II. Observations on preserving specimens of plants

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II. *Observations on preserving Specimens of Plants.* By
JOHN STACKHOUSE, Esq. F. L. S. *

IN prosecuting my researches with a view to complete the history of the British *Fuci*, I was desirous to discover, if possible, a method of preventing the olive-coloured, coriaceous species from turning black in drying. For this purpose I tried the experiment of immersing them in a strong solution of alum. The result of my experiment did not answer my expectation. They were prevented, indeed, from turning black, but they acquired a greenish hue. However, imagining this might arise from the mixture of aluminous with muriatic salts, and being of opinion that the properties of alum might be of great use in preserving land plants on several accounts, I set on foot a course of experiments, and am happy to say, that the result has been favourable to my expectations. After repeated trials, during which partial failures occurred, owing to the proportioning the degrees of strength of the solution, and the admission of light and air during the time of drying, I can safely recommend to the public attention the process which follows, not doubting but that many improvements will suggest themselves to those who possess a chemical knowledge of the various substances made use of by dyers in fixing their colours.

Take a saturated solution of powdered alum in common water: immerse carefully your specimen, flowers, leaves and stalk in this liquor. During this immersion, with a camel's-hair brush, such as varnishers make use of, wet thoroughly a sheet of blotting-paper: display your specimen carefully on this paper, and prepare another sheet in a similar manner to lay over your plant. Then give a smart pressure to your plant, either with a botanical press, a napkin press, or weights of any kind applied to the specimen placed between smooth boards, or books, observing to lay about half a quire of paper below the specimen, and the same quantity above, to take up the moisture. After a day or two, according to

* From the *Transactions of the Linnean Society*, Vol. V.

the succulency of the plant, and when the aluminated paper appears perfectly dry, your specimen may be removed into fresh paper, and kept carefully under gentle pressure, with the edges of the paper folded over each other to prevent every possible admission of light and air till its removal into the herbarium. For those who wish to affix their specimens, (and it is scarcely possible to effect the preservation of the delicate tints of the petals of many kinds without a strong adhesion to, and almost incorporation with, the paper,) the time above mentioned, that is, when the aluminated paper is thoroughly dry, is the proper time for proceeding with the operation. Have ready a paste made with flour and water, with alum mixed in it, such as upholsterers use, strong gum-water, or isinglass-glue: apply either of these to the back of your specimen with a brush; then fix it carefully on strong writing or drawing-paper, by laying your paper smoothly on the specimen as it lies, pressing it gently with your hands and a cloth, and then turning over both together. When this is done, iron the plant with a box-heater in the manner recommended by Major Velley in Dr. Withering's *Arrangement of British Plants*, v. 1. p. 34, if you have the conveniences; if not, apply an immediate and smart pressure, as before directed.

It is taken for granted that those who wish to profit by these instructions, are practised in the usual methods of preserving dry specimens, and that they are aware that particular care should be taken to pare off the back parts of thick woody stalks, and of the globose, succulent heads of flowers, as well as of the buds of those intended to be pasted down, previous to their pressure. For the most satisfactory information on these particulars, the reader is referred to the Introduction to Dr. Withering's excellent work above mentioned. It is almost needless to mention, that aluminated specimens will be completely guarded from the erosion of insects, as well as from the danger of being injured by damps; and therefore the process will be particularly valuable to those who visit foreign countries.

As beauty and durability are of so much consequence in the arrangement of an herbarium, and as plants cannot be
preserved

preserved any length of time in perfection even with the usual apparatus of a *vasculum*, or tin-case, no botanical traveller should be without a small press, such as that described in Dr. Withering's *Arrangement*, v. 1. p. 31. It may be framed so as to admit of a drawer for receiving the preserved specimens; either thin enough to lie under the feet in a post-chaise; or, as a seat for a third person is often desirable, it may be contrived to be as high as the seat of the carriage, with a corresponding cushion on the top.

III. *A cursory View of some of the late Discoveries in Science.*

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ANATOMY OF ANIMALS.

CUVIER has made many researches respecting the organisation of insects, and the manner in which nutrition takes place among them. "I think I am the first," says he, "who has distinguished worms into two grand families; the moluscæ, which have a heart, and a complete system of circulation; and zoophytes, which have neither. I have described the heart, and the vascular system of the principal genera of the moluscæ; and I have proved that their venous vessels perform at the same time the function of absorbing vessels." He then shows that insects have neither a heart nor vessels of circulation. Malpighi observed in the silk-worm a large knotty vessel extending along the whole back, and he believed that this vessel performed the functions of the heart and aorta, and that the same organisation existed in all insects. This opinion was adopted by all naturalists. Cuvier has carefully examined this vessel, as well as the whole organisation of insects; but he observed no movement of fluids, or circulation. Almost the whole body of the insect is filled with tracheæ; from which he concludes that there is no real circulation in these animals, and that their nutrition is performed by immediate absorption, as is evident in polypes and other zoophytes, which are found immediately below insects in the scale of organic perfection,

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