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THE NEW YORK BOTANICAL GARDEN

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Vol. XI

No. 41

GUIDE TO THE ECONOMIC MUSEUM OF THE
NEW YORK BOTANICAL GARDEN

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INTRODUCTION

The plan of the Economic Museum provides for the illustration of all useful products derived directly from plants and, so far as practicable, for the presentation of characteristic specimens of the plants themselves.

The United States possesses no such large general collection of useful plant products as those to be found at Kew, South Kensington, Berlin, Calcutta, and other Old World centers. There are, indeed, many collections, some of them fairly large, which represent special industries, such as *materia medica*. Some of our larger drug houses possess extensive collections of this kind, but they are maintained chiefly for their own working purposes and are not founded on broad scientific lines. Several of our schools of pharmacy, notably that of Columbia University, strive for more complete collections, but these are primarily designed for teaching purposes. We have also a number of excellent collections representing forestry, notably that at the American Museum of Natural History in New York, but relating chiefly to North American trees.

In addition to these special exhibits, we possess a number of museums organized on the basis of a general representation of vegetable products, each of them possessing some special characteristic of its own. The most important of these collections is that of the federal government at Washington. Its object is chiefly economic, although its scientific value is great. Next in importance, perhaps, are the collections of the Philadelphia Museums. These, however, are purely commercial and the method of their accumulation has been such as to preclude, to a great extent, the element of botanical authentication of the article, the commercial relations of the products themselves being the special object of illustration. In Chicago, we have the Field Columbian Museum, which aims particularly at the most elaborate possible representation of types.

The special characteristics of our Museum are correct nomenclature, this method being followed throughout, and positive authentication of the articles exhibited. We possess, it is true, a large amount of material from commercial sources, which, although gathered with every possible precaution as to authenticity, presents no *prima facie* evidence as to its botanical origin. The more valuable portions of our exhibits are those which have been taken from the growing plants by special collectors, in connection with herbarium material displaying flowers, fruits, leaves, etc., which is suitably preserved in our own herbarium, with cross references from one collection to the other. In the pursuit of this object and in the extent to which it has been carried, our collections are probably unique. The presence of such authenticated specimens beside commercial samples of the same, and with an opportunity thus presented for comparison and confirmation, imparts a value to the latter which is beyond estimate, even from a practical point of view.

Another distinguishing character of our collections is the extent to which aboriginal and domestic customs and uses are represented by them. At the first establishment of our

Garden, long before our buildings were erected, or even planned, the collection of authenticated specimens of local products was begun and vigorously pursued. Since that time, no opportunity has been lost by our collectors for securing the useful plant products, similarly authenticated, of the regions visited. In this way we have come to possess a large and world-wide representation of products that are as yet not commercially known outside of the producing localities. A collection thus accumulated becomes increasingly valuable as a center of study of little-known subjects.

A third feature which may be regarded as somewhat characteristic is the extent to which we have gone in preserving fresh material, chiefly in formaldehyde solutions, representative of the various products. It has been a most laborious and expensive operation to carry into many remote regions, often destitute of roads, supplies of large glass jars, with preservative material, and to return them filled with specimens, but the result has more than repaid the sacrifice, as it has brought within the reach of the people of this metropolis the study of many things not otherwise to be seen, except by visiting the countries where they are grown. The advantages of study from such collections are not alone practical. Important questions relating to taxonomy, morphology, and physiology may be answered by reference to fleshy fruits and flowers preserved in their natural growing state, which could not be demonstrated in any other way.

Our museum collections now number about 8,000 articles, many of them also represented in the living state in our economic plantations and conservatories.

LOCATION AND CLASSIFICATION OF THE EXHIBITS

The Economic Collections occupy the entire main floor of the museum building and at present fill 173 cases; which are arranged in units, each unit, when complete, comprising 6 cases. Not all of these cases or units are as yet installed, additions being made from time to time as the accumu-

lation of specimens proceeds. These additional units and cases have been accounted for in *the numbering, which begins on the left as one enters the building.*

The primary classification of the articles is in accordance with their use as products, as indicated in the following synopsis. Those of each of these classes are then arranged in the botanical sequence of the plants yielding them, proceeding from the lower to the higher groups. Exceptions to this arrangement are the foods and drugs, these groups being so large that they are subdivided in accordance with the portion of the plant represented, from root to seed. The articles of these subdivisions are then arranged in botanical sequence.

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Plant Hairs and Fibers

In common parlance, some plant hairs, such as cotton, are often spoken of as "fibers," but there is a valid distinction between these two classes of tissues, both of which possess important uses in the arts. Fibers are internal structures pertaining to the framework of the plant, while hairs are of epidermal origin.

PLANT HAIRS

Plant hairs belong to the class of structures known as *trichomes*. These are appendages developing from the epidermis of various parts of the plant, and include scales, papillae, spicules, epidermal glands, prickles, and all other appendages of the superficial layers of cells. They serve the plant through protection, nutrition, and seed distribution. When long, slender, and flexible, they are known as