involving towards the end of the last century the removal of the old and erection of the present tower, which, due to this increase, is now very much in the same relative position as its predecessor of 1792. This local accumulation runs northward to "Romney Hoy" but is accompanied beyond this again northward by a constant struggle to preserve the sea frontage right up to Hythe.

Take the Royal Military Canal, twenty miles long, as the base of a triangle running out ten miles seaward therefrom, with two inclined sides of ten miles and fourteen miles, or twenty-four miles of sea margin in all; of this we have on the west side eight miles of stationary or receding shore, thence two miles to the "Ness," and northward of it four miles, or six miles in all of local increase, and northward again ten miles of stationary or receding shore.

Now under these conditions who is to fix, and on what principle, the landward boundary of what may be termed the "live beach," and is it not this very material (not grass-grown or covered as it ultimately becomes by vegetation) that lies most temptingly for removal?

A very tentative advertisement has recently been displayed at the Charing Cross terminal station of the South-Eastern Railway offering sea-beach or shingle for sale. J. B. REDMAN
6, Queen Anne's Gate, Westminster, S.W., May 28

Sheet Lightning

SOME people never see lightning; I have met one lady who cannot, and have heard of other instances. The question suggests itself, consequently, whether the duration of a flash of lightning is sufficient to produce a visible image on the retina or whether the image is only produced after successive reflections in the eye itself, which might be too few to produce such an image in the case of people with very dark eyes; if the latter is the case, this would go far towards accounting for the difficulty there is in deciding as to the character of sheet lightning as far as any optical test is concerned, but would indicate the possibility of further light being thrown on the subject by photography.

Ripon, May 24

N. W. TAYLOR

[WE never heard of any one (except blind people, of course) who could not see lightning, nor have we any idea how the colour of the iris (or reflection either) can have to do with it. As to the duration and visibility of a flash, see NATURE, vol. xxii. pp. 340-41. As to "summer lightning," the following statement from Prof. Tait's lecture on Thunderstorms (NATURE, vol. xxii. p. 438) may be of interest:—"I have said nothing of what is commonly called *summer lightning*, which is probably, at least in a great many cases, merely the faint effect of a distant thunderstorm, but which has also been observed when the sky appeared tolerably clear, and when it was certain that no thunderstorm of the ordinary kind had occurred within a hundred miles. In such cases it is probable that we see the lightning of a storm which is taking place in the upper strata of the atmosphere, at such a height that the thunder is inaudible, partly on account of the distance, partly on account of the fact that it takes its origin in air of small density." We know that Prof. Tait speaks from having himself seen what he here describes, which shows unquestionably that (on some rare occasions) its source is really above our heads, and not (as is the general rule) a thunderstorm of the ordinary kind several miles off.—ED.]

Curious Nest-building—"Scarecrows"

THERE is an old house at Whetstone at which a robin lately built its nest in a singular position. The gate in the garden wall, opposite the door, is opened from inside by a servant, when the bell rings. To do this she goes to a little hole in the wall close by the gate, and pushes along a small bell-pull handle in the line of the wall (the motion very slight). In the space behind this handle, and evidently scanty for the purpose, a robin built its nest, and it is now filled with little birds, which stretch out their yellow gaping beaks when one pushes the handle. The case is the more curious in that the master of the house, fearing inconvenience on both sides, had the nest twice removed when in course of building; but the robin persisted, and was ultimately allowed. A little way along from this gate is an old disused pump, the front of which opens on hinges. Round the vertical rod of this pump a tom tit has laboriously built up a pile of twigs and various scraps, quite filling the body of the pump

for about a foot in depth; and on the top is the nest proper, with six or seven eggs. The handle is never moved by any one. The bird apparently enters at the hinge.

While on this topic I would ask, Has any systematic study been given to the question of scares for birds? I recently sowed some grass and clover seed on a lawn, and, to scare the sparrows, stuck up some bits of wood, with square pieces of paper, attached with string to flutter in the wind; but from the occasional position of sparrows on the lawn, I suspect the radius of action of these scares was decidedly limited. Are birds most scared by still effigies of persons, or by sight of movements apart from such imitation, or again by sounds, as in a scare I saw lately, where pieces of glass were hung so as to clink together?

