TO CORRESPONDENTS.

MISCELLANEOUS.

BOREAS.—To keep away midges apply to the parts exposed the following solution:—Place some Persian insect powder in about four times its bulk of spirit (as gin or whisky, &c.), and when it has steeped for twenty-four hours dilute with ten times as much water. A little benzole sprinkled on the brim of the hat will keep the insects away, or any other liquid containing the same principle (as pennyroyal, paraffin, turpentine, or common tar) may be used, if more readily obtainable.

T. L. H.—The patentee of the tube well is Mr Norton, Belle Sauvage Yard, Ludgate Hill.

F. W.—An operation may be performed for the purpose of obliterating the vein. Short of this, there is no remedy but an elastic stocking.

YACHTING.

LEANDER.—You omitted the word Dartmouth, but as you now put it the Royal Yacht Squadron Regatta, at Cowes, is by far the most important.

EGBERT.—A vessel laid-to on the port tack should get way on her and avoid the one approaching when hauled on the starboard tack. The clauses in the Merchant Shipping Act do not enjoin this, but there is one that states both vessels are to exercise every precaution to avoid collision.

TYRO.—A work published by Hunt and Co., Church-street, Edgware-road, called the "Yacht Sailor," will teach you how to handle a sailing vessel. We do not know of one that will inform you as to the expenses, &c., of a cruise on the Mediterranean. You may calculate upon 25s. per ton per month, besides your own stores, living, and personal expenses.

H. H.—Wilcox's as "Sea Fisherman," published by Longman and Co. There is no work that we know of with "constructive drawings" that would answer your purpose as an amateur, Marcel is a work on shipbuilding, an i Scott Russell's may perhaps assist you There have been various "Hints" and papers on yacht building in *Hunt's Yachting Magazine.*

BILLIARDS.

FRED.—Among amateurs it is not usual to claim a foul stroke at billiards or pool if the ball is moved in taking aim. It is, however, claimed at pyramids. The reason for this distinction is not very obvious.

REN.—It is quite usual to star at three pool; but if there is a rule of the room, barring a stun, of course an individual has no right to override it.

RIFLE.—It is not a foul stroke. See answer to "Fred."

GARDEN.

F. M. PRINGLE.—Confining ourselves to hardy flowers, trees, and shrubs, unacclimated and introduced, we should say more beautiful flowers open in the month of May than in June, though an unusually late season might prevent many of them from flowering till June.

AQUARIUS.—You do not say whether your aquarium is an indoor or an outdoor one, and if you state the size, &c., we will explain, we will furnish you with the names of the most suitable plants.

G. B.—The "Amateur's Manual of Gardening," published by London, will probably suit you; and, if you subscribe monthly, the *Floral World* will probably meet your wants. No book can call all names by their proper botanical names, inasmuch as multitudes of the finest plants have of necessity no English or popular name as yet, and the "grand Greek and Latin ones" are more desirable than such barbarisms as the "long-eared plant-bearer," an "English name" for Adenophora stylosa.

J. W. B.—Your best plan is to destroy the nests; as they are in meadows, you can do it very easily.

F. O. R.—You may defer the propagation of your bedding calceolarias for a month or two longer, but we have always observed them strike best in October.

MONTREAL, CANADA.—Your strawberries were of an unusually fine weight. It never pays to grow fruit up to the expense of netting for them.

E. P.—We cannot tell you how to "keep the colour" of your geraniums "fresh" as without further explanation we cannot understand your meaning

COURSING.

TEVIOT.—According to Rule 16, every entry for a produce stake must include the names of the sire and dam.

CATS.

G. B.—An article on the pug dog appeared in No. 754 of THE FIELD. We do not recollect the allusion to Jemmy and Tim Bunnion's pug.

J. P.—It is generally believed that it has more or less effect upon the next litter.

CANIS.—Try two grains of bromide of potass in a pill twice a day; but it is rather an excessive medicine.

J. C. C.—Oatmeal porridge, flavoured with broth, milk, or the scraps of the table.

A. Z.—Carbolic acid mixed with forty times its bulk of water forms a good plan for expelling fleas from dogs, when the smell is not objected to.

CHURLYRON.—Jaundice is generally caused be cold, either indoors or out. If the droppings are watched, a little medicine given at once when bile is deficient, jaundice may almost always be prevented.

SHOOTING.

J. D.—We should advise you to get a centra-fire gun, but we cannot select the action for you, being several of nearly equal pretensions.

J. B.—1) By all means take your dogs with you. 2) As Mr C. Lancaster's New Bond-street. (3) A cork jacket is better than a swimming-belt.

H. B.—The cartridge is beyond the bounds of the manor to which he is appointed, without taking a full certificate.

R.—Shoes for pointers in case of lameness are easily made by first cutting a rough model of the foot, and then blocking on it two pieces of stout welted calf, so to leave the sole full in the seanty, and the under one full. The edges are then sewn together with as close stitch as possible, leaving only enough to allow of the with trawal of the last, after which the shoe is necessary is to attach a small strap and buckle.

POULTRY.

T. S. H.—The bird is either suffering from determination of blood to the head, or from muscular leg weakness. The treatment would be quite opposite. For the first, bleed, purge, or a brisk dose of jalap; for the latter, 2 grains of citrate of iron daily.

CAGE BIRDS.

A. M.—We published about three months ago several letters on parrots speaking or talking, and could not say more than we did at that time.

PERE FIDELIS FOR MAY 1, 15, and 22.

BIG.—We do not recollect an instance of the fivestcher being kept throughout the winter, but it combines very much in the same food as that on which Mr Hardy kept the swallow and many other insectivorous birds. The following was as follows: Scrape some raw lean beef into a pulp, and mix with yolk of hard-boiled egg and a little bread crumb to form a paste. Make it fresh every day.

VETERINARIAN.

G. C.—There is no cure for windgalls. Rest, with repeated blister of biniodide of mercury, followed by a charge," may lessen the enlargement, but they will return again when the animal is put to work.

ANGLING.

BULL TROUT.—Consult Tod's "Trout Fishing in the Isle of Man," published at Douglas by M. Quiggin.

