

stars than the remaining parts of the sky—a theory upon which some doubt had been cast by earlier work of this nature. The method, although of extreme simplicity, has certainly proved efficient for the first of these objects, and various systematic errors of scale have been clearly exhibited. With regard to the second object, an examination of the ratio of the number of faint stars to bright in the various regions investigated appeared at first to negative Prof. Kapteyn's conclusion; but, although this ratio was not found to vary with galactic latitude, certain changes were detected in different parts of the sky. Prof. Turner has thus been led to the interesting conclusion that regions of "obscurisation" exist which tend to obliterate the fainter stars, and these regions appear to form a spiral in the heavens, the central line of which is approximately given by the equation

$$\alpha + 3.66\delta = 247^\circ,$$

where α denotes right ascension and δ declination. There appears to be a fairly sharp boundary to this "spiral of obscurisation" on the side of smaller R.A. in the northern hemisphere, and on the side of greater R.A. in the southern hemisphere.

Another very valuable piece of work is represented by a series of papers on "Baxendell's Observations of Variable Stars," edited by Prof. Turner and Miss M. A. Blagg. A very considerable amount of painstaking work must have been expended on this task of revising and editing Baxendell's observations of some twenty-three long-period variables. The greater part of the work appears to have been done by Miss Blagg, and the result as a whole is certainly a most valuable contribution to the study of this particular branch of astronomy. In connection with this subject we may also mention two papers by Prof. Turner "On the Classification of Long-period Variables," in which the alternative classifications of the author and of the Rev. T. E. R. Phillips are discussed and compared at some length. Both methods are considered to be useful, and a suggestion is made that some stars might pass from one of Phillips's groups to the other during the course of their evolution. This latter idea is more fully discussed in the particular case of W Cygni, which appears to be changing from Phillips's Group I. to Group II.

There are many other shorter papers of considerable interest, but these are too numerous to be noted here individually. The whole collection pays ample tribute to the energy and resource with which work has been carried out at the observatory during the trying period of the last few years. Apart from the many difficulties directly resulting from the war, there have been other troubles with which the staff has had to contend. In particular, we regret to note the decease of the caretaker, Mr. J. Mullis, who had been with the observatory since its erection in 1874. There is at present no second assistant or resident computer, and Prof. Turner and his staff must certainly be congratulated on the way in which the work has been carried on in the face of these and numerous other difficulties.

D. L. E.

The Alligator Pear.

THE cultivation of the Avocado or alligator pear is the subject of articles by Mr. W. G. Freeman and others in the Bulletin of the Department of Agriculture, Trinidad and Tobago (vol. xviii., part 3). The Avocado (*Persea gratissima*), a member of the family Lauraceae, is a pear-shaped fruit with a large central stone, the amount of covering flesh varying considerably according as the kind is good or poor.

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It is one of the most important of the fruits which have become widely distributed since the discovery of the New World. It is probably a native of tropical America, and was introduced at an early date into the West Indies, where it is now naturalised. Sir Hans Sloane, in his "History of Jamaica" (1707-25), gives a long description of the tree and its fruit, and Dr. Patrick Browne (1756) is eloquent on the flavour of the latter and the esteem in which it is held. The edible portion of the fruit varies from a little under one-half to more than three-quarters of the weight of the whole, according to the thickness of the rind and the relative size of the seed. Its food-value is mainly due to its high fat content, which in some varieties approaches that of the olive, and is especially high in the fruit grown in Florida and California.

Although so long cultivated in the West Indies, yet little attention has been given until recently to the selection and propagation of good varieties. It is an extremely variable plant, and the method of selecting seeds from trees bearing the best fruit and of high productiveness gives uncertain results, as the varieties do not come true from seed. But by budding or grafting from good varieties these may be fixed, and by this means poor trees will be converted into good varieties. Mr. Freeman suggests the probability of a seedless Avocado being obtained, as occasional seedless fruits have been reported from the United States and Honolulu. The Avocado needs no very special care in cultivation, and does very well on the poor soil of parts of the northern range in Trinidad. Budding has been practised at the St. Clair Experiment Station for the last four years, and the curator, Mr. R. O. Williams, gives details of the operation. The method is the same as that generally adopted for roses and citrus. The full-grown tree is fairly free from insect pests, but the plant is more susceptible in early stages and when recently budded. Mr. F. W. Ulrich describes the various insect pests and means for combating them. A more serious disease which attacks the fruit is the so-called anthracnose, very closely related to the fungus which causes anthracnose of the mango. In the case of fruits packed for export this disease causes complete rotting of the whole consignment. Repeated sprayings with Bordeaux mixture are necessary to prevent its development.

The Improvement of Grassland.¹

IT is too often the case that grassland is left to take care of itself, and that no steps are taken for its improvement. Even where manuring is carried out it is usually confined to occasional dressings of farmyard manure; little or no use is made of artificial fertilisers, and the beneficial effects of lime upon the herbage are far less widely known than they should be. The consequence is that much of the finest pasture and meadow land in the country is carrying only a second- or third-rate herbage simply from lack of knowledge of the most effective treatments to bring about improvement. For the education of public opinion in this respect nothing is more useful than demonstration plots, and the Ministry of Agriculture and Fisheries has issued a most valuable and comprehensive pamphlet outlining schemes of experiments suitable for this purpose. The schemes intended for farmers are simple in character and direct and practical in their object, while those drawn up for the agricultural colleges and institutes deal with experiments requiring considerable attention and supervision.

¹ "The Improvement of Grassland: Suggestions for Demonstrations and Experiments." Miscellaneous Publications No. 25. Ministry of Agriculture and Fisheries.