TENNESSEE is the first state selected by the Commonwealth Fund for carrying out its new rural health project in cooperation with health departments in two or three states. Gibson county in the western part of the state has already been chosen as one of the two counties in which field work will be developed. In accordance with the general plan, Vanderbilt University is to receive a grant for developing the teaching of preventive medicine and providing opportunities for graduate study by rural physicians, and the University of Tennessee will be given funds to organize training courses for teachers in health education.

THE Kentucky Legislature has passed over Governor Sampson's veto the bill providing for acceptance of the offer made by Former Senator T. Coleman du Pont, of Delaware, to provide $230,000 for the acquisition for state park purposes of an area of approximately 2,200 acres at Cumberland Falls.

Museum News reports that an official party representing the Department of Interior and interested organizations made an inspection, lasting from February 11 to 15, of the site of the proposed Tropic Everglades National Park in the Cape Sable district of Florida. This party included Dr. Hermon C. Bumpus, of the American Association of Museums; Dr. T. Gilbert Pearson, of the Audubon Society of America, and E. K. Burlew, personal representative of the Secretary of the Interior, as well as Director Horace M. Albright, and other officials of the National Park Service. The inspection was made under congressional authority. The itinerary included a cruise over the territory in a blimp, a trip by water down the Florida Keys and through Florida Bay and the upper reaches of White Water Bay, and an automobile tour out the Tamiami trial from Miami. The findings of the investigators have not yet been made public.

THE National Tuberculosis Association announces a limited number of fellowships in social research as related to tuberculosis, open to graduate students who have had special training in statistics, social science or public health. Preference will be given to candidates who are interested in pursuing research in public health after the completion of this fellowship. Researches on topics selected by the National Tuberculosis Association will be conducted in collaboration with colleges and universities, and each study will be under qualified academic leadership. Academic credit may be allowed for this research according to arrangements with the individual universities under whose supervision they are undertaken. Each fellow will be required to submit a written report at the completion of his fellowship grant, and the text of that report shall remain the property of the National Tuberculosis Association. Candidates will be considered not alone on academic standing, but on experience and general fitness for research work. The fellowship grants will date from the beginning of the academic year in the fall of 1930. They are for a twelve-month period, and the fellowship grant amounts to $1,500 for that period with a month's leave for vacation. Interested candidates should write to Jessamine S. Whitney, Statistician, National Tuberculosis Association, 370 Seventh Avenue, New York City, for further information.

DISCUSSION

THE ECLIPSE OF APRIL 28

THE brief duration and the narrow path of totality of this eclipse, visible in California, make the question of the accuracy of the predictions of some interest to observers. Perhaps a brief statement of the problem, free from technical terms, may be of value.

The errors of the prediction arise mainly from two sources, namely, those due to lack of full knowledge of the motions of the Earth, Moon and Sun, and those due to the topography of the Moon's limb. Owing to a variety of causes, the former have been much diminished during the past six years. There is still some uncertainty due to the changing rate of rotation of the Earth, but this affects the position of the path less than it does the time at which totality occurs. In the coming eclipse the position is of importance because a small error may cause the observer to miss totality altogether. In a discussion just published in No. 934 of the *Astronomical Journal,* Dr. D. Brouwer has used all the latest available information, and we estimate that the uncertainty, due to these causes, of the position of the path given by him in a direction perpendicular to the path is less than a quarter of a mile.

The uncertainty due to the topography of the Moon's limb is larger than this. We have plenty of evidence of valleys on the limb a mile or more deep, and of mountains even higher than this amount, but our knowledge of their exact position at the time of the eclipse is not sufficient to enable us to use it for prediction. A valley a mile deep at either of the positions where the grazing edges of the Sun and Moon give the limits of totality on the Earth may alter the edge of the path on the Earth by a like amount. In the present case, where the predicted width of the path is considerably less than a mile, it may result in a complete absence of totality anywhere. Professional observers are aware of these facts, and have made up their programs accordingly. Certain classes of ob-

servation can be usefully undertaken with these conditions in view.

