed to know what they were talking about, and knew, for example, the right colour of a Pelican's egg, and how many were laid, our hopes began to revive. One of them could speak Italian, like most of the fishermen and sailors on this coast, and seemed more intelligent than one might expect from his appearance. We lost no time, and were soon afloat in two rude dug-out canoes, which the men managed skilfully with single paddles. In the far distance we soon saw a mass of white objects. These, they told us, were Pelicans on their nests, and we scrutinized them eagerly through our glasses as we advanced. At first sitting, as

we were low down, level, or a little below the surface of the water, they appeared to be on the further shore of the lagoon in front of a fringe of tamarisk-bushes, which we hoped would serve us as a screen to enable us to approach them unobserved. As we drew near, however, we saw that, instead of being, as we had supposed, on the mainland, the nests were placed on two low sandy islets devoid of any vegetation more than a foot high. The men had told us that they could bring us to within thirty yards of the birds without unduly alarming them, and this was found to be correct. Getting out of my canoe into the shallow water with the camera, I made a few exposures, but my stock of plates was very limited, as one box had had its contents completely smashed and pulverized by some accidental knock in the pack-saddles during our cross-country journey. We therefore hurried back, determined to bring a tent and supplies for a few days, with a full stock of photographic necessaries. The consulate was reached the following day, and we began our preparations at once, so that early the next morning we were able to dispatch two pack-horses early, thus giving them a good start, while we ourselves followed a couple of hours later. By riding hard all day over the hills, only stopping to give our horses and ourselves a rest and a feed at midday, we reached the forest on the shores of the lagoon in time to pitch the tent before dark.

Though we were quite a strong party, including, besides ourselves, four men armed with Martinis and magazine rifles, it was considered by the natives a very rash thing to sleep in this forest. There was, as a matter of fact, some chance of an attack, as it was a notorious resort for robbers; but the night, or two nights, passed quite quietly and peaceably. We were certainly much more comfortable in our well-appointed tent than we should have been in the village; and we slept much better—my friend in a camp-bed, and myself in a sleeping-bag on a bed of leaves, covered with a mackintosh-sheet—than on doubtful sheepskin rugs. After dark the effect was very fine, as the light of the camp-fire flickered on the picturesque costumes and equipment of our attendants, bringing their forms into strong relief against the gloomy and mysterious background of the forest.

Early in the morning we were afloat again, and I was soon

landed at the back of the island, and left alone with the Pelicans. There was no particular difficulty in approaching them slowly and gradually, taking care not to cause them undue alarm at first. I advanced nearer and nearer, taking photographs at each step, until, after some time, they allowed me to come within twelve or fifteen yards. If sometimes they left their nests it was only for a short distance, and they soon returned as they became more confident that I was not dangerous. And a great satisfaction it was to be at last at such close quarters with these birds, which had evaded my pursuit for a good month, and to be able to watch the habits of such a wary and comparatively little-known species.

The nests were generally in groups of six or eight together, some of them quite small and flat on the ground—mere flat trodden rings of sticks; but in each group there were generally one or two considerably higher than the rest. These were well and completely made of sticks, and about two feet high—very similar to a Cormorant's nest. Two eggs seemed to be the full clutch; these were long and white, rough and chalky, but by this date (May 4th) the young had nearly all hatched. However, I obtained nine clutches altogether, and might have taken some more. Some of the young were still in the nests; a few only a day or two old, others as large as a goose, and many more, nearly as large as their parents, were sitting on the sand, or swimming in the shallow water of the lagoon. The younger ones progressed by crawling, helping themselves along with their wings. Those in down presented a curious appearance. Their colour was a dull dirty white, with leaden-coloured beaks and feet, and small pouches of the same colour. From the young ones proceeded a constant moaning sound, like the lowing of cows or Buffaloes.

The stomach of a young bird in down which I skinned was enormously distended, and contained a large double-handful of what appeared to be vegetable matter. It was difficult to imagine that it proceeded from a fish diet, but rather resembled the contents of the stomach of a goose after grazing in a field.

I had several opportunities of watching the young Pelicans being fed by their parents. Naumann says that *P. onocrotalus* feeds its young from the pouch. In the case of *P. crispus*, at

any rate, the young bird inserts its whole head down the parent's throat, much lower than the opening of the pouch. In fact, the point of the young bird's beak could be most distinctly seen pressing from inside at the base of the old bird's neck. In this observation I was corroborated by my friend the consul, who from an adjacent islet was watching the birds through his glass, while lying prone on the sand. His description of what he saw exactly corresponded with what I have described.

The old birds frequently yawned, stretching their necks and beaks upright, at the same time arching their lower mandibles, which are exceedingly flexible, into the shape of a hoop. It may be, perhaps, that this is an attempt to dislodge the numbers of parasites, apparently intestinal worms, which were adhering in large numbers to the inner skin of the pouch of an adult female which was shot and skinned.

The peculiar character of the skin was very noticeable. It was porous and cellular to an extraordinary degree, resembling a series of innumerable air-bubbles. Even the body had large air-cavities, and the bones were very hollow. This porosity, no doubt, helps to support their huge bodies in the air, and must serve a most useful purpose during flight. They can fly well and strongly, with the head drawn back and the beak resting on the doubled-back neck.

This colony had its parasites. Hooded Crows (*Corvus cornix*) and Gulls (*Larus cachinnans*) walked about in a most impudent and familiar manner among the Pelicans. They no doubt act as scavengers, and devour any fish dropped, and probably they also eat the eggs and any dead young birds. The fishermen described how the Eagles spent whole days devouring young Pelicans, and we found a nearly full-grown young one almost entirely eaten, while near by lay the feather of an Imperial Eagle.

The fishermen, by the way, appeared to regard the Pelicans in a very friendly way, and did not look upon them, as I had been told, as rivals in business. On the contrary, they seemed to have a sort of superstitious liking for them, and were very unwilling for any of them to be shot. They denied altogether their feeding on fish, and were quite surprised when a mass of eels which they had disgorged was pointed out to them. On the other hand, they gladly went in pursuit of a wounded *Larus*

cachinnans, which had been winged, and described these birds as being very mischievous, and doing much damage to the fishing.

The soil of the islands was entirely composed of shells—broken-up cockle-shells. The only vegetation was a species of samphire, growing like heather, but this only flourished where there were no nests. In this samphire were countless hosts of mosquitoes and poisonous-looking horse-flies, and I fully expected to be fearfully tormented. However, much to my relief, I was not stung once during my five hours' stay on the islet. I met the same flies later in the Dobrudscha, when I was not so lucky. They can fetch blood every time!

This expedition of ours, being quite unauthorized, caused great excitement in the minds of the Turkish authorities. It was reported that an Englishman was travelling about the country, and inquiries and official reports were flashing along the telegraph-wires between Scutari and Constantinople. As they could not get hold of me they put into prison the poor Albanian, whose only offence was that he had given us food and shelter for a night. He was accused of "conspiring with foreigners," and some difficulty was experienced in effecting his release. As it happened, I had official permission from Constantinople, but had not known I was within the jurisdiction of the Governor-General of Scutari, to whom I had been recommended. I called on him later, and found him very courteous and obliging. It will not, however, be very easy in future for anybody to penetrate as far as the locality we visited, for the natives will not unnaturally oppose any visit for fear of getting into trouble again. This is no doubt exactly the effect desired by the Turks, and, after all, perhaps it may serve a good purpose, for the Pelicans seem to be receding further and further from civilization. I can only hope that this particular colony may remain undisturbed for many years.

IDENTIFICATION OF WILD DUCKS' DOWNS.

BY J. A. HARVIE-BROWN, F.R.S.E., F.Z.S.

I WISH to refer back to old papers on this subject which appeared in 'The Zoologist' and 'Ibis,' and as they seem to have been forgotten, or are unknown to many of our younger ornithologists, to ask if their reproduction in 1906 might not be advisable?

For convenience, I place the two papers referred to in parallel columns, with cross-references.

Let me also recommend that all examinations and comparisons of "downs" be conducted as follows:—

The downs should be cleared of all extraneous matter, such as *moss, blades of grasses, leaves, &c.*, which may have got mixed with the downs.

Any flank-feathers found in the nest should be carefully preserved and placed in a small envelope, and bear careful authentication, same as the eggs and down of each "clutch."

(a). The downs only of *first* nests should be collected, or, if of *first* and *second* layings of the same species, must be kept in separate boxes, &c.

(b). Downs in bulk, after cleaning, should be placed with the eggs of same "clutch" in square glass-topped boxes, and the downs should be so disposed as to rise up close to the glass tops, and present a uniform and smooth appearance.

(c). The measurements of the eggs, carefully taken by oömeter* in millimetres, should be entered on a card or slip, and enclosed, with full authentication, in the above-mentioned small square envelopes, along with the flank-feathers (if any). The feathers may be fixed in some convenient manner also to the card or slip.

(d). Separate sprays of down may in like manner be affixed,

* The oömeter I have always used is one made by J. Buck, Newgate Street, and Waterloo Road, Lambeth.

neatly, to cards or slips, or *folded pieces of paper*, for comparing under Sommerfeldt's system, and the microscope.

(e). But first and foremost, and most important of all, each "clutch" or nest of eggs, and accompanying down and feathers, *must be carefully collected and thoroughly identified*; and it is *impossible to expend too great trouble in this authentication, as a first and necessary step, if the collection is to be of any value or usefulness afterwards.*

(f). Then—and supposing a collection of thoroughly identified *clutches* (I don't admire the word "clutch": it reminds me of rather wholesale *lifting*; but I use it as at least descriptive) have been procured and carefully treated—*then* these should be examined and compared always in a *northern light*, and in absence of *direct sun-rays*—an artist's light, in fact—*if in bulk*. Single sprays may (ought to) be examined in *both* lights, and results carefully noted in note-book or on cards enclosed in the boxes.

(g). An ordinary Salvin cabinet drawer of requisite depth will hold *eight* of these boxes, and the drawer may have a lid, or be *only a tray with a rim*, slightly higher than the boxes.

(h). If an *extensive* collection for more thorough comparisons be made, each drawer may be used to hold, say, as many as eight "clutches" of the *same* species from *different* localities; or, if this be considered too *wholesale a method*, one or two eggs with the downs may suffice. Or, if the items be reduced to, say, *four* of each species, or *two* of each species, still there will be good material for comparisons, either *inter se*, or subsequently *with others which require authentication.*

Needless to say, the collector's note-books ought to contain the very fullest and most careful accounts of each "setting of eggs," and it would be well if photography can be called in to identify *the birds upon the nests.*

I now proceed to revise the articles.

DUCKS' DOWN.

1st.—Dresser, H. E. (Zool. 1867, June, p. 776), quotes Sommerfeldt in his "List of the Birds noticed in East Finmark," Zool. S. S. 700, and ditto, 761, &c.).

Sommerfeldt described the downs of *the following ducks* taken from nests by Lapps, from SINGLE SPRAYS.

2nd.—Seebohm and myself made careful examinations and comparisons of ten species of Ducks' downs, collected by ourselves in Russia; but we described ours from the down IN BULK. These ten species are here given in the *second* column, and we endeavoured to classify these ten downs in our paper in the 'Ibis' for 1876, p. 62—classed *A. B. C. D.*—*i. e.*:—

A. White downs. *B.* White-tipped downs. *C.* Large dark downs, *without* white tips. *D.* Small dark downs, *without* white tips.

Besides the above ten species, I have also taken (collected myself) eggs and downs of the following species:—Red-breasted Merganser and Goosander, Mallard, Pochard, Tufted Duck.

And of the ten species we obtained in Russia, I have also collected eggs and down of Wigeon, Scoter, Teal, and Shoveler elsewhere.

Of other Ducks, I possessed eggs and downs of several other European species, including *Marbled Duck*, *Iceland Golden-eye*; and down of *Greylag*- and *Bean-Geese* (the latter taken in Russia, the Greylags taken in Britain by myself).

But all the above were lost by fire in 1897.

Since then I have formed another series, numbering some fifteen species, including species taken by, or collected by, the late John Young, who left me his collection, and others obtained through Mr. Marsden, of Bristol, by purchase; but I do not use these *latter at all* in the table above given, as this latter series *may* be correctly identified and authenticated, or *may not*; and I have no means available for getting to *bed-rock truth* about them, though I must say I *believe* them to be correct—though without possessing the *absolute proof* which appears *still to be necessary* to have Ducks' nests identified to the complete satisfaction of naturalists generally, *viz. shooting the birds off the nests, or photographing them on the nests, or watching them go off or on to the nests, by experienced ornithologists and able collectors (?)*. But it does seem to me that something more might be done than has yet been done, on these now somewhat old-fashioned lines, by young ornithologists who have good opportunities and *sufficient patience and sound judgment of circumstances*—scientific practice or scientific logical training, in fact.

SOMMERFELDT'S DESCRIPTIONS FROM
SINGLE SPRAYS.

A. CLANGULA.—The very thin light down is *white*; the centrum *pure white*; rami *rather long*, white, with a slight grey tinge towards the points. The radii are *not long*, and lay *rather close*. (See A. of class, opposite column.)

A. GLACIALIS.—The rather *thick* and *close* down is *blackish grey*, like soot, with a *light centrum*, and consists of larger and smaller down. The smaller down has the centrum light grey, and the rami light blackish grey *right out to the point*. The larger down has the centrum light blackish grey; the rami dark blackish grey *out to the point*; the radii long, *standing out* almost at right angles. (See D. of class, opposite column.)

A. ACUTA.—The rather *large*, thick, and *close* down is *light greyish brown*, with *white centrum*, making the *white point* of the rami appear *indistinct*; the centrum is *quite pale* brownish white; the rami *grey towards the light centrum*, shaded outwards with light greyish brown, the outer point being *white*; the radii *rather long*, and *standing out*. (See B. of class, opposite column.)

A. PENELOPE.—The large and *not close* down is *dark greyish brown*, with *light centrum*, but the white points are *clearly visible*; the centrum is *greyish white*; rami *rather long*, *dark greyish brown*, with a *white point* of rather more than one line in length; the radii *long*, and *sticking out*, and *not lying close*. The down has therefore some resemblance to that of *A. acuta*, but is *darker*, and the *long white points clearly seen*. (See B. of class, opposite column.)

SEEBOHM AND HARVIE-BROWN'S
DESCRIPTIONS FROM BULK.

A. WHITE DOWN: (1) Smew, down *large*, *greyish white*; (2) Golden-eye, down scarcely to be distinguished from Smew's, but has a slight *bluish tinge*. (See opposite under *A. clangula*.)

B. WHITE-TIPPED: (1) Pintail; (2) Wigeon.

- (1) *Pintail*.—Down smaller than (2); brown, with pale centres, indistinctly tipped with white. (Sommerfeldt calls this "rather large, thick, and close." Our comparison is smaller than (2) of same class.)
- (2) *Wigeon*.—Down larger than (1), of same class of white-tipped downs; darker brown than (1), pale centres, *long* and *conspicuous white tips*.

C. LARGE DARK, WITHOUT WHITE TIPS.

- (1) *Black Scoter*.—Down medium size, *darker brown than* Pintail's, *lighter than* Wigeon's; centres *pale* but *conspicuous*.
- (2) *Velvet Scoter*.—Down larger than Black Scoter's; darker than Pintail's or Wigeon's; centres *less conspicuous than* Black Scoter's.
- (3) *Scaup*.—Down about the *same size* as Velvet Scoter's, but *darker*; centres *inconspicuous*.

D. SMALL DARK, WITHOUT WHITE TIPS.

- (1) *Long-tailed Duck*.—Down small, darkish brown; with pale centres.
- (2) *Shoveler*.—Down small, darker than Long-tailed Duck's; pale centres.
- (3) *Teal*.—Down small, darker brown than either Long-tailed Duck's or Shoveler's; pale centres.

SOMMERFELDT'S SYSTEM. SEPARATE
SPRAYS.SEEBOHM AND HARVIE-BROWN'S
TABLES. IN BULK.

A. CRECCA.—The short but close down looks greyish brown, with whiter spots on the ground of the white centrum, and small white down; the lesser down has the centrum white; rami greyish brown; the white radii at the centrum rather close, whereas the brown radii are over one line long, and placed rather apart from one another. (See D. of class, opposite column.)

A. NIGRA.—The fine but thin down (taken off a bird in June) is very light, with a reddish grey tinge; the centrum is white; the rami rather long, white, with a reddish grey tinge, and light grey point; the radii are very short, and stand out at almost right angles. (See C. of class in opposite column.)

A. FUSCA.—The down (taken off a bird in June) is dark, with light grey spots; the centrum light brownish grey; rami rather long, dark greyish brown, with light grey points. (See C. of class in opposite column.)

MERGUS SERRATOR.—The short but rather thick and close hanging down is light blue-grey; the centrum light grey, almost white; the short rami light blue-grey, with quite short light grey points; the radii light blue, with grey points, giving the whole down the appearance of being strewn with meal-dust.

It might be a help to working naturalists if collectors who possess THOROUGHLY AUTHENTIC collections of Duck's eggs and downs would assist. There are—LET IT BE REMEMBERED—many circumstances which militate against dealers' eggs being admitted in scientific comparisons.

N.B. this—The above were examined IN BULK in a clear but not too bright light, and in the absence of direct rays of sunshine.

It should also be borne in remembrance what heads the columns, viz. examined IN BULK and not IN SPRAYS only; so we did not go into the comparative descriptions of the rami and radii as Sommerfeldt did. I think that may require a more microscopical examination.

NEWFOUNDLAND SEALING, 1906.

BY THOMAS SOUTHWELL, F.Z.S.

NOTWITHSTANDING the unfavourable result of the sealing voyage of 1905, this precarious industry has been pursued with increased vigour in the past season, three additional steamers having been added to the fleet, bringing the number up to twenty-five. One of these is the 'Adventure,' of 829 tons, the largest and most powerful vessel ever engaged in this business; the others are the 'Havana,' of 190 tons, and the 'Terra Nova,' of 450 tons. Only six of these sailed from St. Johns, four from Channel (Port-aux-Basques) for the Gulf sealing, the rest from the more northerly ports of Pool's Island and Wesleyville. The eastern sealing has been very successful, and the catch much more evenly distributed than last year, no fewer than eleven vessels having more than 15,000, five others having between 10,000 and 15,000, and of the remaining nine 6786 was the lowest. The average of the twenty-five vessels was 13,673, and the total number of Seals captured 341,836, valued at £121,509. To these must be added some 45,000 taken by the Magdalene Islands. At the eastern sealing, the 'Adventure' headed the list with 30,193 pelts, the 'Neptune' coming in second with 24,020. The Gulf steamers did badly, owing to stress of weather and the unfavourable condition of the ice.

The main patch of the breeding Seals was struck some ninety or hundred miles N.N.E. of the Funks, twenty-one of the vessels speedily being amongst them, and 280,000 are said to have been slaughtered between the 16th and 20th of March—24,000 of these in one day. The close proximity of the vessels, it is alleged, led to several instances of the misappropriation of each other's "pans," and caused much ill-feeling. The 'Adventure' was the first to get into the patch (on the 11th), closely followed by the 'Neptune,' where for a time they had it all to themselves (the others having gone too far north), hence their superior

success; and the former vessel then proceeded in a north-easterly direction in search of what is known as "Capt. Charlie's patch of Hammer Heads" (see last year's Notes, p. 362), but without success, and thus missed the Hoods, of which she captured only seventy-three young and fifty-four old ones. The 'Bloodhound' was the first steamer to return, reaching Harbour Grace on March 27th.

Mr. Chafe's circular gives the following analysis of the results of the voyage:—The number of Harps was 301,436 young, 3122 old, and 8534 Bedlamers (*i. e.* over-year Seals); 17,810 young and 10,937 old Hoods. The young Harps were in excellent condition, but the Hoods very poor.

The spring was very rough and cold, and much sickness prevailed amongst the men in the shape of colds, frost-bites, and pneumonia, resulting in no less than four deaths.

I cannot close these notes without expressing my sincere regret for the rather sudden death, at the age of seventy years, of my valued correspondent, Sir Robert Thorburn, K.C.M.G., which took place on the 13th March last. Since the year 1852, when he left his Scotch home to take up his residence in St. John's, Sir Robert took an active part in the legislature of the Colony, and for several years held the office of Premier. His death has removed one of the most highly respected and influential inhabitants of the Colony, and I have been greatly indebted to his courtesy for information relating to the fisheries of Newfoundland, of which Board he was a member.

My thanks are due to Mr. Furneaux, editor of the St. Johns 'Evening Herald,' for his kind assistance.

NOTES ON THE KITE (*MILVUS ICTINUS*) IN SOMERSET.

BY F. L. BLATHWAYT.

IN older days five royal forests existed in Somerset, namely, Exmoor, Neroche, North Petherton, Selwood, and Mendip, and it is only reasonable to suppose that a forest-haunting bird like the Kite must at one time have been very numerous in the county. A glorious land it must have been in those old days for the lovers of rural sport. Fine stretches of breezy moorland, hundreds of acres of waving woods, lonely expanses of stagnant mere and swampy marsh harboured in plenty the various birds and beasts of the chase. What merry hunting-parties from Saxon to Tudor days these forests must have witnessed! Here, indeed, King Alfred may have taught his haggard to stoop to the lure, and here King John, ever keen for the chase and a frequent visitor to Somerset, doubtless flew his well-trained Falcons at Wild Duck, Heron, and Crane. Much of the wild glory of these royal game-preserves has now departed, though some of them still preserve many traces of their ancient features. In one of them the wild Red-deer is still a beast of the chase, and the clang of horn and deep notes of hound are heard there as in days of yore. But the Kite is now a bird of the past. In the times of the Stuart Kings it may here have formed a quarry for the trained Gyr-falcons of the wealthy, but the birds were probably left much to themselves until the improvement in firearms enabled man to wage an all too-successful war against these ravagers of the poultry-yard. It is probable that a stricter form of game-preserving, coupled with handier guns, tended to diminish the numbers of this species, while the bird's own fondness of making raids on goslings and poultry no doubt hastened its extinction. If we remember this habit, it is far more likely that the money paid for the destruction of "Kites," as recorded in many old parish accounts, was really paid for the fork-tailed

bird, and not, as some suppose, for the Buzzard, a species which shuns the haunts of man, and feeds chiefly upon Moles and other small mammals. Hence it is that the mewling cry of the Buzzard may still often be heard in our county, but the Kite has gone for ever.

The task of trying to trace the former abundance of the Kite in Somerset is a somewhat melancholy one. We have interesting evidence that the species inhabited these regions some nineteen hundred years ago, as its bones have been identified among those of other birds unearthed from the lake-dwelling near Glastonbury, which was discovered in 1892. To come to more recent times, it is probable that this species haunted the fringes of the meres on the central level of Somerset until they were drained about a century ago. Their nests would be placed among the tall trees of the neighbouring forests, while the goslings and poultry of the farmers, or the young of the numerous water-fowl, would supply them with many a meal.

It is impossible to fix exactly the date when the Kite became a rare bird in Somerset, though it is probable that the process of extinction when once begun was rapid. As the trees disappeared from some of the ancient forests, such as Mendip, the birds would have to shift their quarters; but it appears that at the close of the seventeenth century the species was quite numerous in West Somerset, on the skirts of Exmoor.

From the churchwardens' accounts for the parish of Luccombe, we learn that payment was made for the destruction of five Kites in 1692, and again for sixteen Kites in 1701, at the rate of twopence apiece. When we read in the same accounts that threepence apiece was paid for Hedgehogs, it is evident that the Kite could have been by no means a rare bird in those days. Again, in the churchwardens' accounts for Porlock, it is stated that in the year 1738 nine Kites were paid for at the rate of twopence apiece, while in 1754, 10s. 4d. was paid for sixty-two Hedgehogs; Foxes, Martens, and Badgers being paid for at the rate of 1s. each. It is probable that many other interesting scraps of information about the Kites might be gleaned from similar parish accounts in other parts of the county.

If we look at the history of the bird in neighbouring counties, we find that about 1825 it was not uncommon in the woodland

districts of central Devon, while its nest has been found in that county at a much later date. In Gloucestershire it was not uncommon in some districts about the middle of last century, frequenting the sheep-pastures of the higher Cotswolds, and it lingered on as a nesting species in the Forest of Dean until about 1870. It is probable that the Kite vanished from Somerset as a resident species about the middle of the nineteenth century. I can find scarcely any definite records of the finding of nests and eggs, though old countrymen will sometimes say that the birds were frequently to be seen in their early days, or in the days of their fathers, and some testify to having seen the eggs. A pair, however, were known to nest in the woods overhanging the River Barle, above Tarr Steps, about the year 1850, the late Joseph Jekyll, a former rector of Hawkridge, having often mentioned the fact to his family. This is the only definite record I have come across of the nesting of the Kite in the county of Somerset.

During the last forty years the Kite has only been a casual visitor to Somerset, the examples seen having strayed perhaps from the few remaining haunts in Wales. From time to time a stray specimen has been trapped or shot, and has found its way into some private collection or local museum. The late rector of Brushford, near Dulverton, has informed me in writing that the last Kite he saw in those parts was soaring over his house about the year 1883. In 1888 two Kites were obtained in the county—one caught by a keeper in a trap set for young Kestrels, at Chewton Mendip, and the other shot at Cleeve Wood, near Yatton. These were both set up, and represent, so far as I know, the last Kites obtained in the county.

