PART I.

A TREATISE ON TAXIDERMY.

CHAPTER I.

ON COLLECTING ZOOLOGICAL SUBJECTS.

(1.) THE economy of animals can only be studied when the functions of life are in full activity; their haunts must be explored, their operations watched, and their peculiarities observed in the open air. But in order to acquire a more accurate knowledge of their external form, and to investigate their internal structure, it is absolutely necessary to examine them in a dead state. Hence has arisen the art of TAXIDERMY, which teaches the various processes by which the form and substance of animal bodies may be preserved from decay, and rendered subservient to the studies of the naturalist in his closet. It is an art, therefore, absolutely essential to be known to every naturalist; since, without it, he cannot pursue his studies or preserve his own materials. As such, our present treatise forms an essential, although, perhaps, a subordinate, part of the "CABINET OF NATURAL HISTORY." We shall here consider taxidermy in its most extended sense, under the several heads of—1. Collecting, 2. Preserving, and 3. Arranging, animal productions.

(2.) It is not necessary that a zoological collector should be a scientific naturalist; or that he should un-

derstand any other than the practical or mechanical parts of the science. Nevertheless, many subordinate qualifications should be possessed by those who follow this occupation in foreign climates. Strength and activity of body, a quick and discriminating eye, capable of perceiving at once minute distinctions; with a courageous, persevering, and inquiring spirit, — are all necessary to insure success: to these should be added a general acquaintance with the elementary principles of zoology, and a complete knowledge of taxidermy in all its branches. The methods of collecting the different tribes of animals, and the apparatus necessary to be provided, are so various, that we shall hereafter give a detailed description of both, under the classes to which they are more immediately applicable. We shall treat the present subject, in fact, somewhat in a professional way; chiefly addressing ourselves to those who collect in foreign countries, either for themselves or others.

(3.) The general equipment of a travelling naturalist or collector should consist more or less of the following articles: — A double and single barrel gun, with an ample assortment of caps, flints, shot, spare screws, &c. If he is proceeding to Africa or India, where the larger quadrupeds are found, a rifle will be advantageously substituted for a single barrel gun. Dissecting instruments for opening quadrupeds, birds, &c. Preserving drugs and preparations. Bottles for containing subjects in spirits, fitted into cases. Canvass knapsacks. Corked store boxes for insects, and others for the pocket and for immediate use. Pins of all sizes. Boxes fitted with moveable trays for bird skins. Apparatus for collecting insects. Chip boxes of different sizes, for small and delicate shells, &c. Knives, scissors, needles, thread, &c. — As a general rule, the collector proceeding abroad should adapt the size of all his packages to mule or horse carriage: such are, indeed, the only conveyances he will find throughout South, and over a large portion of North, America. In Southern Africa, wagons are used on long journeys, but on short

ones the baggage is conveyed upon the backs either of horses or oxen. The naturalist who collects in Europe and other countries more civilised, will of course require a much more scanty equipment.

(4.) QUADRUPEDS.—The best information respecting the species of quadrupeds inhabiting any particular district, and of their local haunts, can readily be obtained from the natives, whose assistance may be called in with advantage, and secured by a competent reward. Gentlemen resident abroad, particularly in India, have it very much in their power to benefit the museums of this country, by acquiring a sufficient knowledge of taxidermy to enable them to preserve the skins of animals killed in the chase, since the public and private collections in Britain are very deficient in many of these species. The skulls and horns, where it is inconvenient to preserve the entire skin, are objects of much interest, particularly if accompanied with drawings, measurements, and notes of the habit, food, &c. The collector in Southern Africa should pay particular attention to the different species of antelopes and rhinoceros: the former are very numerous; and of the latter, the skulls and horns will be sufficient to identify the species. We are still ignorant of many quadrupeds of the north-west coast of America, whose furs are articles of commerce. The skins may be removed and slightly stuffed in the manner hereafter described. If the skulls alone are desired, they may be easily prepared by parboiling the head, and separating the fleshy parts with a knife or scraper: the brain is either removed through the occipital hole, or (if the animal is large) by sawing the skull in two; when clean, and the smell evaporated, the parts are tied together and left to dry in the shade. The *packing* of the skins or bones of quadrupeds requires but little care; they must, however, be well dried before they are put into the case, the sides and joints of which should be perfectly close and waterproof.