Finchley, May 29

M.

Ground Ivy

I SHOULD like to know if a peculiarity I often see in the position of the stigmas in the pistillate form of this flower is generally observed. Instead of the stigmas opening up and down from the style as usual in Labiates, they often diverge to right and left across the flower, and the style also often curves forward, so as greatly to facilitate cross-fertilisation as it seems to me. If I am right this slight change may be of interest as a step towards dioeciousness. I found this peculiarity in 291 out of 531 flowers with abortive stamens which I looked at; the stigmas opened in the usual way in 85, while in 141 one stigma was vertical and one horizontal; 14 cases were doubtful. In some unopened buds, the stigmas already diverged horizontally. For comparison I looked at 418 perfect flowers, and here, while the stigmas of 360 opened as usual, only 15 spread horizontally; 34 had one stigma vertical and one horizontal, and 9 cases were doubtful.

Geldeston, May 22

S. S. DOWSON

Meteor

I HAVE just seen a very splendid meteor (at 10.40 p.m.). I watched it during about thirty seconds, in which time it traversed the heavens from about the point south-east nearly to that of north-west, where it burst. Its path was nearly parallel to the horizon, probably approaching it at an angle of about 5 degrees. When first seen it appeared nearly yellow as to colour, with a very fine tail, but just before it broke up the colour changed to white, and the fragments reminded me very much of some "magnesium stars" fired from a rocket. No doubt you will have a quantity of communications concerning this meteor. I wondered whether any one else had noticed this appearance.

Filston Hall, Shoreham, Kent, June 3

A. HALL

WASPS (L. C.).—Thanks; but there is nothing new in your observations.

MIMICRY (DR. KESTIVEN).—The occurrence is perfectly well known. It is probably *Uropteryx Sambucana*. You have mistaken the anterior for the posterior extremity.

RECENT ORNITHOLOGICAL WORKS¹

TO those who imagine that British ornithology is worked out, and that there is nothing left to do in this well-worn field, we commend the study of the present book, as presenting us with a delightfully fresh view of an old and familiar subject. The author is already well known to the public from his admirable books of Siberian travel, but it is only his private friends who have been aware of the devotion to this favourite branch of science which has characterised Mr. Seebohm for many long years, when most people imagined him to be absorbed in business in the north of England. Brief excursions to points of interest on our own coasts, snatched in intervals of scanty leisure, succeeded in after years by more important expeditions to Greece and Asia Minor, the River Petchora, the Yenisei, &c., have given him an acquaintance with field-ornithology which is surpassed by few of his contemporaries, while the fact that the dry details of literary research have no terrors for him is proved by the

¹ "A History of British Birds, with Coloured Illustrations of their Eggs." By Henry Seebohm. Published by the Author, 1883.

masterly way in which he executed the fifth volume of the British Museum "Catalogue of Birds."

The present volume, however, will appeal to a class of readers very different from those who study the high and dry literature above-named, and even those accustomed to the well-written pages of Prof. Newton's edition of "Yarrell's British Birds," will find delight and instruction in the volume now issued by Mr. Seebohm.

The first part contains an account of the Birds of prey, and the Thrushes, and considerable novelty is introduced in the style of nomenclature of these two groups. First of all we notice that Mr. Seebohm gives up the idea of Orders in the class *Aves*. Although commencing with the Birds of prey, the time-honoured opening "Order Accipitres" is absent, and we are introduced to the family *Falconidae* instead, and we consider that it is in the classification adopted and in certain points of the nomenclature that the weak spot lies in this otherwise admirable work.

Mr. Seebohm is the kind of man who would speak disrespectfully of the Equator! With unremitting energy he charges full tilt against what he considers the abuses of scientific nomenclature in the present day, and not content with heartily belabouring those who differ from him, he returns to the assault on every possible opportunity, "fights all his battles o'er again, and thrice he slays the slain." He is quite furious with the rules propounded by the Committee of the British Association, and rebukes the authors, promoters, and followers of these rules with unabated vigour, but with perfect sincerity, as is exemplified by the following sentence in his "Notice to Subscribers," where he writes:—"If I have criticised the work of any of my fellow ornithologists too severely, I ask their pardon, and hope that they will pay me back in my own coin by correcting my blunders with an unsparing hand. The object of all true scientific work is the elimination of error and the attainment of truth."

