a new work is unnecessary unless the author has new material to present or can place before the reader the old facts in a novel and interesting form. Judged on these lines, this book of Mr. Serviss is wholly unnecessary: it presents old material in a stereotyped, uninteresting and unattractive form. The explanations of many of the motions of the solar system are obscure, and fail to give the reader an adequate understanding of the underlying principles involved.

The book contains many illustrations, but the pictures in most cases bear no relation to the accompanying text. Photographs of the surface of the moon are scattered through the chapter devoted to definitions and explanations of such astronomical terms as horizon, zenith, altitude and azimuth; while amid the pages devoted to a description of the moon appear photographs of various nebulæ.

CHARLES LANE POOR

A Beginner's Star-book. By KELVIN MCKREADY. G. P. Putnam's Sons. 1912. Illustrated. Pp. vii + 148.

This little book is a beautifully printed and illustrated guide to the stars and star groups. The star charts and key maps, intended as guides for the amateur observer, are arranged on a somewhat novel plan. For each season of the year two charts are printed, one showing the sky as the observer faces the south, the other the sky as the observer faces the north. This undoubtedly facilitates the finding of those stars situated either directly north or south and not too high above the horizon. But the charts are rather confusing when the star one seeks to locate is nearly overhead, or far to the east or west.

The illustrations, showing the principal nebulæ and star groups of the heavens, are from photographs taken at the Yerkes Observatory, and are wonderful reproductions and triumphs of the printer's art. As a whole, the book is admirably adapted for its purpose, and should interest many in the study of the heavens.

CHARLES LANE POOR

SPECIAL ARTICLES

UROPHLYCTIS ALFALFÆ, A FUNGUS DISEASE OF ALFALFA OCCURRING IN OREGON

EARLY in the year 1910 the writer noted the occurrence of a crown gall disease of alfalfa in the Rogue River Valley near Medford, Oregon, but, on account of other pressing work, the character of the disease was not investigated until later. However, during 1911, owing to the fact that the disease began to show rather seriously in many of the large alfalfa fields, an investigation was begun and considerable field and laboratory work was done. An examination of a large number of fields with plants from two to seven years of age showed large areas where the plants had died, or where the growth had become very weak. On examining the plants within these areas, it was found that the crown and part of the stems just above the crowns were badly infected with numerous galls, varying from an eighth of an inch or less to sometimes four inches in diameter. These galls are much warted externally, and more often a large-appearing gall is made up of a number of smaller galls which have become united. Very rarely were there any galls found on the root system, and none at more than six inches below the surface of the ground as the plants stood in the field. The disease seems to affect the shoots or stems as well as the crowns and roots, and many specimens were found where the galls covered the stems fully five or six inches above the crowns. In the field, diseased plants usually show a very roughened crown from which only weak, chlorotic stems arise, the leaflets also being very small and lacking the normal green color. In the few references which the writer has had the opportunity to see, and which are cited below, it has been stated that the fungus was observed to be most destructive to plants on damp ground. My investigations have shown that this is not true. It has been found that even in the best drained sandy loam and gravel soils of this district (Rogue River Valley) the disease is quite as serious as in the heavy, poorly drained, "sticky" soils. It has been deter-

mined that most of the serious injury attributed to disease in the heavy soils is, after all, due to lack of drainage. An examination of the root system of plants not diseased shows that the root system penetrates only a short distance, and the root terminals, instead of being tapered, have a rounded or blunt appearance.

CAUSE OF THE DISEASE

A microscopic examination of the galls shows the disease to be due to *Urophlyctis alfalfæ* (v. Lagerh.) P. Magnus. The galls are merely hypertrophied tissue of the host plant, and contain minute cavities which are filled with masses of the brown resting spores which measure approximately 40 micromillimeters in diameter. The fungus belongs to the Class Chlorophyceæ, Order Protococcales, Family Chytridiaceæ, Subfamily Olpidiæ. The sexual resting spores are formed by the union of two sporangia and the passing of the contents of one into the other. The mycelium which produces several fruiting bodies en masse is more or less developed. The fruiting bodies are almost spherical and brownish in color.

This disease was first recorded in 1892 by Lagerheim, who found it in Ecuador. He, however, placed the parasitic fungus in the genus *Cladochytrium*. Magnus, in 1902, found it in Alsace, Germany, and referred the fungus to the genus *Urophlyctis*. Until 1909, the disease had not been reported in the United States, although it had been found in South America, Germany, England and other foreign countries. In 1909, it was reported from both California and Arizona. A year later the writer found it in southern Oregon, but nothing was published until 1911, when a preliminary statement was made which appeared in the local press.

During the past season the writer has been doing considerable work on the histological effect of the fungus, as well as the determination of the manner of natural infection, etc. A detailed paper will be published later.

The literature on this disease is not very extensive; the references which the writer has at hand are as follows:

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A COMPARISON OF THE "MAMMOTH" AND SPANISH PEANUTS AS GROWN IN CENTRAL IOWA

In the spring of 1911, the writer procured seeds of two varieties of peanuts, a strain of the Virginia peanut known as the "Mammoth" and advertised as combining earliness and large size and as being very prolific, and the small Spanish peanut. The "Mammoth" peanut seed was obtained from the Mills Seed Co., Washington, Iowa, and the Spanish peanut from Burpee, of Philadelphia. Both kinds were planted the same day, May 8, and in neighboring rows in a rich soil, which was not, however, a good peanut soil, as it was rather heavy and liable to cement and run together. Both kinds received the same treatment and were gathered the same date, October 23, the date of the first killing frost, unusually late for this section.

The Mammoth peanut hills were only a few in number. They made much higher, larger stalks and were inclined to spread over