Similar experiments were used in conjunction with Dr. Sachs to determine the effect of salicylic acid, the conclusions being, as follows, from taking four and a half to five grammes of the salicylate of soda in two doses at an interval of fifteen minutes:

1. A diminution in temperature of the meatus averaging 0.35° C. within two or three hours.

2. No hyperæmia of meatus or injection along the manubrium, and where any such already existed no change whatever was noticed.

3. Roaring, singing, and occasionally ringing were felt in all cases in from two and a half to four hours, and lasted longer than similar noises produced by quinine.

4. The loss of hearing was very marked, and continued in several cases for some days; in several cases where the ears were diseased the loss of hearing continued much longer, in one case, it is said, for six months.

5. Decided dizziness was noticed in seven of the twelve cases, beginning somewhat later than the subjective noises.

Comparing the second series (salicylic acid) with the first series (quinine), it was found that in the second the fall in temperature was less, but the diminution in the hearing was greater and continued longer. —*Amer. Jour. of Otolaryngology*.

EAR DISEASE.

JAMES L. MINOR (*Virginia Med. Monthly*, November, 1831) has collected fifty cases of ear disease at St. Joseph's Industrial Home, and of these forty-two were girls and eight boys. Of the diseases, forty-two were chronic suppurative inflammation of the middle ear; four, impacted cerumen with chronic aural catarrh; three were chronic aural catarrh, and one eczema of the auricle. Of the forty-two cases of otorrhœa, both ears were affected in thirty-two, making a total of seventy-four tympana in a state of chronic suppurative inflammation. The drum heads were perforated in all instances. Twenty-nine cases were cured with restoration of hearing and an entire reproduction of the drum-heads; eleven were cured of the inflammation, and the remaining cases were in various stages of improvement.

Boric acid was the most successful agent he found in the treatment; a warm, saturated solution of boric acid was first used to thoroughly cleanse the ears; they were then dried with absorbent cotton, and the meatus about one quarter filled with finely-powdered boric acid, dropped through a quill. The powder and syringing were repeated whenever the discharge was abundant. For the nasal catarrh, the nose was cleansed first with a spray of the acid and then the powdered acid was either blown or snuffed into the nostrils.

Boric acid is not an irritant to inflamed surfaces, and its action on inflamed mucous membranes and granulations may be divided into two stages: "The first gives rise to a sensation of slight warmth and moderate stimulation, and is associated with an abundant serous discharge from the succulent tissues. This gradually merges into the second stage, which is one of ease and relief, and is accompanied by a marked reduction in volume of the inflamed tissues. The diminution in size is evidently due to the depurative action of the acid on the swollen tissues during the first stage, and is especially noticeable in succulent polypoid growths with a purulent discharge (granulation). I have frequently noticed the granulations to shrink and disappear entirely under its influence, where removal by the snare and cauterization with nitrate of silver or nitric acid seemed to stimulate them to increased growth. The first stage lasts from one to six hours, and the second from six to forty-eight."

SIMPLE DIRECTIONS FOR COLLECTING, PRESERVING, AND PACKING INSECTS.

By FREDERICK LEROY SARGENT.

It is the object of this article to offer to those who are interested in studying the common insects around them, directions sufficiently plain and practical to enable such persons to collect and preserve any specimen they may come across. It is also intended to help those who have developed a desire to make a serviceable, systematic collection.

APPARATUS FOR COLLECTING.

More or less apparatus will be needed by any one proposing to make a collection; nevertheless, occasional captures may be made without special apparatus, as will be shown hereafter.

A good collecting outfit need only consist of a net, a collecting bottle, some paper pockets, and some pill-boxes.

The net, Figs. 1 and 2, may be made after the following plan:

The handle should be at once strong and light, heavier at one end than at the other, and about $4\frac{1}{2}$ feet long. A stick, such as used by farmers for their whips, or the right length from a bamboo fishing pole, is excellent. The best thing to use for the ring is a piece of rattan, 3 feet or more in length. If this cannot be obtained there may be substituted for it the same length of a good barrel hoop, shaved down to one-third of an inch in width. A piece of rather stout brass wire about a foot long is put through a hole bored at the smaller end of the handle, $3\frac{1}{2}$ inches from the tip, and then it is bent as shown in Fig. 2, and bound firmly to the stick with small copper wire.

