

In large atolls, on the other hand, the periphery is small relatively to the size of the lagoon; there is less secretion and formation of coral sand by the living outer surface than is removed in solution from the lagoon, which is, in consequence, widened, deepened, and reduced to a more or less uniform appearance.

MADGE W. DRUMMOND.

Challenger Office, Villa Medusa, Boswell Road,
Edinburgh, December 6.

Positions of Birds' Nests in Hedges.

ABOUT a year ago I wrote to NATURE (December 16, 1909) giving certain facts which I had noticed with regard to the position selected by birds when building. There seemed to be good reasons for such selection, but I wanted to know whether the conditions I had noticed were local or general. The letter sent to NATURE by Mr. A. R. Horwood showed that similar conditions were found in Leicestershire, Shropshire, and Surrey. Of the information which reached me directly, one letter deserves mention.

Mr. Francis G. Cousins enlisted some of the boys of the Johnstone Schools, Durham, as observers. Out of eight nests, the positions of which are given in the terms of my letter, two only faced north, one faced north-west, four south-east, and one south. I quote the following note sent by these observers:—"In the north-east of the district, with fairly open country, the nests faced north-east, and at their rear was a vast extent of woods. In the south-east of the district the nests face south-east, with woods again at their backs and open country in front." The italics are mine. I need not labour the conclusion that birds seek sun and warmth when building their nests. In this connection it is interesting to quote an observation made by Mr. Roosevelt ("African Game Trails," p. 290). He notes that, in Guaso Nyero, just north of the equator, the weaver birds place the mouth of the nest invariably towards the north, away from the strong, prevailing winds.

J. H. TULL WALSH.

Heath House, St. Faiths, Norwich, December 11.

Tribo Luminescence of Uranium.

I HAVE not seen in recent literature any reference to the "tribo" luminescence shown by uranium salts, and by metallic uranium in particular. Having accidentally knocked over a bottle containing 2 grams of the latter substance, I was surprised to see the bottle glow with a brilliant yellowish-white light, and on shaking the bottle the luminosity could be maintained to such an extent that the label on the bottle was read with ease, and the general illumination seen easily throughout a large lecture-room. The best way to see the glow is to bring the bottle sharply down on the palm of the hand.

On repeating the experiment with compounds of uranium, the nitrate and yellow oxide show the same effect, but to a very much smaller degree, whilst the black oxide and sodium uranate do not give it.

I expect the above must be known to workers with uranium salts, but it may be useful to some of your readers to know a method by which tribo luminescence may be so easily demonstrated.

W. A. DOUGLAS RUDGE.

Grey University College, Bloemfontein, November 18.

MARKED BIRDS IN TWO SENSES.¹

(1) THE interesting brochure referred to below gives an account of the bird observatory belonging to the German Ornithological Society at Rossitten, which, already well known, is likely to become in the future of prime importance in securing data, by local observations and by the labelling of living birds,

¹ (1) "Die Vogelwarte Rossitten der Deutschen Ornithologischen Gesellschaft und das Kennzeichnen der Vögel." By Dr. J. Thienemann. Pp. 36. (Berlin: Paul Parey, 1910.)

(2) "Aigrettes and Bird Skins: the Truth about their Collection and Export." By Harold Hamel Smith. With a Foreword by Sir J. D. Rees. K.C.I.E., C.V.O., M.P. Pp. iv+138. (London: John Bale, Sons, and Danielsson, Ltd., 1910.) Price 5s.

towards the determination of many obscure questions in bird migration.

Rossitten is situated on the narrow belt of sand-dunes, lying between Cranz and Memel, which bank out the Baltic Sea from the Kurische Haff, the more northern of the two lagoons chiefly forming the seaward face of East Prussia. The station—mainly designed by Dr. Thienemann, the distinguished ornithologist—was established in January, 1901, and fitted up at the expense and under the auspices of the Ministers of Education and Agriculture. Being, therefore, a State institution, it will possess greater stability than it could have had under the private enterprise of the society alone. Dr. Thienemann is director of the station, and holds with this post that of Custos of the zoological collections of the neighbouring university in Königsberg. Ulmenhorst, the actual designation of the observatory, derives its name from the generous lord of the manor, Herr E. Ulmer, who presented, in 1907, the present buildings in a new and more favourable site, some seven kilometres from Rossitten, than the original installation. Here Dr. Thienemann and his assistants, cut off from the world, spend the dreary and stormy season of the year from October 1 to May 1. The station stands on the narrowest part of the sand-spit, whence the observers have a free and unrestricted view of the area between the seaward and the inner sandhills, and can study the birds which specially collect there under genuinely natural conditions. Previous observations made along this stretch of sand-dunes, on the movements of the hooded crow (*Corvus corax*), proved that a migration route of great importance passed along it, and that every year it was a rendezvous for flocks composed of the same individuals. The site, therefore, though peculiar and isolated, has been deliberately chosen because of its special advantages.

