SCIENTIFIC BOOKS

Lectures on Nutrition—delivered under the Auspices of the Washington Academy of Sciences. Published at Washington, D. C., 1916.

This is a reprint, in collected form, of a series of four published lectures given under the auspices of the Washington Academy of Sciences, during April, 1916, with which is included, as an introduction, the address of the retiring president of the Chemical Society of Washington, Dr. C. L. Alsberg, which was given before a joint meeting of the Chemical Society and the academy.

The address of Dr. Alsberg, entitled "The Biochemical Analysis of Nutrition," reviews recent contribution to the knowledge of the component parts of the food elements and their fate in metabolism, especial attention being given to the investigations of the rôle of amino acids in nutrition.

"The Basal Food Requirement of Man," by E. F. DuBois, considers the basal energy requirements of man, the manner in which metabolism is studied, and the factors by which it is influenced under conditions of health and disease.

"Nutrition and Food Economics," by Graham Lusk, gives statistical data regarding the amount of protein and the fuel value of food consumed by people living under extremely varied conditions. This lecture also refers to a dietary study, carried out by F. C. Gephart, in a private boarding school for boys. The author also emphasizes the need of including on the label of package foods the number of calories furnished by their contents.

"Investigations on the Mineral Metabolism of Animals," by E. B. Forbes, presents some of the conclusions, with reference to the rôle of mineral elements of foods, which were drawn from extensive studies of the chemistry of foods and metabolism experiments with swine and milch cows, data being included regarding the iodin content of foods.

In "The Relation of the Vitamins to Nutrition in Health and Disease," by C. Voegtlin, the author outlines recent advances in the science of nutrition, with special reference to the importance in the diet of small amounts of the so-called accessory food substances essential for the maintenance of health. The topics considered are the deficiency disease, beriberi; the chemical isolation and chemical properties of vitamins and their physiological action; and the distribution of vitamins in foods. The factors which tend to reduce the vitamin content of the diet are also discussed at length.

This compilation of lectures brings together a great deal of useful information and constitutes a handy reference book for investigators and students in nutrition.

C. F. LANGWORTHY

Catalogue of the Lepidoptera Phalænæ in the British Museum. Supplement. Vol. I. Catalogue of the Amatidæ and Arctiadæ (Nolinæ and Lithosianæ) in the collection of the British Museum. By SIR GEORGE F. HAMPSON, Bart. London. 1914. Pp. xxviii + 858.

In this large volume all the new species are treated that have been made known since the publication of Vol. I. (1898) and Vol. II. (1900) of this series of catalogues or, more properly, monographs. The family name Amatidæ is a change from Syntomidæ, formerly used, on the ground that the generic name *Amata* Fab. has priority over *Syntomis* Ochs. There are many synonymic references and corrections of generic locations all of which will be extremely useful as aids to identification of species. 330 genera and 2,002 species are referred to, of which 10 genera and 43 species represent new forms described from America. A separate volume of 41 colored plates accompanies the work.

HARRISON G. DYAR

SPECIAL ARTICLES

THE REARING OF DROSOPHILA AMPELOPHILA LOEW ON SOLID MEDIA

DURING the course of some experiments on *Drosophila* which one of us was performing, it became necessary to observe the beginning of oviposition. It is impossible to see the

eggs and difficult to see the larvæ in the mass of fermenting banana ordinarily used in rearing *Drosophila*. For this reason and for many others one can clearly see what the advantages of a transparent solid medium might be.

Banana agar was made as follows: Five or six bananas were mashed up in 500 c.c. of water. This was allowed to infuse on ice over night, after which the liquid was passed through cheesecloth. Powdered agar-agar was then added in the proportion of 1½ grams to 100 c.c. of the banana infusion. This was then heated until the agar had dissolved. The liquid was next filtered through a thin layer of absorbent cotton into test tubes. The tubes were then plugged, sterilized and slanted in the customary manner.

Media so prepared are quite transparent. Greater transparency may be obtained, of course, by repeated filtration, but this removes too much from the food value. The slanted tubes give about 6–7 c.c. of food with a feeding surface of about 15 sq. cm.

Adult *Drosophila* are inserted into the tubes. The tubes are then incubated at 35° C. or kept in some other warm place. In a day or two the small white eggs may be seen deposited everywhere on the surface of the agar. In a day or two more the eggs hatch and the small larvæ can be seen working in the medium. The average number of days required to complete the cycle on the agar from egg to adult is about thirteen. This is three days longer than the average number of days required on the ordinary fermenting banana mash. This means that the amount of available food is too low. That this is the case is further shown by the fact that some of the larvæ die prior to pupation, and that the flies are somewhat undersized. It is highly probable that the amount of food may be increased by the use of some concentrated form of food like banana flour. An increase of the feeding surface may likewise help.

We have also succeeded in rearing *Drosophila* on potato agar. The average number of days required to complete the life cycle is 15 on this medium. The flies are very much smaller than those reared on banana agar. Clearly, the amount of available food in the potato must be very small.

Of course, bacteria always develop on the medium and sometimes we are troubled by molds. The bacterial growth does not seem to harm the larvæ and the molds are usually destroyed by the larvæ just as soon as they hatch. Sometimes the fungus growth becomes too luxuriant between egg deposition and hatching. At such times the larvæ are killed by the growth, but this is exceptional. It is well to take all bacteriological precautions in handling the tubes.

The agar method for rearing *Drosophila* has the following advantages. The eggs "stand out" clearly and hence the time of deposition and hatching can be noted. The larvæ can also be clearly seen and their habits observed. By using various synthetic solid media, *Drosophila* may become the subject for interesting nutritional experiments. Our solid medium has the slight disadvantage that the concentration of the food is too low. This difficulty can probably be remedied by the addition of some concentrated form of food like banana flour.

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THE NEW YORK MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The sixty-ninth meeting of the American Association for the Advancement of Science and affiliated national scientific societies was held in New York, December 26 to 30, under the presidency of Dr. Charles R. Van Hise.

Owing to the large number of organizations brought together at one time, and to the fact that many local institutions are intimately related to these organizations, the places of meeting were widely scattered. The general headquarters of the association were maintained in Earl Hall of Columbia University, and the various buildings of the university served very admirably for the meetings of many of the sections and affiliated societies. Others met at the American Museum of Natural History, at the College of the City of New