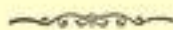


THE SPORTSMAN'S HANDBOOK
TO
PRACTICAL COLLECTING,
PRESERVING,
AND
ARTISTIC SETTING-UP
OF
TROPHIES AND SPECIMENS.

TO WHICH IS ADDED

A Synoptical Guide to the Hunting Grounds of the World.

By ROWLAND WARD, F.Z.S.



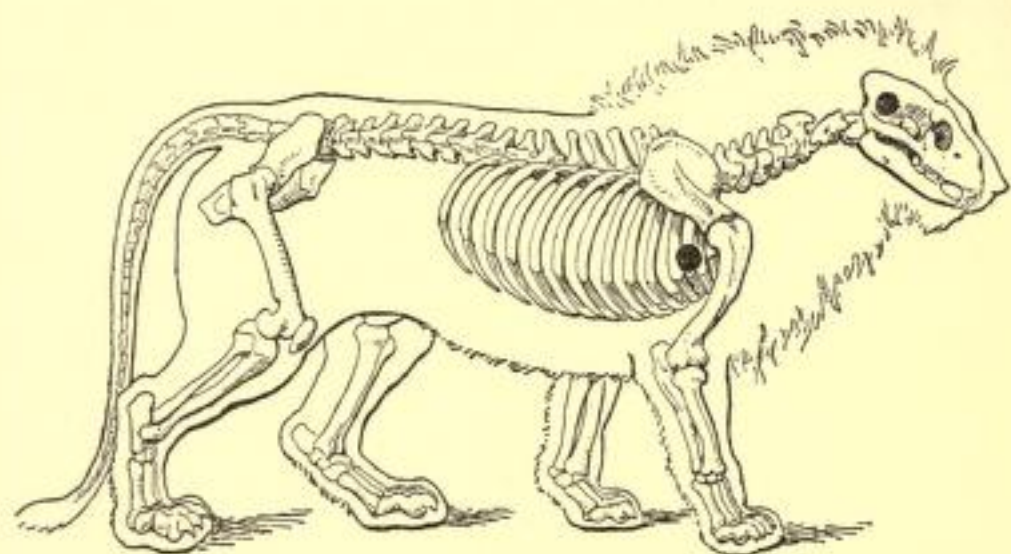
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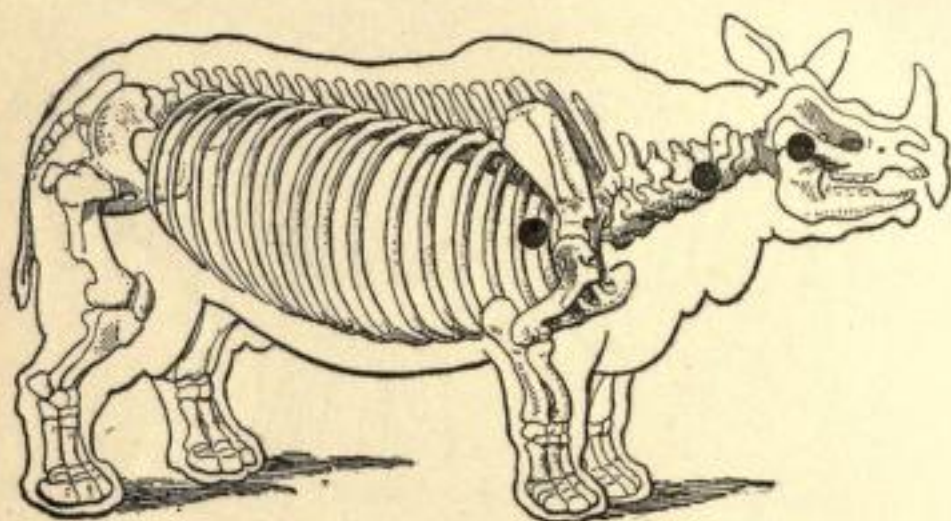
Felidæ. The place to hit a lion, if you are quite sure of your aim, as you may be if he is quiescent, is undoubtedly the brain. Now with tiger as well as lion, the brain is about the size of an apple, and small in comparison to the bony structure; the brain-pan is located about three or four inches to the rear of the eye (*vide* diagram). The heart is also indicated, and when the animal is broadside on, it can be pierced by a shot behind the shoulder. When he is charging



direct towards you, the best shot to deliver is a little to the right or left of the head, straight through the shoulder; by this you may perhaps pierce his heart, or possibly fracture the spinal cord; the bullet may traverse the body lengthwise with paralyzing effect, or it will—which is most important—shatter the shoulder-bone and prevent his deadly spring. The rhinoceros is best killed by piercing the brain, or by fracture of the spinal cord. The brain is surely found in the region below the ear. The sportsman's position in regard to the animal will determine the possibility of

his reaching the spinal cord. The hide of the Indian rhinoceros is harder than that of the African species, but on the living beast is easily permeable by hardened bullets; still, where there is room for choice, it is best to shoot between the folds.

In certain circumstances the charge of a Cape buffalo or a gaur is among the most dangerous experiences of the sportsman. The same general observations apply; but the neck and shoulder shot is to be



preferred. In regard to the elephant, there is a great difference between the African and the Indian. The skull of the first is convex in frontal form, while that of the Asiatic variety is concave. The brain is wonderfully small in comparison to the bony matter by which it is protected. The average weight of an elephant's brain is, say, nine pounds, which is but a fraction of the weight of the bone. The Asiatic elephant may be well shot dead while charging, if pierced in his forehead; but a similar shot would not be efficacious with the African. The brain of these creatures is

PROCESSES OF PRESERVATION.

IN regard to the preservation for after treatment of the skins of great game, it would be easy here to quote many recipes of approved efficiency, and, in given circumstances, not open to doubt. But, for the particular conditions of the explorer, the *simplest* process that is safe and good is the *best*. I think that the materials carried may be reduced to two, viz. a quantity of dry powdered alum and a supply of spirits of turpentine. How these should be applied I shall presently explain.

For the treatment of bird-skins a supply of arsenical soap should be carried. It can be compounded of the following ingredients :

Camphor	5 ozs.
White Arsenic, in powder ...	2 lbs.
Yellow Soap	2 lbs.
Lime, in powder	4 ozs.

