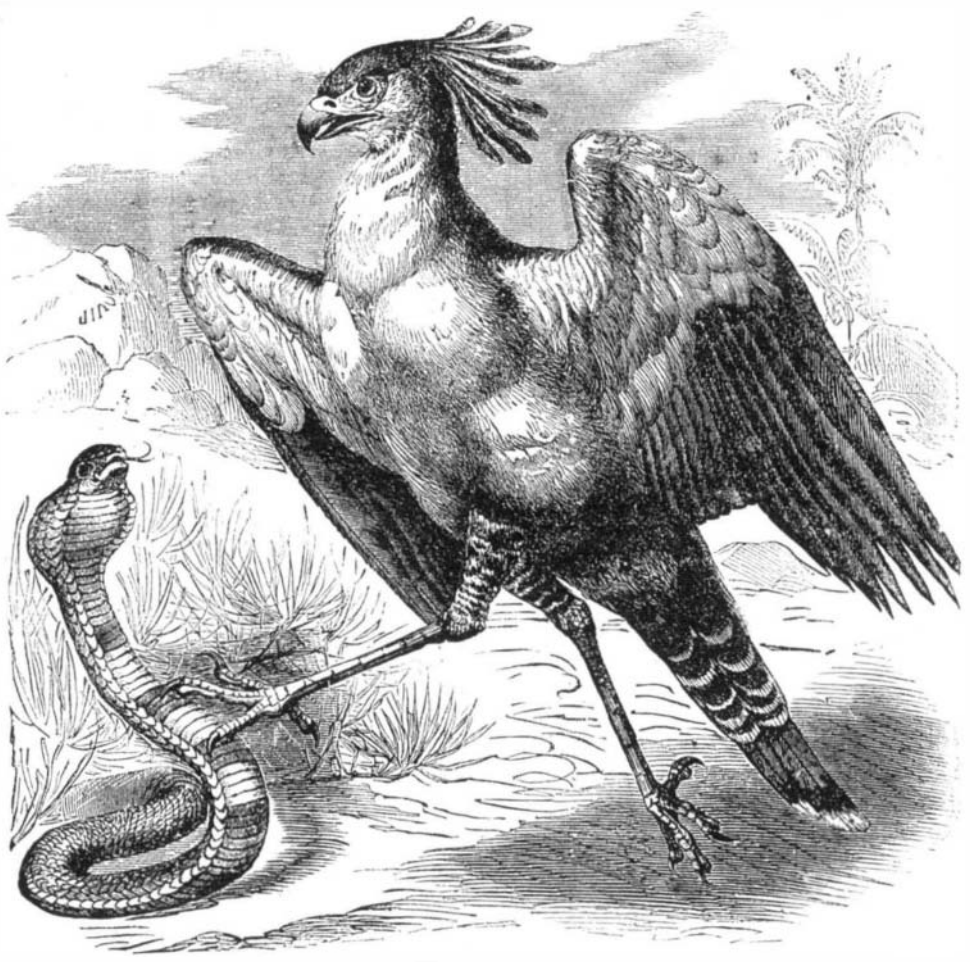
THE SECRETARY BIRD.

Many and various are the names applied to this extraordinary bird, by the natives of the different countries in which it is common. By some it is known as the "Devil's Steed," by others as the "Bird of Fate." We must own that to us these fanciful appellations are quite unintelligible, nor has any Eastern tale that we have ever read thrown a light upon their origin; nevertheless, our unpoetical imagination at once recognizes the appropriateness of its nickname of the "Secretary," as the crest upon its head, when laid back, looks most comically like the quill pens which clerks or secretaries used sometimes to put behind their ears.