And so in Somerset, as in the greater part of the British Isles, the Kite is now a bird of the past, though at one time it must have been quite numerous. We know that in the fifteenth and sixteenth centuries the bird was so abundant about London Bridge, that foreigners visiting the city were struck by the fact, and made mention of it in their writings.

GOLDSMITH AS A NATURALIST.

BY BRUCE F. CUMMINGS.

OLIVER GOLDSMITH might have been a naturalist had the opportunity presented itself. But he would undoubtedly have first been poet and novelist, and Fate allowed him to go thus far but little further. For it was his lot to earn his daily bread by scribbling catchpenny compilations for the booksellers, and in the spare moments to fight for fame by modelling his works of genius. If he had only been granted a few more spare moments, he could have spent them in the woods and fields, and we should find his 'Animated Nature' full of original observation, and in every respect quite a different book.

However, of his few opportunities for studying nature he made the very best; and there is pathos in the fact that, through watching the ways of the spider in the dusty little garret in Green Arbor Court, he was afterwards able to contribute an article on its habits to 'The Bee.' Then one reads of his observing the antics of the Rooks from the Inner Temple; walking in the lanes around the farmhouse on the Edgware Road—another of his lodgings; and, in his happy Irish days, following the gentle art of Izaak Walton, whose pretty writing he since lived to honour with praise. During these short periods of leisure, he saw more, thought more, and admired more than do many in a lifetime. The high position he now holds in the world of letters he owes primarily to his great love of the country and the rural life—depicted in 'The Deserted Village' and 'The Vicar of Wakefield' with the originality and freshness which is Nature's own.

The chief fault in 'Animated Nature' is that it is a compilation. Goldsmith borrows from a large number of authors, including Buffon, Aristotle, Pliny, Linnæus, Pennant, and Swammerdam; however, he would probably have done better

if he had quoted fewer authorities, and those more judiciously. The whole eight volumes are interspersed with many very absurd stories about beasts and birds, which his innate simplicity led him half to believe. I will mention a few. Quoting, I believe, Linnæus, he says that a Squirrel, when it wants to cross a river, finds a piece of bark, sets it afloat, and goes aboard; it reaches the other side by using its tail like a fan or windmill! Imagine this timid, unobtrusive creature, with the cunning of a Monkey, watching its anchored "bark" as it waits for a flood-tide or a favourable wind.

We are informed, too, that the Albatross, on flying to an immense height, tucks its head under one wing, and keeps afloat by flapping the other; thus it roosts. "What truth there may be in this statement I will not take upon me to determine" is his comment.

Goldsmith was quite aware of his ignorance of the natural sciences, and he makes no attempt to hide it (for, in spite of his vanity, he was unwilling apparently to assume an affectation of great learning); but, nevertheless, the fear he shows of passing decisive opinions, even on such fables as these, is ridiculous.

A certain few Nightingales are related as being so clever that they could talk like Parrots, and tell each other tales. "Such is the sagacity ascribed to the Nightingale." Would that they had lent a little of this superfluous quality to the credulous author!

These wondrous stories are at all events amusing, and Dr. Johnson prophetically remarked, "He is now writing a Natural History, and he will make it as interesting as a Persian tale." But the extravagant imageries of a Persian tale would not go to form an ideal history of animated nature. The book might have been even more fanciful, for in the preface Goldsmith writes that, before he had read the works of the great French scientist Buffon, it was his intention to treat what he then conceived to be an idle subject "in an idle manner"; for let us "dignify Natural History," he says, "with the grave appellation of an useful science, yet still we must confess that it is the occupation of the idle and speculative rather than of the busy and ambitious."

All is written in Goldsmith's vivacious style, and the first two volumes are to a certain extent excellent in subject matter, for he was able to make use of Buffon as far as the end of the history of quadrupeds. But in justice to Goldsmith, it must be said that he had this help where he least wanted it, as, in dealing with the earth, with man, and with the well-known wild beasts, he had his own engaging descriptive powers, his own knowledge of human nature and anatomy, and a multitude of books, other than Buffon, fairly correct in their accounts of the larger mammals.

Consequently, Goldsmith can, "with some share of confidence," recommend this part to the public, and also I would suggest that his chapters on "Sleep and Hunger," and "Smelling, Feeling, Tasting," are as entertaining as any in the book. In his history of birds and insects he is very meagre and confused, like Pliny. His account of the reptiles is, as one would expect, full of those curious mythical tales, in which Goldsmith revelled more than in scientific facts. In many places throughout this unique Natural History one relishes the numerous personal references which he introduced into most of his writings, and here and there some really fine prose, as fine as any he ever penned.

The naturalist will find amusement in assigning descriptions to their right owners, and in discovering the names of species but vaguely characterized. Then there is humour, which, although unconscious, should not on that account be omitted from among the merits of a book that are deserving of a wider recognition. Of his personal references, I must not pass over his touching remarks on "Hunger," which he wrote perhaps at a time when he felt his own wants becoming more serious day by day:—"In the beginning the desire for food is dreadful indeed, as we know by experience. . . . Those poor wretches, whose every day may be said to be an happy release from famine, are known at last to die in reality of a disorder caused by hunger, but which in common language is often called a broken heart." That death was his own, said Forster in his 'Life.' He (Goldsmith) pities Aldrovandus, the naturalist, whose undeserving end was poverty and death in a public hospital, but how much the more should we lament his untimely decease.

Goldsmith might have lived on his own earnings, but undoubtedly he was extravagant. Yet could not the friendly Reynolds, or the kind-hearted Johnson, have helped him through the mire, or attempted to strengthen those weaknesses, which, in so great and unfortunate a man, we should all be more or less willing to overlook?

Turning again to 'Animated Nature,' let us see what Goldsmith has to say of the pugnacity of the Puffin. As soon as a Raven approaches to carry off its young, the Puffin, making a curious noise like a dumb person trying to speak, catches him under the throat with its beak, and sticks its claws into its breast, which "makes the Raven try to get away." At length both fall into the sea, the Raven of course drowning, to leave the Puffin to return unharmed to its nest.

The Woodpecker feeds sometimes in the following way. It lays its tongue on an ant-hill, and waits until there are a sufficient number of ants collected on it (for they mistake the long tongue for a worm), when the clever bird suddenly withdraws "the worm" and the ants with it, thus reaping a rich harvest!

One can conceive how this curious habit (?) originated, but what the Butcher Bird may be, which is little bigger than a Titmouse and lives in the marshes near London, I cannot determine.

Hérons, he tells us, occasionally take their fish on the wing by hovering as the Kingfisher does, but they do this only in the shallows, because in the deeper parts the fish, as soon as they see the Heron's shadow, could sink immediately and swim out of harm's reach. The reader will notice many more such extraordinary pieces of natural history to interest him, and not a few to amuse him.

The Turtle is lachrymose and forlorn, for it sighs and sheds tears when turned over on its back.

The Toad has only to sit at the bottom of a bush and to look a little attractive, when the giddy butterflies "fly down" its throat. A fascinating Toad!

Goldsmith found some difficulty in deciding into what class he should put the Lizards. "They are excluded from the insects," he argues, "by their size, for, though the Newt may be

looked upon in this contemptible light, a Crocodile would be a terrible insect indeed." To think they are excluded only by their size!

It is astonishing that a man like Goldsmith should make such an illogical statement as the above. The best that can be said for it is that perhaps it is a sacrifice of sense to effect; this is very unlikely, for he never wrote for effect. Genius, however, is erratic, and Goldsmith, though he "wrote like an angel, talked like poor Poll"; though he was a brilliant poet, he was a bad reasoner.

Johnson, though in general he thoroughly understood Goldsmith's character, and correctly valued his abilities, was hardly right in describing him on the memorial in Westminster Abbey as *physicus*. However, Johnson was quite unable to arrive at an exact estimate in this matter, for natural history was a subject which he understood even less than did Goldsmith, notwithstanding that he knew Woodcocks *must* migrate; and thought he knew that Swallows "conglobulated together" at the bottoms of ponds and rivers in winter time. In the sense that he wrote a Natural History, Goldsmith would perhaps consider himself entitled to be termed a naturalist, though some of us would be glad to earn such a distinction in so easy a manner.

He loved Nature and all God's creatures, but he possessed an "invincible aversion" to caterpillars—which a naturalist would ascribe to his uneducated taste; he abhorred cruelty; and, with an Englishman's prejudice, hated Germany, "which is noted," he writes, "if not for truth, at least for want of invention." It is from this fact, among others, that he considers a German book to show some good marks of veracity!

'Animated Nature' should be more generally read. Superficial and out of date it is, perhaps, to the scientist, yet to the field naturalist it is highly entertaining, and to the student of Goldsmith's character most helpful. All nature lovers must ever remain indebted to Goldsmith for presenting to the people that which had hitherto been hidden in the repulsive garb of consummate learning and scientific names, and thus exciting in the subject interest which is now very widespread.

There are very few who can spare time to study Nature deeply (*miserabile dictu*), and the majority must content themselves "to view her as she offers, without searching into the recesses in which she ultimately hides"; they must "take her as she presents herself, and, storing their minds with effects rather than causes, instead of the embarrassment of systems about which few agree," they must be satisfied "with the history of appearances concerning which all mankind have but one opinion." It is for this class of people that 'Animated Nature' was written.

THE BIRDS OF THE DISTRICT OF STAINES.

BY GRAHAM W. KERR.

(Concluded from p. 310.)

MALLARD (*Anas boscas*).—Formerly the only appearances of this bird were confined to small flocks visiting the river in the most severe weather ; now, however, large flocks of several hundreds winter on the reservoir, and this spring (1905) several pairs remained to breed on some small ponds near by.

COMMON TEAL (*Querquedula crecca*).—Small parties winter on the reservoir.

WIGEON (*Mareca penelope*).—Some numbers visit the reservoir.

POCHARD (*Fuligula ferina*).—During winter I have several times seen a few on the lake at Virginia Water.

TUFTED DUCK (*F. cristata*).—Occurs only at the reservoir, where they are not so shy as the other Ducks, and do not associate very much with them, preferring the company of the Coots, with whom they swim about ; they are often seen feeding and diving quite close to the banks, though I have never seen them leave the water as the Coot does.

COMMON SCOTER (*Ædemia nigra*).—Two birds were shot on the river some years ago just above Bell Weir Lock.

RING-DOVE (*Columba palumbus*).—Very numerous.

STOCK-DOVE (*C. œnas*).—A few may be met with in Windsor Forest.

TURTLE-DOVE (*Turtur communis*).—Very common along the Thames Valley.

PHEASANT (*Phasianus colchicus*).—Plentiful enough where they are preserved. Around Virginia Water and in Windsor Forest the eggs are taken up and hatched out under fowls, so that there are enormous numbers of the birds. During a walk in this part it is no uncommon thing to see three or four albino varieties in

a very short space. It is noteworthy that these are always females.

COMMON PARTRIDGE (*Perdix cinerea*).—Well distributed throughout the district.

RED-LEGGED PARTRIDGE (*Caccabis rufa*).—Of the rarest occurrence only.

LAND-RAIL (*Crex pratensis*).—The numbers of this bird vary considerably from year to year. The great June flood of 1903 swept over acres and acres of meadow-land, and destroyed the nests of all ground-breeding birds, besides working havoc among the ditch- and low-bush-breeding Warblers. The Land-Rail was one of the greatest sufferers from this visitation, yet, curiously enough, the following year seemed to bring more than the usual number of the birds.

SPOTTED CRAKE (*Porzana maruetta*).—Laleham, 1857 (*vide* Harting's 'Birds of Middlesex,' p. 205). I have not met with the bird myself, but there is still much country well suited for it.

WATER-RAIL (*Rallus aquaticus*).—Rarely seen, but there must be a good many along the river-banks, as men employed in cleaning out the bottoms of osier-beds have frequently brought me the eggs. The latter, besides being larger and of a lighter ground than the Land-Rail's, also seem to be of thinner shell.

MOORHEN (*Gallinula chloropus*).—Very common along the river-banks. An excellent climber, and I have often seen it moving about in high hedges with great ease. It is adverse to taking to the wing, but can run at great speed. The Moorhen has a great variety of calls, and is frequently heard late in the night. The nest is sometimes placed fifteen or twenty feet from the ground in the crown of some willow-tree, but is more usually among reeds, or on a low branch of some bush just over the water. The eggs are not covered over when the bird is absent from the nest. A large number of weed collections are made quite distinct from the nest, and what object they serve I have not satisfactorily discovered. I call these collections "stands," for I think the bird must use them to rest on, and probably sleep on. Up to the present the Moorhen has not been observed on the reservoir!

COOT (*Fulica atra*).—Very rarely seen on our part of the river,

and never known to have bred there; yet during winter many hundreds of them frequent the reservoir, and this spring several pairs remained to breed on a piece of private water near by. I could see the nest from the roadway, and, as I had never taken a Coot's egg, I particularly wanted one for my collection. I set out one night after dark, and soon found the nest. As I waded out the bird left the nest, and swam away, uttering loud cries, vigorously splashing up the water, and continuing to do so for some time. Later in the year a pair nested on Virginia Water lake, which I do not think they have done before. At the reservoir the birds readily leave the water, and wander far over the grassy outer slopes of the embankment.

GOLDEN PLOVER (*Charadrius pluvialis*).—Some twenty-five years ago the Golden Plover was common on Staines Moor, which was then a favourite winter resort for many birds. All this is now changed, and the Golden Plover is only a straggler to the district.

LAPWING (*Vanellus vulgaris*).—A common and increasing species.

COMMON SNIPE (*Gallinago caelestis*).—In hard weather a fair number appear throughout the district.

JACK-SNIPE (*G. gallinula*).—Mr. Howard Saunders, in his 'Manual of British Birds,' p. 560, refers to a melanism of this bird shot near Staines, and recorded by Mr. F. Bond.

COMMON SANDPIPER (*Totanus hypoleucus*).—Large numbers occur on spring and autumn migration. In spring the bird arrives from the middle of April onwards to the end of May, and often not more than a month will elapse before the first of the returning migrants appears.

COMMON CURLEW (*Numenius arquata*).—Passes overhead on migration.

BLACK-HEADED GULL (*Larus ridibundus*).—The most numerous Gull on the reservoir; they may often be seen in the fields around following the plough.

COMMON GULL (*L. canus*).—A few pass the winter on the reservoir.

GREAT NORTHERN DIVER (*Colymbus glacialis*).—In 'The Zoologist' (1902, p. 311) there is an interesting account of one of these birds being caught with a rod and line at Virginia Water

in the year 1881. In 1889 another example was shot by Mr. E. Hawes in a flooded field at Egham. It is remarkable that two specimens should have been obtained so far inland within the space of nine years, the more so as the reservoir was then un-built.

GREAT CRESTED GREBE (*Podiceps cristatus*).—As many as a dozen nests are to be found on Virginia Water lake every year, and one or two more are built on the small Obelisk Pond near at hand. On the reservoir the bird is unusually plentiful, and it is only for about three months (June, July, and August) of the year that it is entirely absent from these waters. I have counted as many as eighty birds in sight at the same time, and that I fancy must be going on for an English record. In spring the male utters a loud trumpeting cry, and when paired the birds often swim up opposite to each other, and remain motionless for some time with their beaks almost touching, as though they were whispering some deep secret to one another. The nest is usually a very substantial structure. The eggs are much pointed at both ends, and usually number three or four, though a clutch of five is not uncommon. When the birds are absent the eggs are covered over with weed. The female alone appears to sit, the male swimming about not far from the nest.

LITTLE GREBE (*P. fluviatilis*).—Not particularly common on our part of the river. More are to be found on various quiet ponds, and these pond-birds breed at a considerably earlier date than those on the main stream. Three broods are reared, and I once found a clutch of five eggs, though, as a rule, I do not think more than four are laid.

NOTES AND QUERIES.

MAMMALIA.

Occurrence of *Tursiops tursio*, Fabr., on the Sussex Coast.—An apparently adult female of this Dolphin was cast ashore dead between Bognor and Littlehampton, Sussex, about the middle of last month (September). In length from tip of snout to fork of flukes it measured ten feet ten inches. Owing to the advanced stage of decomposition no observations as to the external coloration were possible. The teeth appeared to number twenty-two to twenty-three pairs; they were much worn at apex, and in many cases decayed and even holed through.—H. L. F. GUERMONPREZ (Dalkeith, Bognor).

AVES.

Blackbird Laying Twice in the same Nest.—Referring to previous communications (*ante*, pp. 235, 274, 312), two broods of Blackbirds were some years ago hatched successively in the same nest in an escallonia hedge in my garden here. They doubtless belonged to the same parents, a pair which for a number of seasons utilized the hedge. P. G. RALFE (Castletown, Isle of Man).

Does the Blackbird Eat Snails?—To this query, so simple at first sight, I should immediately reply in the affirmative; but after carefully reading Mr. A. H. Meiklejohn's note (*ante*, p. 312) I determined to investigate the matter for myself, and not be led, rightly or wrongly, by the many works consulted. That the Thrush does consume great numbers of these tasty morsels I have had ample opportunities of witnessing, but I cannot recall one single instance in which I had seen the Blackbird doing the same; and it was not until the beginning of last month (September) that I succeeded in seeing a Blackbird in the very act of devouring a snail, which was of the striped species (*Helix nemoralis*). It was early morning, and while dressing, I chanced to look out of the window overlooking the small garden at the farmhouse where we were staying; I saw a fine adult male Blackbird on the gravelled path very busy with something on the ground, which looked

to me very much like a snail. In order to be quite certain I immediately went downstairs, and, on opening the front door, the bird flew away, leaving on the ground the broken and partly consumed snail. Was this bird driven to depart from its usual fare during this exceptionally hot and dry summer? was a question that immediately occurred to me, for Blackbirds were already attacking the apples which had fallen to the ground (a fruit they rarely touch), and had commenced an attack on the fruit still hanging to such an extent that they had become a pest, and a little powder and shot had to be resorted to in order to thin out their numbers. Determined to continue my investigations, I consulted a few of my many gardening friends—one of them an ardent and most careful observer—but, alas! not one of them could give me a definite reply in regard to the Blackbird, though they were all quite certain that the Thrush ate snails. Summing up the somewhat meagre evidence before me, and taking into consideration the isolated case just submitted, my answer to Mr. Meiklejohn's question must be adjourned *sine die*; but I would like to make the following observations:—(1) that in my humble opinion there is no hard and fast rule in regard to the diet of the Blackbird; (2) that they do eat snails, and must be generally admitted, though only to a small extent compared to the Thrush; (3) probably they confine themselves more to the smaller species, such as *Helix nemoralis* and *H. hortensis*. I quote the following from Smith's 'Birds of Somersetshire,' p. 68, on the feeding of the Blackbird:—January: seeds, spiders, and chrysalids. February: the same. March: worms, buds of trees, and grubs. April: insects, worms, and grubs. May: cockchafer and worms. June: worms, grubs, and fruit. July: all sorts of insects, worms, and fruit. August: the same. September: the same. October: worms, chrysalids, and grubs of butterflies. November: seeds, corn, and chrysalids. December: the same. (The author quotes the above from a paper which appeared in 'The Zoologist' for the year 1863 (p. 8760) on the "Food of Small Birds.") It will be seen that this formidable menu does not contain the snail, though Mr. Cecil Smith goes on to say that during the dry summer of 1868 both Blackbirds and Thrushes have been most busily employed in devouring snails, which bears out my contention, but the inclusion of buds of trees in the above list I think is an error.—P. F. BUNYARD (57, Kidderminster Road, Croydon, Surrey).

Variety of Common Wren (*Troglodytes parvulus*).—On June 13th of this year, when wandering along a green lane near Elstree, in Hertfordshire, I met with a cream-coloured variety of the Common Wren.

It was sitting with its brothers and sisters, all of the normal colour, on an old Thrush's nest in a large overgrown hedge. Wishing to examine it more closely, and thinking that it had only recently left the nest, I pursued it, but unfortunately it escaped owing to the thickness of the hedge. Although I never met with it again, I saw it then sufficiently clearly to observe that it was of a uniform cream-colour all over. This I believe to be an uncommon occurrence in the Wren, and should be glad to know if any other instances have been recorded. In the same hedge, on May 12th, I saw a nest of the Goldcrest (*Regulus cristatus*) in some ivy about eight feet above the ground, which I believe is an uncommon nesting-site for this species. Last year I came across an unusual instance of perseverance exhibited by the Common Wren. A nest of that species was found in a gorse-bush in Battle, which on April 27th contained two eggs; these were removed. The nest was next examined on the 29th, when it again contained two eggs; these were also taken, but in spite of this there were another couple of eggs in the nest on May 1st. This rather does away with the theory that a Wren always resents the slightest interference with its nest.—H. WHISTLER (Battle, Sussex).

Late Stay of Swift.—When sitting on the lawn close to the sea at Chapel St. Leonards, I saw a Swift on Sept. 15th. The bird was hawking about, and came within ten yards of me several times. After a lot of wind on the 21st the scrub on the back of sea-bank was full of migrants. On the 22nd I was sitting on the top of the bank, and heard a new bird note. I saw a smallish dark bird sitting on a dead twig about six yards away, and got my glasses on it at once; it was a female Rustic Bunting. I could see every feather, and had it under observation for quite half a minute, when it flew southward over the sand-hills. I also saw a female Pied Flycatcher, and hundreds of commoner migrants, evidently a big lot working south.—J. WHITAKER (Rainworth Lodge, Notts).

Iynx torquilla in Cheshire.—A Wryneck was caught in a street-lamp on the borders of Winsford at 7 a.m. on Sept. 9th. This is an interesting observation, as from a reference to Coward and Oldham's 'Cheshire Birds,' this is the sixth recorded instance in this county.—JOEL SOUTHWORTH (92, Wharton Road, Winsford, Cheshire).

Hoopoe in Cheshire.—A male specimen of the Hoopoe (*Upupa epops*) was taken near Chester on August 29th last. According to Dr. Dobie's list of the Birds of Cheshire and North Wales, this is the third specimen recorded for this district. The first specimen was taken

at Chester on Sept. 11th, 1792; the second specimen at Coed Coch, North Wales. Circa twenty-six years.—A. NEWSTEAD (Grosvenor Museum, Chester).

The Hobby in Cheshire.—A fine adult male Hobby-Hawk (*Falco subbuteo*) was taken at Tarvin, near Chester, early in August of this year, and has recently been presented to the Chester Museum.—A NEWSTEAD (Grosvenor Museum, Chester).

Glossy Ibis (*Plegadis falcinellus*).—A young male was shot on Twin Island, Belfast Lough, on Sept. 9th, and is now in the hands of Messrs. Sheals, the well-known taxidermists here, where I had the pleasure of examining it. The bird had been seen haunting the place before it met with the usual welcome that is generally accorded a rare visitor to our shores. This constitutes the second record for Belfast, as, according to Thompson, one was shot in the bog-meadows on Sept. 30th, 1819. It is interesting to note that both these birds occurred in September, as, on referring to Ussher, whose 'Birds of Ireland' now supersedes the former work, he states out of twenty-two or more records of the capture of this bird in Ireland, and where dates have been given, one occurred in September, ten in October and November, and one in January.—W. C. WRIGHT (Belfast).

Supposed Flamingo near Aldeburgh, Suffolk.—While lately on a cruise in the steamship 'Oithona' (from Marine Biol. Laboratory, Lowestoft) fish-marking, &c., besides other grounds, that of Hollesley Bay was trawled northwards to beyond Orfordness, and anchor was cast for the night abreast of Aldeburgh. Going ashore, through the kindness of a local resident, Mr. Ganz, I had an interesting conversation with Mr. Charles Clarke, naturalist and birdstuffer, 1, Brudnell Terrace. Among other things, he informed me of a Flamingo frequenting the neighbourhood. I there and then wrote at his dictation the subjoined statement of the case:—"Mr. and Mrs. Perry, visitors at the Brudnell Hotel, were coming up the River Alde to-day (Wednesday, Aug. 22nd), in company with William Brinkley, wildfowler and fisherman of Orford, when they saw standing on the mud a strange bird, taller than a Heron, and apparently quite white, but which on nearer approach seemed to have salmon-pink wing-coverts and dark or blackish primaries. The bird rose from the mud, and flew close over their boat. Then on its flight it showed a long and slim body, and outstretched neck and legs. In fact, it resembled a great white cross from underneath. It flew off towards Orfordness." Mr. Clarke is decidedly of opinion that it was a Flamingo. His and Brinkley's practical know-

ledge of the shore birds of the district guarantees their recognizing a stranger. Their description of its coloration, &c., supports the idea of its being an immature Flamingo (*Phœnicopterus roseus*, Pallas). On Aug. 23rd the 'Oithona' returned to Orford Haven, entered the Alde, and worked up and down the river to as far as Aldeburgh, leaving on the 25th, but without seeing or hearing more of the bird in question. In Yarrell's 'British Birds,' vol. iv. (1885), edited by Howard Saunders, and in the latter's 'Manual' (1899), reference is made to four instances of Flamingoes, *viz.* Sheppey, August, 1873 (a doubtful escape); Staffordshire, September, 1881; Hampshire, November, 1883; and South Kent, August, 1884. I am unaware whether others have since been recorded. Although this presumed Suffolk example has not been unmistakably identified, it may still be deemed worthy of notice, to be taken for what it is worth, the possibility being that more may be heard of the straggler.—J. MURIE (Leigh-on-Sea, Essex).

P.S.—A report ('Aldeburgh, Leiston, and Saxmundham Times') states that the Flamingo seen on the Alde river was also noticed later on the Woodbridge river.

