Potential Function of B. O. Peirce, which many of us remember as young students. Ramsey's "Introduction" can be read profitably by persons who have mastered the second year of calculus in an American university.

The reviewer does not mean to say that the book is a mere routine selection of details of subject matter from more ambitious treatises. For example, the following topics will immediately excite interest: the condition that a family of surfaces be a possible family of equipotential surfaces; approximate formulae for the potential of a body at large distances from it in terms of the principal moments of inertia, and the potential of a nearly spherical body, with applications to the attraction of the moon on the earth; the equilibrium of a rotating liquid, with Jacobi's ellipsoid of three unequal axes. The reader can thus expect to gain an introduction to several of the classical problems connected with the subject, as well as some systematic knowledge of the subject itself, in this very brief exposition.

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SOCIETIES AND MEETINGS

THE AMERICAN ASSOCIATION OF BOTANICAL GARDENS AND ARBORETUMS

AT the annual meeting of the American Institute of Park Executives, in September, 1940, a new organization was formed, to be made up of those connected with arboretums and botanical gardens situated in North America. Though this organization is still very young, it has at present approximately seventy members, representing approximately fifty-four different arboretums and botanical gardens in North America. Its purpose is to promote the interests of botanical gardens and arboretums and to promote the interest of the general public in living plants.

The official organ is the magazine *Parks and Recreation* in which the association has a monthly section, at present consisting of descriptions of the various botanical gardens and arboretums in North America, their objectives and methods of conducting research projects. Also in this section appear various news notes and interesting items concerning rare or unusual plants. This is part of the work of the publication committee, the chairman of which is Henry T. Skinner, curator of the Morris Arboretum, Chestnut Hill, Philadelphia.

The chief undertaking of the association at this early stage is the assimilation of a complete list of plants of a few genera which are growing in this country at the present time. For instance, many a botanical garden has a collection of oaks, maples, junipers, rhododendrons or honeysuckles. Some of these have been collected from many foreign sources, and without the aid of complete inventories from each institution, it is impossible to comprehend exactly what plants are growing here in this country. Naturally, some collections are more complete than others, but it may well be that hidden in the smaller collections are some rare species and varieties, not known to exist in this country. With the increasing uncertainty of foreign horticultural contacts, it becomes more and more important to take stock of what plants are being grown here in the western hemisphere. It is to obtain an inventory on plants in North America that this method has been adopted. The problem will be attacked genus by genus and will take years of painstaking effort, but the idea is a sound one, and it is hoped that the various botanical gardens and arboretums will be sufficiently interested to cooperate in this undertaking and help make it a success. It is not anticipated that all genera will be included, but it is hoped that much will be learned about those genera studied in this way.

There are several other possibilities of cooperation among the members of this new organization. In the first place, it is hoped that some method may be worked out whereby a competent group of judges can be selected who will inspect various collections consisting of one genus or even one species, and report on "the best" for ornamental purposes. An example would be in the case of *Syringa vulgaris*. There are over 300 varieties of the old-fashioned lilac in America to-day, over 150 of them being offered by nurseries. Certainly all do not have outstanding ornamental characteristics. It would be the purpose of this judging committee to study such large groups of lilacs as exist in America, and make recommendations of what would constitute the 10 (or 15) "best" white varieties, the best pink varieties, and so forth, the idea being to help the general public and the commercial growers, in spending time only with those varieties which have demonstrated their superior qualities. This same group of judges, or another like it, could investigate the daffodil, iris and peony collections in the country. Truly an ambitious program! Yet some organization should at least contemplate the possibilities of such a plan, and it is hoped the new Association of Botanical Gardens and Arboretums can work out some recommendations which will prove practical in attempting to tackle the problem.

It is also the purpose of the organization to pub-

licize certain noteworthy plants rarely grown in America at present. Then, too, some mutual system of dissemination of propagating material will be considered, together with plans for certain cooperative hardiness tests. It will be seen that these ambitious plans will take much time to complete, but certainly form the basis on which there can well be a firmer bond between the botanical gardens and arboretums of America.

