and a typical odd chromosome is present. In *Syromastes* the spermatogonial number is 22, the "accessory" being represented by two chromosomes, and the number 24 is inferred for the female. A general review is given of the facts thus far determined in this field. N. M. Stevens contributes "Further Studies on the Chromosomes of the Coleoptera" and "An Unpaired Heterochromosome in the Aphids." David Day Whitney writes on "The Effect of a Centrifugal Force upon the Development and Sex of Parthenogenetic Eggs of *Hydatina senta*." The unsegmented eggs were centrifuged so that their contents were separated into three layers. These layers were variously arranged in their relation to the first cleavage plane and consequently a different distribution of the egg material occurred in each of the cells at the first cleavage. From such eggs normal individuals developed, grew to maturity, and produced normal offspring. No change in the sex ratio occurred. The same author has an article on "Observations on the Maturation Stages of the Parthenogenetic and Sexual Eggs of *Hydatina senta*." In the female parthenogenetic egg there is no reduction in the number of chromosomes during maturation but in the male parthenogenetic egg and also in the fertilized egg there is a reduction in the number of chromosomes. One polar body is formed by the female parthenogenetic egg and two polar bodies are formed by the male parthenogenetic egg.

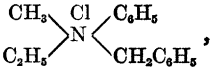
A NEW VARIETY OF ASYMMETRY EXHIBITED BY THE NITROGEN ATOM

A NUMBER of organic compounds are known the isomerism of which is due to the different spatial arrangement of certain groups around a nitrogen atom. The most familiar examples are the oxines, such as benzaldoxine, which exists in the forms,

$$\begin{matrix} C_6H_5CH \\ NOH \end{matrix} \quad \text{and} \quad \begin{matrix} C_6H_5CH, \\ HON \end{matrix}$$

termed the *syn-* and *anti-* modifications, respectively.

A second variety of isomerism is recognized which is dependent on the fact that the nitrogen atom is linked to five dissimilar groups, as, for example, in the compound,

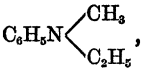


which exists in three forms. One is optically inactive (racemic) and the other two rotate the plane of polarized light to the right and left, respectively.

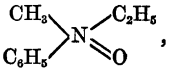
Similar varieties of isomerism are, of course, common in the case of analogous carbon compounds free from nitrogen.

Hitherto it has been believed that the difference in optical behavior mentioned above could not be exhibited unless all five of the groups linked to the nitrogen were unlike, but J. Meisenheimer[1] has just shown that this is not the case.

When methylethylaniline,

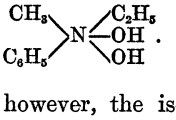


is treated with hydrogen peroxide, in presence of sulphuric acid, methylethylaniline oxide,



is formed. It is a crystalline, basic substance and is optically inactive. By the fractional crystallization of its *d*-bromcamphorsulphonic salt it is separated into two modifications. From these the corresponding free bases may be isolated and other salts prepared. These free bases are relatively stable and they rotate the polarized light to the right and left, respectively, the rotation being equal in degree.

It is, at present, uncertain whether these optically active free bases have the anhydro formula given above, with the double linkage between nitrogen and oxygen, or whether they are dihydroxides,



In either case, however, the isomerism is of an entirely new type. It will be interesting to see whether it is possible to prepare analo-

[1] *Ber. deut. Chem. Ges.*, 41, 3966, 1908.

gous compounds of the carbon series, free from nitrogen.

J. Bishop Tingle
McMaster University,
Toronto, Canada,
December 16, 1908

RUSSIAN RESEARCH IN METABOLISM

The activity of Russian investigators in problems of animal nutrition and metabolism in general has been but imperfectly noted by the large majority of workers in metabolism. This is in large part due to the fact that in spite of increasing interest in international cooperation in scientific research in all branches, the Russian language remains, and probably will continue to remain, a distinctly unintelligible vehicle for conveying scientific communications to the world at large. More recently at least one Russian journal is issuing simultaneously an edition in French.

Recognizing the great importance of many of the earlier Russian researches, the Office of Experiment Stations of the U. S. Department of Agriculture has from time to time had translated and published abstracts of much of the Russian research in that particular branch of science dealing with metabolism. These abstracts were translated in large part by Professor Peter Fireman, formerly of the George Washington University, and the admirable digest of metabolism experiments by Atwater and Langworthy[1] contains many of them.

A dissertation entitled "Production of Heat by Healthy Man in the Condition of Comparative Rest," by A. Likhachev, is especially valuable as giving a complete description and tests of the Pashutin respiration calorimeter. This was translated at the instance of the Office of Experiment Stations, U. S. Department of Agriculture, by Dr. Fireman. Copies of the translation are on file at the Nutrition Laboratory and also at the Office of Experiment Stations, U. S. Department of Agriculture.

In connection with the preparation for publication of the results of a series of experiments on fasting men made at Wesleyan University, I arranged with a young Russian school teacher, H. Levin, to translate completely a lengthy article entitled "Metabolism during Fasting," by A. Sadovyen. This article is of interest in that it describes a series of experiments on a fasting man in the Pashutin respiration chamber. The translation is preserved in the reading room of this laboratory.

On a recent visit to a number of European laboratories it was my good fortune to include several of the laboratories in St. Petersburg, and there I came into intimate contact with a great deal of research which was to me wholly unknown. I found that in certain instances the briefest kind of an abstract had been noted in some of the German abstract journals, but nothing approximating an adequate digest of this work had appeared as yet in anything but Russian. Thanks to the kindness of Professors Likhachev and Avroroff and Dr. Kartaschefsky, many important monographs were placed in my hands and, on my return to America, arrangements were made for their translation.

Professor Likhachev sent to the Nutrition Laboratory a copy of Pashutin's treatise on experimental pathology. This large work, consisting of two bulky volumes, contains a great deal of new, unpublished material, particularly in the section (some 800 pages) dealing with inanition. During the past year the whole section on inanition has been completely translated by Michel Groosenberg. This valuable work contains a large amount of original material, chiefly from Albitsky's laboratory, and is of importance to all workers in animal or human nutrition. The translation has been typewritten, manifolded and bound and copies of this translation are deposited in the surgeon general's library in Washington, the New York Public Library, and in the John Crerar Library in Chicago. Two other monographs presenting the results of experiments on man in the Pashutin respiration calorimeter are "The Influence of Alcohol on the Heat and Gas Exchange in

[1] Bulletin 45, Office of Experiment Stations, U. S. Department of Agriculture, 1898.