The ends of the rattan or hoop are similarly bound to the diverging ends of the brass wire, thus making the framework of the net.

The ring is covered with a strip of cotton cloth $2\frac{1}{2}$ inches wide, and to this is sewed a bag of mosquito netting about $2\frac{1}{2}$ feet deep and of the shape figured. It is well to have the bag of some dark color, such as green or blue.

The net above described possesses many advantages over the nets ordinarily used.

The collecting bottle consists of a wide mouthed jar or bottle having something in it whereby the air is kept charged with poisonous vapor. The best substances to use for this purpose are potassic cyanide and chloroform. Bruised laurel leaves are also recommended. Many different ways of fixing up the bottle answer the purpose. As for instance, a cavity may be made in the cork and filled with a wad of cotton, and this kept saturated with chloroform while the bottle is in use; or the bruised leaves of the little red sheep laurel (*Kalmia angustifolia*) may be substituted for the cotton and chloroform, if only small insects are to be collected. The most convenient collecting bottle, however, is one having a few pieces of potassic cyanide in the bottom, covered with a layer of plaster of Paris. The plaster is mixed with water to the consistency of thick cream, and then quickly poured over the cyanide in the bottle. When hard it forms an even floor on which the insects may rest without coming in con-

tact with the cyanide, but still being subject to the influence of its fumes.

To make the cork perfectly air-tight it may be soaked in melted paraffine.

The paper pockets consist of square pieces of newspaper, folded on the diagonal and the edges turned over. They are very useful to keep butterflies in until they are to be prepared for the cabinet.

Pill boxes suitable for small specimens, such as cocoons, eggs, beetles, etc., may be purchased cheaply at any wholesale drug store.

METHODS OF CAPTURE AND HANDLING.

Collecting may, as before stated, be either with or without special apparatus. We will first consider the methods used in the former case.

The net is used either to "scoop" an insect while flying, or it is thrown over an insect at rest. Collecting the minute insects which swarm in fields is accomplished by sweeping the net vigorously through the grass.

In "scooping," after the insect is in the net a twist is given to the handle, and thus the bag is closed and the creature imprisoned. All this is done in one movement, consisting of a *scoop* ending in a *twist*.

The insect once in the net, the next care is to remove it uninjured. If a large moth or butterfly it should be confined within a small space at the end of the net. It may now be grasped from the outside of the net, at that part of the body where the wings arise (the thorax), and held firmly while the other hand is inserted in the net to take hold of the insect at the same place. It may be taken out now and put into the collecting bottle or a paper pocket. In the case of a small butterfly or moth or a stinging insect handling is out of the question; so, to avoid contact, the mouth of the collecting bottle is placed over the insect from within, the bottle closed and removed from the net.

When collecting without apparatus, as will frequently be necessary even to a regular collector in emergencies, the methods are more crude and often require much dexterity. A few general principles only can be laid down, together with one or two practical tricks. First, in handling any of the *Lepidoptera* (butterflies and moths), under no circumstances should the wings be taken hold of; the insect should

be taken near street lamps, toward which they have been attracted by the light. Dragon flies and the like are found abundant in the vicinity of ponds and brooks. Different species are found at different places, even though they be quite near each other.

Beetles are to be sought for along the sandy road, in the orchard, woods, pasture or field, on flowers, fruit, and carrion, under stones or sticks, and under the bark of trees. These creatures are continually presenting themselves at the most unexpected times and places, and the collector will do well to be always prepared to take them.

PREPARING FOR THE CABINET.

It is the custom among insect collectors to impale nearly every specimen with a pin, so that the insects may be arranged in the cabinet or studied without injuring them. The different kinds of insects are not all pinned alike, and therefore it will be necessary to discuss the various ways separately. Some insects which it is not desirable to pin are fixed in a manner to be spoken of hereafter.

All the *Hymenoptera* (bees, wasps, etc.), *Lepidoptera* (butterflies and moths), *Diptera* (two-winged flies), *Neuroptera* (dragon flies, etc.), are pinned through the middle part of the thorax, that is to say, between the points of insertion of the wings. (See x, Fig. 3.)

The *Orthoptera* (locusts, katydids, etc.), are impaled through the shield, which is at about the same place.

Hemiptera (bugs, harvest flies, etc.), are, as a rule, pinned through the *scutellum*, which is a conspicuous triangular piece about the middle of the back. (See x, Fig. 5.)