The officers of this new association are: *Director,* C. Stuart Gager, Brooklyn Botanic Garden, Brooklyn, New York; *Director,* Henry Teuscher, Montreal Botanical Garden, Montreal, Canada; *Chairman,* Donald Wyman, Arnold Arboretum, Jamaica Plain, Massachusetts; *Vice-chairman,* Henry T. Skinner, Morris Arboretum, Chestnut Hill, Pennsylvania; and *Secretary,* C. E. Godshalk, Morton Arboretum, Lisle, Illinois.

DONALD WYMAN,
Chairman

SPECIAL ARTICLES

DIETARY REQUIREMENTS FOR FERTILITY AND LACTATION. XXX. ROLE OF p-AMINOBENZOIC ACID AND INOSITOL IN LACTATION[1]

PRELIMINARY REPORT

RECENTLY I have reported[2] that such large daily doses as 120 μg thiamine, 120 μg riboflavin, 120 μg pyridoxine, 15 mg choline chloride, 600 μg calcium pantothenate, and "W" factor from 1 gm liver extracts (nicotinic acid having been provided in the ration), as a source of the vitamin B complex, resulted in complete failure in lactation of the albino rat, the infant mortality being 95 to 100 per cent. Apparently some dietary factor was missing that is essential for lactation. The missing factor, tentatively designated as "Bx," was found in rice polishings, defatted wheat embryo, dried grass and brewer's yeast, but most abundant in liver and rice bran extracts. A potent concentrate was prepared from the residue of the "W" factor extract by adsorption on fuller's earth. The "Bx" factor was found in the filtrate. On the daily allowance of this concentrate, which was the equivalent of 2 gm of the original liver extracts, 5 mothers successfully weaned 33 out of 34 young given them to rear. The litter of one mother, however, reached maintenance on the 15th day of lactation and maintenance persisted for 7 days. Another litter showed loss of weight on the 17th day and maintenance on the succeeding 3 days. The recent reports of Ansbacher[3] that p-aminobenzoic acid is a chromotrichia factor for the rat, and that of Wooley[4] that inositol is an antialopecia factor for the mouse; also, the report of Pavcek and Baum[5] that inositol is an antispectacled and growth-promoting factor for the rat warranted the trial of these substances. The results with daily doses of 15 mg p-aminobenzoic acid were negative. A daily dose of 30 mg inositol resulted in a prompt response in the case of the first mother, *i.e.,* a gain of 16 gm in 24 hours, and 33 gm in 48 hours in the weights of the litter, and the litter was weaned in 8 days subsequent to the inositol administration. The response to the inositol administration in the case of the second mother was similar.

It was then decided to attempt to rear nursing young of the albino rat on only known pure chemical substances of the vitamin B complex. For this reason the "W" factor was removed from the females at mating. The experiments were conducted in three series, and the following daily additions to the vitamin B complex mixture were given to the mothers during pregnancy and lactation: (1) 15 mg p-aminobenzoic acid; (2) 30 mg inositol; (3) 15 mg p-aminobenzoic acid and 30 mg inositol. The results obtained to date on reproduction and lactation are as follows: Series 1: Out of 92 young born there were only 3 dead, or 3.3 per cent. stillbirths. Out of 53 young given 9 mothers to rear, 32 were weaned. Series 2: Out of 5 litters, 2 were born dead. Two mothers failed in lactation with litters of 6 each. One mother weaned 5 young. Per cent. of stillbirths was 30. Series 3: Out of 46 young born to 5 mothers there was only one stillbirth. Out of 28 young given 5 mothers to rear, 22 were weaned.

It appears from the character of results obtained in this investigation that p-aminobenzoic acid should be added as an essential dietary factor for the rat, as evidenced from studies on reproduction and lactation. It would also seem from the data submitted that the "Bx" factor either contains p-aminobenzoic acid or a substance of similar physiological properties. Further experiments will determine whether inositol is also to be considered a dietary essential for lactation and reproduction of the rat.

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[2] *Proc. American Soc. Biol. Chem.,* Chicago, Ill., April 15–19, 1941.

[3] S. Ansbacher, SCIENCE, 93: 164, 1941.

[4] D. W. Wooley, *Jour. Biol. Chem.,* 139: 29, 1941.

[5] P. L. Pavcek and H. M. Baum, SCIENCE, 93: 502, 1941.