Red-crested Pochard at Yarmouth. — On September 4th thirteen Ducks were observed to come in from seaward, and alight on the north-west side of Breydon. An amateur puntsman named Youngs, who was lurking under the "walls" hard by, immediately sculled after them, and got a charge of B.B.'s into their midst with telling effect. Nine were killed or maimed, and, although the birds had on arrival appeared tired and remarkably tame, the wounded ones, by diving and the use of their wings, gave him an arduous half-hour in retrieving them by doubling after them, and the use of his shoulder-gun. One bird, spoiled by decapitation for a "specimen," was eaten by Mr. Youngs; the other eight he sold to Mr. Saunders, the taxidermist, of this town. A tenth wounded bird managed to reach the marshes, and was lost, but was soon after picked out of a ditch by a marshman, who ended its career in the oven. I called on Mr. Saunders on the 5th, and saw four birds still in the flesh, four having already been made into skins. They were unmistakably Red-crested Pochards (*Fuligula ferina*). They were, of course, by no means so distinguished in appearance as birds shot in nuptial dress; the plumage, to my mind, greatly resembled that of an adult female Smew; and, indeed, the general contour of the birds was slim and rakish, like that dainty little creature. The white shoulder-patches, and that of the lesser wing-coverts, secondaries, and primaries, were very conspicuous. The toes of six of the birds were Naples-yellow, with a suggestion of redness, the

webs being blackish ; these were males. The other two had greenish yellow-tinted toes. I suggested these were females, and this proved to be so on dissection. The cap was reddish brown, and the beak scarlet-lake. We had a look at the windpipe, and were much struck with its peculiarities of conformation. I made a rough water-colour sketch of the best bird, and obtained three large parasites, which, under the microscope, look hairy and forbidding, with the suggestion of much tenacity of purpose. Had I been earlier, Mr. Saunders remarked, I could have had more, and been welcome to them, for they made things lively for him for a time. According to the 'Field' of Sept. 15th, two birds of this species were shot on the 8th on Hickling Broad by Alfred Nudd, keeper to Mr. S. H. Smith, a duck being secured, but the drake was not recovered until two days later, and was consequently spoiled. In all probability these belonged to the same flock. Mr. J. H. Gurney, in suggesting the likelihood of the heat-wave having brought them hither, remarked that at any rate "the poor things met with a *warm* reception when they came." The prevailing winds had for some time previous been southerly.—ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

Hybrid Black-game.—Referring to Rev. F. C. Jourdain's list of Black-game-Pheasant hybrids (No. 27), will you allow me to say that the bird in Mr. Le Strange's collection was shot at Snettisham about the year 1850, as stated in the 'Birds of Norfolk,' vol. i. p. 375, and not in 1876? It was given to Mr. Le Strange by the widow of Capt. Campbell, who had the Snettisham shooting about the year 1850, and is the only known Norfolk hybrid between these two species. I mention this as the great disparity of dates (1850 and 1876) might lead to the impression that two distinct individuals were referred to. It is difficult to say when the indigenous race of Black-game became extinct in this country, but probably one of the last was a Greyhen, seen by the writer, which was killed in 1852 near Lynn. Mr. Le Strange tells me that the last he saw in Norfolk was about the year 1872 or 1873, when shooting with the late Mr. Anthony Hamond at Leziate, or Bawsey, near Lynn ; but many unsuccessful attempts to reintroduce this fine bird into Norfolk have been made of late years.—THOS. SOUTHWELL (Norwich).

Baillon's Crake (*Porzana bailloni*) near Stockport.—An adult male Baillon's Crake was captured alive in the neighbourhood of Stockport, Cheshire, in May, 1905. The bird subsequently came into the possession of Dr. Charles Cairnie, of Manchester, who showed it to Mr. Charles Oldham and me. The actual locality where it was

obtained is uncertain; it was captured in a drain by a workman, and passed through two other hands before Dr. Cairnie obtained it. Stockport, though a Cheshire town, is on the Lancashire-Cheshire border, and it may have been caught in either county. The outer web of the first primary is white, and in all particulars its plumage agrees with the description of the species in Dresser's 'Birds of Europe,' and with specimens in the Dresser Collection in the Victoria University Museum, Manchester. Dresser, however, says (*op. cit.* vol. vii. p. 276) that the legs are "dirty greyish flesh," though Seebohm and Sharpe describe them as olive. Dr. Cairnie, who saw the bird in the flesh, is certain that they were green, and gave his taxidermist instructions to be careful in this particular. Probably some descriptions and plates, for Dresser is not the only one who describes them as other than greenish, are taken from dried skins in which the colour has faded.—T. A. COWARD (Bowdon, Cheshire).

Notes on the Dabchick (*Podiceps fluviatilis*).—Mr. Oldham's notes on the Little Grebe (*ante*, pp. 351–353) appear to throw some doubt on several of my observations regarding this bird. I do not think that three eggs is an unusual clutch. I have frequently found nests with three highly incubated eggs; and on Sept. 8th this year I saw three young birds just hatched on the nest, and this must surely be sufficient proof that three eggs *do* sometimes constitute a clutch. I have had several Dabchicks alive, and have never seen them walk on their feet in the way Mr. Oldham describes, but, on the contrary, shuffled along on the belly, and rested with the whole tarsi on the ground. The captive Dabchick I mentioned in my paper was one which was confined on a tank of clear water, and its every movement could be closely observed when submerged, and, as before stated, I frequently saw it use its wings.—GORDON DALGLIESH (Brook, Witley, Surrey).

PISCES.

Loch Broom Sea Monster.—Regarding the Loch Broom sea monster and correspondence thereon (*ante*, pp. 355–357), I may say by the way that it is refreshing in absence of the sea serpent and mermaid tone. The evidence given is simply hasty impressions of the observer, and, *ceteris paribus*, comparable with my note on Flamingo—a passing record and not indisputable data. I strongly support Mr. Southwell's conclusion of the likelihood of the Loch Broom animal being a Basking Shark (*Selache maxima*). His reasoning is sound, and very rightly he attaches importance to the habits shown; *i. e.*, its demeanour under the circumstances, as less likely to be deceptive than

supposed shade of colour, length of body, or height and shape of fins. Moreover, it should be borne in mind that some twenty years ago, or over, there was a profitable Basking Shark fishery off the north-west coast of Ireland, which, however, dwindled away as the price of liver oil declined. It is said the Sharks approached the Irish coast from the Atlantic in spring, by midsummer and in autumn sheering off by way of the North of Ireland, passing round Scotland to the Norwegian area. This would tally with an occasional odd and big one appearing in the neighbourhood of the Minch, *ergo* the Loch Broom specimen. I may refer you to the latest account of the facts of the case in Green and Holt's "Cruise of the 'Harlequin'" in 'Report to Council, Royal Dublin Society,' 1892, pp. 39 and 301.—J. MURIE (Leigh-on-Sea, Essex).

QUITE a number of communications have reached me, to which I have replied privately, including sketches of the back fins, &c., of the animals, and including two accounts of the Loch Broom appearance. I have not, however, seen the account sent to the daily papers, as Mr. Workman had (he does not quote the reference). The first communication about the animal seen at Loch Broom, between the Priest Island and Glasleag Beg (not *Glostloch* Beg as printed), was from Mr. Mackenzie Catton, with a drawing, done from memory. The next in reply to inquiry was from Mr. Henderson, Ullapool,—Mr. Workman's correspondent—with a drawing, in all respects similar to that supplied by you to Mr. Southwell (*ante*, p. 356), and labelled "Basking Shark" by Mr. Henderson. I replied to that, that I was inclined to agree with Mr. Henderson in his identification; but I did not quite appreciate the pointed appearance given to the larger fin. I then had a letter and a drawing of a "sea monster" from Her Grace the Duchess of Bedford, which was much truer to the outline of the *truncated* back fin of the Basking Shark, as viewed by her from the deck of her yacht (*in litt.* Sept. 9th, 1906); and she distinctly says, "the stick-like upper part and sudden widening, and that it was not the usual pointed fin." I recognized this as belonging to the Basking Shark, and wrote to Her Grace to that effect. Then followed a journal of Mr. J. Pedder's sojourn in the West in July, August, and September, 1906, with report of similar appearance, and a sketch taken on the spot; *i. e.* from the deck of the yacht he was on board of. Mr. Pedder *is an artist* (and, you may be aware, illustrated the ninth volume of our Faunal Series ('A Vert-Fauna of North-west Highlands and Skye,' 1904). Shortly afterwards Mr. Pedder paid me a visit (Sept. 14th-15th, 1906), and I told him his sketch and description clearly authenticated the fact that

it was the dorsal fin and tail-fin of Basking Shark which he had seen; and we satisfied ourselves by comparing it with the illustration in Lydekker's 'Royal Natural History' of that fish. In his journal, Mr. Pedder says:—"On July 28th we weighed anchor, touched at Kyleahin again for letters and some supplies, and then set sail for Torridon; wind light and variable. In the Sound of Raasay, two or three *Whales were blowing* about half a mile away from us towards the entrance of Loch Broom. One of them must have been a huge creature, for, after watching a great length of his back rise and disappear, and upon which was a very big fin, we came to the conclusion that the fin stood up from the back at least six feet. Someone aboard a steamer making for the Kyle, possibly much nearer to the beast, fired a shot from a gun at it; but the great fin kept coming up at intervals as before until we were out of sight—about 2.30 p.m., between Crowlin Islands, Longay, and Scalpay." I consider Lydekker's illustration settles the question of identity as belonging to a Basking Shark.—J. A. HARVIE-BROWN.

Thresher Shark (*Alopias vulpes*).—A specimen of this singular fish, now being preserved for the Norwich Castle Museum, was taken in the nets off Hasborough, on the Norfolk coast, on the 26th September last, and brought into Cromer. It measured 10 ft. 8 in. total length. This Shark has been met with on the Norfolk and Suffolk coast several times, generally about the commencement of the Herring season. The earliest mention of the species is, I believe, by Dr. Cains, who described a specimen stranded near Lowestoft in February, 1570. A second is recorded by Mr. Gunn as having been captured on July 4th, 1867; this measured 14 ft. 5 in. in all, 7 ft. 4 in. of which consisted of the whip-like upper lobe of the caudal fin. Others were taken off Lowestoft on Sept. 28th, 1879, and on Oct. 22nd, 1881, in the same locality; the latter measured 12 ft. 10 in., 6 ft. 4 in. of which consisted of the tail. In the Hasborough specimen the curious notch at the base of the caudal fin, which is not shown in Mr. Day's figure, was very conspicuous.—THOMAS SOUTHWELL (Norwich).

NOTICES OF NEW BOOKS.

The Journal of the South African Ornithologists' Union. Pretoria.
Annals of the Natal Government Museum. Part I. Adlard & Son,
 London.

THE South African region, as now understood by zoologists, was, in the days of our adolescence, principally described in the narratives of geographical and natural history explorers, among whom we may mention the names of Burchell, Livingstone, and Holub. Then came a period of gold-hunting, and the records of the Stock Exchange constituted the most popular gazetteer. For a time it was the world-watched scene of military operations. Even so recently as a decade since we left South African shores, there was, apart from Cape Town, little scientific enterprize, and the South African Philosophical Society may be said to have held the field. Since then the advance has been phenomenal, especially in a country where the race for wealth has almost become an ideal aim. Recently both the South African and Grahamstown Museums have published their Annals, and the Natal Museum has now followed their example.

An active and growing Natural History Club exists in the once "golden city" of Johannesburg, and, what is still more noteworthy, there is now a "South African Ornithologists' Union," well established, ably directed, and enthusiastically supported. Of the latter, we now possess vol. i., and part 1 of vol. ii.; of the Durban publication, the first part has recently reached our hands. Both these publications have come to stay, and are well worth the attention of all naturalists. Not only do they foster and promote the study of zoology in our South African colonies, but they afford a means of publication of very much valuable information which our central societies would clearly be unable to supply.

The presidency of the South African Ornithologists' Union was originally held by Mr. W. L. Sclater, who has now left South

Africa, and his place has been taken by a whilom contributor to 'The Zoologist'—Mr. J. A. S. Bucknill, author of the 'Birds of Surrey.' The 'Annals of the Natal Government Museum' are edited by its Director, Mr. Ernest Warren.

The South African ornithologists are giving much attention to the nests and eggs of South African birds, and the 'Journal' of the Union contains some excellent photographs of the first, and some chromo-plates of the latter, the eggs being in the first instance drawn by Mr. Gronvold. There is a wide field for work in this direction, and the results will supplement Stark and Selater's 'Birds of South Africa,' volumes which have also only appeared during the last ten years.

The Durban publication opens with descriptions of new fishes from the coast of Natal, by Mr. C. Tate Regan, and Pisces alone would almost occupy naturalists at this port. Marine Mollusca, a kindred subject, occupies the pen of Mr. Edgar A. Smith, whilst the Director writes on Rotifers, Hydroids, &c.

May some other outlying posts of the British Empire soon follow this excellent example.

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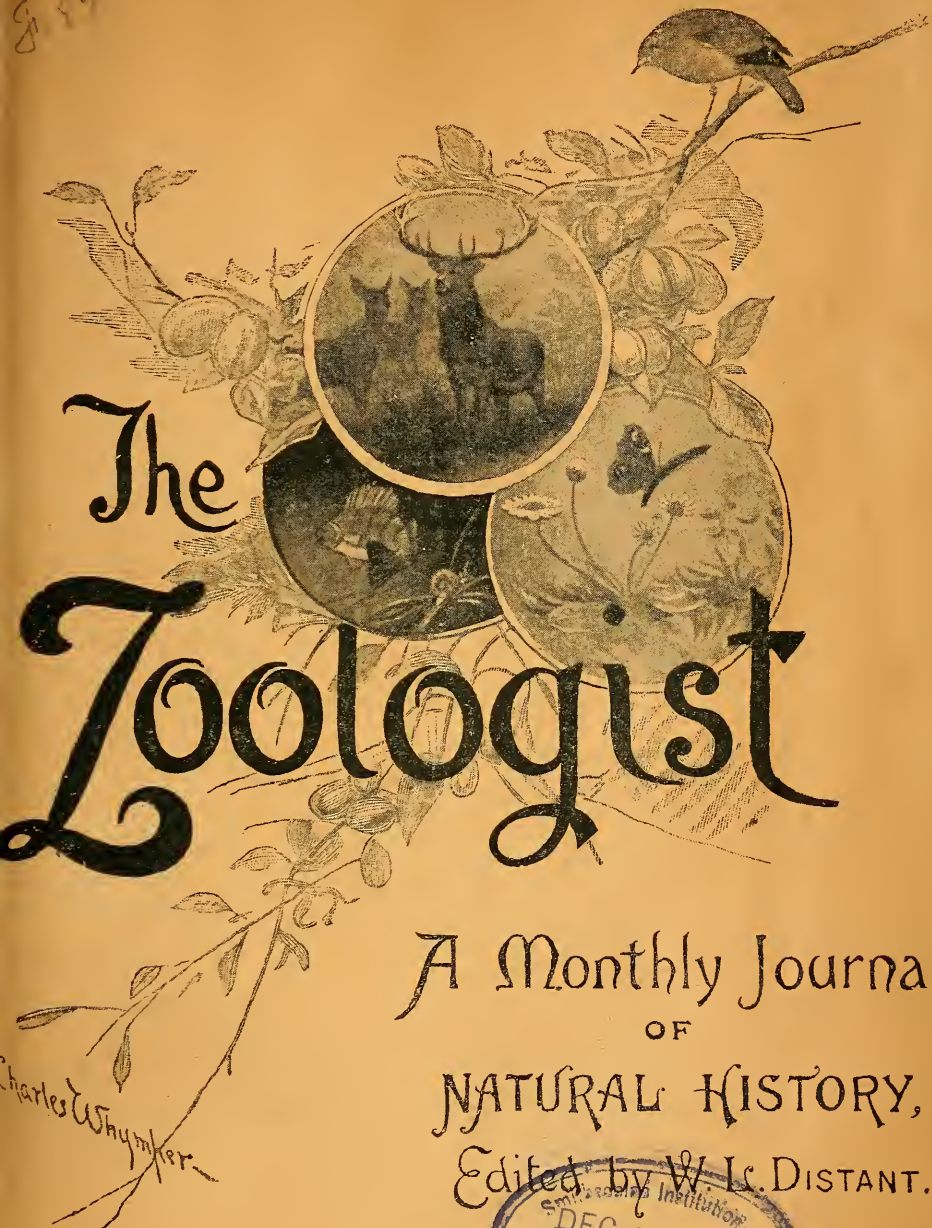
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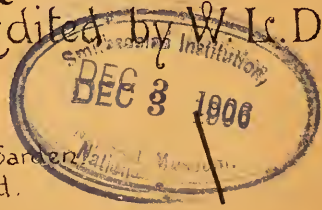
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THE ZOOLOGIST

No. 785.—November, 1906.

ACROCEPHALUS PALUSTRIS: A BREEDING RECORD OF FOURTEEN YEARS.

BY W. WARDE FOWLER, M.A.

THE following notes form a succinct record of my long experience of this species in an Oxfordshire parish. This year (1906), for the first time since 1892, I have been unable to find it, and it now seems advisable to put together the leading facts I have learnt about its habits. I am also led to believe that my record will serve to illustrate the conditions under which an unusual and delicate species may fix itself in a breeding-place, flourish there for some years, yet eventually find itself in adverse circumstances, and die out or abandon the position. I propose to give the bare facts to begin with, and then to add a few notes on salient points of interest.

1892, *June 5th*.—I heard the song of the Marsh-Warbler, already known to me on the Continent, in an osier-bed near Chipping Norton Junction. This osier-bed had been planted within my recollection, and, as I had never noticed the song before, I am disposed to think that the birds were now visiting it for the first time. It had not been cut in the winter, but was overgrown, and full of dense vegetation. The bird was heard and seen several times by my friends and myself, but we were unable to find a nest (*cf.* 'Zoologist,' 1892, pp. 303-9).

1893.—The osiers had been cut in the winter, and the place was entirely altered. It was not till June 20th that I again heard the song in another small osier-bed about half a mile along the line towards Worcester, which was as wild and overgrown as the other had been the year before. It was about half an acre in size, comparatively dry, and with small open spaces here and there. By watching from the railway embankment I found the position of a nest which was being built, on June 21st. On the 22nd an egg was laid, and on the 23rd we took this nest with two eggs for the Oxford Museum. It was suspended by two quasi-handles from the slender shoots of the osiers, where they were least overgrown, and within ten yards of cultivated ground. The material was dry grass, with a few hairs in the lining. I then went abroad, and saw no more of the birds this year.

1894, *June 16th*.—The bird was singing in the same place as last year, the osiers being still wild and uncut. Absence from home prevented further observation.

1895, *June 11th*.—Bird in the same place. Oxford duties had prevented me from searching for it earlier. A nest had been begun by the 23rd, and on the 26th it contained two eggs. This year I had unusually good opportunities of watching the birds about the nest, which was in willow-herb near a thick hedge, in which I cut a hole. The hen, when seen on the nest at a yard's distance, showed a distinct buffish eye-stripe. Two eggs were hatched on July 10th, after which date I was obliged to leave home.

1896, *June 5th*.—Bird singing in the same place, which seems to have become the permanent breeding place of the species. The osiers are still neglected and wild. The singing continued till the 13th, when it almost entirely ceased; this meant, as I had already discovered, that the nest had been begun. On June 27th I found a nest with four eggs in osier-shoots two feet from the ground. On July 12th I found (after an absence) four nestlings, and followed their growth closely till the 16th, when they flew. They remained among the osiers till July 22nd (*cf.* 'Zoologist,' 1896, pp. 286-8).

1897, *June 4th*.—Bird singing in the usual place. On the 7th there seemed to be two singers. Song almost ceased on the

13th. I was away till July 21st, when the birds, old and young, were still in the osiers.

1898, *June 4th*.—Birds paired, and male singing, in the usual place. The osiers were still neglected and overgrown, but there were open places here and there. On 20th I found a nest with five eggs; on 21st a second with one egg, and a third with four. Two of these were in meadow-sweet, the other in the osiers. From one of these nests the eggs gradually disappeared between June 25th and 28th, when I cut it out of the meadow-sweet, and found the egg of a Cuckoo buried under a fresh lining. This nest is now in the Oxford Museum, and I believe this is the only case on record in this country of a Cuckoo laying in a Marsh-Warbler's nest. The explanation probably is that the Cuckoo was very late with her egg, and the Marsh-Warbler's nest was the only one handy which contained freshly laid eggs. As it was clear that the removal of the Marsh-Warbler's eggs was not due to any human being, it may probably be put down to the Cuckoo herself; but I confine myself to the facts as I saw them. Another nest was destroyed in my absence. The young in the remaining one had flown by July 8th, and I heard singing again on the 9th (*cf.* 'Zoologist,' 1898, pp. 356-8).

1899, *May 31st*.—Birds singing in usual place, but faintly, as if just arrived. A nest had been begun on June 18th. The young had flown by July 6th, when I returned after absence from home. There were probably one or two more nests.

1900, *May 30th*.—Bird singing well in the usual place. The osier-bed was in a very wild and overgrown condition, and hardly so well suited to the birds as it had been the last year or two. They seem always to prefer to build near the edge, and in spots where the growth is not too dense and heavy. Still, on June 14th two nests were being built, one in osiers, the other in meadow-sweet. On the 24th the one in osiers contained five eggs; the other had two eggs, which resembled those of a Reed-Warbler. The latter is a very rare bird in this district, common as it is in the upper Thames Valley not far away; and, as the eggs of the two species do occasionally approximate in colouring, it is just possible that this was really a Marsh-Warbler's nest, as I had judged by its structure. But it was forsaken shortly after this, and I was unable to determine the point. In a third nest an

egg was hatched on July 3rd, and I think there was yet another pair of birds in the osier-bed, but, owing to the tangle of undergrowth, I was no longer able to search effectively. In the autumn of this year the osier-bed was sold, with the land around it. I at once tried to interest the new owner in the birds, and he very kindly consented to leave them some cover for next year's nesting. But, as will be seen, from this time onwards the colony began to find difficulties.

1901.—The osiers had been cut in the winter, except at one end, where sufficient cover had been left. This year I first heard the song on June 1st, not in the usual place, but in the larger osier-bed, where I had first heard it in 1892. Next day, however, I heard it in the usual haunt. I was away at Lyme Regis for some time, engaged in a fruitless search for the Melodious Warbler, but my friend Mr. Aplin, with the Earl of Gainsborough, found a nest nearly finished on June 17th, which on the 22nd contained four eggs, of a type which was new to me, the dark spots and blotches being much less distinct than usual. This nest, the only one found this year, was unluckily forsaken by the birds.

1902, *May 31st*.—The bird singing in the usual place. The osiers had been cut in the winter, all but a small patch, and on June 22nd I found a nest with four eggs in an isolated patch of withies. When I returned from fishing in Wales, in mid-July, the young were still in the osiers, and continued there till the 25th.

1903.—This year there was only a small patch of osiers left standing, and the meadow-sweet, willow-herb, &c., were late in growth; so that the general appearance of the osier-bed must have been decidedly discouraging. On June 1st, however, I found and heard the bird as usual, and on the 21st I found a nest with four eggs, in nettles for the first time. This nest was well photographed *in situ* by my friend Mr. H. G. Maurice. The young were hatched on the 25th. On July 2nd I heard a bird singing vigorously on a hedge about one hundred and fifty yards away. This seemed to indicate the presence of another pair that had not found suitable accommodation in the osier-bed, and careful watching confirmed this suspicion. The singing went on in the hedge for some days, during which a pair of birds were

evidently trying to find a nesting place. On the further side of the hedge was a field of beans, and what I saw induced me to examine a particular spot in this close to the hedge. Here, on July 5th, I found an unmistakable and pathetic attempt to use the bean-stalks as supports for a nest; several pieces of dry grass had been threaded round them. This attempt was given up, but I have some reason to think that a nest was built not far away. The young in the other nest had flown by July 6th.

1904.—This year the owner had forgotten his promise, or fancied we had seen enough of the Marsh-Warbler. The osiers were now entirely cut down, and in early June there was no cover suitable for the birds. On June 4th, however, a bird was singing as usual, and on the 12th there was singing going on both in the osiers and in the hedge to which the birds had taken a fancy last year. On the 16th I found a nest with four eggs in willow-herb in a new position in the osier-bed, where a spring kept the ground wet, and favoured the early growth of the plants. This spring and the wet ground had up till now been steadily avoided by our birds, which (as is well known) rarely or never build over water; but this year they seized on the only chance open to them, and by doing so produced a comparatively early brood. On the 18th another nest was exposed and ruined by mowing near the hedge and field already mentioned, at the bottom of the railway embankment, in meadow-sweet. On the 28th there was again brilliant singing in the hedge. On the 30th I found a nest just completed in cow-parsnip under the hedge, at 5 a.m., but, on taking Mr. Aplin to see it later in the day, we found it also exposed and spoilt. So long as the birds could remain in the osiers they were almost sure to escape harm, but in their attempts to establish themselves in more public places near at hand they made a mistake. Singing continued till July 7th, but I found no other nest.

1905.—The osiers seemed quite hopeless this year, but on June 4th I heard the bird singing in the other and larger osier-bed, which was well-grown and suitable for their operations. Here they continued to sing for some time, but no nest was found. A new bit of railway was being made close by, and the men at work were apt to come into the osier-bed. It looked to me as if such conditions as we could offer them would no

longer prove attractive to the birds, and this year (1906) I have not been able to find them either in the old haunts or anywhere in the neighbourhood.