The *Coleoptera* (beetles) are pinned through the right wing cover, so that the pin passes through the body and comes out between the second and third pairs of legs. (See x, Fig. 4.) The insects should all be about two-thirds up on the pin. This is important, because any unevenness in height among them looks bad in the cabinet. Care should be taken to avoid having to put the pin into the insect more than once, as a very unpleasant greasiness is often the result when several holes are made.

It is customary to use pins which are made expressly for pinning insects, and these, known as "entomological pins," are sold by dealers in naturalists' supplies for 15 cents per

COLLECTING AND PRESERVING INSECTS.

be grasped by the thorax. In all insects especial care should be exercised to prevent injury to the *antennæ* or feelers; as much of the value of a specimen depends on them. Care should also be taken to keep the legs of beetles, bees, etc., intact.

It must not be supposed that when a fine butterfly is seen it is useless to attempt its capture if a net is not at hand. It may oftentimes be stunned by a dextrous blow with the back of the hat and thus brought to the ground.

A delicate insect, or any one which it is not desirable to handle, that may be on a wall or window-pane, or in a situation similar, may be taken uninjured by placing a bottle, tumbler, or the like over the animal, and then sliding a stiff piece of paper between the surface and the vessel, and by thus closing the latter, imprison the insect.

The best way to kill a large moth or other insect with great tenacity of life is to expose it to the fumes of a mixture of potassic cyanide and chloroform under an inverted jar or tumbler. Beetles are almost instantly killed on being plunged into hot water. Many bees, hornets, flies, and, in fact, most insects devoid of delicate hairs or scales, may be similarly killed without injury to their appearance.

On the principle that "necessity is the mother of invention," various expedients will doubtless suggest themselves to the collector under various circumstances. The above are merely mentioned as some which have been found useful in the experience of the writer.

WHERE TO LOOK FOR INSECTS.

In regard to such a subject as this, experience will teach vastly more than any directions ever could. A few hints only can be thrown out.

When hunting butterflies, bees, and other day flying insects, particular attention should be paid to swampy places, rich in the larger and more gaudy flowers. The milk weeds, Joe-Pye-weed, thistles, clover, and honeysuckle, and, in fact, all the fragrant honey-bearing flowers, are frequented by diurnal insects. Shortly after sundown the sphinxes and other crepuscular moths may be taken hovering over tubular flowers, such as the evening primrose, and especially are they attracted by petunia beds.

Night-flying moths keep mostly in the woods. In the cities many handsome specimens of moths and beetles have

100 or \$1.25 per 1,000. As the finer and even the medium-sized pins are very apt to bend, and so become rather troublesome, it will be found on the whole most advisable to use pins as large as the size of the insect will permit.

The object of a collection of insects being not only to show a number of different species, but also to show the characteristic parts of each specimen to the best advantage so that they may be satisfactorily examined and compared, it becomes necessary to know how to accomplish this end.

The principal apparatus needed are some wooden forms to use in spreading the parts until they dry in position; a box of black glass-headed pins (sold under the name of mourning pins), and some very fine cambric needles. The latter are for drawing the wings and other parts into position, while the former are used for keeping them in the position they are thus made to assume. The needles are much more easily used if inserted in wooden handles 3 or 4 inches long.

Two kinds of spreading forms will be found useful. The first of these (shown in Figs. 6 and 7) consists, it will be seen, of two wedge-shaped pieces of wood, separated from a plane piece forming the bottom by four small wooden blocks, the whole being fastened together by screws passing through the three thicknesses of wood from beneath.

If slots be made in the lower piece of wood for the screws to slide in, the distance between the upper pieces may be regulated to the size of the body of the insect to be spread. This kind of form is used for spreading those insects which have large or medium-sized wings, such, for example, as most of the *Lepidoptera*, *Neuroptera*, and *Orthoptera*. The insect having been pinned, it is stuck in the form so that the body comes between the two top pieces of wood. The wings are now drawn into position with the needles, and then fastened there either by putting the pins through the wings near the stronger parts, or else by pinning strips of card on to the wood so as to press upon the wings. The other kind of form (shown in Fig. 8) consists simply of a rather thick piece of wood, having bored in it a series of holes about the size of the head of one of the pins, and of a depth equal to one-third the length of the pin. The bottom of each hole should come down to a point, so that when a pin is put in head first it will be held firmly. Forms of this kind are used for spreading insects having wings too small to be conveniently managed on the other kind, or else those needing especial attention in the arrangement of legs, etc.—such in

sects as the smaller *Lepidoptera*, *Hymenoptera*, *Diptera*, *Hemiptera*, and *Coleoptera*.

