a coarse-grained gray-to-pink biotite-gneiss and the other a highly acid pink muscovite-gneiss of finer texture. The latter was found intruded into the former.

A variant group of semi-metamorphosed basic intrusives is somewhat younger than the gneisses. These include syenites, gabroid and dioritic rocks. In some of these rocks a gneissic structure has been induced, while others are not notably altered. It is evident that they are of different ages relatively to each other, although belonging to the same general interval of time in the section.

In the northern part of the Sherman quadrangle gray anorthosite, or labradorite rock (with or without hornblende), is exposed over wide areas. It is intruded into the schists, granite-gneiss and dioritic rocks, but is itself essentially unaltered.

On the east side of the district the gneisses are further intruded by a quartz-porphyry, which is so little altered that it is believed to be younger than the basic intrusions, although it may be older than the anorthosite.

All of the foregoing formations are surrounded and probably underlain by the great mass of coarse red granite, to which the name " Sherman granite " has been given. The contact surface is in many places so nearly horizontal that bodies of gneiss and schist form outliers on hill-tops, while the valleys have been trenched through into the younger granite. Dikes of all sizes emanate from this foundation and traverse gneisses, schists, porphyries and gabbros indiscriminately. The granite itself is essentially unaltered, except that it is deeply weathered at the surface. It is crossed by a moderate number of small dikes, consisting of fine-grained granite, pegmatite and diabase. The diabases are apparently the youngest rocks of the pre-Cambrian complex.

Since there are no well-defined sedimentary rocks in the pre-Cambrian mass, it is not possible to assign the rocks to any particular age. They are covered unconformably by the Carboniferous, but they are so nearly identical with granites and older rocks, which to the north in the Big Horn Mountains and to the south in Colorado lie beneath the Cambrian, that the writer has no hesitation in considering them all to be of pre-Cambrian age. It is probable that the schistose complex of volcanics and intrusives, with traces of sedimentary rocks, belongs to the Archean; it is equally probable that the unaltered granites and diabase are not older than the Algonkian. The position of the intermediate formations is entirely problematical.

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A STATISTICAL STUDY OF BROWN SCALE PARASITISM

PARASITIC and predatory enemies are important factors that should be taken into consideration in the control of injurious insects; but the effectiveness of such agencies is very often overestimated, since their efficiency is usually based on estimates made instead of upon accurate and sufficient data. It very frequently happens that a notable decrease in numbers of insects occurs coincidently with the introduction of a parasite, but this reduction should not be attributed to the parasite alone, as is often the case, since there are many other factors entering into the problem.

The brown scale (*Eulecanium aremniacum* Craw) is one of the most important pests of prune trees occurring in this state, and according to statements frequently made and published here, this scale is kept in very complete subjection by its parasite (*Comys fusca*). This control for the whole state is usually estimated at 95 per cent. During the past winter the writer visited sixty-six different orchards, covering all the important prune sections in the state, and has made an examination of a total of 63,700 scales. From this count the actual percentage of parasitized scales is 12.02 per cent. The counts were made in units of 100 and covered various parts of the tree and various trees in the orchard. The location of each orchard and the name of its owner were taken, and the abundance of scales, both young and adult, in relation to the amount of parasitism, was noted. A summary of a part of these data is given in the table below:

No. Orchards	Scales Examined	Parasitized	Not Parasitized	Per Cent. Parasitized	Per Cent. Not Parasitized	Highest Per Cent. in Any Orchard	Lowest Per Cent. in Any Orchard	Greatest Number Parasitized in 100	Least Number Parasitized in 100
27	31,200	1,918	San Joaquin Valley 29,282 | 6.15		93.85	32.25	1.9	45	0
11	14,500	1,916	Sacramento Valley 12,584 | 13.21		86.79	23.15	2.38	60	0
10	4,800	644	Santa Clara Valley 4,156 | 13.42		86.58	20.5	4.5	23	3
9	7,200	971	Napa Valley 6,229 | 13.49		85.51	17	11	22	7
9	6,000	2,210	Sonoma Valley 3,790 | 36.83		63.17	47.6	20.33	55	15
66	63,700	7,659	Grand Total California 56,041 | 12.02		87.98	47.6	1.9	60	0

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EXPERIMENTS ON EARTH CURVATURE

AFTER reading my article on earth curvature[1] Mr. H. F. Dunham, of New York, called my attention to similar experiments reported
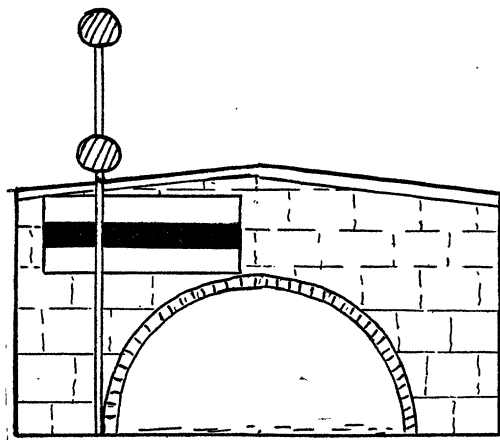

FIG. 1

by Mr. Alfred Russel Wallace.[2] A brief sketch of Wallace's experiment and its results

[1] " A Simple Method of Proving that the Earth is Round," *Nat. Geog. Mag.,* XVIII., 771.

[2] " My Life," Alfred Russel Wallace, Vol. II., 381–393.

may possibly be of interest to the readers of SCIENCE.

In 1870, through the medium of the public press, a Mr. John Hampden wagered £500 that the convexity of the surface of any inland water could not be proved. Mr. Wallace accepted the challenge. The old Bedford Canal was chosen for the experiment and a six-mile stretch between two bridges selected as the site. On the higher of the two bridges a white sheet, six feet long and three feet wide, was fastened. Along the center of the sheet parallel to the water was a six-inch black band, the lower edge of which was at the same height above the water as the parapet of the second bridge. At the half-way point a pole with two red discs, four feet apart, was erected in such a way that the center of the upper disc was at the same height as the center of the black band. A six-inch telescope, resting on the parapet of the second bridge, was used for sighting. The result, as seen through the telescope, is shown in the accompanying figure. A second experiment was performed with a spirit-level.

The sequel of the experiment is almost as interesting as the experiment. The referee for Mr. Hampden, a devotee of the flat earth school, insisted, on looking through the telescope, that the three points were in a straight line. Hampden, who refused to look through the instrument, accepted the statement, although Wallace's referee declared that the curvature was shown. An umpire, chosen to settle the difficulty, awarded the money to Wallace. Then followed a remarkable series of libels, persecutions and recriminations. As late as 1885 Hampden published, among other things, the statement that "no one but a degraded swindler has dared to make a fraudulent attempt to support the globular theory." Wallace sums up his experience in this matter thus: ". . . two law suits, the four prosecutions for libel, the payments and costs of the settlements amounting to considerably more than the £500 pounds I received from Hampden, besides which I bore all the costs of the week's experiments, and between fifteen and twenty years of continued persecution."

The whole story as presented by Wallace is