The chief objects of the observatory are to record the exact dates and composition of the migration flights, with the numbers and age of their component species; the direction in which the birds travel; the velocity and altitude of their passage (to be determined by the use of field telephones and box-kites), and the atmospheric conditions prevailing during its continuance, with the effect of any changes on the migratory stream. Many other cognate questions are to be inquired into, such as bird-life in relation to food supply, moulting, and colour changes in the plumage at different ages, the economical value of birds, and the most suitable means of protecting useful species. It is intended also to form extensive collections of the skins and internal parts of the birds of the Nehrung and neighbourhood for reference and systematic study. The scope of these observations as proposed to be carried out at Rossitten, if covering a somewhat wider field than, does not greatly differ from that undertaken by the committee of the British Ornithologists' Union and by other observers elsewhere. Valuable as the observations all are, however, they do not, as was pointed out in NATURE of May 26, 1910, seem likely to carry us further forward than we at present are towards the solution of the phenomena of migration, until such observatories are more numerous and widely distributed; for what is now required is to trace individual birds or flocks along every part of their route from their birthplace to their winter quarters, and back again several times. These feathered armies may change their altitude, speed, and direction, or may break up into several battalions beyond the nearest horizon of an isolated observatory, and be affected in front and in rear by weather conditions unobservable from it. Even such bird observatories are as yet few in number. There is one at Riga, one in Algiers, another in Heligoland, and the one so well known, at Budapesth, which cooperates with an observer in almost

every Hungarian province. By the more crucial method of bird-marking the Rossitten observers are busily engaged in carrying out investigations which will give us eventually, we trust, the essential data referred to above: the identification of the members of a flock all along its migration route.

Besides those of Rossitten, only a few other ornithologists have attempted the "kennzeichnen" of birds. These are Prof. Martensen in Viborg, Prof. Thomson in Aberdeen, Mr. Witherby in London, and the watchers at the Heligoland station. The "marking" is done by affixing a light aluminium garter, capable of easy and quick attachment to the leg of adult birds captured for the purpose, and of fledglings before they leave the nest. The weight of these rings is so disproportionate to that of the bird that they form (as has been proved) no possible impediment to its flight or feeding. The weight of a stork's ring, for instance, is only 2.4 grammes, while that for small species is only 0.05 grammes. Each ring bears a number and the name of the station embossed on it, and when attached serves as an addressed missive for its return to the station of origin. The latter is obviously an essential factor to the success of the system. At all events, if the ring itself be not returned, its number with an accurate note of the time and place of its wearer's recapture must be communicated to the observatory, or published in some journal likely to meet the eye of the Rossitten or other European ornithologists. Each bird, as soon as ringed, is liberated to assemble with or rejoin its associates in autumn and fare forth on its adventurous voyage. The larger the number of birds ringed out of a migratory flock, the greater are the chances of prizes being drawn in this novel lottery by the man with a gun or a snare, and of data, indisputable and free from conjecture, being accumulated towards the elucidation of the routes followed by the flock, and of the terminus of its journey.

At Rossitten numbers of hooded crows, black-headed and herring gulls, storks, rough-footed buzzards, and various species of Totanidæ, Fringidæ, and Charadriidæ have been ringed since the observatory was established. The success of these experiments has been most remarkable. Large numbers of hooded crows were obtained for marking through the observatory's investigators associating themselves with the crow-catchers who frequent the dunes for the purpose of netting these birds for food. Twelve per cent. of the marked crows were recaptured, and the place of their misfortune plotted on a map, which shows that this species disperses over a wide region to the north and south. The most northern point of recapture was 30 km. from Savonlinna in Finland, and Solesmes in France, the most westerly and southerly; while Prettin on the Elbe was the most southern spot in Germany itself. From Rossitten to Savonlinna the distance is 900 km., to Solesmes 1280 km., and from Savonlinna to Solesmes 2180 km. Recaptures were also effected in the crow-catchers' nets in the neighbourhood of the East Prussian lagoons, sometimes after the lapse of three or four years, showing that the hooded crows come backwards and forwards to this region. Strange to say not a single marked individual from Rossitten has been reported from the Netherlands.