F. R. L.—Mullet are very uncertain fish in their biting; in some places they take a ball fairly, in others they are shy of it. The best baits for them are ray worm, found under stones in muddy harbours. The liver of pilchard, boiled cabbage, or the soft, green, silky weed found on rivers and lapped on the hook, a piece of smelt, or a shrimp, have also been found worthy.

W. T.—The only good pike or bottom fishing we know of at all in that neighbourhood is the Stapton Pond, near Dartmouth.

W. R. (Galloway).—There is the Drumcliff river some miles off, in which fair white trout fishing may be had. A few salmon are annually caught in Loch Gill, and there is fair pike trolling and coarse fish in it. Then there is Loch Arrow within a drive, where in the Mayfly season the trout fishing is second to none in Scotland. For the minuter matters of information on which you inquire, should you go to Sligo you will soon learn. In one of these waters leave has to be obtained.

E. KING.—We do not think a catch of 13lb. worth ottering.

TURF.

J. E.—We fear that the handicaps at county meetings are not the only ones in which horses are turned loose.

CRICKET.

R. GARNETT.—The decision of the first umpire in the case referred to was fatal to the bowler's claim, notwithstanding its irregularity.

F. D. G. (Guy's).—We are not at all familiar with the gentleman in question as a cricketer.

COUNTRY HOUSE.

WALLSEY JACK.—We received.

A JEW.—You cannot certainly shoot them, and we believe your only remedy is an action for trespass to do.

S. P.—We cannot assist you, having no knowledge of Mr Stone, the agent of M. Charlier, beyond his advertisement.

BRITON.—We have made the inquiry you wish, and will let you know next week.

IRENE.—A lady's horse should be trained to lead in the canter with the right leg.

ARGUS.—There is no plan which can be used on a hunter to prevent roaring. Pressure sufficient to stop the noise interferes with respiration as a fast pace.

HERSAL.—The analyses are so indefinite as to be of little value. The water contains ning much organic matter cannot be wholesome for a human beerage. Of the other we can say nothing, not knowing what "neutral salts" is indicated.

G. S. M.—(1) The extract is useless. (2) Indian corn meal answers well for any kind of ordinary work, but not for hunters. The London General Omnibus Company now use nothing but Indian corn.

CROQUET.

TYRO.—The address of the secretary of the C. C. C. is Mr Mitchell, E.q., 2, Old-square, Lincoln's-inn, London.

NATURALI T.

A. BULL.—You can only rear them by placing them in the nest of a tame pigeon whose young have been removed.

J. M. C.—We quite agree with you as to its being a most unsatisfactory thing to have bees kept in confinement many years without exhibiting any such growth of beak.

E. W. T.—(1) Jordon's "Birds of India" is the only complete work on the subject. It is a most valuable work. (2) Possibly Mr Sharpe, the librarian at the Zoological Gardens, could tell you.

W. T. R.—It is a wood-boring beetle (Lamia zonifila), and its presence in the coal pit must have been accidental. It must have settled for it flies with great readiness on warm days that was subsequently taken down the pit.

S. C.—We know of no good book on stuffing fish.

SEATON.—The plant is the common hound's tongue (Cynoglossum officinale).

GUNNER.—The history of the cuckoo is detailed in great length in Colonel Montagu, and more recently by Mr Yarrell. We think there must be some mistake about the fern owl preying at a peasant.

MR ADAMS.—The insect is Ichneumon manifestator. It is parasite on the large wood-feeding caterpillar which produces the fir apple figures, its insect frequently sent us to be named.

REV. J. C.—The viper does not lay eggs. The membranous sac is the ovary, full of extrusion, and the young are born alive. The fact of finding live young in an old viper is the strongest proof of their having been swallowed.

FARM.

PADDY FROM CORK.—You will find instructions for laying down "for pasphalts" in an article entitled "Walks and Drives," No. 735 of THE FIELD.

VICTIS.—We advise you to commission an Irish dealer. They are to be picked up at the large fairs.

M. T.—Apply to F. and C. Hancock, Dudley, Worcestershire.

H. W. S.—We have employed cotton cake for pigs, but have no doubt it will answer well, if not better, for large quantities. It would be best given as meal. Set your mill as close as possible, and separate the husks with a screen; the broken lumps will do for sheep and cattle. Soak it with the palm nut meal and Indian corn in equal quantities of palm nut meal and cotton cake commencing with about 2lbs.

INQUIRER.—The management of sheep is seen to the best advantage on limestone soils from the fact of the shortness of foot crops and their consumption on the land. The variety of sheep originated depends upon circumstances; thus, on the wolds of Yorkshire and Lincolnshire, and on the Cotswold range, long-woolled varieties are approved, whilst on the south and west country downs short-woolled breeds are kept. We advise an inspection of the district round Salisbury, where great pains are taken with Down lambs.

W. W.—"Clater's Cattle Doctor," &c., is a good book. Youatt's work on cattle studied than cattle. the knife being usually considered the best remedy.

W. L. Martin's work on "Domestic Sheep; our Domestic Breeds and Treatment," is also a good one. "Sheep Shepherd" by H. Randall, may be worth looking at The above can be obtained at the *Farmer's Magazine* office, 20, Fleet-street, London. The work we referred to was Alexander Jennatt's "Farm Accounts," published by Simpkin, Marshall, and Co., London, but we are not aware that it could be kept by a hind.

J. P. A.—The agricultural statistics are not yet published, though out.

C. J. B.—We know of no separate work on this important subject. In vol. 19, page 256, of "Journal of Agriculture Society's Journal," you will find an excellent essay by Mr Hall. The Agricultural Reporter Buckman's little work on grasses contains a good description of the character and habits of the various grasses composing pasture and meadow.

INQ.—Brewers' grains will be found very suitable for your purpose, if the same can be purchased at a moderate price a bushel. Mix the meal and bran with them, supplying hay night and morning, and taking care that the cows are freely watered.

THE FIELD.

SATURDAY, SEPTEMBER 4, 1869.

THE LATE INTERNATIONAL BOAT RACE.