After pinning, the insects are put on the forms with the underside uppermost, and the different appendages held in position by the same means as before.

The insects should remain on the forms until thoroughly dry and stiff; that is to say, from one to three weeks or over, according to the size of the insect and the humidity of the atmosphere.

The wood used in the construction of both kinds of forms should be the softest white pine. A coat of shellac improves them. All that are used should be so made that every one of the insects will stand at the same height on the pin.

The object of spreading insects, as before stated, is to display their various parts to the best advantage. The following hints may be of service, as they express the usual ways in which this is accomplished.

The wings of *Lepidoptera* should be so spread that the lower edges of the forewings shall be on a line with each other; and the hind wings brought slightly forward to conform to them. The antennæ (feelers) should be in the same plane as the wings, and nearly parallel to the front edge.

Orthoptera require much the same treatment, especial care being taken, however, to display the legs to advantage. The wings may be either expanded or closed.

Hymenoptera, *Diptera*, and *Neuroptera* have the wings brought slightly forward and the legs carefully arranged.

The chief point that requires attention in the setting up of *Coleoptera* and *Hemiptera* is the proper arrangement of the legs and antennæ, especially the latter.

There are some insects, such as the flea-beetles, weevils, and the like, which, from their small size, cannot be pinned without distorting them and increasing the difficulties of examination. They may be glued on to little pieces of card, or, preferably, mica, and the pins inserted through the latter.

The following is a good way to protect delicate antennæ or fragile legs from sudden jars or knocks, and consequent breaking off. Below the insect, on the same pin, put a piece of stout card-board, larger than the insect when fully spread; press it close up, and then arrange the different parts on it, fastening them in position with glue or gum. A disk of cork pressed on to the pin and glued to the under surface of the card-board will keep it permanently in position.

Painting insects with mercuric bichloride (corrosive sublimate) dissolved in alcohol, has a tendency to prevent the attacks of cabinet pests. This process cannot be applied, however, to any insects covered with hairs or scales.

When it is desired to render a dried insect pliable, so that it may be reset, this may be done by keeping it in a moist atmosphere. To do this various means are resorted to. One way is to place the insects on some moist sand in a box, and, covering the whole with a damp cloth, let them stay there for about twenty-four hours. The best way to do when the relaxing process is to be much resorted to is to take a stone jar, put some potassic cyanide and water in the bottom, and lay the insects on a tray suspended over the mixture. The cover may be put on and the insects allowed to remain for several days if need be, without danger of their moulding.

DISPLAYING IN CASES.

Collections on which any value is placed are kept in cases or in the drawers of a cabinet. The former is the more general way.

The essential qualities of good insect cases are that they exclude dust, shield the specimens from the fading action of light, and, above all, that they exclude the little insect pests which so quickly destroy collections.

Quite good cases made of *papier mâché* are sold cheaply by dealers in naturalists' supplies. Wooden ones are also sold. It will probably be found more satisfactory, and, on the whole, cheaper, to purchase cases from some dealer for whom large quantities are manufactured than to make them for one's self.

As a help in keeping out insect pests, one or two small bottles filled with potassic cyanide, and having in the mouth a plug of loose cotton, should be fastened inside of each case. This, however, must not be wholly relied on; the boxes should be made as nearly air-tight as possible, and then, unless the most expensive kinds of cases be used, it will be necessary to make an examination of the collection every little while that any intruder may be killed. Otherwise valuable specimens may be lost. Should any living insects be found in the cases, the best thing to do is to pour a little chloroform on the bottom of the case and then tightly shut it. In a short time this will bring many out of their hiding places, and many it will have killed.

A collection, to be of much service, should be catalogued. A very good way is to attach to each specimen on the same pin a different number. In a blank book there are corresponding numbers arranged consecutively; and, following the number of a specimen, should be written its Latin and its English name and synonyms, if any; its classification, the locality and date of collection, any references to notes made on the circumstances of collection, habits or development of the insect, agricultural importance, or any other points of interest in regard to it. When the name of the insect is unknown, the number attached to it answers the purpose almost as well.