Its common name is crane vulture, while it is known to men of science as the *gypogeranus serpentarius*. The crane vulture inhabits Africa, from the Cape to 15° north latitude, and from the Red Sea to Senegal; it is also occasionally seen on the Philippine Islands. One species is also met with in Northern Africa. A glance at the engraving will show that its life must necessarily be passed almost entirely upon the ground. Its toes are short, and it can walk so fast that it is sometimes called the messenger bird. When desirous of flying, it is compelled to run a short distance and then spring upward, in order to get fairly on the wing; at first it moves heavily and with difficulty through the air, but after a few strenuous efforts its flight becomes easy and regular, and it sweeps lightly and beautifully aloft, apparently without even moving its broad pinions. It finds itself, however, most at home upon the ground, and stalks over its surface with much dignity.



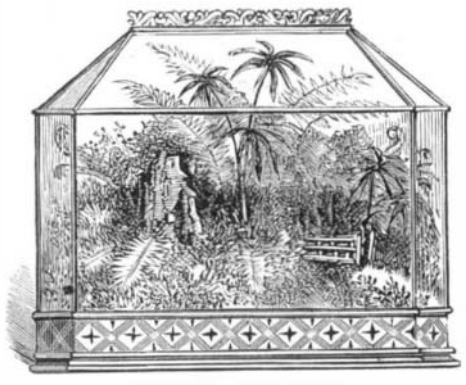
THE SECRETARY BIRD.

About June or July furious quarrels arise among these birds relative to the choice of a mate, the disputed female becoming the prize of the most powerful of the rivals. The pair build a nest upon a high tree, using branches and twigs plastered together with clay. The shallow interior of the nest is lined with cotton, feathers, and other soft material. It is no uncommon thing for the branches, of which the outer walls are formed, to sprout afresh and spread, until the eyrie becomes literally a leafy bower of great beauty. The eggs are two or three in number, and about the same size as those of a goose, but somewhat rounder; the shell is either pure white or slightly marked with little red spots.

Snakes of all kinds are the objects of constant attack by these birds. When a serpent sees one of these dreaded enemies approaching, it will rear itself and swell and hiss in rage and fear; but the bird will spread his wings, forming with one of them a buckler in front of him, and when the reptile makes a spring at him the bird will bound about, always presenting that hard, well-protected wing; and while the serpent is vainly spending its poison on the thick bunch of feathers, the foe is inflicting heavy blows on the defenceless head with his other wing, until, stunned and faint, the venomous creature rolls on the ground; the bird then catches it and throws and dashes it about, finally killing it with his sharp bill. Then he swallows his victim with great relish, being in no way affected by the poison it contains.—*Home and School Journal of Popular Education, Louisville, Ky.*

THE WARDIAN SYSTEM OF PLANT CASES.

The ferns have long been favorite objects of cultivation by lovers of beautiful foliage, and their infinite variety makes them a never ending source of interest. A slight expense in providing the requisite glass case and a little occasional attention will provide a very beautiful object of decoration to a home; while the tasteful selection and arrangement of the plants is a pleasing occupation for the ladies of the household.



THE SYDENHAM CASE.

We publish herewith three designs for fern cases, which we have selected from the London *Farmer*, and that journal gives the following principles upon which a fern case should be constructed: 1. Have no apparatus or arrangement for drainage. 2. Make your case as airtight as possible, allowing for no ventilation. These are very simple rules, and may seem to mean nothing; but they cover the whole ground, and, if you wish success to be the result of your labors, follow them.

Cases constructed on different principles from those of the Wardian case are necessary for the culture of other plants.

Why should we provide no drainage? The reason is that we have no ventilation. If we have no ventilation, or give no access to the air from outside, we keep the atmosphere in our case constantly charged with moisture, provided we water our plants well at the start. Ferns require, for their growth, shade and moisture; upon the former, in a great degree, depends the latter. A northern or eastern aspect, where the morning sun reaches the case, we think is best. As regards moisture, we have the principle of self-support in an airtight case; for if you allow the sun to reach the case for an hour or so in the morning, you will find that the moisture needful for the growth of your ferns is extracted from the earth; and when evening comes, this same moisture will condense and fall. Each day, this process of extraction and condensation takes place, and your plants flourish under a necessary and sufficient moisture. Now this being the kind of air we want, we must not, of course, ventilate our case, and allow it to escape, otherwise the dry air of our rooms would enter, and the watering of the case become a necessity. This at once upsets all the benefits derived from these cases. The temperature, also, must be much more even in an airtight case than in a ventilated one, where the constant opening and shutting of doors and windows would affect it. If we have no watering to do, we have no water to run off, and consequently require no drainage in the bottom of our case. Now in this airtight principle, we get at the secret.