FOR THE SECOND TIME has the old country been victorious in a contest with the representative of her eldest offspring; once more has Oxford added to her long list of victories on the river Thames; and again once more has a crew which held a lead for two miles been beaten by the steady and more measured rowing of their opponents, who, rather than let slip ever so small a chance of winning, were content with the second place for a long distance, in order that they might ultimately outlast their quicker opponents. Of these international contests, two have taken place upon the Thames; the first of them was rowed as far back as the year 1863, for on the 16th of June in that year the late Robert Chambers, the then champion of the Thames, contended against Richard Green, the Australian champion, who had come over to this country to try his luck with the best sculler England could produce. On that occasion, curiously enough, Green started at a very rapid pace, but when he had rowed a mile and a half, and held a good lead, he was passed by Chambers, and after that did not persevere. The second was in the year 1866, when James Hammill, the champion of America, came over to this country and rowed a match with Henry Kelley, who had during the previous year defeated Chambers in a match for the championship of the Thames. The races—for there were two of them, one being a right-away race, and the other to a turning buoy and back—were rowed on the 4th and 5th of July, and resulted in two very easy victories for Kelley. Another contest, which ought hardly to be called international though it has been so by some, took place at Paris in 1867, when a four-oared crew from St. John's, New Brunswick, who rowed in an outrigger without a coxswain, defeated, amongst others, a crack Oxford Etonian crew and a London Rowing Club crew; but the bad position of the Oxford men at starting gave their opponents an undue advantage, which the absence of the weight of a coxswain greatly augmented, so that the result was not surprising. That St. John's men were certainly not *bonâ fide* amateurs, and the race can hardly on that account be called a fair test of the merits of the representative amateur crews of England and of the American continent, though it is very probable it had some weight in inducing the Harvard men to challenge the Oxonians.

The race of last Friday came next in order, and is of the greatest importance, as the interest it elicited far outstripped that of any of the others, and it will long be remembered in both the Old World and the New, as one in which ten undergraduates from different sides of the Atlantic, of good birth and education, met together to contend in a friendly spirit of rivalry for the honour of their respective universities. The race itself, though it was only between two crews of two universities, one in the United States and the other in England, has been called international, and rightly so, though the term is objected to by some, but for what reason it is difficult to see; for are not the Harvard crew Americans, and are not the Oxford crew Englishmen? It was thought at one time that Cambridge would have been able to join in the race with the Americans, but the very great difficulties that exist in forming and training a crew in the middle of the long vacation prevented her from taking part in the contest; and the proposal of the London Rowing Club to row the Harvard men a friendly race when in this country was courteously declined by the Americans, as they intimated that their intention was only to measure their strength with the two English universities.

The arrangements of the late race were carried out in a most successful manner, and the way in which the course was kept clear, and the hitherto rebellious and refractory steamers restrained, by the Thames Conservancy, under the guidance of their able officer Mr Lord, brings three facts before us. The first shows that the fears of the American Press were groundless, when they stated that it was impossible for us to give the Harvard men a fair course; the second, that there never need be any necessity to have the Oxford and Cambridge University Boat Race removed from the course over which it has so long been rowed; and the third, that the American fears that betting men and roughs would prevent the Harvard crew from winning the race were also groundless, and must have proceeded from a source similar to that whence the ever-ready author of "Formosa" drew his absurd picture of University life. Of the race itself there remains but little to be said. The Harvard men, impressed with the old-fashioned idea that the lead is all-important, went at once to the fore, and, rowing about half a dozen strokes per minute faster than their opponents, held the lead for some distance, during which time, it may be observed, the latter were astonished by the peculiar cheers of the Harvardians who were on the attendant steamers. The "'rrah!" repeated sharply by many voices nine times in succession has a strange effect, and sounded oddly at first. At Hammersmith it became evident that the pace of the leading boat could not be maintained, and that the steady sweep of Oxford would outlast the brilliant efforts of their opponents. It was not, however, until Chiswick Church was reached that the race was decided; but it was there evident that victory was in the hands of the Oxonians, who, however, owing to a boat getting in their way, only won by a length and a half—not four lengths, as we stated last week.

The race thus won by Oxford was not an easy victory; indeed, Mr Willan said it was the hardest that he had ever rowed. To the coaching the Oxford crew underwent at the hands of Mr Warre at Eton, and Mr G. Morison at Pangbourne and Putney, their success is mainly to be attributed; but it must not be forgotten that the material they had to work upon was that of four very good and oft-tried oarsmen, who were nevertheless wanting in that life and *élan* which their opponents from the other side of the Atlantic possessed. The latter, on their part, had the advantage just enumerated; but on the other hand, to counterbalance it, they had to undergo the disadvantages of a change of climate and water, of rowing with a coxswain, and of the frequent changes in their boat, as well as the alteration in their crew; and last, but by no means least—for this was the most important defect of all—of not having a "coach" to direct the practice of the crew, and to rectify the hundred and one faults that men will fall into whilst rowing. Had they been able to secure such a coach as either of the Oxford gentlemen above enumerated, they would most probably have achieved success. They have now learned to carry a coxswain, and it will at least enable them to have a person at the stern of their boat who can do his best to coach them—a thing to which they are apparently unaccustomed.

The victory has been with Oxford, but who shall apportion the honour of the contest? *Nemo ex hoc numero mihi non donatus abibit.* All have well earned the meed of praise, and not least Harvard; for if the merit of the performance is proportionate to the energy displayed and the difficulties surmounted, then indeed all honour is due to the five young Americans who have come 3000 miles by sea and land to measure their strength in amicable rivalry with their cousins in the Old World. There is in these contests something peculiarly captivating to all of Saxon blood. There is a sense of kinsmanship developed by the display of such pluck and endurance, such muscle and sinew, that does more to make us realise our blood relationship than scores of treaties or official declarations of good will. The worship of "pluck" is a national idiosyncracy, and this race between Harvard and Oxford brings home to every Englishman the great fact that the Anglo-Saxon type is still unaltered. Long, then, may these contests continue! We have given good proof, by the undisguised goodwill and fellowship with which the Harvard men have been greeted on the river and elsewhere, that the old reproach, *Britannos hospitibus feros*, has in this instance no meaning; and we are well assured that, should Oxford return the visit and contend with Harvard on her own waters, their reception will be not a whit less cordial, or their welcome a whit less sincere.

THE PARTRIDGE SEASON.

