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VI. HORTICULTURE, ETC.—A California Arboretum.

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a direct relation between the rapidity with which the wind Lake Michigan, wrecking a number of vessels and causing a

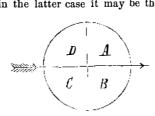
THE LAWS OF CYCLONES.

There seems to be no subject of equal importance so little but that sailors and soi-disant scientists should fall into gross wind, having a diameter of from 100 to 800 miles, and a its center, ought never to lose his ship. spot of actual calm in the center. This storm revolves at a velocity increasing from the edges toward the center, where it sometimes attains a rate estimated at five miles a minute. The whole disturbance also moves forward at a speed varying between five to forty miles an hour. The great diffill leaves of the sumac bush to decorate their rooms, without culty in understanding the phenomena of the cyclone is due knowing that there is any other use for the plant. Yet the to this double motion-a lateral movement of the whole importation of the sumac into this country this year will storm over the face of the earth, and a revolving motion amount to about 11,000 tons, costing about \$1,100,000. The around its axis, or center. The general movement of the leaves of the sumac, dried and ground, are largely used in storm is confounded with the direction of the wind at any tanning and dyeing, and in Sicily and other parts of Italy given point, and vice versa, so that oftentimes a captain, by the plant is carefully cultivated and treated. In view of putting his ship before the wind, in the idea of running the fact that the American sumac contains from 6 to 8 per away from the storm, is really steering straight into the cent more tannic acid than the Italian, and remembering track of its most dangerous part, namely, the center. Yet, that the plant grows wild in profusion throughout this the means of knowing how to avoid this danger are so easily country, it seems reasonable to believe that it might be attainable that no captain nor mate ought to be allowed a made a very profitable crop. At the present time the berth on shipboard unless he is thoroughly acquainted with amount of native sumac brought into market does not exthese simple rules.

Let us examine the conditions of the problem.

watch placed face upward, thus, southern hemisphere the motion thus Now it is evident that a may come into vessel clone by being overtaken by it-generа суthe case with sailing ships-or by runally

she will feel the influence of the cyclone less and less as it draws away from her. The vessel must come into its influence in one of the quadrants indicated by the letters A, B, C, and D, in the figure, the



direction of the forward motion being shown by the arrow. B, she would feel a constantly increasing power of the not yet developed, and that therefore the American leaves wind, and would be in a steadily increasing danger. If a gathered in June were superior to the Italian for all pursteamer should run into either of these quadrants she ought poses. The importance of this discovery may be seen by at once to take such a course as would carry her away from the fact that the cultivation of the plant may be carried on the center; while a sailing ship should do likewise so long most profitably in this country as soon as manufacturers as the wind and sea were not too heavy, and then "lie to" on the proper tack. If a steamer entered either C or D domestic article, and by classifying it according to its perquadrants she would be obliged to change her course very centage of tannic acid and its relative freedom from colorlittle, if at all, and a sailing ship could actually derive a ing matter, advance the price of that which is early picked benefit from the cyclone by keeping in its edge as long as and carefully treated. the wind and sea permitted her to do so.

captain tell which quadrant he is in when he enters a and the barometer so closely as to know at the earliest possible moment when a cyclone is coming. Having assured himself that the approach of a cyclone is certain, he should lized and cultivated on land not valuable for other crops. carefully watch the wind and notice in which direction the shifts occur. These gradual changes in the wind's direction constitute the most marked features of the cyclone, since there is only one position in which they will not be immediately observed, namely, if the ship lies exactly in the path of the center of the hurricane in its onward course. When these changes in the direction of the wind have become clearly marked, he should apply the following rule, which is invariable in both hemispheres: When the shifts of wind occur from right to left, that is, say from north to hand side of the cyclone's advance facing in the direction server is in quadrant B or quadrant C, on the right of the storm's track. Knowing on which side the storm center manifest not only under heavy pressure, but under all cirbetween quadrants A and B and quadrants C and D will soon be discovered by the fact that in the first pair the storm will steadily increase, while in the two latter the strength of the wind will diminish. When a sailing ship 4024 has run away from the center as long as the wind and sea are by no means lamb-like. will permit her to do so, she must invariably follow this rule in "lying to:" If she is on the right hand side of the storm center's track she must "lie to" on the starboard tack, and on the port tack if on the left hand side. She will thus escape the danger of being caught aback by a

