THE 1905 ECLIPSE OF THE SUN.

BY MARY PROCTOR.

The last total eclipse of the sun observed was that of May 17, 1901, its path traversing the islands of Mauritius, Sumatra, Borneo, and New Guinea. The duration of totality in Sumatra amounted to six and a half minutes, the greatest observable eclipse of the last half century. Results of great value were obtained by Prof. Perrine, in charge of the William E. Crocker expedition from the Lick Observatory.

On September 20, 1903, a total eclipse of short duration occurred in the southern Indian Ocean. No effort was made to secure observations as the shadow did not pass over land, unless within the closed South Polar continent. Another eclipse will occur on September 9, 1904, which will go practically unobserved, since its path passes eastward over the central Pacific Ocean without touching any known islands, and terminates on the coast of northern Chile about six minutes before sunset. The Chilean astronomers are expecting to view the phenomenon, but further plans have not been made.

The next observable eclipse is that of August 30, 1905, and is looked forward to with unusual interest. The shadow path begins at sunrise south of Hudson's Bay, enters the Atlantic Ocean a short distance north of Newfoundland, crosses northeastern Spain, northeastern Algiers, and northern Tunis, passes centrally over Assouan on the Nile, and ends at sunset in southeastern Arabia. The duration of totality on the coast of Labrador, in Spain and at Assouan, are 2½, 3¾, and 2 3-5 minutes, respectively.

At Domino Harbor, Labrador, the eclipse begins (local mean time) August 30, 7h., 8m., 18s. A. M., the sun's altitude being 19 deg., and duration of totality 2m. 38.1s.

South of Luraca, Spain, the eclipse begins August 30 (local mean time), 11h., 14m., 39s. A. M., the sun's altitude being 55 deg. and the duration of totality 3m., 44.7s.

Southwest of Burgos, Spain:

Eclipse begins August 30, 11h., 31m., 05s. A. M.; totality begins August 30, 12h., 51m., 17s. P. M.; totality ends August 30, 12h., 55m., 02s. P. M.; eclipse ends August 30, 2h., 11m., 40s. P. M.; local mean time. Duration of totality, 3m., 45s.

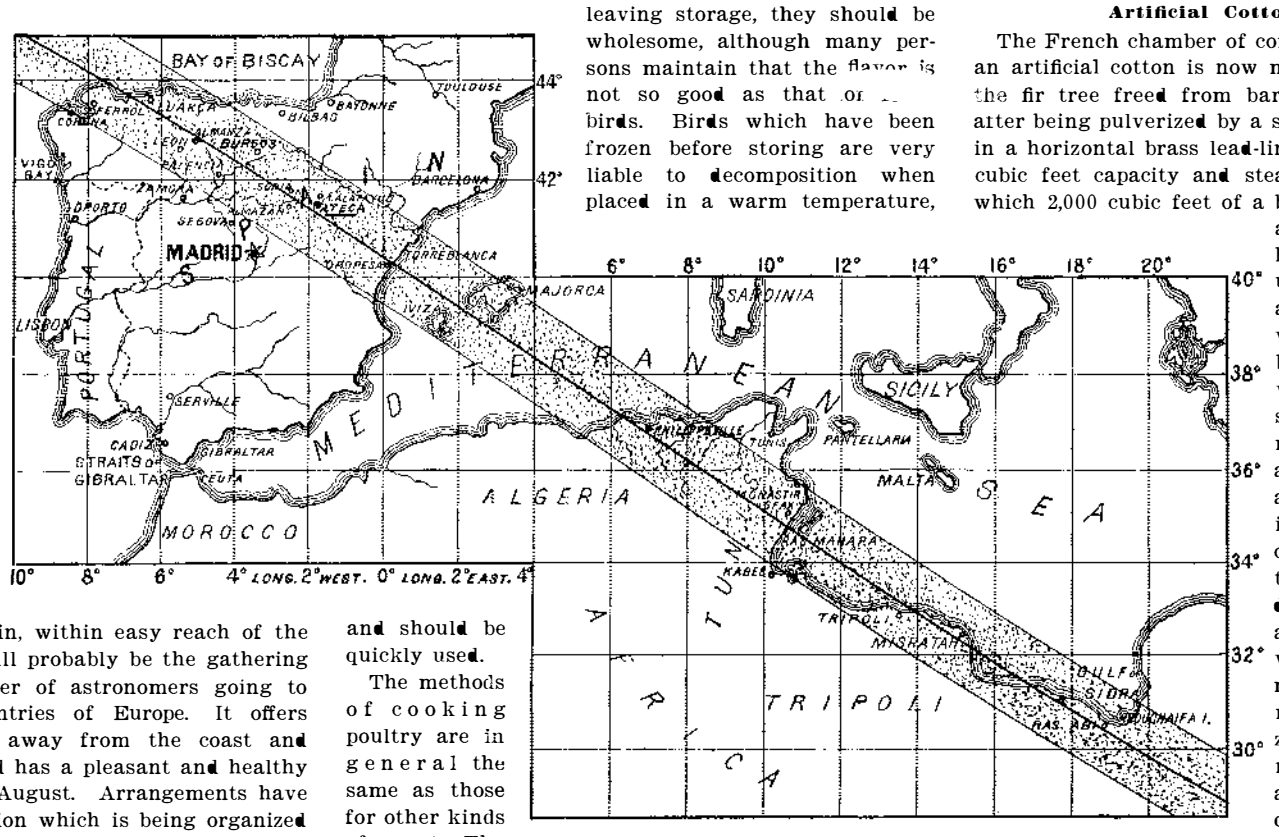
There is a tableland in the northern part of Spain, within easy reach of the town of Burgos, which will probably be the gathering ground of a great number of astronomers going to Spain from all the countries of Europe. It offers many advantages, being away from the coast and with less risk of fogs, and has a pleasant and healthy climate for a sojourn in August. Arrangements have been made for an expedition which is being organized by the writer of this article, to view the eclipse from the position southwest of Burgos, and the accompanying map shows the path of the 1905 eclipse. Members of the expedition will leave Boston or New York city July 1, 1905, allowing one week in Burgos for necessary preparations in viewing the eclipse.