(5.) Living quadrupeds have long been brought to this country as articles of commercial speculation; but they are now likely to be imported for the purposes of

science. The younger they are procured, the less difficulty will be found in rearing and in reconciling them to confinement. When first taken, great attention should be paid to their food, which should assimilate as much as possible with that which they prefer in a wild state. Every effort should be made, if not to tame them, at least to reconcile them to the presence of strangers and other persons besides their keeper. This is not difficult, as there is scarcely any animal whose ferocity cannot be softened by kind and judicious treatment. An excess of food is at all times bad; and the greatest attention to cleanliness is equally essential. Animals intended to be sent by sea, should be put into confinement two or three weeks before the ship sails, that the change may not appear to them so great; and the passengers should be particularly requested not to irritate or worry them during the voyage.

(6.) BIRDS.—A collector of birds should be provided with one or two light fowling pieces, and duplicate parts of all their usual apparatus; a supply of the best powder contained in tin canisters, and of shot in bags: he may take with him a small quantity of swan and duck shot, but he will find Nos. 6. and 8. the most useful; while small birds not larger than a sparrow are killed with the least injury to their plumage by what is called dust shot. For preserving his specimens, he must have a good supply of arsenical soap, penknives, sharp and blunt pointed scissars, &c. Cotton or tow can be had in America, and in some parts of India; but if the collector proceeds to Africa or the South Seas, it will be prudent to take a small stock with him. The best periods of the day for procuring birds are early in the morning and late in the evening. In warm latitudes, the sportsman should always choose the dawn of day for his excursions, not only on account of the refreshing coolness of the air, but as being that time when the greatest number of birds are seen and heard. A little boy can carry the box or basket intended to hold the game; and this will enable the sportsman to enter the thickets and woods with less dif-

ficulty: the box should contain some pieces of soft paper, and a little cotton or tow. Before each bird is put in, the feathers are smoothed, and a small piece of cotton or tow twisted round the bill and nostrils. If the wound bleeds much, some tow should be laid upon it, and the bird wrapped in paper, to prevent it from soiling the others: the box should be made of tin, as this metal keeps the specimens cool. In two or three hours a sufficient number may be killed to occupy the collector during the rest of the day in stuffing: by that time, or about eight or nine o'clock, the great heat commences, the birds become silent and retire to the deep shades, and the sportsman had better return home. Towards the cool of the evening the birds again emerge from the woods, and, if any more subjects are wanted, the sportsman may again use his gun. In these climates, birds will not keep beyond a day without some degree of putrefaction taking place: this shows itself by the feathers coming off; first on the belly, and after on the front: it is, therefore, advisable not to shoot more specimens than can be prepared in twenty-four hours. Birds in tropical countries are, in general, so tame, that they can be approached very near; there is, therefore, little occasion to be very particular about the excellency of the gun or the quality of the powder: the first, for convenience, should be light, and the last good. Humming-birds are advantageously shot when hovering over the flowers on the nectar of which they feed; but the charge should be very small, and dust shot alone used. Birds of the size of a hawk or thrush may be killed with shot No. 8. In some parts of America, the natives shoot the creepers and humming-birds with a blow pipe. An expert marksman of this sort might be retained in the service of the collector, as the specimens are killed without the least injury to their plumage, and consequently in the best state for preserving.* The sexes of every species should be industriously

* *The Naturalist's Guide*, for collecting and preserving all Subjects of Natural History and Botany; intended for the use of students and travellers. By W. Swainson. With plates. London: second edition, 12mo. p. 18.