Melt the soap completely by heat in a small quantity of water, and add the lime; then remove it from the fire and stir in the arsenic; next add the camphor, previously rubbed to powder with a little spirits of wine, and mix the whole thoroughly, till it has the consistence of paste. Preserve it in carefully closed glazed vessels, labelled "Poison." To use it, mix the quantity required with cold water to the consistence of clear soup, and apply it with a brush to the inside of the skins.

There are two methods of preserving animals, or the skins of animals, on the spot where they are collected till they can be transmitted for definite treatment by skilled practitioners at home: viz. (1) by means of preservative applications, so that natural decay and the ravages of insects, etc., may be pre-

time of placing it in pickle, or the operation will not succeed. The vessel must be kept closed. A number of skins may be placed in the same barrel, which is then ready, when quite filled, and closed, for storing, or for transit. If thought more convenient to make the package lighter for travelling, the skins can, when they have been thoroughly pickled for a few days, be taken out, spread open and dried, then repacked. This, however, is an operation requiring obviously great judgment, as if it be imperfectly carried out the consequence may be ruinous.

A conspicuous exemplification of the advantages in this process of brine-pickling, was afforded by the great elephant trophy brought from South Africa by H. R. H. the Duke of Edinburgh. In this case the system was adopted in manner following: The entire skin of the mighty beast was preserved. The animal was undoubtedly one of the largest examples ever brought to this country of the African species. His height at the withers was 10 ft.; from tip of trunk to tip of tail, 23 ft. 5 in.; girth, 16 ft. 6 in.; from top of head to end of trunk, 11 ft. 3 in.; circumference of head, 10 ft.; from ear to ear, 9 ft.; length of ear, 4 ft. 6 in. The skull and tusks weighed more than 3 cwt.; the skin of the head when taken from pickle, weighed 3 cwt. 6 lbs. The weight of the whole skin when taken from pickle, was 20 cwt. 7 lbs. The weight of the entire elephant in the flesh was 4 tons 8 cwt. 4 lbs. On the field the skin, having been duly prepared, was folded in this wise: the flanks with skin of legs and feet were folded inwards, each half-way, so that the inner surfaces or flesh side were outwards; then the skin of the head was in like manner turned back, the trunk being disposed of longitudinally down the centre

between the edges of the flanks ; and the tail end with nether extremities was similarly folded back to meet the trunk. The whole skin was then rolled as tightly as possible round the head, and carefully tied at both ends of the bale. In this condition it was placed in a great barrel which was then completely filled with



liquor, and properly coopered for transmission to this country. On arrival in London, when the head of the barrel was removed, the perfect success of this mode of transport was at once apparent. There was no unpleasant odour. On taking out the mass and unfolding the skin, it was noticeable that every part of the surfaces had been properly acted on, and there

was not a single tainted fold. At that time it had been upwards of a year in the barrel. The old pickle was removed, the skin was refolded and restored to the barrel with a supply of fresh liquor, and the cask was re-coopered. In this manner the skin was preserved for upwards of three years more, until the decision as to how this great trophy should be treated was arrived at. The magnificent head was mounted, and is now in Clarence House; the feet (which supply an index of his size) were utilised for ornamental purposes, while the hide was cut up and converted to use; a considerable portion being made into walking sticks, that formed appropriate mementoes.

The skulls of large mammalia are always removed from the skins. It is important for the proper preservation of the skulls of *Felidæ*, that they should be protected from injury to, or loss of, the teeth. This is best done as follows: When the skull has been boiled (not too much or it loosens the sutures) or soaked, and properly cleaned, and the teeth painted with wash about half-an-inch thick, it should be tied up in a calico bag and placed in a separate compartment of the packing-case designed for it. Stuffing should moreover be put into each compartment to prevent the specimen from being shaken, and so injured. The wash for teeth mentioned above can be well made of wax; as the tooth dries it often splits up, the bony structure as well as the enamel; wax tends to prevent this action.

It should be mentioned in case of need, that many strong mineral and vegetable astringents can be used with more or less success besides arsenic, alum, and salt; such as saltpetre, powdered green vitriol, or sulphate of iron, corrosive sublimate, etc. It is also

maintained that white arsenic applied in dry powder, or mixed with spirits of wine to the consistency of treacle, and put on with a brush, is the best preservative of all. Of vegetable substances, gum kino, oak bark, willow bark, catechu, powdered nutgalls, or any such material rich in tannin, are available; and strong spices or strong tobacco powdered will keep off insects. A large skin, in default of anything better, may be plentifully dressed on the inside with wood ashes. The virtue of wood ashes really consists in their detergent properties; for, containing as they do a large proportion of potash, the fat is thereby converted into soap, and sometimes in this condition is immediately brought away by the hand, or the scraper, and as a preservative, excepting under difficult conditions, the effect is cleanly and good. Remember that there is a difference in ashes, depending on the wood employed. Oak is one of the best.

FISH.—The proper preservation of fish is undoubtedly a matter of some difficulty. Naturalists are perhaps not generally aware of how few examples of foreign fish reach this country in a condition that admits of effective after treatment, or how special a branch of the art it is to set them up effectively and well. The ordinary processes are: (1) to plunge and bottle them in spirits; and we all know the effect of that on the evanescent colouring, as well as on the natural contour of the specimens; (2) when they are skinned (see p. 46), to apply alum to those parts where the flesh cannot be perfectly removed, so that it may be dried, and to apply arsenical soap on the inside, for preservation of the skin.

REPTILES.—The skins of crocodiles, alligators, and

tative of each class; and my reader must trust himself to adapt the practice by the light of his own judgment to the specimens, large or small, with which he may have to deal; and he will soon find his practice surpass in usefulness the most compendious (and cumbersome) book of recipes and directions.