ACTUAL EXPERIENCE has verified the prognostications which we ventured to give on the 21st of the last month, as to the prospects of the shooting season in the south. Barren pairs and half-grown coveys are the rule everywhere, as far as our own experience and that of our correspondents enable us to form a reliable opinion. In the midland counties there is even a lower cover than last year, the rainfall having been in that district much below the average of the south and north. Swedes are very thin, and turnips all good, while mangolds, which last year were pretty good, are extremely light below, and so deficient in top as scarcely to hide a mouse. On the opening days there was a nice cool breeze from the east, but, as usual when in that quarter, the scent was not very good. Owing to the later harvest, the birds are much less wild than last year, even the old pairs allowing a shot at them from the stubbles, and the coveys almost requiring to be kicked up, from their juvenility. In many manors the shooting is put off for a fortnight to allow the "cheepers" time to get feathered, while in some the partridges are allowed a respite till the 1st of next month; but these are chiefly where driving is resorted to as the only kind of sport, and where a great bag is wanted for the sake of the *éclat* it gives. There seems no disease of any kind among the partridges; but in some pheasant preserves the "gapes" has made sad havoc.

THE NATURALIST.

THE ZOOLOGICAL GARDEN AT ANTWERP.

(*Continued from page* 175.)

M. VEKEMANS does not much patronise the Quadrumana; but, accordantly with his prevailing system of illustrating a species of animal thoroughly, he has a splendid group of some twenty of the yellow Guinea baboons, of all ages, from the mature patriarch downwards; and the gambols of these sagacious though somewhat ungainly satyrs, in their spacious place of abode, appear to be not a little attractive to visitors. On a previous visit to the Antwerp gardens, in September last I saw there a pair of mandrils, with their big baby of four months old; but the whole family has since gone the way of all mandrils. By a very simple contrivance it was managed that there should be nothing offensive in the appearance of those hideous caricatures of humanity. They were deep in clean straw, which effectually subserved the purpose of a garment. The only monkey of note at the present time is an example of the Japanese macaque (Inuus speciosus), which occupies a pole and box, as does likewise a common African mangaby (Cercocebus athiops). A lemur or two, and some marmozets in a very roomy cage, about exhaust the scanty catalogue of quadrumana.

The feline genus is illustrated by some rather juvenile lions and tigers, with jaguars, leopards (inclusive of a sooty-black one, which shows its spots distinctly), a puma; and the only other species which I remember at this moment there is a fine and particularly savage American lynx (Felis rufa), the "wild cat" of our Transatlantic cousins. Now, this animal enabled me to demonstrate a fact which I recommend to the attention of sculptors and other artists. Upon entering the Musée in the City of Antwerp (not that devoted to natural history within the precincts of the Zoological Garden), about the first object that strikes the attention is a sculptured group, representing an American wood-cat, which latter has been seized by a lioness, or some other great feline quadruped, in a way in which no feline animal ever attacked yet. It is represented as having seized with its teeth the neck of the nag—which is about as conformable with fact as Sir Edwin Landseer's most reprehensible picture of an eagle seizing a swan's neck with its beak, the swan meanwhile doing the same to the eagle, instead of striking vigorously with its wings, as is a swan's mode of offence or defence. Canine, or viverrine, or musteline quadrupeds seize with their teeth, but feline animals never. A big cat fells or strikes its victim down with a blow of its tremendous paw, and the sledge-hammer stroke of a lion or tiger suffices to crush the skull of an ox. The bone of a tiger's fore-arm is so weighty and compact that it will strike sparks from steel. Even when the puss captures a mouse with her talons, then takes it in her mouth; but she does not seize it with her teeth as a dog tackles a rat. Why are artists, as a rule, so wofully ignorant of the most familiar facts in natural history? and above all, those artists in particular whose aim and speciality it is to attempt the representation of animals? Now, I had occasion more than once to illustrate and demonstrate this fact to my Antwerp friends this feline mode of attack, as exemplified by that exceedingly savage American bay lynx, and it acted precisely as I well knew it would have done. Upon placing my walking-stick within the bars of its cage, it struck it down repeatedly with its paws, striking at it with each fore-paw in quick succession not unfrequently, and surprisingly heavy were its blows; and it growled, but it never attempted to use its teeth, as a wolf or as a hyæna would have done. Surely such a simple fact as this in feline nature should be familiarly known to every animal painter and sculptor!

Of canine animals I remarked a fine old example of the Indian wolf (Canis pallipes of Colonel Sykes), the Senegal jackal (C. anthus), and three or four species of fox, inclusive of the arctic "blue fox" of the furriers. I do not remember having seen this animal before otherwise than as differs from the common arctic fox (C. lagopus) in colouring, being uniform dark leaden-grey, and the same at all seasons. In its size, proportions, and anatomical form, I have been assured that there is no difference at all from the seasonally-varying C. lagopus, which occurs throughout the circuit of the arctic regions, whereas the "blue fox" would appear to be peculiar to America. As the annual exhibition of furs in London I have seen many hundreds of skins of this blue variety, but have remarked among them no variation. It is a remarkable instance of what has been denominated *dimorphism* in one of the higher mammalia.

The Antwerp collection is not rich in specimens of the smaller carnivorous quadrupeds, nor in rodents, though it contains a few of more or less interest. There is a fine species of mungoose or ichneumon from Senegal (Herpestes ichneumoda), and some genets from the same country (Genetta senegalensis), but little else worthy of particular notice. Of kangaroos there is a tolerable collection, inclusive of the large red one (Macropus rufus). Of pigs, there is a fine old boar of the Abyssinian wart-hog (Phacochœrus Æliani), of which at present there is only a young sow in the Regent's Park collection, though I understand that a boar is shortly expected. The two species of wart-hog (P. athiopicus and Æliani) are far from being so closely akin, when viewed alive, as might have been expected. There is also one of the miscalled red "water hogs" (Potamochœrus porcus), of which we have so fine a pair in the Regent's Park, and which most showy and aristocratical-looking of pigs proves to be the veritable Sus porcus of Linnæus, as well as the S. guiminesis of certain of the earlier naturalists, although denominated P. penicillatus in works of recent date.