We can promise Mr. Seebohm that, as one of the authors most severely attacked in his volume, we shall accept the above challenge, and shall not hesitate to pay him back in his own coin when occasion arises, trusting to the strength of the late Marquis of Tweeddale's dictum, that it is "by the flails of disputation that the truth is threshed out." And yet this is not an easy book to criticise. There is so much that is elegant in the treatment of the subject, and the work is so evidently done *con amore*, that in reading it through one is apt to lose sight of the irritating attacks on one's own writings in the admiration which the general style of the book compels; nevertheless there are several points on which it is impossible to agree with the author.

To drop the idea of *Accipitres* as an Order, and treat the Birds of prey as a simple family, suggests that the author has only a limited acquaintance with this group in its entirety, and this is a failing which appears throughout Mr. Seebohm's work, viz. that he is apt to judge of the classification of birds from a knowledge of Palearctic forms alone, without any consideration of the mass of birds which are extra-Palearctic in their habitat. This remark would be perhaps unnecessary did not the author aim at such a high standard. Thus his families are provided with "Keys to the genera," which, as Mr. Seebohm is nothing if not seeking after natural affinities, may be supposed to give the author's matured opinion on the relations of the genera. We can only wonder, therefore, at the importance attached to the characters which ally *Falco* with *Vultur* (in the same primary section of the *Falconidae*), and place the Ospreys as intermediate between the Falcons and the Swallow-tailed Kite. The Falcons and the Honey-kites are united by such forms as the Neotropical *Harpagus*, the Indo-African genus *Baza*, and other forms, but what *Pandion* has to do with any of them we fail to see entirely, and so far we have not seen any reason to modify our opinion expressed in 1874, that the Ospreys

are co-ordinate with the Falcons and the Owls, and form an intermediate group between these two. We should have thought, too, that at least as good characters could have been found to separate *Neophron* from *Vultur*, as some of those employed by Mr. Seebohm for distinguishing other genera of his family *Falconidae*.

In the much-vexed question of the Jer-Falcons Mr. Seebohm brings in his favourite theory of interbreeding, and accounts for the variation in plumage between the different races on this score with much ingenuity and some show of success, but we must totally dissent from his view of the Iceland Falcon being an intermediate form (*F. gyrfalco-candicans*). To our mind it is quite as good a race as the true Jer-Falcon of Scandinavia, and has a perfectly distinct habitat. In Greenland the case may be different, and it is by no means improbable that the resident Jer-Falcon of Southern Greenland, *Hierofalco hoelboelli*, Nob., sometimes crosses with the Arctic white Jer-Falcon (*H. candicans*), and that the result is seen in those specimens which are so numerous in collections, and whose exact specific position it is difficult to define; nevertheless fully adult birds, both of *H. candicans* and *H. hoelboelli*, are very easily recognised, but Mr. Seebohm's theory of hybridisation carries a strong probability.

In the article on the Peregrine Falcon the author sounds the first note of the trumpet which is to carry the charge into the enemy's lines and work havoc and destruction among the followers of the British Association rules of nomenclature. Mr. Seebohm asserts (and he is probably right) that the *Falco gentilis* of Linnæus, founded on Albin's Falcon Gentle, is absolutely the oldest-known name for the Peregrine, if the above rules are to be carried out to the bitter end. In the year 1767, a posthumous work by Gerini, who cuts a great figure throughout Mr. Seebohm's book, contained the name *Falco peregrinus* for the species, and as this is also the best known one, it is adopted by Mr. Seebohm as being that "auctorum plurimorum." By the simple process of using that name which has been employed by the majority of standard ornithological writers, the author settles all vexed questions as to priority, and does away with the difficulties of nomenclature arising from the discovery of a prior name in some long-forgotten "musty tome" by some diligent bibliographer. In the present case Gerini's book cannot be invested with the authority which Mr. Seebohm claims for it, because, as Prof. Newton has lately shown, the work was the result of the labours of three *collaborateurs* who published it in 1767, Gerini himself having died in 1751. The work is generally quoted by authors as the "*Storia degli Uccelli*."