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WAS MAGENDIE THE FIRST STUDENT OF VITAMINS?

FEW investigators have had the rare fortune to make two classical discoveries in one series of investigations. To Magendie must be ascribed such a feat. In a report entitled the "Nutritive Properties of Substances which Contain Nitrogen," which was published in 1816,[1] Magendie showed that dogs can not live upon fats, sugar and water but must have some form of nitrogen in their food. The importance of this discovery was such that it seems to have eclipsed the remainder of the report.

Magendie fed his dogs upon a diet of sugar and water. They lost weight steadily. The remainder of the experiment can not be expressed more concisely than in the author's own words:

> In the third week his [the dog's] thinness increased, his strength diminished, the animal lost his liveliness, his appetite was not so keen. At this same period a small ulceration was developing in the center of the transparent cornea, first on one eye and then on the other, it increased rapidly and at the end of a few days was more than a "ligne" [two millimeters] in diameter. Its depth increased in the same proportion; soon the cornea was entirely pierced and the fluid of the eye was flowing out. This singular phenomenon was accompanied by an abundant secretion of the glands of the eyelids.

This animal died. Autopsy showed little other than the effects of inanition. Magendie was a careful investigator. The experiment was repeated two times with identical results. Has any modern investigator presented a clearer picture of xerophthalmia?

In order to test the nutritive value of fats, a diet of olive oil and water was fed another dog. This animal died but showed no xerophthalmia. Another dog fed butter fat and water developed xerophthalmia in one eye! These results are of special interest in the light of modern work, since they are the reverse of modern experiments.

Magendie seems to have realized that he was dealing with a dietary deficiency, since he found normal chyle in his animals at the time of autopsy. His own statement is that "it is thus evident that if these diverse substances [fat, sugar, gum and water] do not nourish, we should not attribute this to the fact that they are not digested."

Magendie noted the marked changes in the urine, feces and bile that resulted from a diet lacking protein and suggested: "Can we not reasonably presume, after the experiments which I have reported, that by diminishing the nitrogenous substances in food we diminish the proportions of materials in the urine which give rise to gall-stones?"

Not only did Magendie record the production of xerophthalmia in animals but he recognized the analogous conditions in man as a result of a restricted diet. He reported this as follows:

> A very interesting experiment has recently been done by an English doctor named Stark. This doctor wishing to estimate the nutritive properties of sugar lived on it exclusively for about one month, but he was then obliged to give up this régime. He had become very feeble and bloated. In his sight appeared livid red spots which seemed to announce the approach of an ulcer. He died a short time after his experiment and the people who knew him thought that he might have been the victim of it.

Magendie closes this classical report with, "I wish that physicians would be inclined to make trials of this kind. Physiology, animal chemistry and medicine can gain from it."

Must Magendie be termed the father of the vitamin hypothesis, as well as the discoverer of the need for protein in the diet?

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DROSOPHILA ONCE MORE

IN a recent number of SCIENCE[1] Dr. Bessie B. League publishes a summary of her observations on the reduction divisions in *Drosophila melanogaster*. It is gratifying to find some one on this side of the Atlantic who will admit that the phenomena accompanying the reduction division in this extremely variable species are abnormal. I have found genetical and cytological colleagues most determinedly of the opinion (not, however, expressed by publication) that the meiotic divisions of this species are quite normal, and so much so that it had not been worth while to figure them. I have had to point out that one so presumably well acquainted with the genetics and cytology of Drosophila as Professor Morgan admitted so late as 1925 that little or nothing was known of the reduction division in this species. I find great diversity of explanations offered by genetical colleagues of the peculiar situation which exists in regard to our knowledge of the reduction division in this species. I have already pointed out that although sex chromosomes in practically every other case among animals and plants are recognized and described in the reduction division, in *D. melanogaster*, in striking con-

[1] *Annales de Chimie et de Physique*, 1 series, 3: 66, 1816.

[1] SCIENCE, 71: 99, January 24, 1930.