sought after, and no pains should be spared in watching their manners and habits. Their nest, if remarkable in form or construction, may likewise be procured. When the skin has been slightly filled with cotton, and sewed up, it may be laid with others, upon any soft substance, within one of the trays of the travelling box, hereafter described, and suffered to dry: each specimen should be numbered, or have a label attached to it, specifying the sex, the place and date when found, the contents of its stomach, and any other particulars that may be known or observed relative to its habits or economy. When dry, the skins may be enveloped in cotton or paper, and closely packed in the trays of the box. Unless the boxes are rendered air-tight, by the seams being pitched, it would be prudent to inspect them every week or ten days, until they are finally sent on board. Birds of England, and other parts of Europe, are collected without much difficulty, and by means well known. It may, however, be observed, that, in our northern temperature, specimens may be sent from one end of England to the other in a fit state for preservation (except during the height of summer), by packing them in a close tin box, partially filled with powdered charcoal.

(7.) Skins of birds should be packed in well-made boxes; each specimen wrapped either in cotton or tow, or in paper, and the interstices filled with moss or any other soft substance. When the lid is shut and secured, the joints and seams should be closed with tow and pitched over. Small boxes may be papered; but a little arsenic or corrosive sublimate should be mixed in the paste, otherwise it will, in tropical climates, be attacked and fed upon by ants.

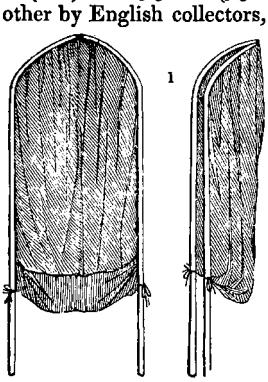
(8.) REPTILES and SERPENTS are best procured by the natives. Indeed, the danger that would result from a *serpent* hunt is too great to warrant the collector setting out on an excursion of that sort. The different species are generally well known to the country people, who give them provincial names, and who may safely be

consulted respecting their habits. Every information on these points the collector will be careful to note among his memorandums.

(9.) Fish.—During a voyage, many species may be caught by a hook and line thrown over the stern of the vessel: these should be drawn and described, if too large for preserving; the lesser species can be put into bottles of spirits, a few of which should always be in readiness. The most advantageous modes for collecting fish are, either to accompany the fishermen in their boats, to be present at the drawing of their nets, or to frequent the markets at an early hour: all these plans, indeed, should be followed, as those species only are exposed for sale which are considered good for food; and consequently many others, particularly those of a small size, are thrown back into the sea. Fishing-nets, at the same time, bring up many other marine animals, as crabs, corals, starfish, medusæ, &c. Those which the collector may select, should be put in a bucket of salt water, that their movements and different organs may be examined, and if possible drawn and described. Fishermen's boys may likewise be impressed into the service, and instructed to throw into a bucket the refuse of the nets. All these plans we pursued with much success, both in the Mediterranean and in the ports of America. A few plain hooks and lines is all the equipment that the travelling naturalist need require in this department, independent of the boxes which contain the bottles for receiving the specimens, unless he is provided with a small trawl or casting net, either or both of which would be very desirable if his plans are likely to place him on the sea coast. In England, the western shores of Devon and Cornwall are frequented by a great variety of species, of the most beautiful forms and colours; and on all these shores the ichthyologist will obtain an abundant harvest. So productive is the west of England in marine animals, that the late active and intelligent colonel Montagu, although living upon the spot for many years, was continually adding new subjects to his collections.

(10.) INSECTS, to be collected with success, require a knowledge of their haunts, great quickness of hand, and accuracy of eye. The apparatus of an entomologist, particularly if he is proceeding to a warm country, requires to be minutely described. The different instruments used in catching insects are as follows:—The fly-net, elastic net, bag-net, hoop-net, landing-net, forceps, and digger. For securing insects alive, are required phials, chip boxes, and breeding cages; and for preserving them when dead, pins, braces, pocket boxes, store boxes, and travelling chests.