Near Ateca, Spain, the eclipse begins August 30, 11h., 43m., 38s. A. M., the sun's altitude being 59 deg., and duration of totality 3m., 45s. Near Torreblanca, Spain, the eclipse begins August 30, 11h., 56m., 57s. A. M., the sun's altitude being 60 deg., and the duration of totality 3m., 44s.

Southwest of Philippeville, Algeria, the eclipse begins August 30, 39m., 34s. P. M., the sun's altitude being 62 deg., and duration of totality 3m., 35.7s. Near Ras Mahara, Tunis, the eclipse begins August 30, 1h., 5m., 7s. P. M., the sun's altitude being 61 deg., and the duration of totality 3m., 29.6s.

Southeast of Misrahtah, Tripoli, the eclipse begins August 30, 1h., 35m., 14s. P. M., the sun's altitude being 58 deg., and the duration of totality 3m., 19.7s. Northeast of Assouan, Egypt, the eclipse begins August 30, 3h., 26m., 28s. P. M., the sun's altitude being 39 deg., the duration of totality being 2m. 33s.

Expeditions from the astronomical observatories of the United States will probably make arrangements to view the eclipse from observing stations in Labrador. The Lick Observatory has issued a circular giving the times of duration of eclipse in Labrador, and emphasizing the necessity of having several good observing stations on this side of the Atlantic.



PATH OF THE SOLAR ECLIPSE, 1905.

Rails have been laid on the San Pedro, Los Angeles & Salt Lake main line from Calientes, Nev., southwest, 85 miles, and, unless unforeseen obstacles arise, the line will be in operation from Salt Lake City to San Pedro on the Pacific Coast early in 1905.

Poultry as Food.

Although not as many varieties of poultry are in common use in the United States as in Europe, and although eggs form perhaps the most important part of the total poultry industry with us, enough birds are raised and sold for their flesh to make poultry an important item in our list of foods. Chickens are, of course, far the most common of the kinds of poultry. Next come turkeys; then ducks and geese, followed by capons and squabs, the other varieties, such as guinea fowl, pheasants, and quail being least common of all.

In raising birds for the market special fattening has not heretofore been practised in this country with anything like the same frequency as in Europe; but American breeders are gradually coming to it more and more, especially on the large poultry farms which are springing up in many places. The extreme methods used so much in France are not, however, considered advantageous by most American breeders.

Live poultry is very commonly marketed, especially in the Southern States, where it is the custom to kill a short time before cooking, but, considering the country as a whole, it is doubtless true that the dressed birds are marketed more than the live, and the buyer must depend mainly on the appearance of the skin and flesh to tell him how fresh the bird is, and whether it has been properly dry-plucked or plunged into boiling water to make the plucking easier. In most cases, also, the age must be determined by the pliability of the breastbone or, in duck and goose, of the windpipe.

Cold-storage birds are frequently seen in the markets, especially in off seasons for fresh birds. If they have been properly stored and not kept too long after leaving storage, they should be wholesome, although many persons maintain that the flavor is not so good as that of [illegible] birds. Birds which have been frozen before storing are very liable to decomposition when placed in a warm temperature, and should be quickly used.