The creatures least well provided for (at present at least) are the seals, of which I remarked two species; but they will have a suitable residence soon. There is a fine large bear pit, well situate, but containing no rare species of Ursus. One object of interest to the naturalist is a large and perfect skeleton of the great rorqual or razor-backed whale (Physalus antiquorum), of which some account

will be found in Dr Gray's "Catalogue of Seals and Whales in the British Museum" (1866), p. 153. The glory, however, of the Antwerp Zoological Garden, so far as the class of mammalia is concerned, is the superb collection of Herbivora—all of them, too, in the highest and healthy condition. I must first notice the very most vigorous and healthy condition. I must first notice the very most vigorous and healthy antelope-house, which alone is worthy of a visit to Belgium to see. It contains a series of compartments for the animals in question, which series may be described as shaped like a horse-shoe, inclosing a considerable arena into which each compartment opens, so that the animals may be turned loose annually, if not oftener, each of them in its turn, and collectively, a pair or more at a time. Nor is this all: the inboard of the arc is formed by gates, through which the visitor looks into the arena; and these gates can be opened so as to close the passage or walk on either side of them, and through the opening thus formed the animals can pass from the arena into a spacious grassy paddock, of which more anon. The passage or walk referred to encircles the series of compartments, so that the visitor can look into each of them, the whole being under glass. Among the rarer inmates may be noticed a Californian prong-horn (Antilocapra americana), which is the second of its species ever brought alive to Europe, the first having lived about a couple of years in the Regent's Park menagerie, where it died a year or more ago. This unique ruminant sheds and renews annually the corneous sheathing of its horns, the bone of them not being cast and renewed as in the deer family. Who knows but that such queer fossil creatures as the Sivatherium and the Brámátherium of India resembled it in this respect?

Another charming antelope is the Gazella dama, of which there is a beautiful and healthy mature pair; also a pair and a recently imported kid of the Senegal leucoryx, which is certainly a distinct species from the veritable Oryx leucoryx in our London garden (No. 51, &c.), and hartebeests (B. caama); also both the "bontebok" "bontebok" (Damalis albifrons of D. pygargus), a fine pair of "singsings" (Kobus gimbanensis), springboks (Antidorcas euchore), harnessed antelope (Tragelaphus scriptus), "nilgais" (Portax pictus) of course, "reh-boks" (Pelea capreola), isabelline antelopes (Helecotragus isabellinus), and a kindred undescribed species; a superb pair of the white-tailed gnu (Catoblepas gnu), and an equally superb pair of the brindled gnu (C. gorgon); common Indian antelope (Antilope bezoartica), and others needless to mention. In another part of the garden are eland (Oreas canna), not so fine as those in the Regent's-park; nor are the wapiti stags (Cervus canadensis) nearly so fine as ours; but there are handsome well-developed examples of the Indian spotted deer (Axis maculatus) and of the hog deer (Hyelaphus porcinus), also choice dappled specimens, typically coloured, of the common park fallow deer, very different from the Grecian race of Cervus mesopotamicus, which I saw last autumn as a calf in the splendid Zoological Garden of Amsterdam; also different races of the domestic humped cattle; a herd of llamas and a herd of alpacas; and a pretty flock of the North African wild sheep (Ovis tragelaphus), being the only representative of the ovine group in the garden, besides certain domestic sheep (inclusive of Soay and Welladhian strepsicerine race). Last year there was a two-thirds-Welladhian strepsicerine race). Last year there was a two-thirds-grown doe kudu (Strepsiceros kudu), but she is no longer among the living, more than the young buck kudu which we had for a while here—both of them being of the large species, with copious neck-fringe, as distinguished from that figured and described in Sir A. Smith's "Zoology of South Africa."

There is another large building, primarily devoted to pachyderms, but which likewise contains a fine herd of giraffes. Here there is a female Indian elephant, not like that in the Regent's Park; an old but a handsome rhinoceros; one-humped and two-humped camels; and examples of the zebra, dauw, quagga, and ghor-khur, but not of the elegant Asinus hemippus (the "wild ass" of our English version of the Book of Job, and also the *onos agrios* of Xenophon). At Amsterdam last year I saw a ghor-khur (Asinus indicus of Dr. Sclater) with well-developed hummels, but in our own Zoological Gardens a there has been recently received in exchange a most unusual deep ruddy colouring, in which both dorsal and humeral stripes are only very faintly and barely perceptible.* The equine series is further illustrated at Antwerp by some domestic Javanese and other ponies.

The elephant house contains a central tank for crocodiles, turtles, and the like; and it is a fanciful building, decorated outside with sculptures of the antique Egyptian paintings representative of animals. The effect by no means bad. Sir Samuel Baker justly remarks that the breeds of camels are about as numerous as are those of horses; and a visit to the different Zoological Gardens of the Pays Bas will convince any attentive observer of the accuracy of that observation. At Rotterdam there is an example of the high-bred, swift, one-humped dromedary, and also of a long-legged two-humped camel; and there is a short-legged two-humped camel at this time in the Regent's Park, which seems to me to exemplify the ordinary Afghan camel. A single one-humped and a single two-humped camel, of any particular race or breed, are exceedingly far from illustrating the very considerable extent of variation to which both species have been brought in the course of countless ages of domestication.

It was really a fine and a most beautiful sight to witness (by special favour) the various antilopine quadrupeds turned out to exercise themselves, one species after another, in the spacious grassy inclosure. What do we know of them when we only see them cooped up in small dens, as in our own Zoological Gardens? How different the aspect of the leucoryx or of the hartebeest as we see them here, from the grand demeanour of the animal in comparative freedom! How nobly they stepped forth, with their very stately gait, and with what a most stylish high trot, exulting in the opportunity what a most stylish high trot, exulting in the opportunity afforded them of displaying their uncramped action!—hartebeest with tail raised high, and otherwise showing off in ways that could never have been suspected of so ungainly-looking a creature as it appears when confined within narrow limits. How wantonly did they prance and gambol about!—now pawing the ground, then perhaps dropping on their fore-knees and rubbing the earth with their horns, anon bounding away, with such magnificent play and freedom of limb! To see, too, the pair of white-tailed gnus come forth, and then in their turn the pair of brindled gnus, wildly tossing their uncouth heads and whisking their fine horse-like tails, then rolling and tumbling over on the sod, plunging their hooked horns into the sward, and next minute frisking about and careering with such speed! Surely no one who thought to see finer than at full speed over the pasture-lea the leucoryx and the hartebeest; and how very beautifully did the graceful reh-bok show, with the white under surface of its upheld broad and bushy tail exhibited to most showy advantage! And the elegant springbok bounded away like an animated ball of caoutchouc, as I have seen herds of the Indian antelope and delicate gazelles hop along in like manner, springing high into the air at each successive leap, barely touching the ground; apparently, with all four feet at once, and so off and onward again; only the springbok displays upon such occasions the beautiful white plume upon its croup, which is concealed when the lovely creature is quiescent. It is indeed a privilege to have beheld such feats of animal grace of action, which assuredly are not to be speedily effaced from the memory of any appreciative and admiring naturalist.