LARGE GAME.—When the great game is secured, and is ready for the operation, first turn the animal on its back, and, stretching apart the fore and hind legs, proceed to remove the skin. In all cases where the skin is wanted entire, this is best done by making an incision from the corner of the mouth, through the medial line of the belly to the extremity of the tail; but in doing this cut only just through the skin, and be careful not unnecessarily to injure the carcase, or especially the intestines; next make lateral incisions in order to strip the limbs; for the forelegs from the edge of the central incision through the armpit, along the inner side of the limbs, the line of incision inclining slightly to the outer portion, in order that the seam may be less perceptible when the perfect specimen is mounted. A like process through the groin is necessary for the hind legs. These incisions thus made leave the skin in form of tongue-pieces over the breast. First apply the knife to these points, and detach the skin round to the spine and along the tail. In doing so it is necessary to clear the limbs, and great care must be taken to leave intact the natural features of the foot. The last metacarpal and metatarsal bones may be left in the skin, whether with the smaller specimens of *Felidæ* or *Cervidæ*; but in the big animals it is better to remove them altogether. Now turn over the carcase, and draw back the whole skin over the head, exercising particular care in separating the ears

and the eyes from the skull. Similar care must be taken as to the lips, for if the rim of the eyelids be severed by the scalpel the injury spreads in a remarkable manner, often so badly as to render the damage seriously conspicuous. The ears should be parted from the skull close to the bone, or the lower structure of them will present too large an aperture. The lips must be cut off close to the gums. Having thus taken off the skin, it must be cleared of all superfluous fat and flesh—and all the fat and flesh is superfluous. The cartilaginous portion of the ear must be turned through. The lip must be treated thus: Pass the knife between the mucous lining and the outer skin all round the mouth, so as to admit of the preservative penetrating this thick portion of the specimen completely. The eyelids and the feet must each be treated in a similar manner for the same reason. Be careful that the claws or hoofs are well kept.

A fruitful source of trouble to the sportsman in Ceylon, India, Africa, etc., is the proper treatment of an Elephant's foot. This feature is a recognised trophy, as well as the head, because it is a gauge of the size of the specimen, and because in ordinary circumstances the skin of this mighty beast is so difficult of transport, and although it can be converted by skill into innumerable articles of domestic utility, the value of it in private hands is not always appreciated. It is different with the foot, excepting that it is particularly adaptable for conversion into useful articles, without impairing its natural history significance. The foot should be severed at least eighteen inches from the ground—that is to say, the skin should be severed. Cut the skin down the back of the foot right across the sole to the toe; a second cut must be

made across the sole so as to form a cross with the first, but these incisions must not be carried so far that they would be visible when the foot is imposed on the ground. Now separate the skin from the flesh, and bring the casing of the foot away in one piece. Clean it carefully, and apply powdered alum both inside and outside, then place it to dry in the shade, taking good care that the skin does not fold, and is in all parts accessible to the air. It is not absolutely necessary that the skin dry in natural shape, but it is important that the foot be protected from insects, and to this end, when the specimen is quite dry, saturate it as far as possible with turpentine. Rhinoceros and Hippopotamus can be treated in the same way.

Something must be specially said as to the head. It frequently happens that it is desired to save the head for preservation as a trophy, while the other part of the skin is either abandoned or saved for a rug. Heads with antlers or horns are prepared for preservation either in the naked bone or to be set up to imitate living nature. For this last, care must be exercised to take the skin of the whole neck. Make the incision up the back of the neck, over the head between the ears until the horns are reached; if they are wide apart cut between them right and left, carrying the incision right round the burr of each horn. In separating the skin from the burr the knife should be used neatly with a plunging action of the point, so that not a particle of hair or skin be sacrificed at this part. He is a bad workman who leaves a morsel of the skin attached to the bone. In clearing the scalp be very careful not to let the knife injure the skin; the knife must be deftly used. But there are other features with which this skill is more important still—to wit,

the eyes, the nostrils, and the ears. The delicate skin round the eye is nearly hairless; it must not on any account be torn or jagged. In a head the eyes and the nose are the most prominent parts, first claiming notice. In treating the nostrils and upper lip operate from inside the mouth; sever the lip neatly high up the gum, over the teeth; and in like manner detach the lip below. The skin will present in these portions a particular thickness, into which, from the inside, a neat midway incision must be carried all along, so that the preservative may penetrate and be carefully rubbed into the cut to the end that these parts may be saved properly. The alum process is best; but if more convenient the skins may be preserved in pickle (see p. 20). Clean the skin well of all fat and flesh; rub in the alum, but not on the outside of the nose, and hang up the skin to dry. If there should appear any likelihood of the short hair round the eyes and nostrils slipping, apply some alum judiciously there. Be sure to save the lower jaw. When the head is of Wapiti, and is to be set up thus, it may be a matter of great convenience to pack the horns, and to do that the skull, to which they are attached, may be sawn in two, longitudinally, by which much space may be gained. But if the trophy is to be mounted in the naked bone, this severance is quite inadmissible, and it should in no case be adopted with smaller heads, which are, in fact, almost destroyed by it, the skull is thereby weakened, and at the end of the journey broken to pieces. Such a state of things necessitates great extra labour and expense even if the injury can ever be repaired. Some North American trophies recently received have come in a deplorable condition from this sort of injury, by which neither convenience nor economy can have been secured. For

preservation in the bone, the flesh may be roughly taken off, and the skull be cleaned by boiling, by maceration in a stream, or by burying it for a proper time in an ant-hill. But be sure and keep the specimen from dogs or other animals. In regard to the ears, when the skin is off, and you have separated the cartilage close to the bone, trim it neatly with the scissors of all that is not wanted inside, but do not take too much, or an unsightly hole may appear when the head comes to be mounted. Next insert the thumb and finger from the inside so as to separate the inner from the outer skin, forming, as it were, a flat bag; do not carry this separation too near the edges. Into the division preservative must be carefully put. It is my practice to fill the space with composition, which keeps the ear for ever the proper size and shape. The old way of sewing a piece of card on the outside is not good, it allows the skin to shrivel and shrink, and its natural beauty is seldom or never to be restored. Some horns (as *Ovis Ammon*) have "bearers," or a bony core, from which the horns may be detached and packed separately; in this instance the skull should be kept, and so much of the bearers as seems superfluous may be removed.

SMALL MAMMALIA.—These can be preserved for dissection and preparation, when necessary, in spirit; or, as described in the cases of large skins, in liquor. When they are treated thus, incision must be carefully made in the trunk, and the intestines, with as much blood, mucus, etc., as possible removed; the liquid will then penetrate, and the carcase should be soaked in spirit or liquor for some time, in order that the juices of the body may be drawn out into it, and then the specimen should be removed into fresh spirit, strong

are plenty of Cormorants. The White and the Dalmatian Pelicans can be found all about Greece and the Ionian Islands, on the borders of lakes and rivers and in the swampy parts. There are many fine species of the *Falconidæ* to be collected. Francolin Partridge (*Tetrao francolinus*, Linn.) are to be had in the Grecian Archipelago, Turkey, Sicily, Malta, etc.; and the *Perdix rufa*. The Greek Partridge is getting scarce. The perching-birds are not greatly dissimilar to the other European species; but among them may be pointed out the Hoopoe, the Roller, the Golden Oriole, and the Bee-eater.

