THE RAMAN SPECTRUM OF HEAVY WATER

THE Raman spectrum of 80 per cent. heavy water obtained with a sample supplied by Professor Taylor, of Princeton, when compared with the spectrum of the 18 per cent. material previously reported, shows that the water molecule with two atoms of heavy hydrogen gives a Raman band with a frequency difference of 2517, while the molecule with one atom of heavy and one of light hydrogen gives *two* bands, one of frequency difference of 2623, the other of 3500. Ordinary water gives a band with frequency difference 3445. A single photograph of a sample of given concentration does not bring out this shift as the bands overlap, but by superposing the two photographs taken with different concentrations the shift in the center of gravity of the bands comes out in a very striking manner.

Preparations have now been made for photographing the spectrum of the vapor in which case we shall doubtless find double lines in place of the superposed and slightly shifted bands.

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THE JOHNS HOPKINS UNIVERSITY
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REPORTS

WORK OF THE NEW YORK BOTANICAL GARDEN

SIGNIFICANT new activities of the New York Botanical Garden are noted in the annual report of the director to the Board of Managers which met on January 8. These include an exhibit during 1933 of plants for home aquaria, which will continue for two or three months more in the Museum Building, and the issuing for the first time of a seed list, making possible exchange of desirable species of plants with other institutions.

Through its new seed list, the garden is offering to botanical institutions throughout the world 500 species and varieties of plants, some native, some exotic and a number of them never before available from such a source.

In the greenhouses the most striking development of the year, according to Dr. Merrill, has been the naturalistic planting of the succulents in Conservatory Range 1, giving those interesting plants which are built to store water during long periods of drought an indoor rock-garden effect for a background.

Other changes still in progress, affecting the collections of ferns, cycads, aroids, bromeliads, bananas, begonias and orchids, are tending also to make the plants appear as though growing in their native haunts, rather than formally displayed in pots or tubs. The special display house for flowering plants in their season, inaugurated a year ago, has been continued this winter, and has attracted many hundreds of additional visitors to the conservatory.

Dr. Merrill emphasized the importance of the science course given for professional gardeners—including some of the gardening employees of the institution—calling it "the most significant innovation in the field of public instruction during the history of the garden." First- and second-year classes are now being attended by about 125 men and five women whose actual employment as gardeners over a period of years has entitled them to enrolment in the course. Such fundamental subjects as plant physiology and classification, chemistry, plant diseases and soils and fertilizers are being given. This course, started in the fall of 1932, is the first one of its kind to be given in America.

About two thirds of the Thompson Memorial Rock Garden, being constructed over more than two acres of ground in the glade east of the Museum Building, is now completed, Dr. Merrill reported, and a portion of this, having been planted last fall, will be blooming for the first time in the spring. Several thousand additional plants are now being raised in the propagating house, to be set out in the new rock garden in a few months.

Three thousand seedlings of rhododendrons and azaleas are also being grown at the garden, to be used eventually for bordering the walks and drives throughout the grounds.

The outdoor plantings of daffodils, iris, roses, peonies, cannas, dahlias and chrysanthemums, of which there are special displays each year, have all been increased in 1933. And the perennial border presented to the garden by the women of the Advisory Council has been most satisfactorily maintained.

The plantings of daylilies (Hemerocallis) and of Louisiana iris have been extended. In addition, a display planting of species and varieties of Hemerocallis has been created. Next summer it is hoped to have the first flowers from seedlings of hybrids of Louisiana iris.

Gifts of plants made to the Botanical Garden during the past year include rare shrubs and rock garden plants from the Boyce Thompson Arboretum; 140 orchid plants from George Baldwin and Company; cuttings of Erica, Calluna, Sedum and other genera from Clarence Lewis; 47,600 tulip and hyacinth bulbs for next spring's display from the Dutch Exporters' Association; cuttings of 140 species and varieties of conifers from the Arnold Arboretum and from Colonel Robert Montgomery; palms and cycads, also from