ZOOPHILUS.

(To be continued.)

* Since writing the above, I have seen a costermonger's donkey of peculiar dark and somewhat dappled coloration, in which the cross upon the back was only very faintly and barely discernible.

FIN-BACK WHALES NEAR GUERNSEY.—At 3 p.m., near Clarence Battery Point, I observed on Aug. 24 six or eight cetaceans, the back fins of which rose above the water to all appearance about 18in. in height, as they cruised quietly along, alternately at and below the surface. The huge shoals of pilchards may probably have attracted them. I have occasionally seen here white whales having a back fin about the same height, and consider them to be white individuals of the same kind.—J. C. WILCOCKS (Guernsey).

THE NEST OF THE CROCODILE.

SO LITTLE IS KNOWN respecting the manner in which the crocodiles deposit their eggs and form their nests, that any personal observations on the subject possess considerable interest. I have read with much pleasure an account by the Rev. Barcroft Boake, of what may be almost termed the incubation of this animal. As this account occurs in a work of which I presume not a dozen copies exist in Europe, I think it exceedingly desirable to give it a more extended publicity. The article was published in the "Journal of the Ceylon Branch of the Royal Asiatic Society," printed at Colombo, the author being the vice-president of the society. Mr Boake writes as follows:

The favourite haunts of crocodiles being but seldom visited, in consequence of the unsalubrity of the localities in which they are generally to be found, and of the dangerous character of their inhabitants, the habits of these animals are very imperfectly known. The following account of two nests, which were recently found within a few miles of Colombo, may therefore be interesting to naturalists.

The first of these nests was discovered by Mr Symonds, of the Survey Department, who found it to contain about one hundred and fifty eggs, which he removed, not without considerable risk, having been repeatedly charged by the old crocodile who was guarding them.

My curiosity having been excited by the description which I received of the nest from Mr Symonds, I went to examine it myself. I found it amongst the bushes on the swampy bank of the Bolgodde lake, at a distance of a few feet from the water.

The nest itself consisted of wet vegetable matter mixed with mud, and was raised to the height of four feet above the ground, presenting in shape very much the appearance of a small conical haycock, but in colour and consistency that of a heap of dung. Round the base of the cone was a circular trench more than three feet broad, and about two feet deep, in which the female crocodile was lying, and watching her nest. As the circle inclosed by this trench, the whole of which was covered by the base of the nest, was between six and seven feet in diameter.

I am not aware that these conical nests have been previously noticed.

The eggs had been placed at a height of about two feet above the surface of the water; and, although the nests in Ceylon are principally composed of aquatic weeds in a wet state, which might be expected to give out considerable heat in fermenting, yet I do not think that artificial heat is required to hatch the eggs, because several eggs, which were procured from the Bolgodde nests, were hatched in my house, being merely deposited in earth which was kept damp and exposed to the rays of the sun.

While examining the last nest that was discovered by Mr Symonds, we were told by some natives who accompanied us that there was another nest, within a mile or two of the spot, which had not yet been disturbed.

On visiting this second nest, we found it to be exactly similar to the first, except that it was not so large, and that, besides the trench which surrounded it, there were one or two holes in the swamp in which the natives said that the old crocodile was accustomed to lie.

Warned by the narrow escape which Mr Symonds had when examining the first nest, we approached very cautiously, expecting an attack every moment, and when we were all assembled on the edge of the trench surrounding the nest, we hesitated to cross it, because it was when he was in the act of stepping across that Mr Symonds was first attacked by the infuriated crocodile, which raised its formidable jaws directly beneath him, and would no doubt have effectually put a stop to his proceedings, had he not promptly discharged the contents of his fowling piece into the beast, Three shots was the number fired; for Mr Symonds was subsequently charged twice by, as he believes, the same crocodile. On finding however that no crocodile appeared, our confidence returned; and at length one of our number ventured to approach near enough to remove the top of the nest, and to take away the eggs, of which he procured twenty-five.

On my expressing astonishment at the prolific conduct of the parent crocodile, and suggesting that it would probably absent in pursuit of food, the natives who were with us expressed their conviction that it was at that moment in the trench, but that it was of a different *caste* from the first. Further inquiries have satisfied me that this belief in the existence of two different races, or, as the natives call it, *castes*, of crocodiles, is universal in the country; and Dr J. Anderson, of the Indian Museum, Calcutta, informs me that a similar belief prevails in Bengal respecting the munger, which closely resembles the crocodile of Ceylon. It is said that the murdering of its nest is the only cause which will induce the female to attack human beings.

The former, called by the Sinhalese Elle Kimbola, or grey crocodile, grows to a much greater size than the more savage species, and is said to be that which is found about Kornegalle. As I have two thriving specimens, hatched from the eggs of the crocodile which attacked Mr Symonds, and am promised one of the progeny of that which subsequently attacked Mr Boake, I am in no hurry to kill them. I hope that I shall be able to ascertain, by the aid of some eminent English naturalist, whether they belong to the same or to two different species. At present they present no difference in appearance that an unscientific eye can discern.

I may mention that there is some difficulty in bringing up young crocodiles by hand, as they obstinately refuse every kind of food that I have ever presented to them. One, which was brought to me some years ago, died of inanition, although, for a month, I tried to force food into its throat, I constantly tempted it with both flesh and fish. Those which I now have I feed by forcing bits of raw meat down their throats with a stick, two or three times a week. Under this treatment they have thriven, and have now attained the size of a large hen's egg; but the operation is not a pleasant one, and requires some dexterity, as their teeth are exceedingly sharp, and they lose no opportunity of turning upon the hand that feeds them.