PACKING FOR TRANSPORTATION.

Many persons are often obliged to do the greater part of their collecting away from the place where they keep their collection. This is largely the case with those who live in cities, and who do their collecting in the country. It therefore becomes an important question how to pack insects for transportation, so that they will go without injury.

The safest way is to put in paper pockets all the larger winged ones. All that cannot be so packed may be wrapped in pieces of tissue paper, twisting the ends instead of folding them over. They may now be packed in a comparatively small space, and at any future time relaxed and spread as before directed. It is well to attach a separate number to each specimen as it is put away, and make entries in the catalogue before the dates, etc., are forgotten.

Another way is to pin the insects and pack them in boxes, as closely together as possible, leaving the spreading to be done after they are unpacked. Although this method has its advantages, the great danger is that some of the specimens may get loose, and, rattling round among the others, make havoc in antennæ, legs, and wings. Especial care should, therefore, be taken when this method is adopted, to put the pins into the wood very firmly. Unless the pins are quitestout, and the wood of the box very soft, the latter will have to have a number of slices of cork fastened inside the box to put the pins in, or else the box will have to be lined with sheet cork or some substitute.

POSSIBLE FOOD PLANTS FOR THE COTTON-WORM.

ONE of the most interesting characteristics of the cotton-worm is that it is so strictly confined to cotton as its food plant. All attempts hitherto made to discover additional food plants have proved futile; nor have we been able to ever make it feed successfully on other plants allied to *Gossypium*.^{*} We have, however, long felt that there must be some other wild plant or plants upon which the species can exist, and this belief has been all the stronger since it was demonstrated two years ago from observations made by Dr. P. R. Hoy, that the larva may occur in Wisconsin, and consequently out of the range of the cotton belt.† We have given special directions to those in any way connected with the cotton-worm investigation to search for additional food plants, but so far no additional food plants have been discovered.

Last November we received from Dr. J. C. Neal, of Archer, Fla., specimens of a plant with eggs and newly hatched larvæ, which he believed to be those of *Aletia*, but which belong to an allied species—the *Anomis erosa*, Guen. The plant proved to be one of the *Malvaceæ* (*Urena lobata*, Linn.), which is reported as quite common in that part of Florida and further south, being a tall branching and straggling weed with annual stems and perennial root, from which new shoots arise in January. It blooms from February to December, and is, in addition, a valuable fiber plant, the bark of both stem and root being very strong, and used very generally for whip and cording purposes. The leaves have three very conspicuous saccharine glands on the principal veins toward the leaf stem, and the plant, Dr. Neal reports, is much less sensitive to cold or frost than *Gossypium*. We find that the plant has been received by Dr. Vasey, botanist of the Department of Agriculture, from several parties in Florida, with inquiries as to the value of the fiber.

Urena lobata was, until very recently, not known to occur in the United States. It is common on dry hill pastures almost everywhere in the West Indies and southward to Guiana and Brazil, and is also reported from Western Africa, East Indies, China, and some of the Pacific islands. It seems to thrive very well in Florida, and is likely to spread to other adjacent States.

The *Anomis erosa*, the eggs and young larvæ of which were not uncommon on the leaves of the *Urena*, may be distinguished from *Aletia* by the paler, more translucent character of both egg and larva, and by the first pair of prolegs being quite obsolete, in which character it resembles the *Anomis exacta* that affects cotton in Texas. *Aletia* larvæ that had been fed on cotton, when placed upon the *Urena* refused to feed upon it, and finally perished.

We recently took occasion to carefully examine the *Malvaceæ* plants in the herbarium of the Department of Agriculture with some quite interesting results, although a herbarium is naturally the least favorable place one can choose for an entomological investigation of this character, as plants that are least injured by insects are most apt to be collected, and the mode of preserving the plants still further reduces the chances of finding traces of *Aletia*, because only one side of the leaf is available for examination. How small this chance is, may be illustrated by the fact that on the specimens of *Gossypium* in the herbarium, no *Aletia* eggs or egg shells could be discovered, and that only one specimen showed any trace of being injured by any insect whatever. Nevertheless a number of eggs or fragments of such—some of them from their structure very closely related to *Aletia*, were found on the following plants: *Malvastrum spicatum*, from Florida and Nicaragua; *Urena vibesia* (which is considered a form of *U. lobata*), from South Florida; *Pavonia typhaleoides*, from Cuba; *Sida glomerata*, from Cuba.

