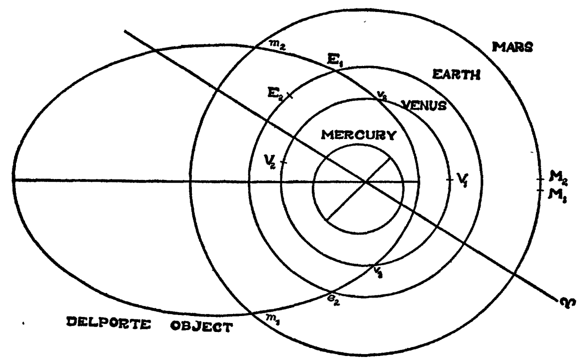

FIG. 1

due to the gravitational attractions of the major planets, let us consider the motion of the object under the gravitational attraction of the Sun alone. It would have passed the point m_2 near the path of Mars about March 17, while Mars was actually at the position marked M_2. It would again be near the path of Mars at m_1 about January 25, 1938, and again Mars will be at a distant point, M_1. It would reach e_2 near the Earth's path about March 5, 1938, at which time the Earth will be at the position marked E_2 on the diagram. It would reach the point v_1 near Venus's orbit about March 25, 1938, when Venus will be at V_1. As it approaches v_2 again, it will likely be subject to large perturbations by Venus.

Some persons have viewed with alarm the close approach of this Delporte planet, telling sad stories of what might have happened if the planet had struck the Earth. Unquestionably the results of such a collision would be unfortunate, but one finds from calculations based on reasonable hypotheses that, of all the bodies coming within a million miles of the Earth, only sixteen in a million will strike the Earth. Of those striking the Earth, about 73 per cent. will fall in oceans or seas and 23 per cent. will fall in sparsely inhabited territory. Thus, of bodies coming within a million miles of the Earth, less than one in a million will strike cultivated sections of the Earth.

It is encouraging also to note that the Delporte planet, like most objects traveling in periodic paths in this part of the solar system, is moving in the same direction about the Sun as the Earth. In the event of a collision, it would be a rear-end one rather than a head-on one. For example, when the Delporte planet was nearest the Earth, it was moving with a speed of about 23 miles per second while the Earth was traveling in approximately the same direction with a speed of 19 miles a second. The relative speed of the two was only about 4 miles a second instead of approximately 40 miles a second as in the case of a head-on collision.

Though it is impossible at the present to predict precisely where the object is going in the distant future, one need not worry too much about one's safety on the Earth.

C. H. SMILEY
WARD CROWLEY

BROWN UNIVERSITY

THE DENSITY OF PURIFIED NEVADA HOT SPRING AND SURFACE WATER

THANKS to the kindness of S. C. Dinsmore, state food and drug commissioner, the University of Nevada, in supplying me with samples of water from several Nevada hot springs, from melting snow at an elevation of 6,000 feet in Nevada near Reno and from the earth's surface near one of the hot springs, it has been possible to compare the density of these waters with the water of Lake Michigan. The Nevada surface water and the water from three different hot springs all have the same density (after purification, of course) within the limits of experimental error[1] and are lighter than Lake Michigan water to the extent of 2.8 ± 0.6 p.p.m. The density of the water from melting snow appears to be intermediate between that of the hot springs and of Lake Michigan, but the supply unfortunately gave out before the density had been exactly determined.

At the suggestion of Professor Urey the Nevada water was analyzed in order to find out whether the deficiency in density was due to the hydrogen or to the oxygen. A sample of Nevada water was electrolyzed and the cell oxygen combined with tank hydrogen; a sample of Lake Michigan water was treated in exactly the same way, the resulting water in the former electrolysis being 2.2 p.p.m. lighter than the water resulting from the latter electrolysis. Thus the difference in density between Nevada and Lake Michigan water is seen to be due primarily to the oxygen in the two waters and not to the hydrogen. One wonders if this difference is due to the isotopic exchanges theoretically treated by Urey and Greiff;[2] apparently the juvenile nature of the water affects its density in no way.

The author gratefully acknowledges the suggestions given by Dr. Charles H. Behre, Jr., chairman of the department of geology and geography of Northwestern University, regarding sources of juvenile water and the problem in general.

MALCOLM DOLE

NORTHWESTERN UNIVERSITY

ORIENTATION OF A DISK SETTLING IN A VISCOUS FLUID

To the best knowledge of the writers, all theory and experiments dealing with the position of stability of a disk settling through a viscous liquid under the force of gravity have indicated that the disk will orient itself so that its major plane is horizontal.

1 For experimental details see M. Dole, *Jour. Chem. Phys.*, 2: 337, 1934; *Jour. Am. Chem. Soc.*, in press.

2 H. C. Urey and Lotti J. Greiff, *Jour. Am. Chem. Soc.*, 57: 321, 1935.