The statement respecting the generally-diffused belief in two *castes* of the crocodile is singular, but I am not aware that the difference has been noted by any naturalist.

The distinction between the different species, and even genera, of crocodiles has long been in a state of considerable uncertainty. Recently Dr J. E. Gray has published a synopsis of all the known species in the "Transactions of the Zoological Society," vol. vi. part 4; and Dr A. Günther, in his valuable work on the "Reptiles of British India," gives an account of the Indian species; and an admirable and graphic account of the habits of the muggar, by "Old Log," will be found in The Field for March 7, 1868.

In the popular mind the distinctions between the different groups that constitute the family of crocodilian reptiles is by no means clear, and writers are constantly found describing alligators in India, where they do not exist, and falling into other errors of a like kind. The crocodiles were formerly associated with the lizards, and constituted the Saurian group of reptiles. They may, however, be readily distinguished by many well-marked characters—amongst others by the short flat immovable tongue, which is raised at the back, and the skin covering it is there continued over a plate of cartilage, and can be pressed back against the soft palate, entirely shutting off the back part of the mouth, so that when the animal holds its living prey under water the fluid cannot pass into its windpipe.

The crocodilian reptiles are amongst the most powerful of the aquatic carnivora, and every portion of their structure is in strict accord with their habits. The elongated body is capable of being rapidly propelled through the water by the movements of the tail, which possesses remarkable muscular power, its breadth being increased by its being furnished with a crest of lobes on its upper surface. This tail is not only a most efficient moving organ when used in the water, but a formidable weapon when on land. In the whole group the snout is more or less elongated out, and furnished with strong conical teeth, well adapted for holding their victims, but not for mastication. Their bodies are covered with square shields, each of which consists of bony plate and a horny covering. These are often sufficiently firm to turn a musket ball; but the invulnerability of the crocodiles is possibly partly illusory. Like other reptiles, they are extremely tenacious of life, and a ball may pass through them without in the slightest degree affecting their speed or activity; and they appear not to have suffered from a ball directed point blank at their bodies, the sportsman comes to the conclusion that it has glanced off, rather than imagine it had penetrated without producing any evident results. The limbs in all the crocodiles are short, the feet being more or less webbed; but they are of more use on land, and for the purpose of preventing the animal sinking in the ooze mud, than as moving organs in the water.

The habit of many species is to lie floating like a nearly submerged log on the surface of the water, and the mode in which the organs of the senses are arranged so as to accord with this habit is thus described by Dr Günther:

The nostrils are narrow, situated close together at the upper side of the extremity of the snout; the eyes and ears likewise are near to the upper profile of the head, so that breathing, seeing, and hearing are uninterrupted, although the whole animal is immersed in the water, only the upper part of the head being raised above the surface. When the animal dives the nostrils are closed by a valve, a transparent membrane (membrana nictitans) is drawn over the eye, and the ear (a horizontal slit) is shut up by a moveable projecting flap of the skin.

According to Dr Cantor, the Indian crocodiles inhabit not only rivers and estuaries, but also the sea coasts, and in calm weather may be seen floating at a distance of two or three miles from shore. Those inhabiting small inland waters which are dried up during a drought are compelled to wander about in search of water, in which alone they can procure their food; they do this during the night. Some of them, however—especially large individuals—bury themselves in the mud, as many fresh water tortoises and fish do, and remain in a state of torpor below the hard crust during the time of the drought. It is during that period, shortly after they have been released from the state of an enforced fasting, that they are most formidable. Whilst at other periods they quietly wait till some victim is brought by accident within easy reach, hunger now renders them more audacious, and compels them to go in search of food; a noise which at other times would scare them away now attracts them, and not unfrequently man is the unfortunate object attacked. A man seized by a crocodile has only one way of saving his life, if not his limb, namely, to force his fingers into the eyes of the beast, which immediately lets go its victim—a practice equally known to the Indian of South America, to the negro of Africa, and to the Hindoo. Dr Cantor says that a single crocodile will often appropriate to himself a limited district, which, if it happens to be in the vicinity of a village, will soon be perceived in the loss of the grazing cattle. It does not appear to be very difficult to catch such a single depredator by a hook baited with flesh or entrails, and made fast by a bunch of strong, thin cords, which it cannot gnaw asunder, as they sink into the spaces between the teeth. When drawn on shore they emit a strong, musk-like smell out of some glands, two of which are situated in the lower jaw. They make a noise intermediate between hissing and bellowing, clashing the jaws together. It is not easy to kill them on the spot, except by a ball sent through the eye into the brain, or through the neck to the spinal cord: of course a severe injury to any of the vital parts will prove fatal to them, but not before days or weeks have elapsed.

The Crocodilian group, or Emydosaurians, are usually arranged into three families—the Gavials, the Crocodiles, and the Alligators, the last being an American in locality.

Of the gavial only one species is known, that of the Ganges; it attains a length of 20 feet, and is readily distinguished by its long narrow beak from all other species. There are other distinctive differences, such as the neck and back plates forming but one shield, and not being distinct as in the true crocodiles, but the long beak is the most obvious difference. With regard to the crocodile, they vary in length from birth age, and have been so little studied by naturalists in their native habitats, that their history is in great confusion, and each species revels in a multitude of synonyms. The muggar—the Crocodilus vulgaris, or C. palustris, or C. bombifrons, &c.—is well known. The British Museum possesses specimens from Madras, Malabar, Ceylon, and the Ganges. An allied species exists in Siam (C. siamensis); it may be readily distinguished by the width between the eyes, being equal to the diameter of the orbits, whereas in the muggar the eyes approach very closely together on the top of the head. The salt-water crocodile (C. porosus) is widely distributed all along the rivers of the East Indian continent and archipelago, and Siam and Australia. It has no plates on the neck, whereas the muggar has them strongly marked. These species appear, according to the latest scientific authorities, to include the well-known Indian crocodiles of authors, with the exception of the species from Pondicherry, of which only a single young specimen, 12 inches long, is known; it is now in the British Museum. It is remarkably distinguished from the last by having the shields down the back in four rows instead of six.