ASIA.—The continent of Asia, of all divisions of the globe, produces the most highly-developed forms of the mammalia: nearly all of the higher animals are to be met with there; some are exclusively to be found there. In the southern countries especially, and in the islands of the Great Archipelago, toward Australia, are some of the most remarkable hunting grounds in the world.

INDIA.—This is perhaps the best field; and, because of the conditions of the British occupation, grand sport can be had with seasonable convenience. Hunting is an acknowledged resource, and means are attainable in most places for pursuing it with success. In Northern India the Himalayas divide Tibet from the great plain of the Ganges. This range, because of its very extent and the vastness of its features, is still imperfectly explored. By reason of its position and the great altitude of its mountains, it presents different conditions of climate, with vegetation and fauna varying in the most interesting ratio. Indeed, a double fauna may be traced in these regions, namely, that which is common to certain divisions of the mountains, and to

Tibet and Northern Asia ; and that which is common to these hills, and the hilly regions of Assam and Burmah, which are to the south of the eastern extremity of this chain. Thus the variety of the game is most remarkable, and each climatic zone has its characteristic creatures. The mountains generally, and those districts of the Gangetic Plains contiguous, furnish a grand series of fine birds, and almost all the other animals most prized by the sportsman in India, or perhaps in the world. In the extreme north-west (Cashmere) can be collected the Gigantic Sheep (*Ovis Ammon*), the Burrell (*Ovis Nahura*), the Oorial (*Ovis cycloceros*), the *Ovis Vignei*, the Ibex (*Capra Sibirica*), Markhor (*C. megaceros*), four varieties, Tibetan Antelope (*Kemas Hodgsonii*), Indian Antelope (*A. Bezoartica*), and some of smaller species. Of *Cervidæ*, the grand Burra-sing (*Cervus Cashmiriensis*) or Cashmere Stag, a very fine species, frequenting the Saul Forests. The great Shou Stag, a species larger than the Burra-sing, and approaching the Wapiti in stature and magnificence of antlers, is a fine trophy that will well repay the hunter. But few specimens of this stag have as yet reached England. The little Musk Deer (*Moschus moschiferus*), etc. The Yak (*Bos grunniens*) may be got here, and also at the other extremity of the chain in Bhootan. Kyang, Wolf, Wild Dog, Lynx, Snow Bear, and Snow Leopard are found here. At the foot of the hills, and generally skirting the plain of the Ganges at this extremity, is a belt of swampy and densely-wooded country in some places only three, in others fifty miles wide, called the Terai, or marsh. This abounds with numberless animals. Kumaon, the wonderful hill district on the western edge of Nepaul, is nearly all forest and Terai. Tigers are very numerous, Leopards,

many Bears, Spotted Deer (*Axis Maculata*), etc. Wild Elephants are plentiful, especially in the rainy season, and near where the land is cultivated. The Nepaulese dominion, which lies along the Himalaya range, has the Terai between it and the plains of Oude and Behar. Almost parallel to this belt, but a few miles further over the frontier, runs the great forest of Nepaul. It is generally only about ten miles wide. Therein are to be found plenty of Elephant, Rhinoceros (*R. Indicus*), and Tiger. Thar (*Capricornis Bubalina*), is a native of Nepaul, and is especially plentiful in the eastern regions of that territory; and only in the cold upper regions the Goral (*Nemorhedus Goral*) should be collected. The Terai, throughout its whole extent, is the ground for numberless Elephant, Rhinoceros, Tiger, Leopard, Panther, Cheetah or Hunting Leopard (*Felis jubata*), Bear, Lynx, Hyæna, Sambur (*Rusa Aristotelis*), Barasingha (*Rucervus Duvaucellii*), Muntjak (*C. vaginalis*), Four-horned Deer, Spotted Hog Deer (*Axis maculata*), etc. The Himalayas furnish the most superb examples of the Pheasant group, among which is the grandest of all, the Monal or Impeyana; a splendid bird of this species, the *Lophophorus L'huysi*, should be looked for on the northern slopes; the Horned, the Cheer, the Snow, Kaleege, Cocklass, etc. Of other *Gallinæ*, there are many species of Partridges, the Black Partridge, Chickor, etc., and Pea Fowl, as well as an immense succession of perching-birds. Among the *Pavoninæ*, or Pea Fowl, the *Polyplectron*, often called the Argus Pheasant, which is peculiar to Indo-Chinese countries and Malayana, may be found here. But the true Argus (*Argus giganteus*) is to be got only in the Malay Archipelago. Of *Raptores*, the Golden Eagle (*A. chrysætos*), though rare in India, can

be collected on the Himalayas; and the *A. imperialis* is also found. The great Condor, often measures more than 13 feet from tip to tip of wings. The Houbara Bustard (*Otis hubara*), the great Brown Vulture (*V. Monachus*), the Tawny Vulture (*Gyps fulvus*), the Bearded Vulture (*G. barbatus*), and others, as well as many *Falconidæ*. At the north-eastern extremity of India, in Assam, the country is mountainous, but watered by the Brahmapootra and numberless tributary streams. The forests are among the best grounds for Elephant, and large herds are to be encountered there, affording grand hunting. Not only in the forests, but in the gigantic grass jungle which is peculiar to Eastern Bengal, and extends to Assam, Tiger, Bear, Buffalo, Hogs, Fox, and Jackal, are to be had in plenty. Among the fine *Phasianidæ* to be got in Assam, are the *Lophophorus Sclateri*, which has been found on the Khasya hills, and the *Cerionis Blythii*, both rare. In Burmah are many tracts still absolutely wild, almost untouched by man, and therein roam Elephant, Tiger, Rhinoceros, Leopard, and other, mostly smaller, *carnivora*: but no canine animals—Jackals, Hyænas, Wolves, Foxes, etc.,—which are curiously absent from this and the countries of tropical Asia lying east of Bengal. The Long-Billed Brown Vulture (*Gyps Indicus*) is very plentiful in Burmah; but the Peacock (*Pavo cristatus*), so common throughout all India, is not found either in Burmah or Assam.

