the colour test for nitrites. It is thus clear that the two processes of bleaching carrotene, namely either by oxygen or by nitrogen peroxide, are quite distinct. It is assumed that the same holds good in flour and that artificially bleached flour, in which normally about one-third of the colouring matter has been destroyed by bleaching, and naturally aged flour are not quite the same thing.

It is shown by Dr. Monier-Williams that unbleached flour, stored in small bags, as is customary in the retail trade, gradually loses its colouring matter, and at the same time picks up nitrites, which in time may amount to 1·4 parts of $NaNO_2$ per million. This is much the same quantity as is present in the freshly milled bleached flour typical of the London mills,[2] which, although it loses further colouring matter on storage, does not absorb any more nitrite. Actually after two months' storage bleached and unbleached flours are practically identical. Samples of very heavily bleached flours had altered after two years' keeping, so that they then only contained about as much nitrite as ordinary unbleached flours kept for a few months.

The interesting conclusion is drawn that under ordinary conditions of storage there is an approximate figure towards which the nitrite content of all samples, whether highly bleached or unbleached, will eventually converge.

With the cooperation of Mr. Kirkland, Dr. Monier-Williams has tested the baking qualities of some heavily bleached flours. Mr. Kirkland reports that all the loaves were of excellent quality, and had no remarkable taste or smell. The one exception—flour containing 100 times the usual quantity of nitrite—gave a loaf which did not rise so well and possessed a somewhat rancid, oily taste.

Leaving any ethical considerations as to the propriety of bleaching flour entirely out of account, this report serves to establish conclusively that there is no scientific evidence that bleaching by means of traces of nitrites is injurious and it is now proved that the presence of traces of nitrites in stored flour is a natural course of events.

REEVES'S NIGHT MARCHING WATCH.

MESSRS. C. F. CASELLA AND CO., LTD., have submitted a "night marching watch," designed by Mr. E. A. Reeves, and costing 2*l.* 15*s.* This is an ingenious device intended to help travellers to know their bearings when moving at night, provided that they are able to recognise the brighter stars. The stars made use of are Aldebaran, Rigel, Sirius, Procyon, Regulus, Denebola, Spica, Arcturus, Antares, Altair, Fomalhaut, Capella, and, of course, by day the sun. The positions of these, together with the days of the months, are printed on a ring outside the watch face, but under the watch glass, and capable of being turned by the bezel (which unfortunately is smooth instead of being milled) so as to bring the date against the hour XII. Then the hour on the watch face under any star's position when multiplied by two is the time measured from noon to this star's meridian passage. A rectangular mark of luminous radium paint carried on the star rim is then set to this doubled time, and the watch is ready for use with that star.

The hour hand carries a luminous projection which rides over the edge of the star rim, and as this hand rotates in the watch twice as fast as the earth rotates or the star appears to go round, the angle between the two luminous marks already described as subtended at the centre of the watch, is double the hour angle of the star. But the angle at the centre is double the angle subtended by the same arc at a point on the circumference, and therefore these two marks will subtend the star's hour angle at any point on the circumference on the other side of the watch. A luminous arrow-head is therefore placed upon the edge of the glass, which is capable of being turned round without turning the bezel. When the arrow mark is removed from the other two, and the watch face is inclined roughly to the colatitude with the first-named luminous mark at the upper side, and then turned in azimuth until a line passing through the arrow and the other mark is directed towards the star, then the first luminous mark as seen from the arrow will be in a southerly direction.

As is usual with astronomical things, there are certain cases where the rules have to be turned inside out (as, for instance, when a star crosses the meridian to the north), and these are explained in the pamphlet. Unfortunately this pamphlet is ambiguously worded, and anyone not understanding the principle would have great difficulty in finding out what to do. The question which must occur to anyone at all familiar with the night sky is this: Has not ingenuity been misplaced? Even if the pole star be not visible, there is very little doubt, at least in the northern hemisphere, where it is. In the southern hemisphere, it is true, there is a great blank in the polar region, but it does not take long to learn the relations of the conspicuous southern stars to the pole. While therefore some people might like to use the watch and enjoy the use of it on account of its ingenuity, others might prefer in practice to do without.

THE VEGETATION OF THE TRANSCASPIAN LOWLANDS.

DR. O. PAULSEN has published an English edition, revised and corrected by Dr. W. G. Smith, of Edinburgh, of his important memoir on "The Vegetation of the Transcaspian Lowlands." This memoir forms the first part of the biological section of the botanical results of the second Danish Pamir expedition—the systematic part of the botanical results having been already published as the examination of the various natural orders was completed—and contains 279 pages, with 79 illustrations, and a map of the area studied. After describing the situation and boundary of the region examined, together with the general geological and climatic characters of Transcaspia, the author deals in considerable detail with the vegetation, which he classifies under the headings of five distinct plant-formations. These formations are the riverside thickets (bushland) and four types of desert formation (salt, clay, sand, and stone deserts).

The second half of the memoir is devoted to an extremely interesting account of the various biological types of growth forms. The author follows Raunkiaer's system according to which the plants are arranged in classes depending upon the way in which they live through unfavourable seasons, special emphasis being laid on the degree and kind of protection afforded to the dormant shoot-tips. Of the 768 species listed, nearly half are annuals which live through the hot, dry summer as seeds, having flowered during the rainy period; trees and shrubs are few and small chiefly tamarisks, Calligonum (Polygonaceæ), and shrubby Papilionaceæ (especially Astragalus); the Compositæ of the Transcaspian flora include 103

[2] In other districts where a very white flour is required a stronger bleach is often adopted.