We must candidly confess that Mr. Seebohm's plan of selecting the best known names for a species of bird has much to recommend it, and in the present volume the result is in general satisfactory, as it restores to many of the common European species the names by which they are most familiar to the general public. At the same time this rule of adopting the nomenclature *auctorum plurimorum* requires great care in its application, and it will probably be found to work better in the case of European birds than in the less-studied species of other countries. The whole subject is deserving of earnest thought, but for our own part we cannot entirely free ourselves from the idea that a certain amount of injustice will be done to the labours of many of the early writers in ornithology whose names have been overlooked by their successors, but who scarcely deserve to be passed over entirely, as their work might be up to the standard of knowledge of the times in which they lived. We cannot help seeing throughout Mr. Seebohm's volume that justice to the labours of the forerunners in ornithological science is *not* tempered with mercy to those who have endeavoured in all sincerity to fix the earliest recognisable names to the species of European birds. We must regret

that we have not space to give extracts from the many charming accounts of the habits of our English birds of prey, which have certainly not been surpassed by any modern writer. We have already alluded to the anomalous position given to the Osprey in Mr. Seebohm's classification, and we notice that in the characters which he assigns to the genus (p. 54) he does not refer to the skeleton, which is so essentially Owl-like in structure. The author calls attention to a very serious slip made by ourselves in the "Catalogue of Birds" with regard to the Rough-legged Buzzard (*Archibuteo lagopus*). We were certainly in error in placing this bird with the genus *Buteo*, and indeed the woodcut of the reticulated tarsus convicts us on the face of it; but we strongly doubt the correctness of Mr. Seebohm's relegation of the species to the genus *Aquila*, and we hardly think that Dr. Gadow's evidence as to the resemblance of certain points in the anatomy of the genera *Aquila* and *Archibuteo* was intended to suggest that they were closely enough allied to be considered inseparable. On p. 134 we are told that "ornithologists seem to have a fatality for making petty blunders." This probably accounts for Mr. Seebohm's admitting (p. 130) a woodcut of the nest of the Hen Harrier with the bird appearing in the background about the size of a Song Thrush. Perhaps Mr. Whymper, the artist who has drawn this otherwise pretty sketch, will, like Mr. Hanhart, who has done the plates of the eggs, "get better as he improves." (Vide the "Notice to Subscribers.")

Passing on to the family *Strigidae* or Owls, we find with regret that Mr. Seebohm has once more ruthlessly destroyed the simplicity of nomenclature in the European species, and this on the authority of the "Storia degli Uccelli," whose fourfold authorship would surely be more than sufficient to place the book out of court. The genus *Aluco* is once more invoked for the Barn Owl, *Strix* is restored to the Tawny Owl as well as to the Long-eared Owl, Short-eared Owl, and Tengmalm's Owl, and the Snowy Owl and the Hawk Owl are placed in one genus, *Surnia*. This classification of the Owls is by far the most disappointing portion of Mr. Seebohm's book, and ornithologists will be inclined to view with suspicion the ideas of an author who, in endeavouring to upset the rules of the British Association, requires them to pin their faith to a system which would lead to such a result as is here offered to us. Gerini's "Ornithologia Methodice Digesta" may have gone down a hundred and forty years ago, but in the present day it appears to be "*Chaos, rudis indigestaque moles*," which the stomachs of the present generation of ornithologists will not be found strong enough to assimilate. A little woodcut is appropriately inserted as a tailpiece on p. 182, which represents the author coming to grief on a downhill path!