The Sunderbunds, or marshy deltas of the Ganges below Calcutta, are a number of low islands covered by a rank growth of wood and apparently irredeemable jungle. The cover is full of great game, Tiger, many Buffalo (*Bos Arnee*), bearing the greatest horns of the *Bos* genus, Rhinoceros, Deer, Hogs, etc. Alligators.

are numerous. Throughout Bengal most of the animals that abound in the Terai are to be collected, and the favourite grounds are to be easily found. The *Cervidae* are plentiful, and of large size. In the Sunderbunds the Barasingha (*Rucervus Duvaucellii*) and Hog Deer (*Axis maculata*) are very numerous, and along the whole course of the Ganges; a great variety of animals can be got on the banks of this wonderful stream. In the west of India, to the north and east of the Gulf of Cutch, is the Runn of Cutch, alternately a sandy saline desert, with numerous shallow lakes, or a vast lake-like marsh. Upon the banks, and in the small islands of the Runn, the Onager, or Wild Ass, exists in great numbers; there are many Apes, Porcupines, and birds in vast flocks. The Lion is now almost confined to the extreme north-western districts. The Peninsula of Guzerat is the most notable ground; but isolated specimens have, even in late years, been collected where once the noble game was plentiful, farther to the east in the Central Indian districts. In the wastes and jungles of Hurreeanah, and on the wooded plains along the Bhardar and Sombermuttee rivers, to the borders of Cutch, Lion may be found. They were undoubtedly very numerous there sixty or seventy years ago. The Peninsula of Guzerat, or Kattywar, as the whole province is named, is covered with undulations of no great height, but of wonderful ruggedness, and made almost inaccessible by forest and jungle. In the ravines and caverns of these tracts great game is harboured, Lion, Tiger, Leopard, Cheetah, Wolf, Hyæna, Deer, Antelope, Hogs, etc. Nylgai (*Portax Tragocamelus*) roam in large herds over the northern parts. But the climate in these districts is often deadly to strangers, particularly after the autumnal

monsoon. The Flamingo, Argala, or Adjutant Bird, Sarus, or Gigantic Crane, and many aquatic birds can be collected.

Central India is a fine ground. The hilly country, or Satpurá Highlands, may be said to range across the Peninsula from near Calcutta to Bombay, lying between those provinces designated as Northern India, and those of the Deccan or Southern country. This truly central position is, as it were, a border land between Northern and Southern India. At one period the Lion, as well as the Elephant, was common in these districts; but now the first-named may, for all hunting purposes, be pronounced extinct there, although an isolated example was met in the Sagar district not many years ago. The Elephant is now found only in the extreme eastern part of this region. Buffalo (*Bos Arnee*), which once was plentiful, has retreated from all save the eastern parts. They are found in the Mandla highlands during the rains, but they retire thence to the jungles south and west when the tame cattle are brought up to graze. They roam, however, in the great Saul forests that clothe the vast plains lying below Amarkantak to the north and east. They are not found west of Jubbelpoor and Nagpoor in these districts. In these eastern forests wild Elephants may be encountered, and this is the westernmost range here of this mighty creature. The number of them has, however, greatly decreased since the Government drove these forests systematically in 1865-67. To the north and east of Laáfargarh extends the Elephant country, where also may be found Tiger, Panther, Sambur, Black Bear, and Red Lynx (*F. caraval*), Spotted Deer, Red Deer, etc. Generally in the more westerly parts of the district are to be found Tiger—

more numerous at Doni and Betul than in Mandla—Cheetah or Hunting Leopard (*F. jubata*), Panther, Bear (*Ursus labiatus*), Wolf, Jackal, Boars on the plains. Barasingha (*Rucervus Duvaucellii*) may be met with in the patches of Saul forest, but it is not very plentiful there. Spotted Deer (*Axis maculata*) along the wooded banks of streams, Barking Deer, Sasin, sometimes called "Black Buck" (*Antelope Bezoartica*), but they have not so fine antlers as those in North-Western India; Indian Gazelle (*G. Bennettii*), Nylgai, Four-horned Antelope (*Tetracerus quadricornis*), commonly called "jungle sheep." Sambur is sure to be found in those localities where the Gaur is to be encountered. This last-named fine animal is one of the most characteristic and important, in a sporting sense, of Central India. He is called by sportsmen the "Indian Bison," and he frequents the hills, as the Buffalo loves the plains and swamps. Gaur is numerous on the Mahadeo Hills, but he retires before the advance of men and tame cattle—civilisation, in fact. Crocodiles (*Crocodylus biporcatus*), the Magar of Upper India, can be shot in the Nerbudda river. Tiger shooting proper commences in April, but March is good. During October and November, migratory wild fowl arrive and swarm on the rivers, pools, and tanks. Several sorts of Teal, including the Blue-winged Teal (*Querquedula crecca*), Duck, Widgeon, etc., and Geese. Many Waders, including the Coolen or Demoiselle Crane (*Anthropoides virgo*), and the Sarus Crane (*Grus Antigone*). Gray Quail, Painted Partridge, Jungle Cock, and Pea Fowl, afford good sport of its kind. The grand Imperial Eagle (rare in the South), the Florican Bustard, several species of Vulture, Hawk, and Owl. Blue Jay, Red Flycatcher, Mango Bird, Snake Bird, etc.

Southern India, viz., all that portion of the great peninsula below the 20th parallel, contains some of the finest grounds for big game, and, at the same time, some of the most convenient and healthy stations which the sportsman can make his head-quarters. On the eastern side, in the jungle on the deltas of the Mahanuddy, are many Tiger, Leopard, Buffalo, Crocodile, etc. Leopard is particularly plentiful in the forests of Cuttack, in Orissa. On the Deccan grounds, Tiger, Sloth-Bear (*Ursus labiatus*), Cheetah, Sambur, Nylgai, Spotted Deer, etc., and Hogs are numerous. Near the table-land of Mysore, on the wooded slopes of the valley through which the Moyar river runs, Elephant may be found, Tiger, Leopard, etc. On the Sheveroy Hills, in the Carnatic, Gaur may be got, as well as Tiger, Panther, Bear, Hyæna, Sambur, Spotted Deer (*Axis maculata*), Nylgai, and other Antelope. The Neilgherries, or Blue Mountains, furnish some of the most delightful stations in the world, and from Coimbatore, or Ootacamund (which last is the principal), some of the best hunting may be easily reached. The Wynaad jungle is a fine field. Therein may be met Elephant, Gaur, Tiger, Leopard, Cheetah, Panther, Hyæna, Wolf, Sambur, Spotted Deer (*Axis maculata*), Muntjak, and other *Cervidæ*; Neilgherry Ibex, a distinct species on the hills, afford fine sport; and the sportsman can get Partridge, Quail, Snipe, Woodcock, and Spur fowl in plenty. On the Annamullay Hills, and among the ravines at their base, great game is to be met, especially in the forest and jungle there, where Elephant can be had. All the immense forest south of the Neilgherries, extending over the Annamullay range along the Western Ghauts, is a very fine ground of glorious extent, and not yet over-hunted; therein