(11.) *The fly-net* (*fig.* 1.) is preferred above every other by English collectors, and perhaps with reason, as it may be applied to more purposes than one. This instrument is similar in its construction to a bat-fowling net, and is more particularly adapted for capturing flying insects. The net itself should be made of strong green gauze: a white colour is preferred by some; but this is objectionable for night flying insects. The rods are from 5 to 6 feet long, half an inch diameter at the base, and gradually tapering towards the end. We prefer those made of hazel wood, from their lightness, although they are usually formed from ash. Each rod may consist of three straight pieces or joints, besides the last or curved one, which is generally made of cane, and thus yields to any sudden knock or pressure: each of these joints at one end has a simple brass tube or ferrule, which receives the bottom of the adjoining piece, like a fishing-rod: the end which goes into the ferrule should have a notch or check, to prevent it from twisting. The terminal joint, being of cane, can either be bent into a curve or fitted into an angular ferrule, so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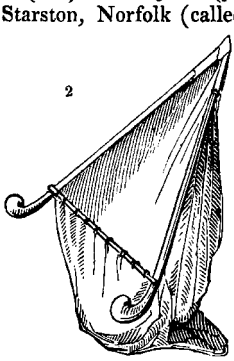
as to form an obtuse angle with the rest of the rod; but the former is the better plan. This frame-work of the net may, for convenience of travelling, be contained in a canvass bag, and carried in a long pocket made in the vest. After the gauze is cut into shape (it must always be loose), it is welted round and bound with a strong ribbon, that the rods may pass within: in the centre of the upper part, where the tops of the two rods meet, a piece of leather is sewn across, which thus forms a sort of hinge: at the other extremity the gauze is folded, so as to form a bag, by which the escape of captured insects is prevented. Finally, that the net may be securely fixed upon the rods, two strings are sewed at the bottom of each side, which pass through holes made in the rods, about six inches from their handles: without this security, the net would be perpetually slipping upwards. The manner of using this kind of net for catching flying insects, is to hold it in both hands, in an extended position; and so soon as you have brought it fairly beyond the insect you are pursuing, suddenly closing it, at the same time giving it a slight jerk upwards. Insects resting upon the ground, may be captured by quickly spreading the net over them, and then closing it. It may be likewise advantageously employed to receive insects beaten from bushes and trees, by either holding both the sticks in one hand and beating the boughs with the other, or by extending it upon the grass.

(12.) Maclean's *elastic net* is thus described by Mr. Kirby:—"It is constructed of two pieces of stout split cane, connected by a joint at each end and with a rod which lies between them in which a pulley is fixed: through this a cord fastened to the canes passes: a long cane with a ferrule receives the lower end of the rod, and forms a handle; and to the canes is fastened a net of green gauze. Taking the handle in your right hand and the string in your left, when you pull the latter the canes bend till they form a hoop, and the net appended to them is open; when your prey is in it,

relax the cord, and the canes become straight and close the mouth of the net: keeping them close with your left hand, you may soon disable your prey with your right. This net was invented by Dr. Maclean, of Colchester, who has scarcely ever found it to fail." *

(13.) *The bag-net* (*fig. 2.*), invented by Mr. Paul, of Starston, Norfolk (called by many the turnip-net), is solely adapted for brushing the grass and other plants, and for capturing insects beat from trees: it consists of two stout pieces of wood fixed obliquely by ferrules into a handle, each in an opposite direction, so as to resemble a wide-spreading fork; the other end of each of these pieces is left thick, and made to curve upwards in a nob, for the purpose of sliding more readily over the ground: towards this end they are united by a cross bar of strong iron wire: the circumference is thus made triangular, and to it is fastened a long, loose bag, gradually tapering towards the end, and made of glazed calico. To use it for brushing herbage, the collector shoves it before him through the fields. This may be done with one hand, while the other can be occupied in beating any insects that may be on the taller shrubs, into the net with a stick: from time to time the contents are either examined, or shaken into the bottom of the bag, which, being very narrow, sufficiently confines them. This net is well adapted for certain descriptions of insects; but, from its nature, cannot be used for such as are flying, or in conjunction with any other. The size is not material, but the handle should be sufficiently long to enable the collector to use it without stooping.



(14.) *The hoop-net* is more in use among the Con-

* Kirby and Spence, iv. p. 520.