changes its direction and the proximity of the vessel to the cyclone's track: the slower that the shifts occur the nearer understood as the laws governing the revolving storms of the vessel is to the path of the center, especially if the inwind known as cyclones. That this should be the case crease in the wind's strength is great; but if the shifts occur among landsmen who rarely encounter them is not strange; rapidly and steadily without a very great increase in force, the center will not pass very near. A careful seaman, conerrors in treating so simple a subject is not only unpar-sulting his experience and his barometer to discover the donable, but incomprehensible. The cyclone, as it is called approach of a cyclone, observing carefully the foregoing in the northern hemisphere, or the typhoon, by which name rules to determine on which side of and how near him it is it is known in the southern seas, is a revolving storm of going to pass, and using a prudent discretion in avoiding

THE C LTIVATION OF THE SUMAC.

There are thousands of people who wander through the woods in autumn picking the beautiful scarlet and yellow ceed about 8,000 tons yearly, and its market price is only \$50 per ton, just half the price of the Italian product. This In the northern hemisphere the wind rotates "against the large difference in the market value of the foreign and the sun;" that is, opposite to the direction of the hands of a domestic article is due to the fact that the American sumac, ; and in the as at present prepared, is not suitable for making the finer is reversed, white leathers so much used for gloves and fancy shoes, owing to its giving a disagreeable yellow or dirty color. the range of | The many attempts that have been made to avoid this difficulty by care in collecting and grinding the leaves have not resulted in success, and it has long been supposed that this ning into the area of disturbance. In the first case the objectionable quality was inherent in the American plant; cyclone center will steadily approach her unless she runs in but Mr. Wm. McMurtrie, in a report to the United States the right direction, while in the latter case it may be that Commissioner of Agriculture, shows that this difficulty can be surmounted and the American product made even superior to the foreign.

Mr. McMurtrie made a number of tests to learn the relative amounts of tannic acid found in the leaves at different periods of their development, and while the amount was found to be greatest in the leaves gathered in July, he found that those gathered in full development in June were even then more than equal to the best foreign leaves in this respect. But further, he found that the deleterious coloring So long as a ship was anywhere in either quadrant, A or matter (due to the presence of quercitrin and quercetin) was and dealers recognize the improvement thus obtained in the

In Italy the sumac is planted in shoots in the spring in Now the great question to be determined is: How can a rows, and is cultivated in the same way and to about the same extent as corn. It gives a crop the second year after cyclone? First of all, he must always observe the weather setting out, and regularly thereafter. The sumac gathered in this country is taken mostly from wild plants growing on waste land, but there is no reason why it should not be uti-

THE COLOR OF OZONE.

A paper recently read before the French Academy of Sciences contains some interesting facts relative to the liquefaction of ozone. A reservoir containing oxygen, at a temperature of 9.4° below zero (Fah.), is charged with ozone, and pressure applied by a column of mercury acted upon by a hydraulic press. Immediately the gas begins to turn to an azure blue color, deepening the shade as the pressure increases. The liquefaction of ozone was obtained by west, west to south, south to east, or east to north, the ob- applying a pressure to the ozonized oxygen of 75 atmoserver is in quadrant A or quadrant D, that is, on the left spheres, while 300 atmospheres of pressure would have been required for pure oxygen. The fact was also estabin which it is moving; but if the shifts come from north to lished that ozone is an explosive gas, since, unless comeast, east to south, south to west, or west to north, the ob- pressed slowly and at a low temperature, it exploded with a yellow flame. Its heavenly blue color was rendered

UNTIMELY SNOWS.

The retreating winter of the southern hemisphere goes out like a lion, while the first showings of our coming winter

A dispatch from Buenos Ayres says that a terrific snow storm occurred in that province September 18, causing the death, it was estimated, of 700,000 cattle, 500,000 sheep, and 250,000 horses.

On the 15th of October a furious storm fell upon Western shift of wind which might result in her sinking stern fore. Iowa, attended by a heavy fall of snow, which drifted seriously during the fellowing day. On several railroads trains If the weather and the barometer both clearly indicate a were blockaded by drifts from five to seven feet deep. The cyclone, but there are no shifts of wind, the captain may snow fell heavily in Southern Minnesota, causing great in consider it certain that he is exactly in the path of the hur terruption of travel and telegraphic communication. The ricane; and during the first few hours of the storm there is storm moved eastward slowly, raging with greatest fury over