

Olives in California.

Mr. Edward Cooper, of Santa Barbara, California, has 6,000 olive trees, some of them seven years old, and these produce twenty gallons of berries each on an average in a good year, and one gallon of oil is obtained from seven of berries. Trees ten years old in a good soil will average fifty gallons of berries in a good year, but sometimes will yield 150 gallons. After a good crop the trees usually take a year's rest, so that its good years alternate. The oil yield from a mature orchard is estimated by the *Alta California* at 200 gallons of oil to the acre, and of this 50 gallons may be deducted to pay for gathering the berries and making and marketing the oil. Two gallons make a case of Mr. Cooper's bottles; though most of the imported bottles hold two ounces less. According to these figures an acre will yield \$900 net annually, but, in the present depressed condition of business, a mature olive orchard would probably not sell for more than \$400.

After visiting Europe and studying the olive question, Mr. Cooper believes that the California olive is unsurpassed in fitness for producing a fine table oil. The small purple berry is not so nice in appearance as the large green or whitish olive of Spain, but it is like the olives in those French districts which produce the best oils of Europe. Besides, he considers it excellent for pickling, and much prefers the pickled olives of Santa Barbara to those imported from Spain. A few of these Santa Barbara olives are in market; but are said not to be compared with the Kimball olives of San Diego. Olives like the last, if they could be had in abundance, would soon leave the Spanish article without a friend.

Many persons are preparing to set out olive orchards, and there is a great demand for cuttings, which are the only resource at present; but Mr. Cooper believes that the trees grown from the seed, and budded or grafted, though slower in bearing, will be stronger, healthier, and longer lived. He thinks the roots from the cutting never equal those from the seed in symmetry and vigor of nutrition. The Federal Department of Agriculture is cultivating twenty varieties of the European olive, and will soon be ready to supply applicants with cuttings.

MECHANICAL INVENTIONS.

Mr. James A. Robinson, of Nashville, Tenn., has patented an improvement in cylinder cocks, which consists in combining with a cylinder cock a thimble valve sliding on a stem, a loose pin passing through the stem, and a recessed rod fitted to slide in a cross mortise.

Mr. Harry Oscar Choles, of Upper Clapton, County of Middlesex, England, has patented an improved stock and die for screw threading pipes, etc. This invention has for its object, first, to prepare the pipe for the action of the screw cutting die by removing the burr, and also the hard outer surface of the pipe, this being done in advance of the screw cutting die, but at the same operation with the cutting of the screw thread, instead of at a previous operation, by means of a file, as usual; and, secondly, to feed the die along the pipe as it cuts the screw thread by means of a leading screw separate from the die, but combined with the die stock, instead of relying on the self-feeding action of the die, thereby relieving the die of this part of its work, facilitating the screw cutting operation, and insuring the formation of a perfectly true screw thread.

Mr. William Birch, of Salford, county of Lancaster, Great Britain, has patented an improved machine for guiding and stretching fabrics. The object of this invention is to make an improvement in the governor described in Patent No. 198,787, and to provide means for stretching fabrics in connection therewith. The inventor uses a well balanced frame pivoted in the central line of the passing fabric, and employs in conjunction with them rollers of suitable form.

Manganese Bronze Torpedo Boats.

Mr P. M. Parsons writes to the *London Times* with reference to the manganese bronze torpedo boat recently arrived at Portsmouth from the Thames. Mr. Parsons says that the thickness of the plates forming the skin of this boat was not 3-16 inch, but varied from No. 9 to No. 18 wire gauge, or from little more than 1/16 inch to about 1-16 inch. As regards the quivering spoken of, this only occurs when the engines are working at a certain number of revolutions, which are such as to make the pulsations of the propeller and the vibrations produced by the spring of the vessel isochronous, and this is also experienced in the steel boats when the speed is such that the two vibrations correspond. When this boat was going at the rate of 16 knots per hour, more than which speed she attained one day when Mr. Parsons was on board of her, no quivering or vibration was felt, but it set in when the speed was reduced to about 10 or 12 knots. He admits, however, that the manganese bronze plates supplied for this vessel are not quite so stiff as steel plates of the same thickness; but this occurred simply because in the contract no stipulation was made as to stiffness. The plates were supplied under the condition that they should stand the Admiralty test for steel plates, namely, a tensile strength of from 26 to 31 tons per square inch, with an elongation of not less than 20 per cent before breaking, and to bend cold to a radius twice the thickness of the plate. This test the plates stood perfectly, those taken haphazard and tested by the Admiralty Inspector giving between 29 and 30 tons breaking strain, with an elongation of from 25 to 35 per cent, and bending round cold to half the radius stipulated.

CHINESE PORCELAIN VASE.

The large porcelain vase shown on this page is of Chinese manufacture. The body, neck, and lips of the vase are covered for the most part with a fine vine and flower scroll pattern done in polychrome, but the front portion is occupied by medallions painted with figure subjects. What the subject of the upper design is, is uncertain, though it might very well represent a high official beset by rival office seekers. But the lower picture tells its own story. Here is a grand Mogul seated at his ease, surrounded by his courtiers, watching the performance of a couple of clowns. Standing on the steps, just outside of the Mogul's court, is the master of the clowns, urging the poor fellows on to renewed exertions, while on either hand, keeping him, the master, to his work, are two courtiers, one expostulating with him kindly, and the other standing silent, with drawn sword, and a most sinister look on his face—an action more potent than words.



CHINESE PORCELAIN VASE.

This picture is a very good illustration of Chinese pictorial art. It is full of character and action. It is not fine art, considered by our canons of good drawing and perspective, but it shows more artistic perception and ability to portray the salient points of a situation than many European artists possess.