OBSERVATIONS ON THE FOREGOING RECORD.

1. *Time of Arrival*.—It seems clear that this is the latest of all our summer migrants to arrive in its breeding quarters—a fact of some importance in estimating the difficulties it meets with in this country. My earliest date is May 30th, and, as I have always looked for it before the end of May, we may confidently conclude that it does not reach Oxfordshire, as a rule, till the beginning of June. In Switzerland it is, of course, somewhat earlier, but in 1895 it was not in its usual breeding places at Stanzstadt at the end of April, where I have several times found its nest with eggs in mid-June. This year (1906) it was pairing in the valley of the Somme, near Abbeville, on June 1st; in 1898 it was there at the end of May. Whether it has arrived in our osier-bed paired or not is a question which I cannot answer with certainty, owing to the nature of the cover; but on the evidence before me I should guess that the male arrives a few days before the female. If this be so, it is remarkable that a female of the same uncommon species should always find her way to the right spot—unless, indeed, both are members of the same family, born in the same place. As bearing on this question, I may mention here that all my endeavours to find or even to hear of this species anywhere in this neighbourhood have been failures.

2. *Choice of Nesting Place*.—When the birds first arrive, if the season is at all late, the plants in which they like best to hang their basket-like nest are not ready for them, and this is perhaps the reason why in this country (and also, I believe, in Northern Germany) they particularly affect neglected withy-beds. Unless the withies have been cut close in winter, they will in June be able to supply the necessary support. But here I may remark that it is not every kind of osier-willow that suits our bird; I have never found the nest in any but *Salix triandra*, which sends up pliant perpendicular shoots quite close to each other. The other osier to be found in all withy-beds (*S. viminalis*) is in every way less suitable. If the osiers in the favourite breeding place have been cut, and the season is late, the birds

will be in serious difficulties, and will search for suitable sites in hedges and ditches, and have recourse to nettles, wild parsnip, or even beans, as we have seen. Here, of course, they run far greater risks than in the dense vegetation of the osier-bed, where I have hardly ever known a nest destroyed or even discovered by the ploughboys who are constantly about the spot. The difficulties met with by my birds during the last few years lead me strongly to believe, apart from other evidence, that the Marsh-Warbler is not, and cannot be, a more abundant bird than we commonly think. What it really loves best, and rarely finds in England except in some parts of Somersetshire and Cambridge-shire, where it first attracted notice, is a large space of flat alluvial ground, with convenient bits of cover, such as thick bunches of tall plants, scattered here and there.

3. *The Nest and Eggs.*—The nest is always two or three feet from the ground, rising somewhat if the plants are growing, made almost entirely of dry grass, sometimes with a very slight admixture of wool or moss, and lined with fine rootlets and a few hairs. (In the nest in which a fresh lining was laid over the Cuckoo's egg there was a conspicuous lump of white wool, which was so unusual as to attract my attention, leading to the discovery of the intruder's egg.) The nest seems a very slight structure, but is in reality strongly put together; for several years I amused myself on Christmas Day by looking in the osier-bed for one built there the previous summer, and in each case found it entire. It is attached to two fairly strong stems of the supporting plant by what I can only describe as basket-handles, *i. e.* the dry grass is at those two points stretched considerably above the proper rim of the nest; usually two or three slenderer stems of the same or another plant are taken into the material of the nest, and pass through its rim. In this point it resembles many nests of the Reed-Warbler, but it is not so deep or so solid as the usual Reed-Warbler's nest, and may always be distinguished by the obvious "basket-handles." A long and close acquaintance with these nests has made it clear to me that the peculiar art of this bird cannot readily adapt itself to many kinds of plants. In this respect the Reed-Warbler has the advantage; I have known it build in two or three different kinds of bushes where it could not get reeds.

There is no need for me to describe the beautiful eggs of this species, which are now well known. The best figure I have seen is of one from our osier-bed in Messrs. Collett and Parker's recently published volume on British inland birds. In all undoubted Marsh-Warbler nests which I have seen myself both in England and abroad, the eggs have been recognizable at once by their clear bluish-white ground colour and dull violet or brownish markings; one clutch, however, may differ considerably from another, chiefly in the strength of the colour of these markings. Whether they ever approach to the type of the Reed-Warbler's eggs I cannot certainly say; it is more likely, I think, that Reed-Warbler's eggs occasionally approach the type of the Marsh-Warbler. Such an egg was found by Mr. A. Holte Macpherson and myself near Abbeville in 1898.

4. *The Young Birds*.—Incubation has within my experience lasted fourteen or fifteen days. In 1897, when I had unusual opportunities of observation, I made the following note (*cf.* 'Zoologist' for that year, p. 288):—"The first contour feathers were almost black; on the tongue were two barb-shaped spots, or rather processes, with the narrow end towards the bill fixed, while the broad one towards the throat was loose, and was raised when the nestlings opened their bills wide. Two days later brown feathers on the back began to appear, the brown being decidedly darker and more rufous than that of the parents. The iris was very dark brown; the legs and feet light flesh-colour. The throat was buffish white, and the breast dull buff." When the young birds had left the nest it was easy to distinguish them from the parents by their darker brown backs, their yellow bills, and the duller white of throat and breast. I found them using as a call-note the same sibilant cry which their parents used as an alarm-note, but it was shorter and fainter, and almost more like a hiss than a croak.

5. *Song and Alarm-notes*.—The delightful song of this species has often been described by myself as well as others, and all I need say about it here is that it is more silvery, high-pitched, sweet, and varied than that of any other species of Warbler with which I am acquainted, and is carried on with extraordinary vivacity when the bird is in full song—so much so as to attract the attention of men working on the railway adjoining the osier-

bed I have been speaking of. Others making hay soon after sunrise have also expressed to me their admiration. It begins very early in the morning, and is at its best till ten or eleven a.m., when it usually ceases for a time. The power the bird possesses of mimicking other songs has been less obvious to me of late years, perhaps because I have grown to be so familiar with the song; but there is no question about it. The alarm-note, not to be heard till the eggs are laid, is much like that of the Sedge-Warbler, but higher in pitch and less grating—a kind of musical crake; I learnt to distinguish the two without much difficulty. When much excited the birds, or possibly the male only, would utter a musical and pleasing chirrup in the middle of the usual crake, and once or twice I have known the bird almost break into song, as the Sedge-Warbler sometimes does when angry.

6. *Coloration of the Adult Bird.*—Skins are not safe guides in this matter, and, as I have frequently had the Marsh-Warbler under observation at distances of from two to ten feet, I may say, in conclusion, that the general colour is a *pale earth-brown* in the breeding season, uniform all over the back. The head is slightly darker; the legs are pale or dull flesh-colour; the eye-stripe is, as a rule, only visible when the bird is quite close to you—never nearly so clear as in the Sedge-Warbler. Those unacquainted with this species may easily distinguish it from the Sedge-Warbler by the faintness of this eye-stripe, and from the Reed-Warbler by the absence of any rufous tint in the plumage.

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE,
1904.

BY O. V. APLIN, F.L.S., M.B.O.U.

January 1st. — Wood-Pigeons here in vast flocks on the stubbles. Hard frost.

6th.—Milder weather. Three Snipe and a Teal in the Swere valley near Wigginton.

7th.—Handled two Crossbills—one red, the other green—shot at Tussmore on the 5th.

8th.—Mistle-Thrush singing well, and Song-Thrush in the afternoon; very little song lately.

12th.—Mild. Nuthatch with the run of long whistles. Coal-Tit with spring note.

17th.—*Galanthus elwesii* in flower a week ago.

20th.—Fieldfares continue very scarce, and Redwings conspicuous by their absence; a few at one spot on the 6th are all I have seen this month. There are no "haws."

22nd.—Sharp frost. A big flock of Linnets on high ground, on clover, near Tadmarton Camp; unusual at this time of year. In the valley below the only good flock of Fieldfares I have seen as yet.

23rd.—Bullfinches very abundant this winter. In the 'Field' to-day is reported a Bittern seen at the gravel-pits near Aynho Station a few days ago.

24th.—A Hawfinch feeding on holly-berries within a few feet of my study window.

25th.—Sky-Larks very numerous; in large flocks.

28th.—Many Song-Thrushes, and much song.

31st.—Rain and snow. Thrush sang while it snowed.

Rainfall 3·17 inches, on sixteen days.

February 2nd.—A deluge of rain in the afternoon. At least two Blackbirds opened song, singing before and after the rain. The open winter, with plenty of food, has made them early.

3rd.—Torrents of rain. Our little valley full of water, and the flood said to be the highest for twenty-two years. "February fill-dyke" found the ditches already full.

5th.—Uplands and valleys alike are simply swampy.

8th.—Floods out again. Two Chaffinches singing in the garden, the song rough and unfinished. Hawfinches have lately been visiting a garden open to the village street, in which there are some big Portugal laurel bushes—perhaps to eat the seeds.

10th.—The floods in the Sorbrook and Cherwell valleys are probably the biggest since the "seventies," and the country generally certainly wetter than in any part of 1879.

17th.—Some Redwings; more than I have seen all the winter. Two small flocks of Wood-Pigeons and one of Peewits.

19th.—Twice lately I have seen a small flock of Corn-Buntings round ricks; they call "trit" as they fly off. This bird began to sing about the 15th.

20th.—Very mild, after six days of snow and frost on and off. Robin began building in some high rockwork close to the house, where it has nested for several years.

25th.—Saw two more Crossbills, which were shot at Tussmore just after the first two.

26th.—Snow.

Rainfall 4.54 inches, fell on seventeen days.

I have had news from Mr. Fowler of an adult Red-throated Diver, caught at the end of this winter, and probably this month, near Chipping Norton Junction Station, by a boy who said he blundered against it in the dusk. The bird nearly poked his eye out when he got hold of it.

March 1st.—Mr. Darbey, of Oxford, told me he had received many Hawfinches to stuff this winter. Also that in the summer, four years ago, he had a "basketful" from Blenheim, where they were breeding in the gardens, but did too much damage to the peas. On the pool by the railway near Wolvercot I saw eight Coots, and a Great Crested Grebe, still looking very grey.

5th.—Cold and snowy the last few days. Not a bud swelled, except a few of the flowering currant, low down and sheltered.

6th.—Rooks busy at nests.

8th.—After a pouring wet night, with nearly half an inch of rain, the weather changed to-day, and the long spell of wet

weather, which has lasted about fifteen months, came to an end quite suddenly. Nearly all the 1.56 inches of rain (on twelve days) fell in the first eight days of the month. A beautiful day. Crocus expanded for the first time. Peewits on the young wheat paired, and lavish with their sweet spring call-notes, doubly welcome after the long wet winter and retarded spring.

10th.—Dr. Routh told me he had seen a pair of Hawfinches at Sibford, and Mr. Warriner that he had had one on his lawn at the Grove lately. There has evidently been an immigration of these birds.

11th.—A pair of Stonechats on Tadmarton Heath, where I have not seen one for a long time. A Hawfinch in the holly-tree by my window.

12th.—Pied Wagtails noisy on the ploughings.

14th.—Song-Thrush (*cf.* Zool. 1904, p. 363; 1905, p. 414) has for the third year built in the same spot on the top of a wall plum-tree, using horseradish-leaf remains, and leaving streamers of this from twelve to eighteen inches long—most untidy and conspicuous. There were two eggs in the nest on the 20th, and the clutch was completed; but a day or two after I found them all on the ground a yard or two from the foot of the tree, one quite whole, and the others in fragments. I am at a loss to know what vermin could have accomplished this feat, but suspect Jackdaws. I hope the old bird escaped.

15th.—A female Grey Wagtail at Barford Mill, where this species bred once.

16th.—Lesser celandine in flower.

17th.—The Crows which destroyed the rookery at Wickham two years ago seem to be still in possession, and this evening I saw them drive off a party of Jackdaws.

21st.—One apricot blossom expanded. Last year the same tree had several expanded on Feb. 20th, showing a great difference in the two seasons.

23rd.—In sheltered places you can here and there find a hawthorn-bud burst and green.

24th.—Saw a Peregrine Falcon flying over some arable fields, and going to a grove of trees on Hob Hill. Mr. Bartlett said he had preserved some Hawfinches this winter, and I had news of some seen at Adderbury lately. A large Chub of from two to

three pounds was found on the banks of the Sorbrook yesterday, and close to it the marks of an Otter, which marks I frequently saw afterwards. I bought to-day a female Stoat, killed this month near Huskott Mill, which, notwithstanding the mild winter, was nearly white.

28th.—Two Hawfinches visited the holly-tree by my window several times. I watched one (a male) for nearly half an hour at a distance of perhaps six feet from me. It was biting open the berries to extract the seeds, sometimes leaving the berries hanging on the tree, and sometimes pulling them off, and mumbering them in its great beak until the seed was detached from the skin and pulp. The bird was so close that I could hear the little snapping noise made by its already bluish beak. It is a quiet stolid bird when feeding, and very much resembles a Greenfinch in that respect. The alarm-note when a bird flies out of the tree is a thin shrill "cheek." Possibly the reason of Hawfinches visiting gardens so much this winter is the failure of the crop of haws in the open country.

29th.—Blackbird's nest with three eggs.

31st.—Kestrels pairing, and uttering a soft chatter, while their aerial evolutions as they toyed round a group of trees were most graceful. Received the first Peewit's eggs (four) from West Oxon, taken in a field which was being ploughed on the 29th. One was broken, the other three weighed just three ounces.

There is a grassy hillside in Milcomb parish which, from imperfect drainage and the cold clayey nature of the soil, is at this season usually very bare of pasture, that little being of a poor quality and mossy. Gorse is inclined to spring up in places, however much suppressed. The ridges and furrows run straight down hill, relics of the fat days of farming when this land was arable. Because of this barrenness, and its open aspect, the field is the favourite breeding place of a few pairs of Peewits (others nesting in the fields around, which are high-lying and poor bad land), and I find it an interesting place on which to watch the early breeding habits of these birds. I went up for the first time this year on the 20th inst. The short grass was "whitey-brown," with a shade of green; the furrows were wet. There was a nice lot of birds about, and one pair mobbed me, screaming and

making the humming noise with their wings ; I found only one nest-hole, unlined.

27th.—Three pairs of birds in the field, and found three holes, not lined.

April 3rd. — The nest-holes were unchanged, and there were no birds near them, as was the case last week. But four birds got up from the other side of the field, which I had not previously searched. I found three nests, containing four, three, and one eggs respectively. The first was a depression in the moss and grass, lined with dead round stems of hard grass. The second (twenty-four yards higher up the field) was in such a deep tuft of grass (and protected, too, by the single trailing stem of a seedling thorn) that the eggs were well sheltered, but this also was lined with similar material. The third nest (one egg) was higher up still, and in a very bare place, so that the nest had no shelter at all from the surrounding herbage ; it was very substantial, having quite a bed of stuff half an inch thick—hard round grass-stems, coarse grass-blades, hard dry stems of some other plant, and a few bits of moss—and was nine inches across. On the 6th I found that this egg had been deserted, and I took it and found it quite fresh. Higher up in the same furrow I found another single egg in a nest formed of a good bed of grass, and probably laid by the same bird.

From these observations I think it is clear that early-breeding Peewits at all events build regular nests before laying, and do not merely add a little lining to the bare hole as incubation proceeds. I have in other years seen well-lined nests with fresh eggs, stubble, squitch-roots, and potato-haulm being used, and last year one of four eggs, and another empty not far off, built of stubble. These were in barley-stubble with clover—short and late in mowing. The nest with four eggs had a distinct rim raised above the level of the ground ; this was probably because the ground was too hard for the birds to be able to scratch out a deep enough hole, and a raised nest would not show in the clover. I remember a well-raised, built-up nest, in a foul and late wheat crop early in April one year. To return to the nests of this season—on April 7th, at Langley, two nests of four eggs each in an old saintfoin field, which had been wheat the year before,

were substantially built of old stubble with some bits of saintfoinstems in one of them. The eggs looked fresh, and one egg which I took was quite so. A nest on a ploughing, from which four fresh eggs had been taken on the 5th, was hollowed out of a lump of old weathered strawy manure.

April 1st.—Hawfinch in holly-tree twice to-day. Hedges and vegetation generally very backward.

5th.—The first warm spring day, 55° in the shade. A Song-Thrush's nest, which contained one egg on the 31st ult., to-day held broken eggs and tail and other feathers of the bird. It is wonderful what a number of these early nests are destroyed. This one was well hidden in a young spruce several feet from the ground. A Long-tailed Tit's nest, built in a thick fork in a naked hedge, and very much exposed; being covered with flat silvery lichen, it looked just like a lump of this. It was not yet lined.

7th.—At Langley, a Mistle-Thrush's nest contained four eggs already very "hard sat." These birds, as well as Song-Thrushes and Blackbirds, when nesting in the little old covers of mixed deciduous trees (the remains of the ancient forest of Wychwood), make use of a great deal of bright green moss on the outside of the nests; some nests, indeed, are formed externally chiefly of this material. The local name of the Mistle-Thrush in the "Forest" district is "Seecher."

8th.—Visited the ruins of Minster Lovell, on the banks of the Windrush, and once included within the limits of the forest (Skelton's 'Antiquities of Oxfordshire'). Part of the walls of this grand ruin are still of great height, and others are clothed with a heavy growth of ivy. It forms a most interesting breeding station. Crowds of Jackdaws and Starlings breed there, and the Stock-Doves, which I could hear "grunting" all about, probably also nest there. The Barn-Owl has bred several times (and this year again, as I heard later) in a hole high up in one of the walls, and on one occasion the eggs of the Kestrel were found. Close to the ruins there is a rookery, frequented by the Tawny Owl. This year the latter bird, Mr. Calvert tells me, bred on Potter's Hill Farm, not far away, in a hole in a tree so low down that you looked down on the young birds when standing on the ground.

10th.—Heard the Chiffchaff as I was dressing, and several more about Milcomb gorse later in day.

11th.—Five Kestrel's eggs, considerably incubated at this early date, were found in Fifield Heath Wood to-day, and shown to me later in the season.

12th.—Several Willow-Wrens in song, and one Swallow. Put a Crow off her nest high up in the small branches of an elm. Greenfinch feeding on larch-cones.

13th.—To Watlington for a few days to look at the bird-life of the Chilterns.

The way in which the chalk downs jut out into the plain-like valley of the Thame, like headlands on the sea-coast, is very curious. They rise in some cases five hundred feet above the plain. Standing on Beacon Hill, and looking north, the hills, thickly wooded at the top, are seen to describe a concave curve to where the bare chalk down of Crowell Hill stretches out into the plain right up to the ancient Icknield (or "Hackney") Way. Inside this curve lies a characteristic bit of the plain; bare arable fields (whitey-brown this dry weather) with hardly anything in the way of hedges, and those in long straight lines separating farms rather than fields, and no trees save some shelter-trees round the farmhouses. Further from the foot of the hills the country is more wooded. Peewits are fairly numerous on this ground, and the Corn-Bunting is common, as also on the arable land on the hill-tops. Larks are very abundant, and to a less extent on the downs also; the amount of song in spring is wonderful.

When any attempt has been made to cultivate the downs it seems to have been generally a failure, and a miserable barren appearance has been produced; the natural turf having been destroyed, not even a decent growth of weeds can be got. However, it suits Larks, Peewits, and a few Stone Curlews. The tongue of Beacon Hill, mossy and thyme-grown under foot, and thickly dotted with juniper-bushes up to six or seven feet high, is liked by Red-legged Partridges; and I have seen a Bullfinch's nest in quite a low juniper-bush on the hills at Chinnor.

Stonechats are not so common as they were years ago; I saw four pairs this year. Linnets are very abundant, and

Yellow Buntings numerous. I heard a Cirl-Bunting in a plantation on the hills above Shirburn, which I could not go into. On Watlington Down are some old wind-swept yew-trees, and there are many along the Icknield Way which must make fine winter shelter for the birds. I could see or hear nothing at Stokenchurch of the Wood-Lark, which used to be found there. The immediate vicinity of that place is bare and wind-swept, gorsy, and resembles one of the commons once one of the features of these hill-villages, but now threatened by the land-grabber. The enclosing of the woodlands has been going on for a long time, and the advent of the motor has put the finishing touch to the spoiling of what was not long ago a beautiful bit of wild Oxfordshire.

Perhaps the principal natural feature of the country is the great beech-woods, and nowhere else in the county have I seen so many Marsh-Tits; their song, "tit-chit-chit-chit-chit," rather quickly delivered, was very noticeable. Beech is still the predominating tree, though conifers have been introduced, and many others are indigenous, the hornbeam and cherry being perhaps not without influence on the avifauna, and the spurge-laurel is common in places. The Mistle-Thrush is very numerous, its loud song resounding in the wooded hillsides. Young were hatched by the 14th, and I found two more nests the same day.

The number of old and new Blackbirds' and Thrushes' nests one sees along the Icknield Way in small thin trees and the ancient hedges, both ivy-grown, is extraordinary. The Carrion-Crow and Magpie are being wiped out by the Pheasant-rearers, but I saw one of the former and a few of the latter. Jackdaws, on the other hand, abound, and probably may breed in rabbit-holes, as also possibly the rather numerous Stock-Doves. The Red-legged Partridge is common on the hills, &c. Of the Stone Curlew I saw only one bird, at the foot of Bald Hill; but about sundown I heard them calling on Swyncombe Down. When they begin the call is almost a hissing sound, but gets fuller at each repetition. It is very shrill, and the "lee-ewk" very peculiar, with almost a Celtic *ll* sound in it. The call is sometimes almost "kurr-lee-ewk." The birds were calling just as the sun set, like a red ball. On the evening of the

14th, about 7.30, and getting dusk, only a few Song-Thrushes still singing, as I was coming along the Icknield Way, a good-sized flock of Fieldfares, followed by another, flew overhead, coming from the down, and calling loudly. They flew north-west, and, as it seemed too late in the evening for them to be leaving feeding-grounds (even if they were likely to be going to roost in the low arable land), I thought they were starting on migration.

The Long-eared Owl, a resident in some numbers in the west of the county, bred, as it has often done previously, again this year in two fir spinneys on the high land between Shipton and Burford.

16th.—Cuckoo, Wheatear, Tree-Pipit, Redstart, Blackcap, and Nightingale.

18th.—Carrion-Crows sitting on three eggs since the 16th.

20th.—A clutch of four Crow's eggs brought in.

21st.—Sand-Martins near the Tadmarton breeding-place.

22nd.—Clutch of six Magpie's eggs brought in.

23rd.—The Crow whose eggs were taken on the 18th was on the nest this evening. The nest is so difficult to get at that I dare not send up again. Ray's Wagtail and Wryneck here.

24th.—Lesser Whitethroat, Whitethroat, Grasshopper-Warbler, and Sedge-Warbler. Saw a pair of Wrynecks near Milcomb, quite scarce birds here. The first day for a week we have seen any migrants about.

(To be continued.)

OBSERVATIONS TENDING TO THROW LIGHT ON THE
 QUESTION OF SEXUAL SELECTION IN BIRDS, IN-
 CLUDING A DAY-TO-DAY DIARY ON THE BREEDING
 HABITS OF THE RUFF (*MACHETES PUGNAX*).

BY EDMUND SELOUS.

(Continued from p. 294.)

April 18th.—Up at five, and at the place a little after six. One bird only flies off as I come up. A little afterwards three or four come down, but almost immediately fly off again. They certainly could not have seen me, nor was there anything else, as far as I know, to alarm them. About 6.30 a single one flies in, but leaves very shortly. A little afterwards, on looking, I see two. Then there are three, but two go off, leaving a single one, who, after staying some time, follows them; and, it being now 8.30, I go back. No Reeve appeared all the time.

This morning, therefore, was very different to yesterday. It is a dull, cloudy, blustering day; cold, too, though not so cold to my sensations—and I should be a judge—as yesterday. Then, however, it was fine and sunny, though the sun can never reach me. It may mean, therefore, that the weather has thrown the birds back, and this I hope, as I am, then, the likelier to see things. Still, at one time, things had an interesting appearance. The three birds, for instance, made longer and more business-like runs about the place than did any yesterday. Of actual fighting, however, there was nothing, and just as it seemed as though something were on the point of happening, away they flew. There were, too, some good examples of the deportment of Ruffs on the assembly-ground, when others of them are about to fly down upon it. They (these same three birds) strained upwards, flapped their wings, and would often run about, and threaten at each other. I always knew, from this behaviour, when a bird (or birds) had flown near, even though, from my view being circumscribed, I could not see it, and it did not then

come down. Generally it did so very shortly afterwards—after another circle, no doubt—and, as it did, these actions were repeated. In the few cases, however, where nothing followed, I could have no doubt as to what had caused the excitement—the stretching up especially being quite distinctive.

Returning again at 2 p.m. I find the place as bare as when I left it. Only one or two Ruffs came in between then and four or five, and no Reeves did; so that it seems evident that this wintry weather has given a check to the nuptial activities.

April 19th.—This was a dreadful day, and I have nothing to record.