One object of this examination was to discover, if possible, the particular *Malvaceæ* plant upon which *Aletia* feeds in the States north of the cotton belt, but this proved to be an almost complete failure, because the herbarium contained only six specimens of such plants from the more northern States, not counting sixteen specimens cultivated in the agricultural grounds at Washington. However, on a specimen of *Sida spinosa*, from York county, Penna., an egg was found which has every appearance of that of *Aletia*.

We would earnestly call upon entomologists who may read these pages to aid us in obtaining evidence of the food plant of the insect in the more northern States by an examination of the plants indicated by an asterisk in the following list, as it is upon such that the insect will probably be found at some future time, but only late in the season:

LOCALITIES FOR MALVACEOUS PLANTS FROM GRAY'S FLORA.

Althæa officinalis, L.—Salt marshes, coast of New England and New York. (Nat. from Eu.)

Malva rotundifolia, L.—Waysides and cultivated grounds, common. (Nat. from Eu.)

Malva sylvestris, L.—Waysides. (Adv. from Eu.)

Malva moschata, L.—Has escaped from gardens to wayside. (Adv. from Eu.)

Malva alcea, L.—Has escaped from gardens in Chester County, Penn. (Adv. from Eu.)

Callirrhoe triangulata, Gray.—Dry prairies, Wisconsin, Illinois and southward.

Callirrhoe alceoides, Gray.—Barren oak lands, Southern Kentucky, and Tenn.

Napea dioica, L.—Limestone valleys, Pennsylvania and southward to the valley of Virginia, west to Ohio and Illinois, rare.

* *Malvastrum angustum*, Gray.—Rock island in the Mississippi, Ills.

* *Malvastrum coccineum*, Gray.—Abounds on the plains from Iowa and Minnesota westward.

* *Sida napæa*, Cav.—Rocky river banks, Penna., York County, Kanawha County, Va. (Cultivated in old gardens.)

Sida elliptica, T. & G.—Sandy soil, Southern Virginia and southward.

* *Sida spinosa*, L.—Waste places, common southward.

Abutilon avicennæ, Gært.—Waste places, escaped from gardens. (Adv. from India.)

Modiola multifida, Moench.—Low grounds, Virginia and southward.

Kosteletzkya virginica, Presl.—Marshes on the coast, New York to Virginia and southward.

Hibiscus moscheutos, L.—Brackish marshes along the coast, sometimes extending up rivers far beyond the influence of salt water (as above Harrisburg, Penna.), also Onondaga lake, New York, and westward, usually within the influence of salt springs.

* The only partial success in this line is that mentioned in our Bulletin on the Cotton-worm, p. 12.

† See Report on Cotton Insects, Department of Agriculture, 1879, p. 89.

Hibiscus grandiflorus, Michx.—Illinois and southward.
Hibiscus militaris, Cav.—River banks, Pa., to Ill., and southward.

Hibiscus trionum, L.—Escaped from gardens or grounds. (Adv. from Eu.)

Hibiscus syriacus, L.—Escaped from gardens or grounds. (Adv. from Eu.)

Of these twenty-two species, eight of which are introduced, at least eleven are not likely to occur in Wisconsin, so that the number of plants upon which the insect will probably be found is very limited, if, as is most probable, the plant really is one of the *Malvaceæ*.—U. V. Riley, in *American Naturalist*.

EXPERIMENTS WITH CAGED PYTHONS.

LIEUTENANT T. HUTTON, 37th N. I., transmitted to the Asiatic Society of Bengal some curious observations on the *Python tigris*, or Indian boa constrictor, made on several of these reptiles which he kept alive. He states that the notion that, after crushing their prey, they lubricate it with their saliva to facilitate deglutition, is erroneous. After winding their death-knot round the victim, they constantly dart out their tongue, apparently to feel for the head. He thinks the tongue of serpents is, in a great measure, their organ of touch or feeling. When he offered water to these animals they felt the pan all over with their tongue till it touched the water, and then, dipping their nose fairly into it, drank it by long draughts. They endeavor to seize their prey by the head, but if it move away they seize where they can; but having crushed it, invariably commence swallowing the head. Sometimes they experience great difficulty in getting their prey down. A boa, eight and a-half feet long, having commenced swallowing a partridge, seized it rather on one side, and one of the wings would not enter his mouth, whereupon he threw a coil tight round his own neck, and then drawing his head and prey backward through it, the wings were smoothed down and lengthened so as to be easily swallowed.