Accident on Board the Greece.

Spontaneous combustion scores another victory over the ignorance of humanity. On Thursday last the steamer *Greece* arrived from Great Britain. As the cargoes this way are small or not sufficient to load the vessel entirely, the ocean steamers are bringing over sufficient coal to carry them back, either in whole or in part. In this instance there was a quantity of coal in the lower hold, and it was intended to transfer it from there to the bunkers. The coal must have been damp, and being hermetically sealed in the lowest depths of the ship's hold, there was no chance for ventilation, consequently sufficient carbonic oxide was there generated to cause an explosion upon the application of light. This was done when the men descended to the lower hold to unfasten the hatches. Five deaths have already resulted, and seven persons have suffered severe injuries. The *Coal Trade Review* thinks it is about time that vessel owners and captains became aware of the danger attached to the storage and carriage of this quality of coal (bituminous) in quantity, where it is liable to heating from any cause. Ventilating shafts at least should be made direct from the hold where stored to the outer air.

Phosphorescence in the Caribbean Sea.

Mr. Alexander Agassiz, in his recent "Report on American Dredgings in the Caribbean Sea," states that in the roadstead, under the lee of the islands, there is little pelagic life to be found, and consequently the phosphorescence is far

less brilliant than in the Gulf of Mexico. Yet occasionally the masses of *Otenophora* (a species of *Mnemiopsis*) swimming at different depths, produce a very striking illumination; sudden flashes of light suddenly appearing as if coming from great balls of fire floating a short distance beneath the surface. The most striking phosphorescent phenomena were produced by a small annelid, allied to *Syllis*, which moved over the surface of the water with great rapidity, performing the most remarkable gyrations and tracing its path, which remained phosphorescent for a short time, by a brilliant line of light. Among the deep water forms several of the species of *Gorgonia* and *Antipathes* (especially *Rusea*) showed a bright bluish phosphorescence when coming up in the trawl. One ophiurian also, like one of the Mediterranean species mentioned by Panceri, was exceedingly phosphorescent, emitting along the whole length of its arms, at the joints, a brilliant bluish-green light.

Astronomical Notes.

OBSERVATORY OF VASSAR COLLEGE.

The computations in the following notes are by students of Vassar College. Although merely approximate, they will enable the observer to recognize the planets. M. M.

POSITIONS OF PLANETS FOR FEBRUARY, 1880.

Mercury.

On February 1 Mercury rises at 6h. 59m. A.M., and sets at 4h. 17m. P.M.

On February 29 Mercury rises at 7h. 11m. A.M., and sets at 6h. 50m. P.M.

In the latter part of February Mercury may be seen after sunset a few degrees north of the point of sunset.

On February 28 Mercury will be seen near Jupiter in the evening twilight.

Venus.

Venus will be brilliant in the morning throughout the month of February, although rising later and coming more nearly into daylight.

On February 1 Venus rises at 4h. 49m. A.M., on February 29 at 5h. 9m. A.M.

On the morning of February 7 Venus will be seen in conjunction with the thin crescent moon; Venus is about 2° north of the moon in declination.

Mars.

Mars will be the most conspicuous of the evening planets. Its great declination gives it a very high altitude at meridian passage; on February 29 its altitude in this latitude is nearly 72°.

On February 1 Mars rises at 11h. 21m. A.M., and comes to meridian at 6h. 40m. P.M., at an altitude of 69°.

On February 29 Mars rises at 10h. 14m. A.M., and sets at 1h. 16m. of the next morning.

Mars will be seen to be among the bright stars of Taurus; on February 9 it will be 2° south of the star Eta Tauri.

The moon will be seen to approach Mars on the evening of February 17.

Jupiter.

On February 1 Jupiter rises at 8h. 47m. A.M. and sets at 7h. 59m. P.M.

On February 29 Jupiter sets at 6h. 42m. P.M.

Jupiter is two nearly in the direction of the sun for good observations.

Saturn.

Saturn as well as Jupiter sets early in February, and it is getting so far off that even large telescopes will not show the smallest satellites.

Saturn sets on February 1 at 10h. 7m. P.M., and on February 29 at 8h. 31m. P.M.

Uranus.

Uranus is in its best position during February.

On February 1 Uranus rises at 7h. 19m., and sets at 8h. 26m. of the next morning.

On February 29 Uranus rises at 5h. 22m. P.M., and sets at 6h. 33m. of the next day.

Uranus is moving away from Lambda Leonis toward Rho Leonis, and on February 29 it has nearly the declination of this star and follows it in right ascension.

A glass of two inches aperture will show the disk of Uranus.

Neptune.

On February 1 Neptune rises at 10h. 57m. A.M., and sets at 12h. 31m. A.M., of the next day.

On February 29 Neptune rises at 9h. 8m. A.M., and sets at 10h. 43m. P.M.

Neptune is among the small stars of Aries.

Oculations.

The "American Nautical Almanac" gives the Washington time, February 16, 11h. 30m. P.M. for the disappearance of Epsilon Arietis, a multiple star, by occultation, or by the moon's passing across it. As the moon will not have reached the first quarter the stars will seem to touch the dark limb and disappear at once; this is always an interesting phenomenon to observe, and is valuable for a determination of longitude. With an ordinary telescope the stars will appear as one.

Sun Spots.

The spots on the sun have been very few for several years. At this time (January 15) two large spots are passing out of sight, in consequence of the motion of the sun on its axis, and a group of some 18 or 20 small ones has made more than half its passage across. These will probably be seen again in February. The large ones should be easily seen somewhat advanced upon the disk on the first day of February.