April 20th.—Better weather, especially in the morning, which, though cold, was sunshiny on and off. I was then, however, elsewhere, and it was about two before I got to my place of espial. I watched till six, during all which time there were birds, on and off, but (except once, when nothing took place worth recording) only males, and never more than six together—more usually two or three. Close attention to these Ruffs—or rather ordinary attention at close quarters—shows a state of things less simple than mere intuition might lead one to suppose. They are constantly, so to say, mistaking one another for the female. One of a pair, for instance, that have been inseparable since their arrival, keeps, at intervals, trying conclusions, after this fashion, with the other, who, for its part, almost permits of this, then makes a flounce about, on the ground, in the curious crouched attitude, ruffling its feathers, and holds up its bill, in a curious way, to its solicitor. Then it sinks down, quietly, by the side of and, sometimes pressed against, the latter, but soon all this is repeated. From a distance this might be mistaken for fighting, but perverted sexuality is the real keynote, though the more ordinary fighting instinct may mingle with this. In fact, the birds seem sometimes hardly to understand themselves, or to know where their feelings are leading them. One of these two would sometimes run at another, some way off, and then immediately return to his companion, against whom he would press himself and sink down beside him. Later the same pair made, twice or thrice, an absurd sort of demonstration against each other, never springing or coming into contact, and desisting almost at once.

April 21st.—A very unfortunate morning. Getting up about five, I got to the place not much after six. As I came up I saw a number of Ruffs and Reeves, and my experience having hitherto been that, upon walking quickly up and getting into position the birds that flew off soon returned, I did so now. I was, however, very disappointed. They did, indeed, return very shortly, but only to fly off again, without even settling, and this they continued to do—the Ruffs, that is to say, for I never saw the Reeves again—time after time, just hovering over the place, and going on, except one bird, which for a long time stood there, and, when it flew off, continued to come back. Latterly he was joined by one or two others out of the flock, but they stayed only a few moments, and then followed the rest, taking, as a rule, the staunch one with them. This continued till past eight, when, seeing no prospect of more interesting developments, I returned to my village and breakfast. Getting down again between 10 and 11, I crept gradually up to the place, putting up a few birds that were there. It is now 1, but, though a sunny day, and much warmer than it has been latterly, there is as yet no sign of their foregathering.

From about 3 the birds began to come in, for some time all Ruffs, but by 4.30 or so there had been first a single Reeve, and then three, with as many Ruffs. It is curious, however, that nothing like the same effect seemed to be produced in the latter by their presence, as on other occasions, or, later, on this. For at about 5, when a single Reeve flew in—I think with a Ruff—making then, or soon afterwards, ten Ruffs to one Reeve, there appeared to be more excitement on her account. There was, however, no fighting—a spring or two, once or twice—nothing that could be called such. The one marked feature was the *couchant* or prostrate posture which all the birds assumed, seeming to be pressed into the ground, though some had the hinder part of the body a little raised from it. When I could get a good view of these it seemed to me as if the anal parts were moving in the way I have before indicated—but again I had to distinguish such movements from that given to the feathers by the ceaseless wind. It certainly seemed now that every bird had assumed the prostrate attitude on account of the Reeve. As for her, she seemed very indifferent. Having alighted and

made a few first steps, she moved very little, but when she did there would be a commotion amongst the Ruffs nearest to her. These turned round, raised themselves a little, pressed, again, to the ground, whilst one or another, and, at one time, at least three or four, ran up nearer to her, in this curious sort of way, and then lay prone, about her. The golden-brown bird did this more noticeably than any other, and she moved a step or two up to, and stood close beside him, as though approving him more than the rest. On the whole each bird seemed content, as it were, to wait, thus glued to the ground. Certainly the Reeve looked indifferent, but were an actress transformed into a bird, and required to be languishing, I know not how she would convey that impression to us through facial expression only.

The difficulty of forming a judgment as to all this is that it takes place, though in a less degree, when there is no Reeve present, and again the excited prostrate or semi-prostrate attitude passes into mere quiescence. It is most marked, on these occasions, after a little pugnacious excitement amongst the Ruffs generally, as when some have come down amongst those already assembled, which always produces running about and general enlivenment. Then, all at once, every bird may hug the ground in this way. Still, both now and at other times when the Reeves were present, such special attitudes, with the excitement which produced them—the whole thing, in fact—was by many degrees, I think I may say, more marked than when there has been no such stimulus. As yet—speaking only of this year—this has not been the case with the actual fighting. Now, for instance, there has at last been a really sustained, as well as very violent, duel between two of the Ruffs. The birds fought most furiously, kicking one another, hitting out with their wings, and seizing one another with their bills. They separated several times, one, when this happened, being generally worsted for the moment, and pursued by the other, till, outdistancing him, he turned, and, crouching, rushed furiously on him again. This lasted, perhaps, some three or four minutes, and then ended by mutual consent, perhaps through mutual exhaustion, for the birds fought like demons—yet not harder, I think, than Coots, and nothing like so long as I have seen these fight; indeed, they go on without pause or break, and with no diminution of energy,

for half an hour, or perhaps even more, at a time; so that, if they were not dull-coloured birds, they might be cited as evidence of that superior vigour which it is our duty to find, throughout nature, in association with bright colouring. This, I think, is a little hard on them—the Coots—but Swifts, Swallows, Peregrines, &c., are in the same predicament. However, here is the Ruff, and the height and the elastic vigour of the springs which these two made was quite wonderful to see. Who could doubt that they owed it all to their colour, or help wondering that they were not iridescent? We see, here, the force of the principle—a little goes a very long way. For converse examples we may turn to Trogons and many other birds. There was no Reeve present during this duel. My principal observation during the earlier part of the time I watched was a repetition of what I have before noted in regard to the sexual perversion, as one calls it—a term which serves to save one the trouble of thinking—of these Ruffs, or of certain of them. I need not note again what I have before described, as it was exactly the same thing, and also—which strikes me as interesting—between the same pair of birds. Again, when one pursued another (this is a second example), and caught hold of him, he seemed to me to be actuated more by concupiscence than pugnacity, if the one, as is probable, did not pass into the other. Of such passages I saw a stronger instance last year.

April 22nd.—Was down at 4.30 a.m., and put up a flock of birds. As it was nearly dark, however, this did not matter, and they were there again almost directly. This at least applies to the Ruffs. It was two hours or thereabouts before the first Reeve flew in—the first, that is, that I could distinguish. The chief points of interest at this *séance*, which lasted some four hours, were as follows:—(1) The greater number of the Ruffs, amounting, at one time, to twenty-two. (2) The fewness of the Reeves, who did not, I think, number more than three, or possibly four, at any one time. (3) The earlier seeming-indifference of the Ruffs to the presence of the Reeves, leading one almost to doubt if their being there made any difference. (4) The later effect produced by the presence of either these same, or other, Reeves—I think the same—the excitement due to it becoming more and more marked, till it took its place as *the* feature of the

performance. (5) The *apparent* indifference of the Reeves, as illustrated, more particularly, by one of them. (6) The probability, if not certainty, that this indifference was only apparent, as shown by the particular Reeve in question caressing, or touching significantly, at least six times, one particular Ruff and no other. This she did by pecking and nibbling with her bill amongst the feathers of his head, he sinking prostrate to receive such caress, and remaining so whilst it was administered. His action as he approached her, and then sank down—as he did many times, in common with many other birds—was most significant. So was that of the others. He, however, was the one bird thus honoured, his plumage, light yellow and white—the crown with snowy plumes—distinguishing him easily from any other. Yet this marked bestowal of favour went hand in hand with an apparent indifference in the general look and behaviour of the bestower of it, the act itself alone suggesting the contrary. (7) The fact that, in spite of the great commotion going on about the Reeve—the great, swollen, rushing, excited birds looked as though they would sweep her away—there was yet never any interference to prevent her acting as she did, or to punish the bird she favoured. (8) The very pretty and effective picture presented by the assembled Ruffs, as others of them flew in. They not only looked up, with necks stretched, flapped their wings, and stood a-tip-toe, but also made—many of them—little anticipatory jumps. As all looked at the flying birds, this made that they all stood turned one way, and the effect was very striking. (9) The sudden away-flying, from time to time, of all the birds together, when they would make but a short circle or two round about—sometimes, I think, but one—not far above the ground, and then come down again. It was often the Reeve that started these flights, and she did not always return with the others.

It would appear, then, that this is really the courting-place, not the lists, of the Ruff—the fighting being merely incidental—but how lengthy, how almost interminable, does this courtship appear to be, and how gradually, it would seem, do the Reeves' sexual feelings become sufficiently developed to urge them to their final expression. And even when they do, as seemed the case a few days previously, when the weather was warmer and

less wintry, the male may not be ready to avail himself of the opportunity. He certainly did not do so on the occasion in question, though apparently on the point of it. Here, too, as it appears to me, we have matter which should give us pause ere we accept, in its entirety, the old view as to the coyness of the female, and the eagerness of the male. The Reeve, though it is early in the season—and she apparently has yet, or rather again, to be won—is not exhibited in a very coy light, and the Ruff, in spite of his ruffings, cannot meet her half-way, in essentials. He has been, at least, as coy as she. What is this coyness then that we exalt into a real active quality, and apply to one sex only? Is it not a mere negative, the want of that motive which, to lead to adequate action, must first be felt sufficiently? Are we coy when we have not much appetite and toy with our food; or, again, when filled to repletion, we avoid for some time another banquet—which we would even fly from if it actively wooed us? Perhaps we are, but, if so, then we have given, in natural history, a false value to the word, and an unreal limitation to one sex, of the thing. In this sense, however, which makes it nothing, coyness, I own, is a real force in nature, and under its tiresome influence it seems as though I should never see what I have principally come to see—the actual consummation of the rite, that is—“the attempt and not the deed confounds us.”

The Reeve, as far as I can see, has great power in the assembly. She is quite at her ease there, and, though occasionally embarrassed by the commotion of male birds about her, so that she may have to run a little, yet she seems to have power over the feelings she awakes. It has also sometimes seemed to me that, in some unknown way, she can either excite the males in a high degree, or hardly at all.

April 23rd.—Got to my watch-house at 12.30 p.m. only, instead of in the early morning, as I had intended; but, feeling myself obliged to make a certain visit, and having chosen yesterday, which was Sunday, to get it behind me, I was up late writing, and so overslept myself in consequence—thus does anything social interfere with anything worth doing. Two birds flew off as I came up, one of them being a brown one, which I know quite well—the loved of a certain Reeve. Now, on the

morning when I startled the birds, and they would not settle for a long time, or stay long when they did (if, indeed, it was really owing to that), this bird was a marked exception to the rest, and was on the place most of the time. Almost always, when, on coming, I have found a single bird here, it has been he, or if there have been a few he has generally been of the number. Thus he exhibits more attachment to the meeting-ground than do any of the others, and of these others some few show more than the rest—for, as hardly any two birds are quite alike in their plumage, I can recognize the more frequent club-haunters. Thus, then, we have variations in the individual strength of the impulse to seek the gathering-ground, which mark, as I suppose, the different stages through which the habit of thus associating together, in one special place, has arisen. What has been its origin, or through what early stages has it passed? As a possible answer to this, I will here interpolate some observations which I made not on the Ruff, but on the Redshanks, a bird belonging to the same family.

April 9th.—For the last quarter of an hour or so I have watched the following sport or play of Redshanks:—A little company of them, numbering, at first, eight, and then varying from eleven, as a maximum, to now only four, have stood together in a certain sandy spot, from which, at intervals, they all rise up, and make a little *Rundreise* round about, not going very far from the place, to which, before long, they return, and settle there as before. There is an interval, then, of standing or walking about, then another little flight and return, and this continues indefinitely—I do not know how long, as a rule, but in the present instance half an hour has gone by, and there have been perhaps a dozen of these little excursions. An inopportune passing by of some one, who spoke to me, would seem to have put an end to them. The number, as I say, of the birds does not continue constant, for either some of the original ones separate from their companions and fly off, the residue only coming back, or these, or the whole body, are joined by some others, or else some fly up, after the party have settled. Thus there have been, at different times, eight, eleven, seven, six, four, nine, and so on; but the sport, if we may call it so, has continued, and probably a certain number of the first eight have returned each time. I must

remember, however, that I was not here from the beginning. Now, after a longer interval, consequent on the breaking up aforesaid, three birds have come back—but again a peasant intervenes, and for a time all seems over. This was from about nine in the morning.

April 11th.—Shortly after this there is another little exhibition—though the word is too pronounced a one—on the part of the Redshanks. I notice a little collection of them, about a dozen strong, not on the same bare sandy space as yesterday, but in the grass, some way beyond it. Amongst these there are the same little ascents, the hanging, for a little, on quivering wings, above the assembly-place, the sweeping away and little flights round and about, with the ultimate return. The features, however, are not quite so marked and special, nor are there so many flights and returns. There is, too, one other point of interest. Amongst the Redshanks there is a bird of the same general shape, but noticeably larger, much darker—indeed, almost black—about the head and neck, and with the feathers of the neck thicker. This bird must, I think, be a male Ruff, whose nuptial adornments are only just beginning to grow. He, however, flies up and about with the Redshanks, stands amongst them, and acts, generally, as though he were one of them.

It was only on the above two occasions that I noticed this tendency on the part of Redshanks thus to form social gatherings, by which, of course, I mean something quite separate from mere flocking later in the year. It is easy to see how, from such beginnings, habits exactly like those of the Ruff, in this respect, might arise, for with the return, many times in succession, to any one spot, for any particular purpose, the localization of special activities may almost be said to have begun, and the more any place, during the breeding season, were frequented, the more usual would it become for the sexes to court and pair there. Yet this, probably, would not come about till the place-instinct had gained considerable strength. For the black-headed bird which I have noticed, I still think it must have been a Ruff, though I cannot well account for the disparity in size not striking me as greater than it did. A Reeve is not coloured like this, nor does she seem to me to be at all larger than a Redshanks. I

have noticed, however, amongst the Ruffs here, one or two nondescript-looking birds, larger than the ordinary female, yet not so large as the male, and with the head and neck coloured much in this way. I cannot, in fact, even now, quite make up my mind whether these birds—if, indeed, there be more than one—are Ruffs or Reeves.

Here then we see a possible line along which the Ruff's habit of assembling in a certain place, where, by preference, the courtship is carried on, may have been developed; for we can hardly suppose that a number of birds would, in the first instance, deliberately choose a spot either for this or for any other purpose. If, however, they became gradually accustomed to standing on one spot rather than on another, all the rest might follow—nor do I believe myself that any individual Ruff has ever selected its ground. But now it is not all the Redshanks that come down, after each little flight, in the one place—the band that do, that is to say, is not always represented by its maximum number. Some flew up from and went down in other places, nor was quite the same place chosen on the two consecutive days. Moreover, the birds did not continue to behave in this way for any long time. Probably, therefore, there are any number of such little embryo gathering-grounds in temporary use every day, and varying from day to day. Do we, amongst the Ruffs, see any relic of this less specialized state of things—as shown, for instance, by the same band of birds having more than one assembly-ground? This question may be answered farther on.

(To be continued.)

NOTES AND QUERIES.

MAMMALIA.

Pigmy Shrew at Great Yarmouth.—I have several times met with the Pigmy Shrew (*Sorex minutus*) at St. Olaves, on the Waveney. The first one I saw had been caught by a cat. It was badly mauled, and, as some doubt was expressed, I sent it to the British Museum, where its identity was confirmed. Since then I have tried, with absolute failure, to trap a good living specimen for photographing, but several have been taken alive from the cats, who will not eat them. The Pigmy Shrew is not entirely nocturnal, as they are caught during the day by the cats. The youngsters of the neighbourhood know the animal pretty well as the “Ranny,” a name generally given to the Common Shrew, which in this district appears to be much rarer. I have only once met with a specimen of *S. vulgaris*. This specimen I have shown to some who were likely to meet with them, but in the district round St. Olaves a “Ranny” as large as that appeared to be almost unknown. The Pigmy Shrew—or, as they called it, the “Ranny”—was recognized by most, and appears to be spread over a large district, including Fritton and Haddiscoe. Mr. Patterson tells me *S. minutus* has been recorded before—on two occasions at least—for Norfolk, but is new to the Yarmouth district. — P. E. RUMBELOW (Napoleon Place, Great Yarmouth).

Notes on Surrey Mammals.—On July 8th I saw here, flying over a large sheet of water, a number of Daubenton’s Bat (*Myotis daubentoni*). I have never seen this species recorded from Surrey before, though it is common in some parts of the Thames Valley. On the 8th of September a Noctule (*Pterygistes noctula*) was on the wing at 7 p.m. This is the latest date as yet that I have of its appearance. Another Pigmy Shrew (*Sorex minutus*) was taken at Elstead, in this neighbourhood, by Mr. L. B. Mouritz, who kindly sent me particulars. He writes:—“I noticed how prominent the snout is in this little species, as you recently remarked upon in ‘The Zoologist.’” During the past summer I have noted numbers of dead Moles lying about the roads and fields, and put this strange mortality down to the long drought.—GORDON DALGLIESH (Brook, Witley, Surrey).

AVES.

Distribution of the Corn-Bunting (*Emberiza miliaria*) in Wales.—I quite agree with Mr. Swainson (*ante*, p. 350) that the distribution of the Corn-Bunting in Wales is very peculiar; but there are parts of Wales where it can be identified at a greater distance than a mile and a half from the sea. In Western Carnarvonshire I think I have seen it nearly twice that distance from the coast, and probably localities for it in Anglesea could be pointed out which are still more distant.—O. V. APLIN.

Shore-Lark near Herne Bay.—I have much pleasure in recording a male Shore-Lark (*Otocorys alpestris*), which came into my possession on Oct. 5th last, that being the very day on which it was shot at Swailcliffe, half-way between Herne Bay and Whitstable, by Mr. R. M. Presland, of 59, Harbour Street, Whitstable. According to the Rev. F. O. Morris, the occurrences of the Shore-Lark in this country are but very few. "One (a male) was shot on the beach at Sherringham, in Norfolk, in March, 1830; a second has been recorded by Thomas Eyton, Esq., as having been killed in Lincolnshire; and Mr. Yarrell mentions two which were obtained on a down in Kent."—J. A. CLARK (57, Weston Park, Crouch End, N.).

[This bird is not so uncommon of recent years. *Cf.* Howard Saunders, 'Manual,' p. 359.—ED.]

A remarkable Cuckoo Clutch.—I have heard of and seen a good many nests containing more than their usual complement of Cuckoo's eggs, but it was not until June 24th of this year that I had the good fortune to witness this *in situ*. The nest in which *two* eggs were deposited was that of the Hedge-Accentor (*Accentor modularis*), was placed in the top of a roundish bush of the wild rose, about three feet high, and was situated in the corner of a field, a few yards only from the hedge; but the most remarkable thing about this nest was that it contained *five* eggs of the foster-parent, making a total of seven eggs in all. The eggs were all in the same advanced stage of incubation (which I proved on blowing), and were quite warm, the bird having only just left the nest on my approach, which had become quite flattened out on account of its unusual burden. I am quite certain that the nest had not been tampered with, as I took particular notice of the surroundings; not a blade of grass or a twig of the bush had been in any way disturbed. The Cuckoo's eggs were of two distinct types, evidently the produce of two separate birds. One has the ground colour white, with well-defined markings of pale brown; the other is of a

common type, with fine mottlings of brown almost obliterating the ground colour. Several interesting points in regard to the above have occurred to me, and I trust some of my readers may be equally interested, and perhaps be able to solve some of them. Granted, as is generally accepted, that the Cuckoo removes one of the eggs of the fosterers on depositing its own, there must have been seven eggs of the Hedge-Accentor's in the original clutch, which would be a very remarkable number for this species; for, as far as my own experience goes, five is a large clutch, threes and fours predominating. Again, if these two Cuckoos' eggs are the produce of two separate birds, as I have every reason to believe, is it not remarkable that two females should have found the same nest, which was beautifully concealed, and could only be seen by kneeling on the ground, and looking up through the bush? Finally, would the foster-parents have been equal to the occasion in regard to the feeding of the two Cuckoos, or would one of them, following their inherited instinct, have ejected its companion? There appears to have been quite an epidemic of two Cuckoo's eggs being deposited in one nest, this season no fewer than four well-authenticated cases having been brought before me. One of them had the two eggs placed in the nest of the Redbreast (*Erithacus rubecula*); the three eggs of the foster-parents were pure white, and almost round. — P. F. BUNYARD (57, Kidderminster Road, Croydon).

Pelecanus onocrotalus at Whitstable.—In the early part of July last a solitary White Pelican was observed on the shore near Whitstable, and it has remained in the neighbourhood up to the present time (October), having been seen as recently as the 20th ult. The bird has its night-quarters in the open marshes near the shore, some distance from the town, and when not engaged in sea-fishing roams over the pastures, and is often seen resting on the ground among the sheep at a distance of over a mile inland. The pastures are intersected with ditches and stream-dykes, which afford the Pelican food, but its almost daily habit has been to go to the shore on a fishing excursion when the tide is well out. Lately its visits to the sea have been less frequent, owing probably to the many attempts which have been made to shoot or capture it. The bird is strong on the wing, and happily has, so far, eluded its pursuers, and been uninjured by their guns. Information was sent to the Zoological Gardens, Regent's Park, of the presence of the Pelican in this locality, and it was ascertained that no such bird had escaped from that collection. The idea now is that it escaped from a vessel, and made its way to the Kentish shore, which at this spot affords it a suitable temporary home; but with the approach

of winter it is expected that the interesting visitor will take flight to warmer quarters.—SIBERT SAUNDERS (Whitstable).

Flamingo in Suffolk.—The Flamingo which Dr. Murie describes (*ante*, p. 393) as being seen on the River Alde on August 22nd was not allowed to live long, for no doubt it is the same which was shot by Mr. George Musters at Morston, on the north coast of Norfolk, the following day. It is a very fine bird, in beautiful plumage, and has been preserved by Mr. Pashley, and neither he nor I can see the slightest trace of confinement about it, its feet, wings, and plumage generally being in perfect condition, without swellings on the former, or any abrasions.—J. H. GURNEY (Keswick Hall, Norwich).

Yorkshire Notes on the Tufted Duck (*Fuligula cristata*).—This sprightly little Duck has several local names, and, as it is an expert diver—really a diving Duck—it is in many places known as the Black and White Diver, Little Black Diver, and White-sided Diver. The golden yellow irides of the adult bird's eye often secure it the name of Golden-eye—wrongly, of course, as it is easily distinguished from the true Golden-eye Duck (which, by the way, does not breed in this country). Full-grown birds scale an average weight of twenty-six ounces, and measure a trifle over sixteen inches in length. Tufted Duck are nowhere common; still, I am aware of several places in Yorkshire where a few pairs rear their young in safety every year. That it is not an early breeder is proved by the fact that I did not find a nest this year till the last week in June, when I discovered four in one afternoon. My photograph (on following page) shows one of them at home. When commencing the nest the duck will take advantage of some slight depression in the ground, the nest invariably being made on land; this hollow is sparsely lined with grass and leaves, and the greenish buff eggs laid day by day till they number eight to ten. When the duck commences to sit she almost strips her breast and body of the down so admirably adapted to making a marvellously comfortable nest. I am not aware whether the Tufted drake will strip his down as is done by the Eider when the nest has been despoiled several times; also, I had no means to test the matter, as the slightest disturbance would cause my feathered friends to desert the nest, with little probability of my locating it again with any certainty. It appears the duck takes the brunt of the burden of rearing the young, while the drake spends his time with some friends diving, swimming, flying, and amusing themselves in the approved manner of Ducks out in the middle of the lake. So far, I am unable to settle whether he takes a share in incubation or not—at any rate, he is exceptionally dutiful

when the young are hatched, and taking their first lessons in food-finding, swimming, and diving; certainly at the two latter accomplishments they are born expert. During the winter Tufted Duck congregate in bunches of seven or eight—probably family parties—on any open fresh waters, and in very hard weather will frequent the coast, rarely leaving fresh water for long, and seldom being seen out in the open sea.—SYDNEY SMITH (20, Park Crescent, York).

Hybrid Black-game and Pheasant.—Since the publication of my previous paper on this subject (*ante*, pp. 321–330), I have received



TUFTED DUCK AT HOME (*cf.* p. 432).

some additional information from various sources on the subject. Five other occurrences are now clearly established, bringing the total number of recorded specimens up to fifty-five.

[*Shropshire.*—The late Mr. W. E. Beckwith, in his work on the ‘Birds of Shropshire,’ p. 17, says:—“Since then [*i. e.* the occurrence of the Merrington hybrids in 1834, Nos. 5, 6 in my list] two similar broods have been found near Bridgnorth and Ludlow.” Unfortunately, however, no further details are given.]

Nottinghamshire (51, 52). — Two (cock and hen) were shot on the
Zool. 4th ser. vol. X.. November, 1906.

same day in Kirton Wood, near Ollerton, in October, 1865 (Mr. J. Whitaker, *in litt.*).

Breconshire (53, 54).—Two, killed in the neighbourhood of Bulth by the late Mr. T. Price, of Bulth, and now in the possession of his daughter at Brecon. A reproduction of a small photograph of these two birds forms the frontispiece to Mr. E. Cambridge Phillips's 'Birds of Breconshire' (1899). *Cf.* 'Zoologist,' 1882, p. 213; 'Birds of Breconshire,' p. 83, where, however, these examples are not recorded under the heading of Pheasant or Black Grouse, but at the end of the article on the Quail! No date is mentioned, but they must have been killed some time previous to 1882.

55.—One, killed Dec. 2nd, 1893, by Mr. A. Crawshay at Llansaint-fraed. This bird is described as being much larger than a Blackcock, and all three Brecon specimens appear to have belonged to the type illustrated by me (Plate IV.), with light coloured wings, tail-coverts, and tail, bronze-black neck, breast, and belly, and parti-coloured head (Mr. E. Cambridge Phillips, *tom. cit.* p. 83).