Doubtless there is a good field for the original observation in the habits and species of the Indian crocodiles.

W. B. TEGETMEIER.

RHINOCEROS HORN TOPPLING FORWARD, &c.

SIR,—Visitors to the Zoological Gardens, Regent's Park, are likely to have remarked how very much the horn of the single horn of the old female Rhinoceros indicus inclines forward, as a consequence of its own weight and of the attachment of it merely to the skin, so that it is movable to a considerable extent. This circumstance is at once suggestive of the idea entertained by the South African traveller Chapman and others, that the alleged Rhinoceros Gordelli is no other than the single horned one, the example of which, with its anterior horn inclining forward in like manner. I shall not be greatly surprised if, in one of her moods of violence, the female rhinoceros at the Gardens detaches her horn from the skin, as happened three or four years ago with an animal of the same species at Moscow, the horn of which is now preserved in the museum of that city. Such a creature would be a valuable addition to this place. That the horn of a rhinoceros, which consists merely of agglutinated hair, is liable to be occasionally thus shed (or rather knocked off), occurred to me many years ago on my obtaining the facial portion of the skull, with the skin and two horns attached to it, of an old male of R. sumatrana. On the small one of its horns, which first supposed the animal to have been adolescent; but, upon maceration of the specimen and removal of the skin, it was at once perceived, from the complete anchylosis of the facial bones, that the animal must have been considerably aged, and the idea at once occurred to me that its first horns must have been cast or shed, and that others had been developed in their places. If the fore-part be examined of the old female rhinoceros in the Regent's Park, it will be perceived that there is a considerable excrescence in the centre of it, which is no other than a diminutive horn; and this illustrates the rudimentary third horn which has occasionally been observed in different two-horned species of the genus, inclusive of the Asiatic R. sumatrana, in which the anterior horn in the species occasionally attains an extraordinary length and high amount of regular curvature backward, and such an example of it in the British Museum was formerly considered by Dr Gray to denote a peculiar species, which he named R. Crossii; but I have seen the horns of the same species upon the head, sufficiently developed in like manner to show at a glance that the alleged R. Crossii must be put down as a synonym of R. sumatranus. I learn from Professor Schlegel that R. sumatranus inhabits Borneo as well as Sumatra, and it is likewise generally diffused over the Indo-Chinese countries and Malayan peninsula, as is also the lesser single-horned R. sondaicus, *i.e.* that formerly supposed to be peculiar to Java; whereas the Javan R. indicus seems to be confined to the base of the eastern Himalaya, inclusive of the valley of the Brahmáputra and the hills immediately southward of that valley, where the three Asiatic species would appear to meet. I once received satisfactory information of the two-horned R. sumatranus having been killed in Assam, where considered an extreme rarity; but I have been quite unable to obtain authentic information of R. indicus having been observed in any province of British Burma, where R. sondaicus has been repeatedly mistaken for it, as likewise in the Bengal Sundarbáns.

ZOOPHILUS.

ZOOLOGICAL SOCIETY OF LONDON.

ADDITIONS TO THE MENAGERIE, REGENT'S-PARK, FROM AUG. 22 TO 28.

Aug.	Name.	Country.	How obtained.	Where placed in Gardens.
23	1 Garnett's Galago (Galago Garnettii) ♂	Port Natal	Purchased	Monkey House
"	2 Yellow Baboons (Cynocephalus babouin) ♂ ♀	Africa	Purchased	Monkey House
"	3 Parasitic Anemones (Sagartia parasitica)	British Waters ..	Presented by H. Lee, Esq., F.Z.S.	Fish House
25	2 Sun Birds (Eurypyga helias)	.....	Hatched in the Gardens	Western Aviary
"	1 Great Eagle Owl (Bubo maximus)	Europe	Presented by Chas. Hamilton, Esq.	Owls' Aviary
26	1 Garter Snakes (Tropidonotus ordinatus)	Nova Scotia ...	Presented by A. Downs, Esq., C.M.Z.S.	Reptile House
27	1 Blue and Yellow Maccaw (Ara ararauna)	South America ..	Presented by Saml. Linder, Esq.	Parrot House
"	13 Barred-tailed Pheasants (Phasianus Reevesii)	North China ...	Deposited by R. Swinhoe, Esq., F.Z.S.	Pheasantry
"	2 Temminck's Tragopans (Ceriornis Temminckii) ♂ ♀	China	Ditto	Tragopans' Aviary
"	1 Common Buzzard (Buteo vulgaris)	Europe	Presented by Jas. Hartley, Esq.	Kites' Aviary
"	3 Short-headed Phalangers (Belideus breviceps) 2 ♂ 1 ♀	Australia	Presented by Robt. G. Batten, Esq.	Sloths and Anteaters' House
28	1 Black Bear (Ursus americanus)	North America ..	Presented by Rees Lindor, Esq.	Carnivora Dens
"	4 Egyptian Mastigures (Uromastix spinipes) ...	Egypt.....	Received in exchange	Reptile House
"	2 Spotted Sand Lizards (Psammosaurus griseus)	Egypt.....	Ditto	Reptile House
"	1 Tree Boa (Corallus hortulanus)	South America ..	Deposited	Reptile House.

♂ Male. ♀ Female.

REEVES'S PHEASANTS AT THE ZOOLOGICAL GARDENS.

THERE have recently been received at the gardens of the Zoological Society thirteen of the most magnificent of the group of true pheasants, the Phasianus Reevesii, or barred-tailed pheasant. They have been sent to England by Mr Swinhoe, H.M. Consul at Shanghai. This pheasant was introduced into England about three years ago, and has since bred freely. There is no doubt of its being as well adapted to our preserves as the Japanese (P. versicolor) or the Chinese species (P. torquatus). In form and coloration it is perhaps the most beautiful of the genus. The body feathers are of a brilliant golden yellow, margined with black. Its central tail feathers reach the length of five or six feet. An excellent engraving of this bird appeared in The Field of June 8, 1867. Like the other species named, it crosses freely with the common species (P. colchicus), and the progeny are perfectly hardy and very prolific. It is probable that before very many years have elapsed a pure-bred pheasant of either of the four species will be a rarity, having been supplanted by the hardier and stronger cross-bred birds.