are many Elephant, many Gaur, Tiger, and Panther; Bears are most numerous. All these southern regions are indeed rich in *feræ naturæ*. Of *Aves*, the Spotted Eagle (*Aquila nœvia*) should be collected, and the Tawny Eagle (*A. fulvescens*), especially in the Deccan. Malabar and the Neilgherries have several species of birds unknown in other parts of India, and the same, although in a much less degree, may be said of the Carnatic and Central Provinces.

CEYLON.—Elephant (*Elephas Sumatranus*) is the most important of the indigenous fauna, and exists in considerable numbers all over the island, excepting the populous parts. His favourite resort is the mountain tops; there are, however, not so many now as formerly. The species is almost always comparatively tuskless. Buffalo abound in all parts of the island, but most in the solitudes of the Northern and Eastern provinces. Gaur is said still to exist in some districts, but if so it is very rare. Sambur, often called Ceylon Elk (*Rusa Aristotelis*), on the mountains; Spotted Deer (*Axis maculata*) and Muntjak (*C. vaginalis*), in the forests of the interior, are the principal *Cervidæ*. Of *Carnivora*, Bear (*Ursus labiatus*) are in the thick woods of the low, dry district on the northern and south-eastern coast; Leopard (not Cheetah, as they are sometimes erroneously called), and a rare variety, quite black (*Felis melas*), can be got; Mongoos (*Hephestes vitticollis*) is comparatively common; Palm Cat (*Paradoxus typus*), Genette (*Viverra Indica*). Only one example of *Edentata*, the Pengolin (*Manis pentadactyla*), or Scaly Ant-eater, is found. There are four species of Wanderoo Monkeys: some which inhabit the lowland woods; and others, the largest of which is the *Presbytes*

Ursinus, are met only on the mountain zone. The rare *Presbytes Thersites* may be sought for, and a white variety may sometimes be captured. *Cheiroptera* are very numerous; the most curious of them is the Rousette (*Pteropus Edwardsii*), commonly called the Flying Fox. The birds are numerous and interesting. There are remarkable Cetaceans in the sea, among which is the Dugong (*Halicore dugong*).

INDIAN OR MALAY ARCHIPELAGO.—This is a wondrous region, full of natural historical wealth, and probably, in many respects, less known to science than any other part of the world. The islands are of vast importance. Borneo is more than twice as large as all Great Britain. New Guinea is larger than Borneo. Sumatra is as large as our whole home empire; and there are numbers of other islands, like Java, as extensive as Ireland or Jamaica. The great islands, Sumatra, Borneo, and Java were probably at one period part of the Asiatic Continent, and in them the animals and other natural productions are, many of them, of the Asiatic forms—some of identical species. In like manner New Guinea was, doubtless, connected with Australia, and we find there the Australian forms, both of animal and vegetable. On the Malayan peninsula Elephant, Rhinoceros, and Tiger may be got, and a few of the last-named game on the island of Singapore. On the mainland some of the birds are of great beauty. The true Argus Pheasant (*Argus giganteus*) is in the thickest forests: it is very shy and wary, and runs among the trees so swiftly and quietly that it is very difficult to collect. It is generally snared. The beautiful Eastern Trogons may be obtained here, and should be looked for in the deepest woods; the Blue-Billed Gaper (*Cymbirhyneus*

macrorhyncus), the Green Gaper, Green Barbets (*Megalæma versicolor*), and other rich birds should be carefully preserved when captured. In the three great islands already named, Sumatra, Borneo, and Java, although the Asiatic forms prevail, there are several distinctive races. The Mias,* or Orang-utan (*Simia Satyrus*), is found only in Sumatra and Borneo. Another species (*Simia Morio*), a little smaller, is only found in the same islands; the large Siamang only in Sumatra and Malacca. These great *Simiadae* are peculiar to these regions.

SUMATRA.—The Mias, or Orang-utan, the Siamang, and *Simia Moria*, mostly in the low swampy forests. Elephant (getting scarce), Rhinoceros (*R. Sumatrensis*, two-horned); *R. Javanus* (one-horned) is said also to be in the woods; Tapir (*T. Malayanus*); Tiger; the Black variety of Leopard (*F. melas*); Balu Leopard (*L. Sumatrensis*); the rare Leopard (*F. macrocelis*), sometimes called the Clouded Tiger, having markings which partake of both characters; the Flat-headed Lynx (*F. Planiceps*) and Golden Tiger Cat (*F. aurata*) are among the principal *Carnivora*; the Black Ox of Sumatra (*Bos Banting*), somewhat resembling the Gaur. Of *Cervidae*, the Banjoe, or Black Stag (*Cervus Hippelaphus*), Samboe (*Rusa equinus*), and Spotted Deer (*Axis maculata*) will be found; and Antelope (*Capricornis Sumatrensis*) in the hill forests. Sun-Bear (*U. Malayanus*); Squirrels are very abundant and curious; Argus, and some Ocellated Pheasants; Fire-backed Pheasants (*Euphocomus ignitus*); Bronze Cock (*Gallus æneus*), and *Gallus giganteus*. There are

* Mr. Wallace records the following dimensions of a large old Mias killed by him: height, 4 ft. 2 in.; arms, from tip to tip of fingers, 7 ft. 9in.; face, 13½ in. wide; girth of body, 3 ft. 7½ in.

no Pea Fowl on this island, although it is nearest to the mainland. There are numerous smaller birds of great beauty and value.