[With regard to No. 7 in my list, Mr. J. R. B. Masefield informs me that the Hawkestone collection has been purchased by Mr. Beville Stanier, and is now at Peploe Hall, near Market Drayton. Other examples killed on Cannock Chase are said to be found in Lord Lichfield's collection at Shugborough Park, but up to the present I have not had an opportunity of examining them, and cannot say whether they are correctly assigned to this cross.]—FRANCIS C. R. JOURDAIN (Clifton Vicarage, Ashburne, Derbyshire).

Richmond Park Notes (September–December, 1905).—On Sept. 10th a Ring-Ouzel on an oak-tree permitted me to watch it for a considerable time; they are very rare visitors to Surrey. Lesser Redpolls were in evidence throughout the autumn and winter, and during the latter season a few were constantly to be seen associated with the flocks of Siskins, which appeared on Dec. 17th, and which were towards the latter part of that month quite numerous. The first Ducks noted were a party of eleven Tufted Duck on Nov. 5th, followed by parties of Pochard, &c. On Sept. 2nd I identified two White Wagtails, and again, on the 16th, four, the last in company with some Pied. Nov. 12th saw a flock of forty Lapwings and some Grey Wagtails, the latter being also seen on the 19th; whilst sixty Lapwings flew across from the direction of Wimbledon on Dec. 24th. A Kingfisher frequented the Penn Ponds between Oct. 6th and 29th, and on the latter date Redwings and a Dabchick were observed. I flushed a Snipe out of a ditch on Nov. 19th, and a keeper informs me that several were noted early in

the morning about that date; and on the 26th two Hooded Crows flew up from the lower pond, and settled in the Pond Plantation.—
L. B. MOURITZ.

PISCES.

Anchovy at Yarmouth.—On Oct. 24th I obtained, through the kind offices of Mr. R. Beazor, one of our local fish merchants, a very fine and plump example of the Anchovy (*Engraulis encrasicolus*), that had been taken in the drift-net of a Scotch boat fishing out of this port. It measured $6\frac{3}{4}$ in. in length, and could hardly fail to attract the notice of the fishermen, when shaking out the nets, by its short length as compared with the Herrings, in whose company it had perished. But for its plumpness it would certainly never have been held in the meshes. Placed in formalin, it exuded so much grease as to discolour the water, and top it with such a layer of oil, that in four days it could hardly be distinguished in the bottle. The skin of this fish is remarkably tender, and peels off most easily, and the scales are soon removed.—A. H. PATTERSON (Great Yarmouth).

Large Chub (*Leuciscus cephalus*) in the Hampshire Avon.—A very fine specimen of this fish has recently been caught a few miles from Ringwood. Its weight was nearly seven and a half pounds—or, to be correct, 7 lb. $6\frac{1}{2}$ oz.—after it had bled considerably from a “gaff” wound. It is said to be a “record” weight for this river, if not for others, and it is somewhat remarkable that it is not a native species in this river. The older anglers in this neighbourhood were entirely unacquainted with it, not from lack of observation, or its close resemblance to allied species, for I understand even the young fry are easily recognized in the water amongst other fish—as Roach and Dace—by their darker fins. The late Mr. Mills, of Bisterne Manor (to whom several miles of the river belonged), once told me of the manner in which the species was introduced some thirty or more years ago. A Pike-fisher, having obtained permission to try his fortune, brought a number of small Chub for bait, but, being unsuccessful, one very cold day he grew disgusted with his ill-luck, and threw the whole contents of his bait-kettle over a bridge into the stream, and from that time the fish grew and multiplied, much to the annoyance of many anglers, for, although it sometimes gives fair sport, and will take almost any kind of bait (either for surface or bottom fishing), it is a “coarse” fish in the truest sense of the word, and has been described as having many bones in its woolly flesh; it also has the reputation of preying upon the small fry of other fish. I cannot speak with certainty of its having

taken possession of the *upper* reaches of the river, but it has become a common species here, whilst others have decreased, and I have known many instances of late years where fish of four or five pounds have been "brought to bank."—G. B. CORBIN (Ringwood).

[This is unfortunately not the first record of Chub having been carelessly introduced, and this fish in a Trout stream is an unwelcome inhabitant. For the Chub is a predaceous fish, being frequently caught by anglers when spinning, and I have personal knowledge of several having been taken when fishing with a Gudgeon. Still the Chub is one of the most interesting fishes if its habits are studied in the way ornithologists conduct their field-work. "Once a Chub-hole always a Chub-hole" is an axiom with anglers, and it is in some ways one of the most crafty of fishes. When a Chub has been played and landed it is not worth while fishing the same spot for some time afterwards, and those who use the natural fly best for this fish are the quietest and most unobtrusive of anglers. Of course, winter fishing in swollen and coloured water does not sufficiently give this impression. The Chub is good to catch and very indifferent to eat, but its bionomical narrative has not yet been written.—ED.]

CRUSTACEA.

Rare Species at Yarmouth.—I have to thank Messrs. Boulenger and Calman, of the British (Natural History) Museum, for confirming my suspicions as to the identity of two stalk-eyed crustaceans, which, I am pleased to say, are interesting additions to my East Norfolk list, viz. *Portunus holsatus*, the Livid Swimming Crab, and *Pandalina brevirostris*, recorded by Bell as Thompson's Hippolyte. Of the former, I met with a very small example in the summer, and, being struck with the delicacy of its markings, and its general appearance, placed it aside in formalin, so as to be able to compare it with any others that might turn up. One, considerably larger, was subsequently taken by a shrimper friend, and placed by him in spirits. He said that he very rarely indeed had met with anything like it. *Pandalina* I picked out of a handful of siftings that had been riddled, and preserved for me by another shrimper. On Oct. 27th, when rambling by the tide-mark from Gorleston, I was surprised at the numbers of Shore-Crabs (*Carcinus mænas*) washed up dead and dying, and could assign no reason for the phenomenon. I picked up a couple of freshly dead Edible Crabs (*Cancer pagurus*) among them, derelicts from the North Norfolk grounds. ARTHUR H. PATTERSON (Ibis House, Great Yarmouth).

INSECTA.

The Poor Mayfly.—Few creatures, I imagine, have more enemies than the insect named. I know little of its comparatively long aquatic life, but if an inference may be drawn from what is well known of the ravages committed by larvæ of dragonflies, the great water-beetle and its kin, and other smaller but no less insinuating fry upon inmates of the water generally, the earlier stages of *Ephemera vulgata* are exposed to not a few perils during its two or threefold metamorphoses. Years ago the insects were very abundant on the Avon and its tributary brooks, but for a considerable time they seemed to be entirely wanting, until comparatively recently their reappearance—but not in their former abundance—has been hailed with satisfaction by the angling community. One bright day at the end of May or beginning of June I sat in a quiet nook by the river, and watched with very great interest some of the insects as they winged their brief aerial existence over the stream from which they had emerged, and I could not but notice what a perilous life was theirs. In the hollow branch of a tree on one side of the stream a Sparrow had built its nest, and in a thorn-bush on the opposite bank a Chaffinch had its home—with probably a family to be provided for in each case—and both birds were alert in watching the opportunity to catch and carry to their respective retreats the dancing, fat-bodied Mayflies as they appeared, and in this work one or the other was generally successful; but on more than one occasion the most strenuous efforts of both finches were unavailing, as a Swift dashed between them and carried off the prize; or, should the poor fly have the misfortune to fall upon the water, it was soon discovered, and swallowed up by some hungry watchful fish. Thus one of the many tragedies in nature is presented to us, and we are inclined to ask why the Mayfly is so sought after and persecuted. — G. B. CORBIN (Ringwood, Hants).

Notes on the Mole-Cricket (*Gryllotalpa vulgaris*).—I have only just seen the notes on this insect (*ante*, p. 357). Illustrations of this striking insect in old books on natural history, and Gilbert White's account of the singular noises it produces, are well known to all entomologists; but its range in Great Britain seems to be very indefinitely understood, and further information as to its occurrence in the different counties would be of great interest. An article on this insect, by Mr. J. E. Harting, appeared in the 'Field' newspaper on April 15th, 1905, when numbers of Mole-Crickets were causing damage to pasture and clover lands on Lord Ellesmere's estate. Mr. Harting, beyond saying that the insect is found chiefly in peaty

soil mixed with sand or clay, and therefore that its presence may be regarded as somewhat local, does not define its range in this country, nor give any localities where it is indigenous, or generally to be found. As far as this county of Stafford is concerned, the Mole-Cricket, being apparently a southern insect, is only very casually referred to by Garner in his 'Natural History of the County of Stafford' (1844), as "taken in gardens about Birmingham," but he gives no actual data. Edwin Brown ('Fauna of Burton-on-Trent,' 1863) does not refer to this insect at all in his list of the Orthoptera of the district. I have only myself during the last thirty years been able to obtain particulars of two records of the occurrence of the Mole-Cricket in Staffordshire—once in 1898, when one was found in a stove-house in the gardens of Meaford Hall, near Stone (Rep. North Staff. Field Club, vol. xxxii. p. 64), and again on Sept. 14th last, when a specimen was found by a workman at the Longton Corporation Gasworks. Mr. B. Bryan, of Normacot, who showed me this insect, stated that it was discovered during the unloading of a truck of "oxide," a substance used in purifying gas, and brought from Ireland. Both these specimens would appear to have been introduced into this country, the Meaford specimen no doubt coming with roots of plants or garden material from the south, and the Longton specimen no doubt flew into the oxide whilst in transit on the railway, and probably when passing through some part of Wales, where the Mole-Cricket frequently occurs. As far as I have been able to ascertain, this insect is not indigenous to this county, which is further north than its normal range, as to which I shall be glad to receive further information from any readers of 'The Zoologist.'—JOHN R. B. MASEFIELD (Rosehill, Cheadle, Staffordshire).

[Mr. M. Burr, in his 'British Orthoptera,' writes of this species:—"In this country the Mole-Cricket is local, being found chiefly in the south. Stephens gives Devon, Cornwall, and Ripley. It is to be found in the New Forest, near the Chichester Canal, and at Besselsleigh, in Berkshire."—Ed.]

LOCAL NOMENCLATURE.

Some Local Names in Surrey.—"Son of the Marshes," in his 'Surrey Hills,' mentions the name "Deaf Adder," as applied to the Slowworm. I have often heard the term used by country people round Reigate and Newdigate. The epithet "deaf" is more curious than "blind," applied to the Slowworm with its comparatively inconspicuous eyes, and I can only suggest the explanation of its use by the rustics as a term vaguely reminiscent of Sunday School. In the same volume the author speaks of the Short-tailed Field-Vole as being

known in Surrey as the "Grass-Mouse." I have not yet come across this term, particularly applicable to this mouse, which is always much in evidence during the cutting of the hay.* A correspondent in 'Science Gossip,' writing in 1882, says:—"The Common Shrew is called the 'Grass-Mouse' in Co. Fermanagh." This must refer to the Lesser Shrew (the only Irish Shrew), if it really applies to the Shrew at all, which is rather doubtful, as the Lesser Shrew—in England, at all events—seems to be almost restricted to the cover of woods and spinneys, or hedges neighbouring such cover; though in some of the treeless districts of Ireland necessity may have induced other habits. In Ireland I have only met with this species in the north, where its nests are placed in the bottoms of loose stone walls, always, as far as my observations went, in the neighbourhood of trees. In Surrey, Shrews are known as "Sheer Mice," which is doubtless a metaphesized form of the word "Shrew." The Lesser Shrew, which is exceedingly rare here, is quite unknown to keepers, farmers, and taxidermists alike; and the Water-Shrew is only known to a very few. Here the Dormouse always goes by the appropriate name "Sleep Mouse." It is becoming very scarce, and within the last ten years has quite disappeared in districts where it was formerly common. The Harvest-Mouse, though now almost extinct in Surrey, is well known to most of the country-folk. One farmer knew it well round Epsom some years ago, and speaks of it as the "Red Mouse." I am not sure if this is his own particular descriptive name, or a local term. I have an impression that there is a continental fable concerning the "Red Mouse," but I cannot recollect any particulars, or if it refers to *Mus minutus*. A reaper whom I lately interviewed told me that the Harvest-Mouse was known as the "Squeaker" in Oxfordshire when he was a boy. The Long-tailed Field-Mouse is universally known in Surrey as the "Bean Mouse," or the "Beaner," on account of its partiality for beans and peas.—LIONEL E. ADAMS (Reigate).

Goldsmith as a Naturalist.—BUTCHER BIRD.—Mr. Bruce Cummings (*ante*, p. 383) says that he cannot determine what Goldsmith meant by the Butcher-Bird, "which is a little bigger than a Titmouse, and lives in the marshes near London." Was it not the *silerella* of Sir Thomas Browne (1674), the Least Butcher-Bird of Edwards (1745), and the Bearded Titmouse (*Panurus biarmicus*) of the B. O. U. List?—MAURICE C. H. BIRD (Brunstead Rectory, Stalham).

* Since writing the above I have heard the term used by our gardener, who gave me a very accurate description of the mouse in question.

NOTICES OF NEW BOOKS.

The Cambridge Natural History. Vol. I. Protozoa, by MARCUS HARTOG, M.A. ; Porifera, by I. B. J. SOLLAS, B.Sc. ; Coelenterata and Ctenophora, by S. J. HICKSON, F.R.S. ; Echinodermata, by E. W. MACBRIDE, F.R.S. Macmillan & Co., Limited.

VOL. I. of this excellent series of volumes has now appeared, and if out of sequence is still in due season, for the authors have brought their subjects well up to date. In reading this volume we are firstly impressed with the wide field of our study which is practically absent from the pages of 'The Zoologist,' for few of our contributors apparently study these frequently minute, and what we generally regard as primitive, forms of animal life. And yet with the Protozoa an evolutionist may study his first lesson in the endeavour to find a primary division between "animals" and "plants." An ox standing under a tree affords a sufficient distinction for an ordinary man, but to the zoologist engaged in the study of some Protozoa the problem is virtually unsolved, at least so far as the result can be expressed in words ; and, as Mr. Hartog remarks, "the study of the Flagellates has been largely in the hands of botanists." Haeckel, with his genius for simple but profound division, therefore divides the living world into the Metazoa, or Higher Animals ; the Metaphyta, or Higher Plants ; and the Protista, which occupy the debatable plane.

If this problem is not sufficiently profound to the student of the Protozoa there is still another—the question of Spontaneous Generation—and Mr. Hartog, in discussing this matter of heated contest, gives a very judicial opinion, and one we gladly reproduce : "Of the ultimate origin of organic life from inorganic life we have not the faintest inkling. If it took place in the remote past, it has not been accomplished to the knowledge of man in the history of scientific experience, and does not seem likely to be fulfilled in the immediate or even in the proximate future."

There are, however, zoologists who are happily free from these considerations, and who seek a knowledge of animal life as it is, without the contemplation of "origins." In this beautifully illustrated volume they will find what they desire. The contributors are not only competent authorities, but in these pages have taken pains to not only give us their own experience, but to tell us what is known ; and if the volume relates to animal organisms not so generally studied as they deserve to be, it is likely to promote, in the minds of many naturalists who have confined their studies to higher animals, an attention to the minute creatures that form the foundation of biology, and are primary factors in the evolutionary conception.

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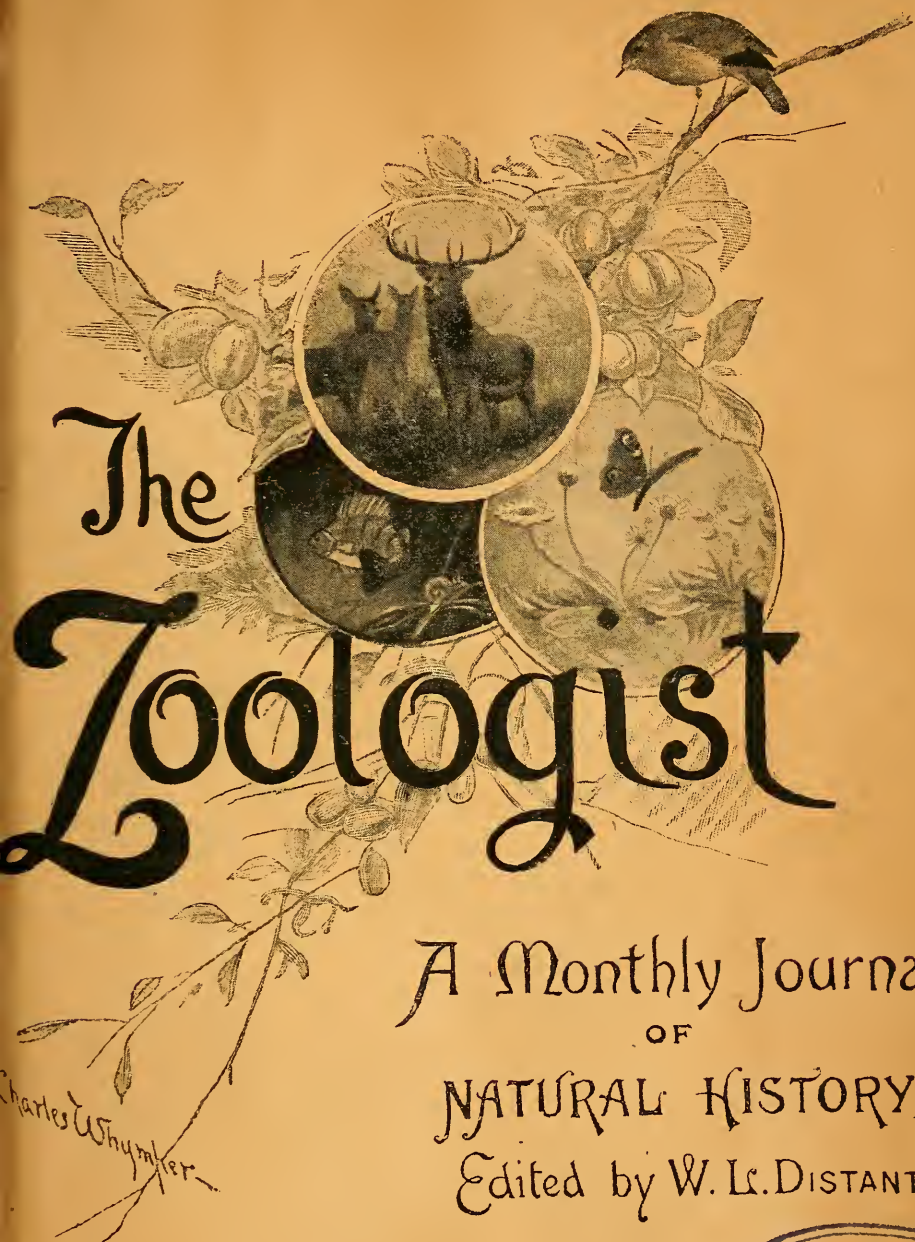
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ARDEA ALBA WITH YOUNG (ALBANIA).

THE ZOOLOGIST

No. 786.—December, 1906.

THE GREAT WHITE HERON (*ARDEA ALBA*).

BY R. B. LODGE.

(PLATE VI.)

AFTER finding the Pelicans' nesting colony in Albania (*cf. ante*, p. 365), my next task was to find *Ardea alba*. And here there was some little difficulty to start with, for the month's search for *Pelecanus crispus* had brought me well into May, and it was doubtful if I should be in time for eggs. But the authorities differed so much that I really knew very little about the proper time for the nesting season. Seebohm says that they nest from mid-May to June, while Howard Saunders mentions a nest (found in 1863) in an old fir-tree which contained young birds recently hatched on June 28th; while others say that they nest earlier in the year in the reeds.

The first place to be searched was a large Albanian lake, where the birds certainly were to be seen plentifully, but all my efforts to discover a nesting colony were fruitless. In vain we struggled through submerged forests, and made distant expeditions to the further end of the lake of some days' duration. The information received in answer to inquiries was, as usual, utterly untrustworthy, and many days were wasted in going to see nests of the White Stork, Grey Heron, and even the Hooded Crow. The people in these countries appear to be quite incapable of distinguishing one bird from another, and the know-

ledge of the local names, even when combined with showing them coloured drawings, is of very little use. After nearly a fortnight's hard work, with no results, I turned my back on this place, intending to try another locality which seemed to promise some chance of success. Before I left, however, I had succeeded in photographing *A. alba* while feeding near to the town very early in the morning, and in securing some characteristic positions of this most beautiful and stately member of the Heron family.

It is true that sometimes *A. alba* assumes an ungraceful and stiff attitude, especially when the long neck is held upright and inclined rather forward; but at other times, and especially when the neck assumes an S-like curve, the bird is extremely graceful in its snowy white plumage. The back-plumes project over the tail, giving it somewhat the appearance of a Crane. Its method of fishing is quite different from that of *cinerea*; while the latter stands motionless and expectant waiting for its prey to approach within reach of its dagger-like beak, *alba* stalks rapidly through the water, snapping here and there as it goes at any small fry it may see. The stomach of one I shot was very much distended, but contained nothing larger than a stickleback. Once I had the opportunity of watching Little Egrets (*A. garzetta*), *alba*, and *cinerea*, together, and could compare the habits of the three species at the same time; *garzetta* was even more active than *alba*, running through the water, and sometimes using its wings to help itself along when it saw anything good two or three yards away.

The fresh locality for more than a fortnight only provided the usual disappointments. The promise of a good "baksheesh" for any news of a nest only resulted in making short expeditions which led to nothing. At last, one day (May 27th), after wading through some large reed-beds, I was making my way back to the boat, utterly exhausted with hunger and fatigue, when I heard the unmistakable croaking and grunting of nesting Herons. On firing my pistol several Common Herons got up, but with them were some White ones, and I knew that I had at last hit on a nesting-place. The sight gave me fresh strength, and for another hour I fought and struggled through the reeds. The water was over waist-deep, though the bottom was firm and fairly level. But the reeds were immense. Each step was only accomplished by

the exercise of my whole strength and weight, while it was impossible to see more than a yard on each side of me.

At last I found a nest like a Purple Heron's perched up in the reeds, containing four eggs, but, as the Common Herons were evidently nesting there too, it was absolutely necessary to make perfectly sure without the possibility of any mistake as to which species they belonged. Retiring, therefore, to a little distance, I waited, motionless and hidden, as well as I could manage, until a pair of veritable *Ardea alba* hovered over the nest, preparing to alight on it. Only those who have experienced the difficulties and disappointments of such a prolonged search can appreciate the delight with which I watched them, and realized that at last I had succeeded in my quest.

After some much-needed refreshments I hurried back to the spot with the camera, and it will serve to give some idea of the denseness of the reeds when I relate that two of us searched in vain for that nest for more than two hours, though I thought I had left a track to it plainly visible. However, after completely losing ourselves, we had to give it up until the next day. And then we spent two more hours before we found it again. In the interval one of the four eggs had hatched, and the other three were on the point of doing the same. It was with great difficulty that these three eggs were saved as eggs.

During our search several other nests were found, but no more eggs. All the rest held young; some only a few days old, others nearly half-grown, the young *cinerea* being nearly fledged. On being approached the young birds leave the nests, and crawl through the reeds to some distance, returning when the danger has passed. On these wanderings they use the beak bent at an angle like a hook, and by hitching their chins over the reeds pull themselves along, and also by taking hold of the reeds between the mandibles.

Both nests and eggs seem to be somewhat smaller than those of *A. cinerea*. The nests were sometimes raised about three feet above the water, at others almost flush. The adult birds are quieter than *cinerea* or *purpurea*, and I only heard low croakings while waiting at their nests. They are exceedingly timid, and I spent six days in this reed-bed before I could succeed in obtaining a photograph. Every plan I could think of was tried in

vain. First of all I began with a long string attached to the shutter of a well-hidden camera, while I waited at a distance with reeds tied all round my waist. Then the electric camera was tried, and, though this went off several times, I was afraid to trust to it alone. My misgivings proved to be too well founded. They were only *nearly* successful, but something or other always happened to spoil them. Then an empty nest was found rather high up in the reeds about fifteen yards from a likely nest containing two young ones. Crouching behind this empty nest, I spent two days of nine and ten hours each, hardly daring to move, in water up to my coat-pockets. And when they did at last visit the nest they were very suspicious, sometimes only showing up through the reeds behind the nest, and several times left without feeding their young at all, and sometimes hovered over the nest without alighting. On these occasions the young became very excited and clamorous, constantly uttering a cry which sounded exactly like "be quick, be quick," repeated many times. In this cry of "be quick" I thoroughly sympathised; I knew the poor little beasts were hungry, and so was I, and tired of waiting in such an uncomfortable position. Besides, the leeches had got into my boots, and through the holes in my breeches made by the reeds, while I was losing blood all the time; for my wading-trousers had been cut literally to ribbons days before at the beginning of the search, and I had received several nasty stabs in the face, uncomfortably near my eyes, from the broken ends of reeds while forcing my way through them. But eventually four or five photographs were obtained of these timid birds at close quarters, just in time for me to rush off and catch the steamer for Fiume on the following day, on my way to the Dobrudscha after *Pelecanus onocrotalus*.

Note.—It is hardly correct to describe the beak of *alba* as black during breeding season, and feet blackish. The base of the beak is yellow, which runs to a point on each side of upper mandible and to the bottom of lower mandible, leaving top edge of upper and sides of lower mandible black. The tibia is yellow; foot black in front and back, with yellowish stripe along the sides as far as the toes, which are greenish black. Iris chrome-yellow; bare skin round eyes green.