In May a large one cast his skin. This he did by first rubbing his muzzle against the side of his cage until the skin became detached from the lips, and then gliding slowly through and through the tight-drawn folds of his own body, by which means the skin was thrust further back until it was all off, and he had fairly "crept out of it."

This reptile coils round and crushes his victim with the speed of thought: "The eye cannot follow the rapid movements of the folds. Gliding very gradually—almost imperceptibly—toward its fascinated and trembling prey, he throws himself upon it, seizing it by the head or leg in his powerful jaws, and simultaneously winding coil on coil round the neck or body. It is in the first movement that the tremendous muscular power of his body is brought into play; and the folds formed at the very instant of seizure are compressed with such desperate energy as to render the victim utterly helpless in his grasp, and the most convulsive efforts are useless, merely shaking the dreadful monster without in the least loosening his folds; nay, on the contrary, only rendering them still tighter, till life has fled. I have tried," adds Mr. Hutton, "with my utmost strength, to uncoil a boa of seven feet from a partridge, but with not a shadow of success, for he tightened his hold the more for my endeavors."

The velocity with which the boa darts on his prey not only overturns it, but hurls his own body in advance of his head, and thus forms the first coil, the rest of his length being rapidly turned at the same time. Lieutenant Hutton introduced a fullgrown buck-rabbit into a den: "The rabbit eyed its monstrous inhabitant with evident uneasiness, his ears thrown back, nose elevated, and hind feet stamping firmly on the floor. In the meantime his enemy was incessantly brandishing his long-forked tongue, and gradually opening out the close-drawn coils of his body in order to give himself room for the deadly spring. His head then slowly glided forward over the upper coil toward the rabbit, which intently eyed every movement of his foe. In an instant, and with a suddenness that made me start, the snake dashed forward, but, to my surprise, the rabbit eluded his grasp by springing over him. With a loud and threatening hiss the boa suddenly gathered himself again into his corner, where he lay still for an instant with his head still pointed toward the rabbit. Not liking his position, the poor buck turned to move away, and that movement decided his fate; for with lightning speed both snake and rabbit were rolled in a fast embrace, tumbling with heavy crash against the side of the cage. The boa had seized a foreleg with one coil drawn so closely round the throat that the eyes seemed starting from their sockets; a second coil was thrown round the body immediately below the shoulders; a third round the loins. So instantaneous was the spring that not even one cry escaped the rabbit, and though the last convulsive motion of the hind legs was strong enough to shake the boa it lasted but a few minutes and all was over. But for some seconds after life had fled, the snake still held his firm position as if to allow no chance of escape, and then proceeded first to disengage his teeth from the hold he had taken; secondly, to uncoil from the neck; with the remaining coil he still held fast."

The process of deglutition is described as frightful: "the snake, with mouth wide open, seems to draw himself over the prey, as a stocking slips over the leg."

A goh (species of monitor lizard) was destroyed in the same manner as the rabbit; but a different result took place on the introduction of a large cat. "I had always been in the habit," says Lieutenant Hutton, "of introducing the prey into the cage by a side door, and from a corner of the den the spring was made almost before the animal introduced was aware of the danger in which it stood. Had the cat been thrust in in like manner, she would have had no time to prepare for combat; nothing, however, would satisfy my visitors on this occasion but turning the snake out of his den into an open veranda, in which the cat was already tied by one leg. The boa, frightened by the noise and number of people collected, endeavored to make his escape, and for this purpose was passing on without noticing the cat, when to my surprise, she seized the boa by the thick part of the tail with her teeth, shaking him forcibly from side to side, while her claws were making sad havoc on his sides. The boa made no attempt to bite, but as soon as the cat quitted her hold took refuge in the cage and coiled himself up as usual. Victory, of course, was awarded to the cat, as though there had been a fight between them. A second trial brought the same result, and I then shut the snake up, as he appeared hurt from the sharpness of the cat's teeth and claws. The cat was then introduced into the cage, and the boa, disturbed and discomfited as he was, instantly sprang at and seized her by the leg; but the cage proving too confined for contest with so large an animal as the cat, he could not coil round her, and puss, getting her