BORNEO.—Mias and *Simia Morio* and the Long-nosed Monkey (*S. nasalis*), which last is found only on this island; Elephant, Rhinoceros. Black Leopards can be often met with. Golden Tiger Cat, Flat-headed Lynx, Sun-Bear (*U. Malayanus*), and a second species (*U. Eurypilus*); the Sumatran Ox (*Bos Banting*); Samboe Deer (*Rusa equinus*), Spotted Deer (*Axis maculata*). Great Argus, and several pheasants.

JAVA.—Rhinoceros (*R. Javanus*), a distinct species. Tiger, Leopard (*L. Javanensis*), the Black variety (*F. melas*), and Bear (*U. Malayanus*), are the most important *Carnivora*. Banjoe, or Black Stag (*C. Hippelaphus*), Spotted Deer (*Axis maculata*), Muntjak (*C. vaginalis*), Wild Bull (*Bos Banting*). The birds and insects of Java are especially beautiful and various. The Peacock, not found in Sumatra or Borneo, reappears in Java; the species is distinct from the Indian. The Horn-bill (*Buceros lunatus*); *Gallus giganteus*; Jungle Cock (*G. Bankiva*) in plenty; the rare Green Jungle Fowl (*G. furcatus*). The Yellow and Green Trogons (*Harpactes Reinwardti*); the superbly splendid little Flycatcher (*Pericrocotus miniatus*); Black and Crimson Oriole (*Analcipus sanguinolentus*); all these last-named are rare, and are among the most notable to be found only in this island, and probably only in the western parts of it. The Great Crowned Pigeon (*Lophyrus coronatus*) is easily to be met with in this and other islands, but abundantly in New Guinea; so is the remarkable *Geophilus Nicobaricus*.

NEW GUINEA AND NEIGHBOURING ISLANDS.—The forms of both animal and vegetable life on the islands

in this division of the Archipelago are mostly of Australian character. But the principal glory of the region in a zoological sense is the possession of a purely distinctive race of *Aves*, the Birds of Paradise. These are all of great value and transcendent beauty, simply forming one of the most beautiful groups in the world. For a long period all that was reported of their habitat was very trifling, and intermixed with mere fable: though much more is known now, our information is comparatively scanty, and there is no region of the globe so little understood, and yet so calculated to well requite scientific exploration. Mr. A. R. Wallace who, a few years since, visited the islands for the purpose of investigating the *Paradisæ*, has recorded the best and latest information concerning their range and particular habitat, and the following is quoted from his words ("Proc. Zool. Soc.," 1863, p. 166): "The Aru islands contain *Paradisæa apoda* and *P. regia*; and we have no positive knowledge of *P. apoda* being found anywhere else; Mysol has *P. papuana*, *P. regia*, and *P. magnifica*; Waigiou, *P. rubra* only. Salwatty, though so close to New Guinea, has no restricted *Paradisæ*, but possesses *P. regia*, *P. magnifica*, *Epimachus albus*, and *Sericulus aureus*. The island of Jobie, and the Mysory islands beyond it, certainly contain true *Paradisæ*, but what species beyond *P. papuana* is unknown. The coast districts of the northern part of New Guinea contain *P. papuana* and *P. regia* pretty generally distributed, while *P. magnifica*, *P. alba*, and *Sericulus aureus* are scarce and local. Lastly, the central mountains of the northern peninsula are alone inhabited by *Lophorina superba*, *Parotia sexsetacea*, *Astrapia nigra*, *Epimachus magnus*, and *Craspedophora magnifica*; and here also probably

(*Apteryx Australis*) on all the islands of New Zealand, but most at the southern end of the middle island. An almost infinite variety of Parrots and Pigeons can be collected, as well as many aquatic birds. The Laughing Kingfisher (*Dacelo gigantea*), the Satin Bower Bird (*Ptilonorhyncus holosericeus*), should be looked for, as also the Great Bustard (*Otis Australis*).

AFRICA.—This vast continent is the habitat of countless great quadrupeds, and altogether of a profusion of animal life that is perhaps unequalled on the globe. Vast regions of it are still unexplored, and there is ample verge for enterprise. The number of mammals is most remarkable, and of those peculiar to this continent the proportion is great. This is the true home of the Lion. The large Pachyderms are most numerous here; and the great Antelope tribe has its head-quarters in this division. Among the *Quadrumanæ* are the Gorilla and the Chimpanzee. In alluding, for the sake of convenience, to Northern, Southern, Eastern, or Western Africa, it should be borne in mind that, comparatively speaking, the great districts or natural divisions on the coasts are all that can be referred to with certainty; beyond all these, in the interior, lie fields for the hunter, where discovery of great natural facts may be pursued, while extraordinary sport is obtained.

In Southern Africa, and the countries contiguous to and above Cape Colony to either coast, may be found two varieties of Lion (*F. Leo*), one yellow and another brown, this last the fiercest. They are never met on the hills, but frequent the plains where there is rank grass, or where low bushes grow near water, and on the banks of rivers. Panther (*F. Pardus*), Leopard (*L. Serval*), the Lynx (*F. caracal*), usually

where Lions frequent, and the Booted Lynx (*F. caligata*), Tiger Cat (*F. Serval*), Hyænas, the Striped (*H. striata*) (but his true habitat is Northern and Central Africa) and Spotted (*H. maculata*), and the Brown (*H. rufa*). Elephant (*E. Africanus*), having the finest tusks of any species. Rhinoceros, three varieties may be encountered, mostly in the remoter districts, viz., *R. Africanus*, two horns of unequal length; *R. Keitloa*, two horns much longer and of unequal length; *R. Simus*, one long and one short horn. Hippopotamus, Buffalo (*Bubalus Caffer*), Giraffe (*Camelopardalis Giraffa*), north of the Orange river; Quagga (*Asinus Quagga*), and Peetsi Zebra (*A. Burchellii*), on the plains, especially north of the Orange river; the true Zebra (*A. Zebra*), on the mountains. Antelopes are most numerous. On the plains: Hartebeest (*A. Caama*), commonest; Springbok (*A. Euchore*), in immense numbers; Pallah (*Æpyceros melampus*), Grysbok (*Calotragus melanotis*), Bleekbok (*Scopophorus Ourebi*), particularly in the eastern parts; Gemsbok (*Oryx Gazella*), and the remarkable White Oryx (*O. Leucoryx*), Blauwbok (*Ægoceros leucophæus*), and other maned variety of this species, the *A. barbata*; Waterbuck (*Kobus-ellipsiprymnus*), 4 feet at shoulder; Steinbok (*Calotragus campestris*), where it is stony, and on hills; Eland (*Orcus cauna*), largest of all, 5 feet at shoulder; Rietbok (*Electrogus arundinaceus*), near watercourses; Lechée (*A. Lechée*), on banks of the Zouga. In the woods: Duykerbok (*Cephalopus Grimmia*), Bushbok (*C. Burchellii*), north of Orange river; Rhoodebok (*C. Natalensis*), and the beautiful Koodoo (*Strepsiceros Kudu*), near rivers. Addax (*A. nasomaculatus*), on sandy tracts of the interior; and