In the account of the *Passeridae*, or Singing Birds, another suggestive tailpiece at once meets our eye at p. 199: it represents a peaceful scene on a river, and is probably placed there as emblematical of the joy of the author at finding himself once more in smooth waters. The rest of the volume is occupied with an account of the Thrushes and Warblers, Chats, Redstarts, and Flycatchers, with which birds Mr. Seebohm possesses an acquaintance beyond that of any of his contemporaries; and no one who reads his book will find fault with this portion of the work, which appears to us to be in every way excellent. We unhesitatingly express our opinion that since the time of Macgillivray no such original book as Mr. Seebohm's has been published on British ornithology, and, in spite of a few less satisfactory illustrations, we think that the figures of the eggs are by far the best that have yet been given. We have ourselves too often run counter to the rules of the British Association Committee to allow of a suspicion of our complete sympathy with these rules, and Mr. Seebohm has done much to prove their unworkable character in many instances, but at the same time his strong expressions with regard to

some of their most conscientious supporters seem to us likely to lessen the respect with which many of his incontrovertible strictures would otherwise have been received.

Another most useful ornithological work has also just made its appearance in Mr. Eugene Oates's "Handbook to the Birds of British Burmah."¹ Although less ambitious in its scope than Mr. Seebohm's work above noticed, it is nevertheless a very complete *résumé* of the ornithology of the country of which it treats, and it forms one of those useful volumes which appear from time to time from the pens of hardworking ornithologists, which bring into one focus the results of many scattered essays in various journals. It must not be supposed, however, that Mr. Oates's work has been confined to the incorporation of the labours of his predecessors, for although he has gathered together into one compass the results of the travels of Mr. Davison and Capt. Bingham in Tenasserim, and of Capt. Wardlaw Ramsay in Karennee, the book is also enriched with an account of his own personal experiences during a fourteen years' residence in Pegu. One great characteristic of this book is its conciseness. In the present volume of 430 pages, four hundred species are disposed of, and yet the principal references are given, as well as descriptions of all the species. In fact, the book quite comes up to our idea of what a model "handbook" should be, and there is no doubt that it will be simply invaluable to the collector in British Burmah, within whose reach it is placed by the exceedingly modest price at which it is published. All workers in the field of Indian and Indo-Malayan ornithology will not be able to do without this most useful volume.

R. BOWDLER SHARPE

THE AURORA BOREALIS²

III.

THE "Utströmnings" Apparatus.—On the top of a mountain, or in a spot situated so high that it commands the surrounding country within a radius of some 5 kilometres, the apparatus, which I have termed an "utströmnings" apparatus, should be erected. This instrument consists of a copper wire, at least 2 mm. in diameter, laid out on insulators fixed on poles 2 metres in height, along which points or nibs of copper or brass are attached at every half metre in such a way that they always point upwards. The wire is, I believe, arranged with most advantage as shown in the subjoined Fig. 1. If the wire begins at *o*, and the distance *oo'* is = 18 metres, the total surface area of the apparatus will be = 324 square metres. The letter *i* indicates insulator.

The length of the wire is, therefore, 194 metres, and the number of insulators, if one insulator is attached in the centre of each outer coil, = 27.

The insulators should be of a peculiar construction, so that they would, under all conditions, even when covered by hoar frost, be perfectly efficient. The kind shown in Fig. 2, based on the principle of M. Mascart's insulator, appears to me to be the most serviceable.

This diagram shows the vertical section of the insulator attached to the pole. *ab* is a glass tube 7 mm. thick, 5 cm. in diameter, and 20 cm. in height. This tube is soldered to the bottom of the jar *cdef*, the outer diameter of which is 11 cm., and height 13.5 cm., and is, at the side, 10 cm. from the bottom, provided with an opening *o* (2 cm. in diameter), which can be closed with a cork. Above the tube, *ab*, the bell, *mnn'* is affixed, which is provided with arms for the coiling of the wire. In the cork, *o*, a U-shaped glass retort, with short arms pointed downwards, is inserted, and if the retort *fede* is filled

¹ "A Handbook to the Birds of British Burmah, including those found in the adjoining State of Karennee," by Eugene W. Oates, Executive Engineer, Public Works Department of India (British Burmah). London: R. H. Porter, 6, Tenterden Street, W., and Dulau and Co., 1883.

² Continued from p. 109.