Space does not permit our referring to any of Dr. Thienemann's other records save that of the stork, which indicates very clearly the great value of the results to be expected by and by from these investigations. The first gartering experiments on storks were made in the Zoological Gardens in Berlin on old and on half-fledged birds. They were so successful that assistance was requested, from those who had access

to nests of these birds, in ringing as many individuals as possible. The observatory distributed rings free and post paid to all who requested them, on the sole condition that a list of the birds marked, with a note of the place and date of their liberation, and of the numbers on the rings, be sent to Rossitten. In the first year 1044 rings were distributed to outside helpers. The results were astonishingly successful. First of all it was proved that the storks migrate in autumn, not to the south-west, but to the south-east. On plotting the "find places" of the recaptured birds on a map, the course of their long journey from East or North Prussia, where they were ringed, could be traced out with beautiful regularity to east and south. One was returned from Poland, one each from Damascus, Acco (in Palestine), and Alexandria; one, snared by a native, from Fittrisee, in Central North Africa; one from Rosseres, on the Blue Nile; one out of a flock from Fort Jameson, in Rhodesia; one from the Kalahari desert, 8600 km. from its home, killed for food by a Bushman, who, seeing the ring, threw his prize away in terror as something uncanny! and two from Basutoland, in southernmost Africa, which were nine months old, and had travelled 9600 km. from their birthplace. The dated rings proved also that storks return from between one to three years after leaving the nest to within a distance of their natal district of from 6 to 94 km.

The recapture of certain ringed swallows in the nest in which they were born a year after leaving it raises, by the way, the interesting question: If a young bird of the previous year returns to its actual nursery, where do its parents nest? This system of marking the old and young of migrating species will unquestionably go far to provide data for solving the great mystery of bird-life; but it is essential that it be extended to the northern regions of America and Asia; and be instituted not only there, but in the middle and at the southern extremity of the journey—in Central Africa, in South America, in South China, and in Australasia—a work in which ornithologists, travellers, civil servants, and military officers in these regions could render very important assistance. Nor must the marking be confined to large birds. Passerines, because less conspicuous, and because they are captured in large numbers for food, for cage-birds and as agricultural pests, should be ringed in all holarctic regions in vast numbers while in the nest. The establishment of new observatories in these distant regions of the globe is also a matter of urgency which should be seriously dealt with by the next Ornithological Congress. Chance and happy circumstance will doubtless in time reward such efforts, and return to the expectant ornithologist answers from out of the empyrean to his numerous queries, and will yet, we trust, reveal to him the *causa causans* of the periodical restlessness that impels the novice-bird to start and guides it on its long, dangerous, often fatal, but hitherto untraversed route to winter quarters of which it has no previous knowledge.

(2) The second book on our list is, we fear, rather an apple of Sodom, fair on the outside, but, within, ashes—of gunpowder. It deals with birds marked for a very different purpose from those of Rossitten. It is chiefly made up of contributions by Mr. Harold Smith, reprinted from a paper called *Tropical Life*, of which he is editor, and from the *Times*, by various correspondents, to defend those engaged in the plume trade in the tropics from, as is suggested, attacks behind their backs and in their absence by those "bigoted members of society," "well meaning but badly informed agitators," and "egotistical humanitarians," who are urging the Government to legislate to prevent the indiscriminate slaughter of "plumage birds now

rife in certain parts of the British Empire," and, by prohibiting their import into England, to discourage the wearing of birds' skins, feathers, and plumes.

Of course, the badly informed humanitarians are the ornithologists and the lovers of birds in all parts of the civilised world. These people form, however, a large body of highly educated men and women, who among them have closely studied bird-life in every corner of the globe; and who, entirely disinterested, are possessed of—let us say—*quite* as much common sense, are as little led by "sentiment," and know "the true facts of the case through long years of experience," as well as Mr. Harold Hamel Smith and the feather traders.