the remarkable Antelope, Korus Sing-Sing, should be sought for. Gnu (*Connochetes gnu*) and Brindled Gnu (*C. Gorgon*), on the plains north of Orange river; never south of Black river. Aard-Vark, or African Ant Eater (*Orycteropus Capensis*), and the Aard-Wolf (*Proteles Lalandii*), an animal interesting to zoologists from its place in nature's economy, can be got in the neighbourhood of Algoa Bay.

Many of the birds are very notable, among which may be particularised: Ostrich; Kori Bustard (*Otis Kori*), the largest of the genus, upwards of five feet high, very fine game, found especially in the countries on the banks of the Orange river; another, *Otis Denhami*, always where Gazelles are; and the African Bustard (*Otis cærulescens*). The gigantic Stork (*Ciconia Marabou*). Flamingo (*Phœnicopterus ruber*), multitudes in the neighbourhood of Walvisch Bay; and the small species (*P. parvus*) on the lakes; Demoiselle Crane (*Anthropoides virgo*), Secretary Bird (*Gypoggeranus Serpentarius*), the superbly beautiful *Promerops erythrorhyncus*, and Golden Cuckoo; Bee-eater (*Merops apiaster*), Roller (*Coracius garrula*), in deep forests; Sun-birds, etc.

Western Africa yields the Gorilla (*Troglodytes Gorilla*), the Chimpanzee (*T. niger*), and two other great anthropoid Apes (*T. Aubryi*), and the rare one described by Du Chaillu, called by him *T. Koolo-Kamba*, as well as *T. calvus*, all of which are valuable. They are found in the most remote woods of the Gaboon district. The very handsome King Monkey, sometimes called Full-bottom, on account of its extraordinary wig-like hair (*Colobus polycomus*), and several other species of *Colobi* can be got near Sierra Leone. The Lion of Senegal is a distinct species, of yellower

colour than its congeners, but the mane is mostly inferior. Panther (*F. Pardus*), Leopard, two species (*F. Leopardus* and *F. neglecta*), Striped Hyæna (*H. striata*), Lynx (*F. caracal* and *F. caligata*), Hippopotamus. Of Antelopes: the Mohr (*Gazella Mohr*), Kevel (*G. rufifrons*), Red-crowned Bushbok (*Cephalopus coronatus*), the White-backed (*C. sylvicultrix*), the Bay (*C. badius*), the Black-striped (*C. Ogilbii*), the Black (*C. niger*), the White Oryx (*Oryx Leucoryx*), Korrigum (*Damalis Senegalensis*), and the Doria, or Gilded Antelope (*Doria Zebra*), a perfect specimen of which is rare in England, and should be sought for.

Of Birds in these countries: the Pheasant-like Touracos, the beautiful *Corythaix Senegalensis*, *C. erythrolophus*, a superb species, *Chizoeris variegata*, and the magnificent *Musophaga violacea*, can be found frequenting the highest trees about the Gold Coast. The Spur-winged Plover (*Philomachus spinosus*) should be sought for, and its habits, of which little is known, recorded; Gigantic Stork (*Ciconia Marabou*), Flamingo, Demoiselle Crane, Crowned Crane (*Balearica pavonina*); Jabiru, a large wader, about the lakes and marshes; Great Kingfisher (*Ispida gigantea*), Secretary Bird, Roller, Sun-birds, etc.

In the Northern countries of Africa will be found: Lion, a distinct variety, with deep yellowish-brown coat and grand mane; Leopard, Lynx, *F. caracal*, *F. caligata*, and *F. chaus*—the last-named most frequently about marshes and bogs; Striped Hyæna (*H. striata*), Wolf, Jackal; Gazelle (*G. Dorcas*), Addax (*A. nasomaculatus*), plentifully; Bekker-el-Wash, or Wild Ox, as the Arabs call him (*Alcephalus Bubalis*), to the borders of Sahara; in Barbary, the Bush Goat, or Barbary Deer (*Cervus Barbarus*), the only member

of the *Cervidæ* on this continent. Among the birds are—Flamingo, Demoiselle Crane, Crowned Crane, Roller, etc. Several Vultures, the Griffon (*V. fulvus*), *V. Kolbii*, *Neophron percnopterus*, and other of the *Raptores*.

Eastern Africa: Hippopotamus, in the Nile; Elephant, in Abyssinia, where also, on the hills, Mohr (*Gazella Sommeringii*), Andra (*G. ruficollis*), *G. Dorcas*, *G. Isabella*, Oryx (*O. Leucoryx*), and the remarkable Antelope (*Hippotragus Bakeri*) discovered (1868) by Sir Samuel Baker, are principal quadrupeds. The Ibis, Spur-winged Plover, many Storks, including *Ciconia Marabou*. Flamingo, in Egypt.

AMERICA.—The New World continent possesses several animals which afford grand sport for the hunter, but altogether the forms of animal life are not so highly developed as those of the ancient great divisions of the world. The birds, however, of Central and South America are more beautiful and resplendent with gorgeous plumage, as well as more various, than are those of any other countries. The ornithology of North America is also remarkable and valuable.

In North America, the Bison, or, as it is termed, Buffalo (*Bison Americanus*), ranges on the prairies of the North-west, but at present is seldom seen east of the Mississippi or south of the St. Lawrence, on this the most inhabited side of the continent. The districts of the Saskatchewan, and thence southward of the upper course of the Missouri, as low as Texas and Mexico, support immense herds. There are two varieties recognised by local hunters of the Red River districts, viz., that of the great plains, which generally avoids the woods, and that much scarcer, which frequents the woods; this last is only found north of the Saskat-



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