The methods of cooking poultry are in general the same as those for other kinds of meat. The tougher the bird the more cooking will be needed to make it tender and easily digested, and the larger it is the more heat will be required to cook it thoroughly. Canned and potted poultry are prepared in much the same way as freshly cooked dishes, and when properly put up do not differ essentially from similar fresh foods.

As regards composition, poultry does not differ as much as is commonly supposed from meat of other domestic animals used for food. Individual kinds and specimens, of course, vary in the relative amounts of protein and fat contained, and there are certain flavors present in poultry which differ from those in other meats. But these differences are so small that they are practically negligible in ordinary diet. Nor is there as much difference in digestibility as is often stated. On the average, poultry is somewhat more easily digested than beef and mutton, but only very slightly. The difference in digestibility between the various kinds of poultry probably depends on the amount of fat contained, the fatter sorts being least easily digested. Tenderness of fiber may have something to do with both ease and thoroughness of digestion, and, if so, young birds are more easily digested than old, and the less-used muscles of the chicken, such as the breast, more so than the much-used muscular tissues of the legs. Similarly, white-fleshed birds may be more easily digested than dark-fleshed, because the fibers of their flesh are less closely set; but this is not fully proved. Indeed, very little is positively known on this subject, and that little seems to indicate that the differences in thoroughness of digestion are very slight, and that cooking has much more to do with the digestibility of the birds than these slight differences in composition and texture. The price of poultry varies largely with the region and the season, and, as regards retail price, with the particular market. Although the proportion of refuse, water, and indigestible nutrients which each particular sort contains makes some difference in its real economy as a source of nourishment, the price is, after all, the most important consideration. Reckoning the cost of the actual nutrients, we find that chicken is, on the whole, the cheapest kind, and compares favorably in economy with cheap cuts of beef and pork. Chicken, at low or average prices, then turkey and goose, follow in order of real economy, and furnish about as much protein and energy for a given amount of money as sirloin of beef or leg of mutton. Out-of-season chicken and turkey, capon, duck, and green goose are slightly more expensive, while squab, pheasant, and quail are so dear as to be luxuries. Save chickens, then, poultry can hardly be used economically by the very poor, but the cheaper kinds may be economically used by the moderately well-to-do, while all kinds except the very costly might well be more frequently used by those who can afford to pay for a pleasant variety in their diet. In sickness delicate poultry is often valuable far beyond its cost, because it is so appetizing and is at the same time fairly easily digested. The rapid increase in the amount of poultry raised for the table in this country is strong proof that it is becoming more and more popular, and although it may not deserve its popularity on the grounds of strict economy, it certainly does earn it by its attractive flavor, easy digestibility, and the pleasant variety it gives to our meat list.—Helen W. Atwater, in Farmers' Bulletin No. 182.

Artificial Cotton in France.

The French chamber of commerce of Milan says that an artificial cotton is now made from the cellulose of the fir tree freed from bark and knots. The fibers, after being pulverized by a special machine, are placed in a horizontal brass lead-lined cylinder of some 3.500 cubic feet capacity and steamed for ten hours, after which 2,000 cubic feet of a bisulphate of soda wash is added and the whole is heated for thirty-six hours under a pressure of three atmospheres. Then the wood, or fiber, which has become very white, is washed and ground by a series of strong metallic meshes, after which it is again washed and given an electro-chemical bleaching by means of chloride of lime. Passage between two powerful rollers then dries the matter, producing a pure cellulose, which when reheated in a tight metal boiler containing a mixture of chloride of zinc and hydrochloric and nitric acids, to which is added a little castor oil, casein, and gelatin to give resistance to the fiber, gives a very consistent paste. Threads are then produced by passing this paste through a kind of drawplate. These threads, after being passed over a gummed cloth, are immersed in a weak solution of carbonate of soda and passed between two slowly-turning drying cylinders. Finally, to give the necessary solidity, the thread is treated to an ammoniacal bath and rinsed in cold water, after which the product is pliable and works well.

In Bavaria experiments have recently been made to produce cotton from pine wood, and it is claimed that the trials have been very successful.

An important alteration will be made shortly in the construction of the large battleships in the German navy, says the Berlin correspondent of the London Standard. The improvements in the manufacture of armor plates, together with other reasons, have necessitated the strengthening of the central battery. It is intended to substitute for the 17-centimeter quick-firing guns, which now form the armament of the central battery, 21-centimeter quick-firing guns. It is pointed out that if a ship of the "King Edward VII." class were opposed by a ship of similar size and defensive power, but possessing 21-centimeter guns in the central armament instead of the present 17-centimeter guns, the latter would have a considerable superiority in an artillery duel beyond torpedo range.

Portland cement work should be allowed a year to harden and dry before applying oil paints. A solution of common water-glass in three or four parts of water should be applied first. Two coats of this, followed by washing with water, and then applying another coat of water-glass, have been found effective.