NOTES ON THE ORNITHOLOGY OF OXFORDSHIRE,
1904.

BY O. V. APLIN, F.L.S., M.B.O.U.

(Concluded from p. 418.)

May 1st.—A very nice May-day, and so far a really genial and favourable spring. Pear and plum blossom well out.

2nd.—A male Dotterel was shot from a small flock on a ploughed field about a couple of miles to the north of Banbury. I had an opportunity of examining it in the flesh. Legs and feet flesh-brown; iris dark brown; bill blackish horn; weight, 4 oz. less a worn sixpence; total length, 9·2 in.; alar expanse, 18·6 in.; wing, from the carpal joint, 6·05 in. This is the only local spring Dotterel I ever handled. I was afterwards told by a good observer, who knew the Golden Plover well, that at the end of April he saw a flock of about a dozen Plovers, which were no doubt Dotterel, on the open high-lying arable land about the "Merrymouth," above Fifield. They were described as wheeling about low down near the ground, smaller than Golden Plover, and greyer or bluer at a distance.

10th.—News from Mr. W. Newton, of Crowmarsh Battle, that he saw a Serin near there on the 5th, and had a good chance of examining it while it was perched on the bare stem of a young chestnut-tree. This bird is new to the county list.

21st.—Mr. Newton saw a pair of White Wagtails on the banks of the Thames near Crowmarsh.

31st.—Returned home after a month's absence. Heard the Corn-Crake from study window.

June 3rd.—Some young Rooks still in the nests. Two fresh Sparrow-Hawk's eggs taken in the Wayhouse meadows brought in to-day; a rare occurrence in this woodless parish.

4th.—News from Mr. Calvert that he saw a Wheatear between Langley and Fordwells on the 1st inst. This bird is rarely seen in Oxon (except perhaps on the Chilterns) in summer.

6th.—Examined adult female Hobby, shot at Tusmore on May 16th.

7th.—In Fifield village House-Martins breeding in some numbers, and so low down that the nests can almost be touched by anyone standing on the ground. In the woods noticed Nightjar, and saw in the bracken the spot where eggs were taken two days before; also two Sparrow-Hawk's nests used this year, and heard a Nightingale. Had news of a Buzzard shot in the neighbourhood two months ago.

8th.—On the open arable land of the Crown Farms about Langley (formerly the forest) stone walls largely take the place of hedges, and nesting accommodation is scarce and crowded. In the small "Dovehouse" close at Langley, which had a big hedge on two sides of it, we found the following nests to-day:—House-Sparrow, three nests with eggs; big deep domed nests at the top of the hedge. Chaffinch, one nest with eggs. Linnet, three nests with eggs, three nests ready for eggs, and two nests with young. Greenfinch, two nests with eggs and one with young. Song-Thrush, one nest with eggs. Turtle-Dove, one nest with eggs; this nest was formed entirely of the dry creeping root-stems of "squitch." I also saw a Pied Wagtail's nest in the side of a straw-rick, which was then empty, but at 7.15 a.m. the next day contained one Wagtail's and a Cuckoo's egg.

To Bampton, and on this and the next day I noticed many Peewits on such of the big open meadows along the Isis which had been pastured; some had already gathered into small flocks. Moorhens are very numerous about the rush-beds, Dabchicks common, and there are a few breeding Wild Ducks. I noticed the Reed-Warbler in willow-beds near Tadpole and Radcot bridges, but the Reed-Bunting is the characteristic small bird of the belt of rushes, reeds, and other water-plants lying between the river and the rarely-used towing-path. I heard four Corn-Crakes, two of them in one large meadow. In the arable land between the marshy village of Clanfield and Bampton, which is nearly as flat as the fens, I was surprised to meet with a pair of Stonechats, the male sitting on a gate. The local Corn-Bunting is fairly common on this land, but I had found it far more so on the high ground as I came from Burford, where this year the "curlock" is rampant, and the fields shine out—a light golden

colour—miles away. Some old pollard willows at the side of the raised marsh-road leading down to the river are the haunt of Tree-Sparrows. On my way home I heard a Corn-Crake in the Cherwell valley at Somerton.

11th.—Mr. P. T. Duffield reported in the 'Field' to-day a bird he had seen over the river at Oxford, which was evidently a Black Tern.

19th.—Lesser Whitethroat continues to sing in shrubs in front of the house, and I think must be breeding. I have seen some about the village all the season; it is a garden bird to some extent.

23rd.—The Red-backed Shrikes have had their eggs taken once this year, and now are quartered on the west side of the railway-station; they are always somewhere close to the railway. Listened to a Quail in a barley-field on Tadmarton Heath, and was told of another near there. It did not call much until after 7.30 p.m., and repeated the call from three to eight times each time it called; there was a slight emphasis on the second syllable.

24th.—News from Mr. Fowler, at Kingham, that the Marsh-Warbler had just hatched its young.

25th.—While waiting for the Badgers to come out, I heard the other Quail. This seems to be a Quail year. Mr. E. Colegrove heard one near South Newington, and Mr. W. Newton wrote from Crowmarsh that he heard more Quail calling in the spring than for many years; the first on May 26th. A nest containing seven hard-sat eggs (two of which I have) was found in a barley-field (when it was cut) on Waterloo Farm, Burford, on August 26th. In other years the Quail has nested late in the season. I have an egg from another August nest (1900), and one found in September, and have seen a record of a third August nest.

There is an uncertain ebb and flow in the numbers of our migratory birds each summer. The Redstart was scarcer than usual last year, and still more so this season. Ray's Wagtail has been quite rare for two or three years. House-Martins are increasing again.

26th.—The habit of singing while perched on buildings is now common with the Song-Thrush. A favourite perch is the

roof-ridge of this house, which is rather high; and Tennyson might well have exclaimed of them, "And loudly sings the mounted Thrush."

30th.—To see Marsh-Warblers in the nest at Kingham (very early this year); only one young one remained, and that on the point of leaving. We caught it and let it go; it was of a dull pale brown—not nearly such a bright brown as the young of the Reed-Warbler. The nest was in willow-herb. Saw a pair of Shrikes there, and Mr. Fowler reported meeting with several around there.

July 7th.—Great Tit feeding young in hole in garden-wall. Do Tits usually rear two broods in a season? One often meets with late eggs. Lesser Whitethroat very merry this hot afternoon.

9th.—Country drying up. 80° in shade to-day.

12th.—A female Badger sent down from Tadmarton Heath weighed only nineteen pounds.

14th.—Hot dry weather. Rooks destructive to potatoes. Those shot are said to be very thin. A Spotted Flycatcher has laid three eggs in a Goldfinch's nest in a pear-tree, from which the young flew in June. A small feather or two appear to have been added and a little hair.

18th.—The sharp and destructive summer drought (having begun so early in the season) continues. Apricots already ripe.

19th.—Peewits have had a good season, and have benefited by the decline in cultivation. Goldfinches are common.

21st.—Barn-Owl now noisy.

24th.—Young Hedge-Sparrows still in nest.

25th.—A deluge of rain after two or three days with showers.

30th.—Two hayricks put up at Langley on a Thursday and Saturday had each a Yellow Bunting's nest with three eggs in them by the following Thursday.

31st.—Grasshopper-Warbler singing well.

August 6th.—News from Mr. Calvert he saw two Curlews rise from a seed-field, where manure had been carted, on the 3rd inst.

8th.—A Flycatcher feeding at 8 p.m., when it was getting dusk; its bill snapped quite loudly.

12th.—Many Swallows and Martins on the roof; nearly a fortnight ago they congregated there.

13th.—Saw a Pied Woodpecker in the avenue at Bloxham Grove, and the owner told me afterwards that in the summer he had seen one come out of a hole in a big ash-tree close to the avenue.

14th.—A big gathering of Swifts in the forenoon, high up in the cloudy wet sky, wheeling about and noisy.

16th.—Still plenty of Swifts. Robins made their song remarkable this evening.

18th.—Several Swifts this evening, but the bulk must have gone after the 16th.

20th.—Flock of about thirty Mistle-Thrushes in oat-stubble. Blackbirds in the garden seem to live on plums now.

21st.—Two Swifts.

24th.—One Swift. Mr. R. W. Calvert at dusk flushed two or three Ring-Ouzels from some seeding kale at Langley.

27th.—Willow-Wren singing.

September 1st.—Many Song-Thrushes in root-fields. Mistle-Thrushes very abundant on stubbles and grass-fields, but not in roots.

3rd.—Good many Meadow-Pipits in roots; this is early. A poor Partridge year, and some birds can hardly fly yet. Flock of two or three hundred Linnets. Many Ray's Wagtails on grass and in root-fields; clearly on migration.

7th.—A great congregation of Martins and a few Swallows on the roof this morning.

9th.—Two Land-Rails formed part of the bag to-day; one of them weighed eight ounces, and its hard muscular stomach contained one large whole earwig, and the remains of several others, besides a lot of hard grit. Saw a Wheatear.

12th.—In early evening little noisy flocks of Swallows and Martins, all flying in the same direction.

13th.—No congregation of them on the roof this morning, as has been the case every morning lately. Willow-Wren sang. Chiffchaff in (autumn) song.

17th.—A gathering of Martins and a few Swallows on roof.

19th.—Starlings eating apples lately.

20th.—Great congregation of House-Martins (only) on roof. Swallows were sitting singing in apple-trees yesterday. Weather glorious.

22nd.—A lot of Martins on roof. Examined a young Hobby with wings hardly full-grown, which was shot at Tusmore early this month. Also a Whimbrel shot at Barford in May.

24th.—Many restless Meadow-Pipits in roots; a flock of one to two hundred all got up and went away. Red-legged Partridges are very scarce this season, not having recovered from the effects of the wet summer of 1903, and the following wet winter.

27th.—The bulk of the Swallows and Martins have gone.

October 6th.—A few Martins.

8th.—Half a score of Swallows on the roof, some quite young. Hardly any seen this month.

11th.—A few Swallows and Martins in front of the house early.

13th.—Five Swallows on the roof.

14th.—Starlings have been most destructive to fruit this year. To-day I saw one eating Burgundy pears on a wall-tree; these were then gathered, and one bird went to a tree of John Dowy crabs, when I shot it.

17th.—A Pied Wagtail has sung a good deal lately; this bird really seems to sing almost as much in autumn as in spring, but this is not saying much.

18th.—A Woodcock shot yesterday. Grey Wagtail in Sorbrook.

19th.—Wren sings well.

21st.—When going to see the hounds draw the gorse, at 7.30 a.m., and very foggy, I heard a Yellow Bunting and two Thrushes singing at 7.15, and the wheeze of a Brambling from some beech-trees.

26th.—Redwings. Linnets still sing. Song-Thrushes sing well.

30th.—The Grey Wagtail is common here this autumn, and Mr. Fowler has noticed unusual numbers at Oxford and Kingham. Several have flown over this garden.

November 4th.—Very nice dry weather now, warm and pleasant, and the autumn tints most beautiful. Plenty of roses in bloom.

10th.—Fieldfares. I watched a Barred Woodpecker feeding on something he had hammered out of a dead and broken elm-branchlet for about ten minutes.

16th.—While some of the many Song-Thrushes about are singing, others are silent and look foreign. A Mistle-Thrush sang.

18th.—Nuthatch at Broughton. We see and hear none here now.

21st.—Season turned cold suddenly in the middle of the day, and a great deal of snow fell at night.

22nd.—Sharp frost.

24th.—Very severe frost; down to 15° , and only 20° at 10 a.m. Starlings here all day feeding on the poor watery asparagus-berries. A flock of Bramblings, with Chaffinches, under the beech-trees in and near the avenue at Bloxham Grove, where the ground was comparatively free from snow, feeding on the fallen mast, of which there is a good crop with well-developed nuts this year. Bramblings are quick, active foragers. Their usual call-note is a rather harsh, hard “chip,” “chzip,” or “gep” (that of the Chaffinch sounds to me like “yip”). One only occasionally hears the curious croaking “weeeech,” which, heard from the beech-trees, usually first announces that the Brambling has arrived. It is a difficult sound to describe, as it seems to vary, and sometimes sounds like “swеееек” or “swееее-erk.”

26th.—Very severe frost. Thousands of small birds on the snowy stubbles—Bramblings, Chaffinches, Tree-Sparrows, Linnets, Yellowhammers, Greenfinches, and great flocks of Larks. Some Corn-Buntings about, and a few Meadow-Pipits in the sheep-folds. A “big hawk” (probably a female Peregrine) upset a Partridge drive.

27th.—So severe is the frost that the Sorbrook between Bodicote and Lower Grove Mills bears crowds of skaters and walkers.

28th.—A slow thaw began, and the Hedge-Sparrow sang. A single Golden Plover shot flying over Tadmarton Heath.

December 5th.—Many Bramblings about, and Fieldfares have been fairly numerous.

7th.—Had news of a Hawfinch’s nest found last summer in the side brush of an elm on the lawn at the Grove.

8th.—Fall of snow, but melted. The Song-Thrushes left with the late frost, and the Grey Wagtails so conspicuously numerous earlier in the autumn have disappeared.

12th.—Little flock of Redpolls and Goldfinches in the alders near South Newington. A single Golden Plover flew over, calling.

17th.—Up to 52° in the shade. During the sharp snap birds ate all the pyracanthus-berries on one tree, and thinned the holly-berries very much. Greenfinches continue to rifle the fruit of the sweet-briars.

20th.—Small flock of travelling Peewits. In the 'Field' of the 3rd inst. the Rev. F. P. Long records seeing a Black Redstart in the city of Oxford on the 22nd November.

22nd.—Hard frost again.

23rd.—Not over 24° all day.

25th.—A Song-Thrush sang a little despite the frost.

28th.—Mild again.

29th.— 50° in the shade!

30th.—The winter aconite, which had its petals free of the earth, but not turned up on the 18th, is now fully out.

31st.—A few Meadow-Pipits about a sheep-fold.

SOME FISH-NOTES FROM GREAT YARMOUTH
FOR 1906.

BY ARTHUR H. PATTERSON, A.M.B.A.

My fish-entries in the "Note-book" for 1906 are, to me, of no small interest, from the fact that three new species have been added to the fauna of the county of Norfolk, one of which has been pronounced, on competent authority, to be new to the fauna of Great Britain, viz. *Scomber thunnina*, a species of Bonito by no means unknown in the seas adjoining the west of Europe. The other two are the Megrim and the Jago's Goldsinny.

In March I obtained a number of wide-mouthed bottles, in which I placed formalin, and fitted them with corks. These were distributed among our local shrimpers for them to drop in any strange small fishes they might perchance find among the Shrimps. The success I met with among the Crustacea I have already made known (*ante*, p. 331). The first fish brought in was a "bull-dog" Whiting, about a span long, on April 2nd; after which date fishes good, bad, and indifferent almost daily arrived.

A very pretty little *Bubalis* (*Cottus bubalis*) turned up on April 26th; on the sides were well-defined bands of a darkish hue on a pinkish ground. Length, $2\frac{3}{4}$ in. Another, May 12th.

On April 30th two Montagu's Suckers (*Liparis montagu*), both females, came to hand, with an example of the Megrim, or "Scald-fish" (*Arnoglossus laterna*), $4\frac{1}{2}$ in. long. The delicate skin had been somewhat abraded; it seems difficult to procure and preserve one intact. Two more Montagu's Suckers, full of ova, were received on May 1st, and subsequently some others.

May 11th.—Obtained a four-inch Rock Goby (*Gobius niger*) from a shrimper.

Smelt-catching has been most industriously pursued on Breydon this year, and in some instances with profitable results.

When plentiful returns are small, and when Smelts are somewhat scarcer prices go up. The highest price ever realized for Smelts, to my knowledge, was in May, 1905, when five shillings and ninepence was sent per score by London salesmen, after all expenses had been deducted. Two shillings a score appears to be the minimum price.

Quite a large number of Sail Flukes (*Rhombus megastoma*), varying from 11 in. to 18 in., brought over from Lowestoft, were exposed for sale in the town during the first week in May.

On May 17th a large Skate (probably the Long-nosed Ray), part of which I saw, was on view in the town, having been sent, I believe, from the South of England. It weighed 120 lb.

The Three-spined Stickleback (*Gasterosteus aculeatus*) is singularly indifferent to the water in which it finds itself, and is found quite as lively and protestingly in a beachman's seine as in a boy's net at the ditches. My boys brought some home in May. One fish I allowed to remain two days in fresh water, and then transferred it to a tank in which lived some Whelks, a Sea-Anemone, and a Risso's Crab (*Xantho rivulosa*). It seemed perfectly at ease, and showed no irritation or surprise when, after five days in their society, it again found itself in fresh water, in company with several small Carp.

Jago's Goldsinny (*Ctenolabrus rupestris*), new to Norfolk, came to hand on June 5th.

A "double" Turbot was also brought to me on June 5th, which I ate.

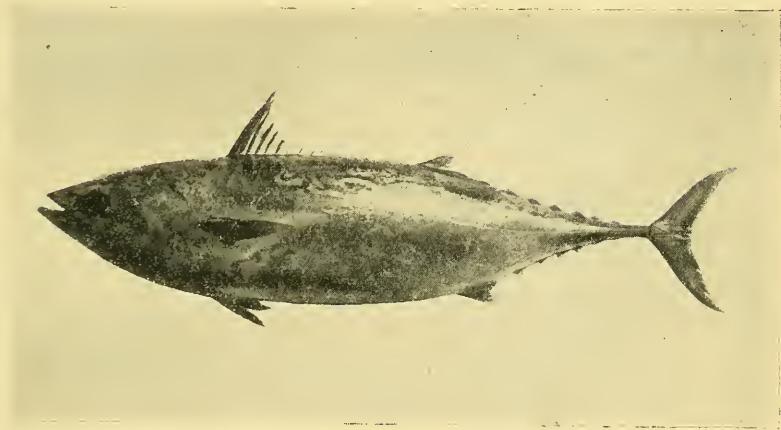
A great number of Little Gobies (*Gobius minutus*), taken on Breydon, full of spawn; and a White Goby (*Latrunculus pellucidus*), the first I have ever known taken there, came up in a small trawl-net.

On June 19th I met with a Turbot almost wholly white, of three pounds weight; the only traces of the normal colour on the upper surface were a small ring of brown around each eye, and a fine splashing of the same hue on the surrounding fins. There were no tubercles on the upper side, which was as smooth and polished as a china-plate.

"Myriads untold" of tiny Herrings—so-called "whitebait," and more correctly "herring-syle." In June, boys with small

landing-nets were to be seen catching them, on the edge of Breydon, in sufficient quantities to fry. Flounders and Eels fed on them gluttonously, the latter paying scant attention to the worms of the "babbers," who complain of a most disastrous Eel-fishing. Terns and Gulls fed bountifully on them.

I have a strong suspicion that their presence in such vast swarms on our coast accounts greatly for the very apparent migration of Mackerel that set in, too. This year's Mackerel fishery was so revived in consequence that something akin to the old-time fishery obtained. No less than fifty luggers went out after them, and great catches were made. The total catch amounted to over 145 lasts, 12,000 fish going to a "last."



SCOMBER THUNNINA.

The largest haul of any one boat landed at one time was a last. Prices varied from 12s. to £1 per hundred, of 120 fish. One boat earned £150 for the two months' trips (in May and June).

Among the breeze-loving Mackerel came a few Scribbled Mackerel (*Scomber scriptus*), Surmullet (*Mullus surmuletus*), and some Garfish (*Belone vulgaris*).

I obtained a Mackerel wholly devoid of stripings on June 27th. Length, 15 in.

Soles came into the roadstead so numerous this summer that at least a dozen shrimpers substituted small trawls for the

shrimp-dredges while the "rush" of fish was on. On July 5th I saw fifty-six pairs of good Soles in one Shrimp-shop, the combined catches of two boats the previous night. The Soles appeared to inshore in search of lugworms, and also took *Nereis diversicolor* freely. I did not dissect any, but I have a strong suspicion that the herring-syle were no small inducement. On July 4th one man, who spasmodically trawls on Breydon, and who is known to the fraternity as "Lucky Bob," informed me he had taken thirty-two pairs of Soles thereon; his largest measured, he assured me, 22 in.

I need hardly refer again to the capture of the *Scomber thunnina* (*ante*, p. 354). This is, I take it, my best "find" as yet for the East Norfolk list of fishes (*cf.* fig. p. 455).

A great inset of Sea-Trout (*Salmo trutta*) occurred in the middle of July. With a single draw-net fifty pounds weight was taken one night. Mr. R. Beazor informed me he received fully one thousand pounds of Salmon-Trout during the "invasion." One fish weighed $16\frac{1}{4}$ lb., and several scaled 12 lb.

A Salmon with a most peculiarly shaped head arrived here in July from Scotland. The upper part of the head was round as a ball, the "nose" turning into the mouth, and lying quite flat and close to the palate. The lower jaw was of the normal shape, and stood out beyond the "forehead"; the tongue lying in the hollow of the useless under jaw, while the distorted mouth very obligingly shut up close and compactly. It is certainly the most grotesque "bull-head" fish I have yet seen.

A second Megrin came to hand July 30th, and a ten-inch Lemon Sole (*Solea lascaris*) was saved for me by Mr. Robert Beazor on August 8th.

A very pretty little Ballan Wrasse (*Labrus maculatus*), of a chocolate colour, sent me from Sheringham, a spot that deserves to be carefully worked; and, judging from what I have had occasionally sent to me from that neighbourhood, I imagine it to be a fine field for an ichthyologist's attentions. Aug. 30th.

Aug. 30th, saw a codling, 20 in. long, of a rich red colour, lying on a fishmonger's slab, answering very greatly to Couch's description of the so-called "Dorse."

I received a young Picked Dogfish (*Acanthias vulgaris*), which was "cast" in a boat soon after the parent had been

taken off the hook. The yolk-sac was still attached to the fish. This was on Sept. 30th.

A Flounder, 4 in. long, white on both sides, was caught on Breydon, Oct. 14th.

Drawn in by the under-current, on a westerly wind, thousands of dead Herrings bestrewed the high-water line, and below it, on the beach, in October. Examining a number of them, I found they had been in many instances bitten by the Dogs; pieces the size and shape of Brazil nuts were taken out of the back, a fish seldom showing two bites. I take it that many had been bitten when swimming free, and others when helplessly enmeshed in the nets, in which case they would be thrown overboard again.

The Anchovy (*Engraulis encrasicolus*) is very oily and tender-skinned, and among the rare examples I have seen taken in the Herring-nets I have not yet found one perfect. An example, $6\frac{3}{4}$ in., taken on Oct. 23rd, had the skin much abraded. I have put it into formalin, and placed it in the Tolhouse Museum, where a number of other specimens, besides some of those mentioned in these notes, have been deposited. Visitors to Yarmouth should make a point of seeing this pretty little museum, located in one of the quaintest of the few ancient buildings still preserved to us.

A number of Scads, or "Horse-Mackerel" (*Trachurus trachurus*), were washed up on the beach, Oct. 27th.

Beyond a few small Porpoises, I have seen nothing extraordinary brought ashore from the Herring-grounds. Two or three, in all probability thrown overboard from the boats on entering the harbour, have floated to Breydon, where a number of Hooded Crows and *thousands* (from five thousand to seven thousand at a time!) of Gulls are glad to dissect these or any other queer things the tide may see fit to fling upon the mud-flats.

The Little Squid (*Sepiolia rondeletti*) is hardly a fish, but it merits notice by its abundance on this coast in the summer months. The Shrimp-boats net thousands, and some numbers find their way on Breydon. I was interested in seeing some boiled ones at a shrimper's one afternoon, when the shrimp-wife informed me that she frequently saved those caught with the

Shrimps for an Italian neighbour, who was exceedingly fond of them, having acquired the taste when in Naples. I was curious to sample them, and ate one or two. They were certainly not bad eating, and very much like a Crab in flavour. One only wanted good teeth to really appreciate them. In July I met with another cephalopod that greatly interested me. I saw it entangled in the meshes of a small Breydon trawl, hung up to dry, as I was rowing past. Curiosity prompted me to "rescue" it, when its pointed "tail" and comparatively long fin-like appendages struck me as differing from those of *Loligo vulgaris*. On comparing it later with an example in the Biological Station at Lowestoft, I was pleased to find it *L. media*, and as such new to my list.

In the summer of 1906 the Aldeburgh Smelt-fishing appears to have been a failure. This the ignorant fishermen laid to the blame of the few pairs of Terns still nesting annually at Orford Ness, and forthwith petitioned "the powers that be" to withdraw protection, and let them be slaughtered off. This had not yet been decided upon when the Sprat fishery also turned out a failure; no Sprats visited Southwold Bay, nor did they put in an appearance until the last week in November. This was attributed to the Herrings working a little further south than usual! As the Terns were gone they could not lay it to their charge. The first indictment was an entirely erroneous one, for the Common and Little Tern feed chiefly on the herring-syle ("whitebait") that teems in local waters during their stay. A Lowestoft gentleman, who has daily records of the sea's temperature, informed me that this has been unusually high, and did not fall to 49° in Lowestoft Harbour until November 25th. Big Herring shoals are not met with until a much lower temperature ensues. I have no hesitation in saying that the influences of tidal currents and the temperature of the water largely ruled the movements of both Smelts and Sprats.

