

be given out than in our experiment but the period of oxidation being a long one, the amount of heat would be given off gradually during the whole period, and would not be sensible except to very delicate instruments of investigation.—*Note Chem. Lect. Pictou Academy.*

COLLECTING FERNS.

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Every ardent admirer of nature is a lover of ferns, but is not always so situated as to be able to collect those beautiful plants, and establish them alive in a fernery. In such a case the best thing to do is to gather the fronds or leaves and preserve them in a fern portfolio. Of course it is desirable to find the most perfect specimens of the fronds it is intended to preserve and such a search will require great care and attention. If there be any breakage, or any unnatural discoloration of the frond, or injury by insects, such a specimen must be rejected. It is essential, too, that a frond, to be gathered for preservation, should be completely unrolled and unfolded into its most perfect state of growth. When possible, the time for taking the frond should be just before the ripening of the fructification. If the latter be fully ripe the spore cases will burst in the process of drying, and the specimen will not be so interesting as an object of study when transferred into the portfolio. As there are various periods of the year for the arriving at maturity of the fructifications of different kinds of ferns, it would not be possible, on one tour, to gather all the kinds at the same stage; but by collecting throughout the summer and autumn during successive years, whenever the opportunity occurs, a complete collection of fronds secured at the right season of growth could be obtained. However, as objects of beauty to the collector, ferns, with or without their fructification, are always an acquisition to the fern portfolio.

But as to the manner of collecting and preserving ferns. First of all it must be borne in mind that the object of the collector is to preserve the color and entire form

of the leaf in a dry state. On starting therefore, on a collecting tour it is necessary to go provided with a number of dryers. The sheets are to be carried between two boards, secured by two strong buckle straps with a third passing under the other two and buckled for a handle by which to carry this combination press and collecting case. The proper size for the boards is about twelve by seventeen inches. The usual size of botanical paper for mounting specimens for the herbarium is eleven and a half by sixteen and a half inches, and the plant to be mounted must be a little smaller.

When the first frond is taken, the boards must be opened and one of them laid flat upon the ground and covered with a couple of dryers. On this the frond, which should be cut from the root stalk at the base of the stem, should be placed. Upon it should be placed the remainder of the sheets beginning at the apex of the frond, holding the superincumbent sheets in the left hand, the left wrist keeping them down, while the right hand—as the sheets are being gradually lowered—is employed, with the aid of a pointed stick, in adjusting the frond in a manner to prevent any crumpling or doubling of the parts. As soon as the frond has been thus arranged it may be followed by another in a similar way, always keeping a dryer between or, if no other is at hand, the remaining dryers should be carefully laid upon the pile, the second board placed upon them and the whole secured by the straps.

The next step, after the collector reaches home with his spoils, is to arrange them for drying. They should be examined carefully in order to remedy any folding or crumpling. This can be easily done, while they are green and pliant, by the aid of the pointed stick already mentioned. The small magnifying glass mentioned in a former report would be found very useful in arranging the fronds, especially of the smaller kinds of ferns. A fresh set of drying papers should now be used and the fronds laid carefully upon them—two or three dryers between each—the whole placed between thick boards and a pressure, moderate at first, but increased, as the specimens dry, to thirty or forty pounds, applied. The dryers should be changed daily at first, afterwards not so