THE WARDIAN CASE AND STAND.

STOCKING AND MANAGEMENT.

In stocking Wardian cases the amateur will find that almost all ferns and mosses will do well in this case. The study of mosses will repay the lover of Nature, and nowhere can it be so successfully pursued as here, the moisture of the case always keeping them fresh and bright, while their growth is rapid. There are few of our greenhouse ferns that will not do well under this treatment; the gold and silver ferns are perhaps the exception; they do not always attain their full size and beauty in a Wardian case, but the adiantums, pteris, polypodiums, blechnums, and others do well.

In planting a case, do not place the plants too near, nor use too many of a large size, but put in a few plants and of a moderate size. Water well after setting the plants out, and shade the case for a day or two; then give it the morning sun each day for an hour or two, and your ferns will soon start. Nothing can be more interesting than to watch them—the frond pushes its head above the earth, the heat and moisture of the case have their effect, and it gradually rises and uncurls till it reaches its hight, then it expands into the most beautiful and graceful of shapes; then what can exceed in delicacy and freshness this newly born part? The lycopodiums grow finely, and spread very rapidly in the case; small pieces introduced at regular intervals in the case will, in a marvelously short time, double their original size; and if the pendent roots of the creeping species are pressed well on to the surface of the earth, the spaces between the plants and ferns will soon be filled up, and a rich and delicate carpet be produced over the whole case. For climbers, nothing can give more satisfaction than *ficus stipulata*, which can be obtained at all greenhouses. The roots of this plant, which strike out at every joint, have an adhesive power, and will attach themselves firmly to the glass in the case, which renders the growth more rapid and regular. It is a very interesting plant to watch; the roots adhering to the glass allow a free use of the microscope, and the growth and circulation can be studied to great advantage from the outside of the case.

As to soil, the best mixture for the growth of ferns and lycopodiums is the following: Leaf mold, two parts; fresh sand, one part; gravel, about the size of a pea, one part; and stable manure, chopped very fine, one part. Ferns which grow naturally in dry places can be arranged on rockwork in the center of the case, if it is large enough to admit of it, and those requiring more moisture should be placed nearer the sides of the case, and they will get more moisture from the glass, where it deposits in great quantities. The spores of ferns can be sown on the surface of the earth in the Wardian case, and a constant supply of young plants can, in this way, be obtained, thus enabling the student to watch them in every stage of development.

It happens that not unfrequently the larvæ of insects are introduced in the earth into the case, and hatch out under the influence of the heat. To provide against this, it will be found useful and interesting to put in a small sized toad, and insects will disappear very soon, and give no further trouble. Toads will live through the winter perfectly well in this way, and their habits can be studied; some may become aware, by trying this experiment, that the toad, although not one of the handsomest of our reptiles, is not the least interesting. Experience will teach many things that cannot be laid down as rules: let us have the result of such, and we may hope ultimately to introduce the Wardian case, which is a most interesting household object, more extensively than at present.

Remember that plants of different natures and requirements cannot be successfully grown together; any amount of management will not produce it, any more than the inhabitant of the tropics can stand the changes of climate in the frigid zones.

THE PRINCESS OF WALES CASE.

Compressed Ice.

A writer in *Les Mondes* sugggests that thin ice from ponds or small pieces left after cutting blocks from larger bodies of water, might be stored in a profitable manner, and at the same time its preservation ensured, by compressing it into solid blocks by means of any simple press. In localities where ice is not attainable, snow might easily be treated in the same way.