DISAPPEARANCE OF MANY OF OUR HOME-BRED BIRDS IN AUTUMN.

BY ROBERT WARREN.

THE disappearance from their usual haunts of many of our home-bred birds in September and October is so remarkable that I think it worth noting, as it may prove of some interest to those who study the movements of our small birds, notably Chaffinches, Greenfinches, and Yellowhammers. I have from time to time noticed their scarcity in their usual haunts, but, thinking that they had only moved for better feeding to the stubble-fields, took no further notice; while being engaged with, and my entire attention taken up with our late and frequently wet harvest in September and October (often delayed up to the end of the latter month), I did not look after them. After the corn, &c., was secured in the stack-yards, I devoted any leisure I had to wild-fowl-shooting, and the observation of the waders and swimming birds of the estuary and bay.

This total absence of the three above-named species first attracted my attention in the middle of October, 1892, when on a visit to the Co. Cork; for, on revisiting the familiar scenes of my boyhood, wherever I walked, I was surprised at seeing no small birds, where I formerly saw plenty, and in districts famed for their numbers and variety. On a three miles' walk from Monkstown by Shanbally, and Coolmore to Carrigaline Church, and, after service, returning by another line of road—by Rafeen to Monkstown—not a Chaffinch, Greenfinch, or Yellowhammer appeared in sight. Some days after, when returning from Queenstown to Cork, I left the train at the "Little Island" Station, and walked about the district for a couple of hours, along some fine demesnes, and roads with hedgerows especially suited for the haunts of small birds; but not one appeared, the district being as bare of bird-life as that near Carrigaline.

This state of things appeared to me so very remarkable that I

determined, on my return home on Oct. 21st, to see whether the small birds had entirely disappeared from this locality also. I searched everywhere—fields, plantations, roadsides, &c.—but the only birds visible were Robins, Tits, Wrens, and Hedge and Common Sparrows.

In 1903, 1904, and 1905 the disappearance also took place. This season of 1906, by Sept. 28th, neither Chaffinches, Greenfinches, nor Yellowhammers were to be seen anywhere about here. On inquiring of my friend Mr. J. A. Knox, of Belgariff House, Foxford, he stated that he had not seen a Chaffinch for weeks past (where they were unusually numerous all the summer). Then Mr. H. Scroope, of Ballina, who was keeping a sharp look-out, also had the same tale to tell—no Chaffinches, Greenfinches, or Yellowhammers; and, having a good knowledge of birds, he would have recognized even a single specimen if it was visible in the course of his daily walks into the country.

On Sept. 29th I paid another visit to Cork, and was determined to investigate as fully as possible the question of the absence of the small birds from their breeding haunts; but, as in 1902, my experience was the same. On the 30th I went from Cork to Carrigaline by train, and saw no small birds along the line. I then walked half a mile to the church, and, after service, walked a mile to Coolmore, the fine demesne of Major Newhenham, beautifully situated on the estuary of the Carrigaline River. After spending some time in the house, I walked through the demesne out on the road, through Shanbally to the railway station at Rafeen, at least two miles; but during my walks neither Chaffinch, Greenfinch, nor Yellowhammer appeared.

Two days after I searched another line of country, leaving Monkstown by steamer for Ringaskiddy, and walked for nearly three miles by the fields along the shore and Leamont Marsh to Prospect Villa and Castle Warren to Currabinny; but no birds appeared in the course of my walk except half a dozen Sky-Larks and Meadow-Pipits, and a solitary male Stonechat on Simon's Point.

On Oct. 5th I looked up another line of country along the Cork and Macroom Railway to visit Warrenscourt, near the Doonisky Station, twenty miles from the city. On getting out at the station I walked for two miles along the Macroom Road, and

a mile on the Cork side of the station; but, although the hedges and trees were all that could be desired, and there were many scrubby patches of coverts in some fields, no birds except a solitary Great Tit appeared in sight. I then called at the house, but unfortunately both Mrs. and Mr. A. R. Warren being away, I missed the pleasure of meeting them. However, as I had to wait for some hours for the return train to Cork, I whiled away the time by wandering about the demesne, and admiring the magnificent old forest-trees, and the acres of rhododendron and laurel coverts, tenanted by numbers of Pheasants which were running about the walks and drives; and, when wishing for a rest, I sat down for an hour on the shore of one of their beautiful lakes at the foot of the lawn, where I saw a few Teal and some Black-headed Gulls; but during the time I was wandering about the place and sitting by the lake a few Great Tits and Robins were the only other birds seen.

Thus, by inquiry and personal observation, I think I have proved that both here in Sligo and Mayo, as well as in Cork, Chaffinches, Greenfinches, and Yellowhammers leave their summer breeding haunts and migrate to some milder climate. My friend Mr. R. M. Barrington, author of 'The Migration of Birds at Irish Light Stations,' writes to me that he thinks "that most of our home-bred Chaffinches depart in early autumn—perhaps to the south of Europe—and that we have a more northern race amongst us now."

About Oct. 16th an occasional straggler began to appear in this district. On that day I drove to Carra, about three miles inland from this place, and situated at the edge of the bog-country, and on my way I saw one Yellowhammer on the side of the road. On the 19th I observed six or seven Yellowhammers near Castleconnor. On the 25th I saw about a dozen small birds feeding in a weedy patch in the corner of one of my fields. I think some were Linnets and the others Chaffinches, but they were so wild that I could not be certain, for when approached they would all rise and perch in the trees, where they were concealed by the leaves.

From Nov. 1st to 5th I observed many flocks of small birds flying about the fields, which were very restless, and so wild that it was impossible to get near enough to identify them. On the

6th and 8th I was for the first time able to identify some Chaffinches feeding in the corner of my potato-field. On the 9th I walked to Enniscrone (three miles), and at some houses along the roadside I recognized a few Chaffinches, Yellowhammers, and a couple of Common Buntings, but no Greenfinches. The first of the large migratory flocks to this district appears to have been observed on the 3rd by Mr. Scroope at Rahins, two miles outside the town—at least one hundred and fifty Chaffinches resting on trees by the roadside, but very wild—and next day he saw a flock of eighty to one hundred birds on the trees at Downhill, near Bunree, and a few Yellowhammers among them. On the 11th he met another large flock on the trees near Newtowngore Fair Green, and at the same place about forty Greenfinches, but all so wild that it was with difficulty he got close enough for identification.

This great wildness shows evidently that the birds were strangers, and not reared in this neighbourhood. Up to the present date none of the regular haunts about this place—the stackyard, garden, kitchen- and stable-yards—have been occupied by either of the three species, nor will be, I suppose, until later on, when these large flocks of strangers disperse and scatter over the country. I should add that the above remarks apply only to the three species first mentioned.

Moy View.

THE WATER-PIPIT (*ANTHUS SPIPOLETTA*) AS A
VISITOR TO ENGLAND.

BY MICHAEL J. NICOLL, F.Z.S., M.B.O.U.

IN 'The Zoologist' for 1904 I wrote a short paper, pointing out that the Tawny Pipit (*Anthus campestris*) is probably a regular visitor to the British Islands during the autumn migration;* and now, from materials collected during the past few years, I will endeavour to show that the Water-Pipit (*A. spipoletta*) may also be looked for with tolerable certainty during both the spring and autumn migrations, *i. e.* January to April and October to December. Until quite recently this species has been looked upon as a "straggler" to this country.

My own observations extend over comparatively a very small part of England, *viz.* the Sussex coast-line and marshes, and of these only that part which lies between Pevensey on the west, and Rye Harbour on the east, a portion of coast-line not more than twenty miles in length; but if, as I intend to show, this species is apparently a regular migrant to this small area, how much more so may it not be found on other parts of the British coast as well. I should like to take this opportunity of calling attention to a most mistaken notion which I have frequently heard expressed, that the district between Pevensey and Rye is a "unique" place for rare birds. I feel quite sure that the east coast is quite as good, if not better, judging by the number of rare "stragglers" obtained or recorded on that coast by Mr. Caton Haigh, Mr. J. H. Gurney, Mr. Patterson, Mr. Arnold, and others. There is a far greater tract of country to be "worked" on the east coast than on the coast of Sussex.

In the course of this paper I intend to give full references to all published records of occurrences of the Water-Pipit in this country. It must be remembered that for every one rare bird

* I have since found that it also occurs here in spring.—M. J. N.

recorded numbers—I might safely say hundreds—pass without being noticed. This is most undoubtedly the case. The late Heinrich Gätke frequently remarks, in his wonderful work ('Die Vogelwarte Helgoland'):—"I would willingly exchange the whole of my collection, wonderful as it is, for all the birds which have occurred here without having been seen or killed, if that were possible."

The Water-Pipit is one of those species which, like the Aquatic Warbler (*Acrocephalus aquaticus*), is easily overlooked owing to its resemblance to an allied species.

I have found that the best way of distinguishing the Water-Pipit from the Rock-Pipit (*Anthus obscurus*), even when flying and at some distance, is that the under parts of *A. spipoletta* appear quite white, and this is especially noticeable when the bird is on the wing. The white pattern of the outer tail-feathers is also a good character, but this is not so noticeable unless the bird is seen when about to settle.

These facts I pointed out at a meeting of the British Ornithologists' Club in November, 1904 (Bull. B.O.C. cx. pp. 20, 21). At the same time I remarked on the call-note of this species, which is less loud, somewhat harsher, and is uttered several times in quick succession. The Rock-Pipit only utters a single note, unless alarmed. These remarks have been written rather fully, as I hope some of my fellow-ornithologists will take up this subject. It is, I consider, of the utmost importance to find out whether this and other species of birds formerly believed to be very rare and accidental visitors are not more often, if not regularly, met with on migration in the British Islands.

It is somewhat unfortunate that of late years it has become a "fashion" for certain people to raise an outcry in the press and elsewhere against the so-called "slaughter" of rare birds! All praise is due to those who are doing their utmost to protect rare *breeding* species, or birds that once bred here, and still occur on migration; but when, as often happens now, after the recording of a rare Warbler, Pipit, or some such bird—birds which never have bred, and never are likely to breed, in this country—a letter appears referring to the sickening list of slaughter, &c., one feels obliged to make a reply, and hence these remarks of mine. At the same time one feels inclined to wonder whether these persons

would know, or even notice, the birds in question if they came across them.

The Water-Pipit (*A. spipoletta*) was first noticed as occurring in Britain in 1864, when one was obtained at Brighton and one at Worthing (Borrer, 'Birds of Sussex,' p. 102), and these two specimens were recorded by Mr. John Pratt, of Brighton, and sent to Gould for determination. The Brighton specimen passed into the collection of the late Bishop Wilberforce, while Mr. Boynton, of Ulsome Grange, in Yorkshire, purchased the other (Borrer).

In 1868 one, shot at Shoreham, passed into the collection of the late Mr. Borrer, as did another obtained at the same place the following year. Subsequently—*i. e.* between 1869 and 1895—two were obtained, one at Lancing and one at Shoreham. One of these, I fancy, is the bird now in the British Gallery of the Natural History Museum at South Kensington, labelled, "ad ♂, Sussex, April, 1873." This bird is in full winter plumage. There is also a skin in the British Museum from the Seebohm collection, labelled "*Anthus obscurus*, England," but bearing no date. This example, however, was obviously obtained in the spring, as the fresh pink colour is just appearing on the neck.

On April 5th, 1895, Mr. Caton Haigh shot a Water-Pipit at Tetney, Lincolnshire, and on April 5th, 1897, he shot another at the mouth of Glaslyn, Carnarvonshire; while he obtained yet another in Carnarvonshire on Dec. 3rd of the same year, 1897 (Howard Saunders, 'Manual of British Birds,' 2nd ed. pp. 141 and 755).

In 1900, Feb. 19th, a male (in winter plumage) was shot on the marsh between Hollington and Bexhill by a boy, who took it, in company with some Bramblings, to Mr. Bristow, of St. Leonards. It was subsequently recorded by my friend Dr. N. F. Ticehurst (Zool. 1900, p. 278). I saw the bird after it had been stuffed.

On Oct. 29th, 1902, I shot an adult female (one of two) at Rye Harbour (Howard Saunders, Bull. B. O. C. xcii., November, 1902).

On Oct. 26th, 1904, I obtained a young male at Rye. On this date, as on the day (Oct. 29th, 1902) when I obtained my first specimen, there had been a great arrival of Rock-Pipits (*A. obscurus*). On Nov. 14th I obtained one of two seen near Pevensey, and on

Nov. 17th of the same year (1904) Mr. E. C. Arnold shot one near Eastbourne. On Nov. 23rd, 1904, another was obtained by myself at Pevensey, while two days later Mr. Arnold shot another near Eastbourne (Zool. 1905, p. 142). Several other examples were seen by myself and clearly identified during that year. On Jan. 13th, 1905, one which I afterwards examined was shot near Littlestone, in Kent. The next month I saw four at Rye (Feb. 25th), and it is interesting to note that on this day numbers of Rock-Pipits (*A. obscurus*) and *A. rupestris* (the Scandinavian form) were arriving in little flocks on the coast. On April 2nd, 1905, I noticed a fine example, apparently in summer plumage, *i. e.* with pink breast, at St. Leonards. This bird remained by the same muddy creek for four days before it continued its migration. Lastly, on Oct. 6th, 1905, I watched a Water-Pipit for some time at Rye Harbour.

For convenience of my readers I give below a tabulated form of the occurrence of this species in the British Islands.

- 1864.—One, Brighton ; one, Worthing, Sussex.
- 1868.—One, Shoreham, Sussex.
- 1869.—One, Shoreham, Sussex.
- ? .—One, Lancing ; one, Shoreham, Sussex.
- 1895, April 5th.—One, Tetney, Lincolnshire.
- 1897, April 5th.—One, Glaslyn, Carnarvon.
- 1897, December 3rd.—One, Carnarvon.
- 1900, February 19th.—One, Hollington, Sussex.
- 1902, October 29th.—One, Rye, Sussex.
- 1904, October 12th.—[Three seen at Pevensey.]
- 1904, October 26th.—One, Rye, Sussex.
- 1904, November 12th.—[Two seen, Pevensey.]
- 1904, November 14th.—Two seen, one shot, Pevensey.
- 1904, November 17th.—One, near Eastbourne.
- 1904, November 21st.—[One seen, Pevensey.]
- 1904, November 23rd.—One, Pevensey.
- 1904, November 25th.—One, near Eastbourne.
- 1904, December 19th.—[One seen, Pevensey.]
- 1905, January 13th.—One, Littlestone, Kent.
- 1905, February 25th.—[Four seen, Rye, Sussex.]
- 1905, April 2nd.—[One seen, St. Leonards.]
- 1905, October 6th.—[One seen, Rye, Sussex.]
- ? .—One, no date ; Seebohm collection, British Museum.

As will be seen by the above list, I have mentioned no records since October, 1905. I have, however, since heard that this species has again been noticed in the spring in Sussex.

These, then, are the facts I wish to lay before my readers. That the Water-Pipit is a much more frequent visitor to England than has hitherto been thought is obvious from the above notes, and that it is a regular visitor to this country on migration is probable.

The numbers seen during the autumn of 1904 and spring of 1905 might be put down to an "eruption," or unusual visitation, but this is unlikely. This Pipit is a small, unobtrusive bird, and is very like the common Rock-Pipit in general appearance and habits; also it appeared again once, probably frequently, during the autumn of 1905, though whether it was as abundant as in 1904 I am unable to say, being abroad after the end of October in that year.

In conclusion, I can only urge those ornithologists who have the leisure and the inclination to obtain further notes during the next few years, and thus to obtain proofs on this subject, which is, to my mind, one of the most interesting studies in ornithology.

NOTES AND QUERIES.

MAMMALIA.

Stoat and Ferret Hybrids.—The following advertisement appeared in the 'Exchange and Mart' of November 16th, and in previous issues there have often been others precisely similar, with, I believe, the same address:—"My noted little Stoat-bred ratting strain (of Ferrets), some promising workers, 4/- each. . . . G. Davie, 4, Cowper Road, East Dereham." In the same issue of the above paper, and on the same page, there is another advertisement, in which "two pairs of half-bred Stoats, quiet as kittens, little shy, for working or crossing," are offered for sale by Mepham, Orlestone, Ham Street, Kent. No satisfactorily authenticated instance of the interbreeding of these two animals has, so far as I am aware, ever been recorded, and such a union seems improbable; moreover, the wording of advertisements is apt to be rather "broad" and "elastic," and not remarkable for scientific accuracy. At the same time, naturalists living near to either of these addresses, the second in particular, might at least find it interesting to examine and make enquiries respecting these reputed hybrids.—G. T. ROPE (Blaxhall, Suffolk).

AVES.

Grasshopper-Warbler in Midlothian.—A pair of Grasshopper-Warblers (*Locustella naevia*) settled in June in a hayfield near the city, and gave us the opportunity of watching them at close quarters, but did not let us into the secret of their nesting-haunt. Repeatedly we saw the birds singing on the grass-stems, and flitting along the top of the field to the shelter of the adjoining hedge. We have sufficient proof of the birds having been in the same locality before the present season, but we think the species is still sufficiently rare with us to claim special attention from ornithologists.—A. URQUHART and R. B. WHYTE (7, Charlotte Square, Edinburgh).

Lesser Redpoll Nesting in Ross-shire.—On the last day of August, while waiting with Mr. Robert Godfrey for the appearance of Golden

Eagles near an eyrie in Strathcarron, West Ross, we were attracted by the nestling cry of a small bird in a thick-set fir-wood. After some careful stalking, we discovered that the sound came from a nest situated about fifty feet from the ground in a slender Scotch fir, and we could see the young bird flapping its wings as it continuously uttered its cry. It was impossible to reach the nest by climbing, and we shook the tree violently till the nest was dislodged. The young bird—a Lesser Redpoll (*Linota rufescens*)—was found to be a prisoner, having one foot tightly bound by several strands of wool to the lining of the nest. A dead companion was in the nest beside it. This record of the Redpoll's nesting in West Ross may be worth mentioning in view of the meagreness of the references in Harvie-Brown's lately issued 'Fauna of the North-west Highlands and Skye.'—G. A. and R. B. WHITE (7, Charlotte Square, Edinburgh).

The Rough-legged Buzzard in Somerset.—On November 13th last I had a brief but clear view, through my glasses, of a Rough-legged Buzzard (*Buteo lagopus*) flying low, and with very slow beats of the wing, along a bare hill-side which is much frequented by rabbits near here. From its white tail, with a broad dark subterminal bar and white tip, it was presumably an adult bird.—H. MEYRICK (Clevedon, Somerset).

Totanus calidris in Bedfordshire.—As the Redshank is not a common bird in Bedfordshire, it is perhaps worthy of record that I saw one to-day (December 2nd) in the bed of a new lake which is being made in the park.—MARY DUCHESS OF BEDFORD (Woburn Abbey, Woburn).

A Remarkable Cuckoo Clutch.—Referring to the note of your correspondent, P. F. Bunyard (*ante*, p. 430), under the above heading, in which he invites readers to solve some of the points to which he calls attention, I think, in all probability, that neither of the Cuckoos removed an egg from the Hedge-Accentor's nest at the time of depositing its own, and that the nest contained only five eggs of the foster-parent originally, which is not an unusual number for the bird to have laid. As regards the nest being "beautifully concealed" and therefore difficult to find, I would suggest that the Cuckoos discovered it by watching the old birds go to it, which I believe to be often the case, as I have frequently found Cuckoos' eggs in nests so completely hidden in thick ivy that it would have been almost impossible for a Cuckoo to have found them in any other way. What the fate of the two young Cuckoos would have been it is impossible to say, but probably the

stronger one of the two would have ejected the other one from the nest with the young of the foster-parents.—E. A. BUTLER (Plumton House, Bury St. Edmunds).

The Birds of Scilly.—As recorded in the 'Bulletin of the British Ornithologists' Club' (xix. No. cxxvii. p. 7 (1906)), an example of the Greater Yellowshank (*Totanus melanoleucus*) was shot by Capt. Arthur Dorrien-Smith at Tresco Abbey, Isles of Scilly, on Sept. 16th, 1906. This was believed to be the first known instance of the occurrence of this species in Great Britain or any part of Europe. Capt. Arthur Dorrien-Smith, a few days later, obtained an immature specimen of the Common Bee-eater (*Merops apiaster*), which I had the pleasure of examining.—W. R. OGILVIE-GRANT.

PISCES.

File Fish on the Coast of Somerset.—On November 21st, while riding along the sands near Berrow, Somerset, I noticed an unusual-looking fish lying among the *débris* at high-water mark. My sister, who was with me, suggested it was a John Dory, but I could see by the peculiar shape of the tail, which I especially noticed, that it did not belong to that species. The fish appeared to have been dead a long time, and was hard and mummified, so much so, that when my horse by chance put his foot on it, it was not crushed. Possibly it had been cast away from some passing ship. I particularly noticed the shape of the fish, and found on reaching home that it agreed with a photo of the Trigger Fish, on page 637 of 'The Living Animals of the World,' and also with the figure in the 'Zoologist' for 1901, page 225. I have little hesitation therefore in identifying the specimen as a File or Trigger Fish (*Balistes capriscus*). The fish, I should say, was rather over a foot in length, and was of a dirty yellow colour. F. L. BLATHWAYT (Lincoln).

INSECTA.

Notes on the Mole-Cricket (*Grylotalpa vulgaris*).—I observe that records of the occurrence of the Mole-Cricket in England are asked for (*ante*, p. 437). I have four examples in my collection, all taken in Dorsetshire, though the exact dates I cannot specify now; three of these specimens occurred in my own kitchen garden, and one at Warmwell, near Dorchester. I was not at home when one of those taken here (at Bloxworth) occurred, but I was told afterwards by the gardener and others that there were other examples both seen and

destroyed on that occasion. It is now some years since this insect has been seen here.—O. PICKARD-CAMBRIDGE (Bloxworth Rectory).

Goldsmith as a Naturalist.—BUTCHER BIRD.—That Goldsmith, when speaking of “the Butcher Bird, little bigger than a Titmouse, living in the marshes near London,” was referring to the Bearded Tit, I should think, almost certain, after reading the suggestion of the Rev. Maurice Bird (*ante*, p. 439), and looking up the authors he mentions, I am afraid I was ignorant of the fact that the Bearded Tit had ever been termed the “Least Grey Shrike.” In Edwards’s book, under this species, I see that it had been shot on several occasions “in marshes near London.” As this book was published in 1745, Goldsmith, in writing his ‘Animated Nature’ some thirty years later, no doubt made use of it, and inserted his vague remark about this species, almost quoting word for word.—BRUCE F. CUMMINGS (14, Cross Street, Barnstaple).

NOTICES OF NEW BOOKS.

A Vertebrate Fauna of Scotland. Tay Basin and Strathmore.
By J. A. HARVIE-BROWN, F.R.S.E, &c. Edinburgh: David Douglas.

THIS forms the tenth in a series of volumes devoted to a record of the vertebrate fauna of Scotland, as important a contribution to Scottish history as that almost universally devoted to the doings of noble, laird, or kirk. We often hear the remark of “back to the land,” but how little we know about it and its inhabitants other than ourselves! We can find an account of the doings of early freebooters, but the fauna of a few hundred years ago can on general inference be only visualized, for there is no faunistic record, no local enumeration—in fact, outside so recent a period as mentioned, we are in the region of animal folk-lore; while stray passages in old songs, or a few references in old books and chronicles, are all we have to compare with faunistic knowledge as understood to-day. Like national zoological paupers, we have slowly garnered these faunistic riches, which we hand on to our descendants, who should by their aid be able to solve many of those problems relating to migration and environment, which we without such an inherit-

ance have vainly attempted. These ten volumes are the legacy to-day to the Scottish natural history of the future.

The area to which these annals refer is an extensive one. "The Great Basin of the River Tay" and its tributary streams alone cover a vast area, greater in capacity than that of any other river system in Scotland. It contains no fewer than some 2600 square miles. It includes the moor of Rannoch, the *Mecca* of many entomologists; but insects are barred—this is a vertebrate fauna. The descriptive chapters renew our acquaintance with some scenes long since familiar, and we read again of several acquaintances long since gone on. Among the portraits is a good one of Buchanan White, and many days have passed since, kilted, he first visited us near London. This portion of the book is all the better for being written by a Scotchman—it is reminiscential—and we can understand that if the mercantile Scot loves to come south, the Scottish naturalist must yearn to get back.

There is a wealth of record in the narrative of the birds, which, of course, cannot be reproduced here, and to which full reference is beyond our space. We may, however, refer to the Tufted Duck (*Fuligula cristata*), which a contributor recently stated in these pages was nowhere common in Yorkshire (*ante*, p. 432). But in this Scottish area we read "that it is one of our commonest Ducks on all suitable lochs throughout the central and east portions, and just outside the south-west boundary of the area in Forth." Of this Duck, Mr. Harvie-Brown gives a very full account, and a map illustrating its nesting dispersal in Scotland. An enormous increase in the number of Starlings is recorded, and the author states: "The Starling in its millions is becoming a poisonous pest, literally an insanitary and ever-increasing evil." The account of the dispersal of the Twite (*Linota flavirostris*) in this area will interest some contributors to 'The Zoologist' who recently discussed the question.

Mammalia, Reptilia, and Amphibia are also enumerated, but Pisces are ignored. The volume is well illustrated, and we may say, with Carlyle, "On all sides, are we not driven to the conclusion that, of the things which man can do or make here below, by far the most momentous, wonderful, and worthy are the things we call Books?"

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