rotation of the plane of the wave front, which would not increase the apparent diameter of a star.

In the case of either an orbital displacement or a rotation of the wave front, the observed deflection decreases with the distance and would be inappreciable at stellar distances. It can be shown that the sun at the distance of the nearest star would show a displacement at the limb, on the Einstein hypothesis, amounting to less than one millionth of a second of arc, if the deflected beam originated in a neighboring companion.

KELVIN BURNS

ALLEGHENY OBSERVATORY

RUSSIAN SCIENTIFIC MEN

TO THE EDITOR OF SCIENCE: Attention has been called in SCIENCE to the British "appointments committee for Russian scientific and literary men," under the chairmanship of Sir Arthur Schuster. Many Russians distinguished in various branches of learning are at present scattered over European countries, some of whom are destitute, while others are earning a precarious livelihood by work in which they have no opportunity of exercising their particular capabilities, the world at large thus losing the benefit of their knowledge and aptitude.

The object of the committee is to bring the names and qualifications of some of these men to the notice of universities and other institutions outside of Russia which may be able to offer them suitable employment. Lists of these names have been sent by the committee to various universities and organizations and the National Research Council has just arranged to send similar lists to the presidents of about two hundred colleges and universities in this country.

The council has also received a circular letter from a committee of meteorologists and geophysicists of Vienna which asks if certain kinds of statistical and preparative work needed by meteorologists and geophysicists of this country can not be done, for pay, in Vienna. These meteorologists and geophysicists have access to many valuable sources of statistics and general data and appeal for opportunity to do this work in order to assist in supporting themselves. Any communications which it may be desired to make to this committee should be addressed to Dr. A. Wagner, Zentralanstalt für Meteorologie, Hohe Warte 38, Vienna XIX.

VERNON KELLOGG

NATIONAL RESEARCH COUNCIL

May 27, 1921

SPECIAL ARTICLES

A CONVENIENT CULTURE MEDIUM FOR DAPHNIDS

Daphnia and other Cladocera may be fed upon certain unicellular green algæ, a mixture of various protozoa and protophyta obtained from the sediment of ponds in which there is a considerable quantity of organic matter, or upon bacteria.

For more than five years the writer successfully utilized material from ponds in obtaining food for Cladocera cultures representing several species. The somewhat discolored water was dipped up in such a manner as to obtain considerable amounts of the loose fluffy sediment lightly resting upon the bottom. In the strainings which followed (through silk bolting-cloth, to prevent contamination of the laboratory stock) much of this sediment was rubbed through the straining cloth and distributed with the water to the culture bottles (about 100 c.c. in quantity in ordinary wide mouthed 200 c.c. bottles). This method of obtaining culture water containing the proper food organisms has certain limitations. The water and sediment from most ponds do not constitute a proper culture medium; a pond from which a good culture medium may be obtained is hard to find. Further from month to month and season to season such a pond undergoes wide fluctuation in its usefulness as a source of daphnid food; it may even dry up and one's Cladocera material be imperilled or lost.

Some workers using algæ have cultivated them in jars of water; others on agar plates. The necessity for obtaining just the proper sorts of algæ and the requisite skill in their

cultivation make this method of obtaining proper food for Cladocera perhaps less useful in some cases than the one now to be described.

It seemed desirable to have a culture medium which could be readily obtained anywhere and at any season of the year. Such a medium has been obtained as follows: two pounds of fine garden soil are placed in a large battery jar (9 in. diameter); to this are added six ounces of finely divided fresh (8 to 15 days old) horse manure and the whole is covered with 10 quarts of strained pond water. Pond water is specified because Cladocera are extremely susceptible to the toxic effects of the salts of the heavy metals. Tap water should be used with caution until proved innocuous. The mixture is allowed to stand at 15° to 20° C. without disturbance for three days when it is strained through silk bolting-cloth. The proper straining is facilitated by carefully dipping out and straining most of the supernatant liquid and then agitating the remainder and with it rubbing a very small portion of the soil through the straining cloth. The solution is then ready for use, though in addition to being thoroughly stirred before being placed in the culture bottles it is usually diluted by adding pond water in the proportions of from 1 to 4 to 1 to 2, depending upon the degree of density in the appearance of the solution.

This culture medium has proved extremely useful to the writer and is now used exclusively for all his Cladocera cultures. No renewal of the solution in a culture bottle is ordinarily required during the life of an individual Cladoceran. Not every make-up of food proves equally satisfactory but persons unaccustomed to handling such culture water quickly learn the proper handling and dilution and very soon obtain excellent results. This soil-manure solution is equally practicable for rearing copepods and some, at least, of the rotifers.

Bacteria constitute the principal food element in this culture medium. While a certain amount of uniformity is attainable in such a culture medium, such mass cultures are quite variable and it is obvious that this can scarcely be considered a "standard" food. It is probable that the proper bacteria could be reared on agar plates, definite quantities introduced into the culture bottles at definite intervals and a really standard food thus obtained.

Arthur M. Banta
Station for Experimental Evolution

THE NEBRASKA ACADEMY OF SCIENCE

The thirty-first meeting of the Nebraska Academy of Science, held in Bessey Hall, University of Nebraska, Lincoln, on April 1 and 2, was one of the most interesting in the history of the organization. The attendance was about one hundred, comprising many educational institutions of the state and one or two from adjoining states. The program was so full it was divided into three sections. A very pleasant feature was the annual dinner held in Ellen Smith Hall, followed by President Walker's address, and a general discussion of the needs and interests of the Academy. Dr. Walker made a number of recommendations and suggestions for the advancement of the organization, which has suffered in the past from a lack of the interest and enthusiasm which usually mark the annual meetings. The harvest time of the organization is between the annual meetings, if the officials are sufficiently active and progressive.

At the business session on Saturday morning a number of new members and the following officials for the coming year were selected: *President,* J. C. Jensen, Nebraska Wesleyan University; *Vice-president,* H. O. Sutton, Teachers' College, Kearney; *Secretary,* Rose Clark, Teachers' College, Peru; and *Treasurer,* P. K. Slaymaker, University of Nebraska. A number of amendments to the constitution were approved and the offer of Dr. Sheldon, of temporary headquarters for the academy with the Legislative Bureau, was accepted. University Place was chosen for the 1922 meeting.

W. F. Hoyt,
Secretary