The book is full of red-herring trails across the question, and of mean suggestions (*cf.* pp. 31, 41 (footnote), and 56) which are not worth our while to notice, and from which even Sir J. D. Rees, who writes a foreword to the book, dissociates himself. It would be reslaying the slain to discuss the question whether or not the slaughter of many kinds of birds for trade purposes is cruelly carried on or not. "Their [the plumers'] ravages are simply sickening," says Prof. Newton, one of the most accurate and unsentimental ornithological historians that ever lived. The evidence is overwhelming. Nor is it worth while discussing whether or not many species of birds are, through the same agencies, becoming exterminated. That question is also beyond contention. The paper on extinct and vanishing birds, by the Hon. Walter Rothschild, in the Proceedings of the fourth International Ornithological Congress (1905), should be read by those interested in this question, and also the remarks of Prof. Newton on Extermination in his "Dictionary of Birds." "The collection of skins for ornithological museums or fishing tackle," we are told, "is far more likely to exterminate a few rare birds than the millinery trade"—who, we are also told, are "the real protectors of birds"—"ever will be." The great bird collection in the British Museum, the largest in the world, contains probably about 500,000 skins, the result of more than a century's assiduous amassing. The present writer has been witness of that number of humming-birds (chiefly) and other bright-plumaged denizens of the Brazilian woods, all killed in the breeding season, being shipped in one consignment (and that not the solitary one of the season) from Rio de Janeiro to London; and has seen in the Moluccas a single canoe-load brought by native hunters consisting of scores of thousands of the most gorgeous members of the New Guinea avi-fauna spread out like wheat in a godown awaiting shipment to Europe.

Such extensive massacres, in which not only the parents but the nestlings perish, may go on for years and not become very obvious without investigation on the spot; but history shows that the results appear only when it is too late for protective measures to be taken. When a species has been reduced in numbers below a certain point, natural enemies, "red in tooth and claw," and causes difficult to determine, begin to operate, and these complete the ruthless work of man without his further interference. Another good reason for legal regulation of this trade is that, by the extinction of dominant species in a region, the equilibrium of nature is disturbed, and results disastrous to agriculture and in other directions arise. These questions formed the theme of many serious discourses by ornithologists from all parts of the world at the congress held this summer in Berlin. There the consensus of opinion was that measures must be taken internationally to prevent the present wanton slaughter of birds.

The burden of this book is that the plume-traders

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will suffer great loss by the exclusion of skins and feathers from this country. The same cry was raised by the slave-traders against the emancipators who struck at a "legitimate and honest trade" and "an important industry in this country." One correspondent of the *Times* writes (p. 98) it is "generous of you to offer your columns to both sides of this controversy." Mr. Smith, less generous, excludes all correspondence sent to the same journal on the protectionists' side. From one of the letters he publishes we learn that the feather trade is rapidly going to other countries, for reasons independent of threatened legislation or of interference by "badly informed agitators."

If it be true that the really large part of the trade is done in "the millions of poultry and game-birds' plumage, quills, and tails" (p. 105), why, then, this great outcry against the protection—which the traders say they desire—of the most beautiful and useful of living creatures, since tropical skins form in England so small a portion of the trade. Among the demands of the traders one is protection for the birds at their natal centre only. This the Government to some extent has done, and can do only, in its own possessions; still, its legislation instead of "not securing the preservation of a single bird" (p. 84), is providing, and will increasingly provide, very large areas of sanctuary for them. It would stultify itself if it allowed the importation of feathers from everywhere else, but prohibited it from its own dominions. Another demand is a close season (in India, for instance), after which skins and plumes would be allowed to be exported. As it is in the breeding season chiefly during which the birds don the ornamental plumage for which high prices are paid, it is obvious—human avarice being what it is—that bird slaughter would be carried on surreptitiously during that season, and the results quietly stored away until the closure was over. The expense of enforcing a close season being prohibitive, the next best means of staying the evil is prohibition of export. The "agitation" has been taken up by the Ornithological Congress, and we may shortly look forward to international regulation of the trade.

This book may contain "the truth" about the collection of "aigrettes and bird skins" as it appears to Mr. Harold Hamel Smith; but we conscientiously believe that every unprejudiced, disinterested humanitarian in this country will repudiate his assertion.

A MONOGRAPH OF THE OKAPI.¹

THOUGH this monograph is replete with exact, and in many cases novel, information regarding the outward aspect and bones of the okapi, it will certainly strike the general reader, as well as the zoologist, as being an incomplete treatment of the subject. This may not be the fault of its principal author, Sir E. Ray Lankester, and is certainly not that of the keeper of the Natural History Museum, Dr. Sidney F. Harmer, but is apparently due to the financial control disliking the expense of publishing the volume of text, which should have accompanied the mere illustrations included in the volume under review. The reason given is that as Jules Fraipont has already published a monograph of the Okapi for the State Museum of Tervueren, Brussels—an admirable piece of work, it is generally admitted to be—the publication of the text of Sir E. Ray Lankester's studies and deductions would be superfluous. It is

¹ "A Monograph of the Okapi." By Sir E. Ray Lankester, K.C.B., F.R.S., assisted by Dr. W. G. Ridewood. Pp. viii+48 plates. (London: British Museum (Natural History) printed by Order of the Trustees, Longmans and Co., B. Quaritch, Dulau and Co., Ltd., 1910.) Price 25s.