jar, and found that after a short time the tails changed also. I thought the appearance bore a striking analogy to the tail of a comet. Will some one give an explanation of the phenomenon.

Albany, N. Y. W. J. WATSON.

The Largest Saurian.

Professor O. C. Marsh has recently received a collection of reptilian remains from the crustaceous deposits of Colorado, among which he has found portions of an enormous dinosaur which he states is larger than any land animal hitherto discovered. The dinosaurs were a tribe of immense saurians, having many mammalian characters, such as a medullary cavity in the long bones, short pachyderm-like feet, a sacrum of five united vertebræ, and a lateral motion of the lower jaw. They include the iguanodon, megalosaurus, etc., herbivorous and carnivorous. The alligator belongs to the same order. The reptile discovered by Professor Marsh probably measured from 50 to 60 feet in length. It was herbivorous and seems quite distinct from any species hitherto described. The name *Titanosaurus montanus* has been applied to it.

Preservation of Telegraph Poles.

M. Tiveyrat proposes to protect the portions of telegraph poles which are buried in the earth by sleeves of galvanized iron about 0·4 inch in thickness, covered with tar or red lead. The sleeves are imbedded in the wood of the post and extend somewhat above the ground. Tar is applied to the upper joint so that no water can enter between the sleeve and the wood, and the lower part of the former is bent over the bottom of the post and covered with an iron cap.

HOW TO RE-BORE THE ENDS OF STEAM CYLINDERS.

A correspondent asks: The wear of the bore of my 16 inch engine cylinder has left a projecting ridge all round the bore of the cylinder at each end. Having no boring apparatus, how can I remove the ridges?

Take a bar of steel about $\frac{3}{16}$ inch square and three feet six inches long; forge it at one end to the shape shown in Fig. 1.

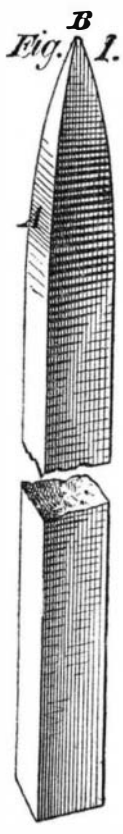

Fig. 1.

in which from A to B is the forged end. This end must then be heated along its entire length to a cherry red, and dipped vertically into cold water to harden it; after which it must be ground from A to B on all four faces square across, and as nearly of an even curve as can be ascertained by the eye. Next take a piece of hard wood—oak for instance—about an inch thick and three inches wide, cut it to such a length that when placed upright its ends will wedge tightly into the counterbore of the cylinder. Into the edges of this piece of wood saw out a series of notches, making its finished appearance to be such as shown in Fig. 2. The object of fitting its length tightly into the counterbore of the cylinder is as follows: If both cylinder covers are off or can be conveniently taken off, the ridge can be operated upon at each end of the cylinder; hence our piece of wood—which is merely an improvised rest to act as a fulcrum for the bar scraper shown in Fig. 1—would require to fit into the counterbore. If, however, only one cylinder cover can be conveniently taken off, the piece of wood will require to fit in the counterbore at the open end and in the cylinder bore at the closed end of the cylinder, hence we make it large enough for the counterbore, and after having removed the ridge at that end we cut the length of the wood down to fit the cylinder bore, whereas if we made our rest to fit the bore at first, we should require to use wedges to make it fit the counterbore. In some cases holes might be bored near the ends of the rest or fulcrum to serve the same purpose as the notches. The method of using the scraper, Fig. 1, is shown in Fig. 3, which represents an engine cylinder. B is the wooden rest or fulcrum; C, the lever scraper operating on the ridge at the closed end of the cylinder. The lever, C, is worked on the pulling stroke only, and is so held that the edge presents a keen scraping tool which will cut very freely. The fulcrum, B, should be adjusted as closely as convenient to the work, so as to obtain good leverage for the scraper. It should be moved in its position so that during the roughing out only the lower notches in the fulcrum are used.


Fig. 2.

A plan was lately resorted to on the White Star line of steamships for re boring a cylinder. The cylinder heads and piston follower were taken off; a groove was cut from the outere nd of the cylinder along the bore as far and as deep as the counterboring was required to be done. The counterboring was then accomplished in the manner shown in Figs.

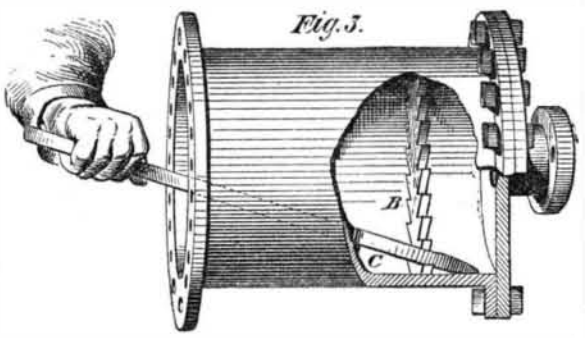

Fig. 3.

4 and 5. The junk ring was provided with a small tool holder, such as is used upon boring bars. The tool was fastened in the holder while its cutting edge was in the groove referred to, cut as deep and as far up the cylinder as the counterboring was to be. To the junk ring was fastened,

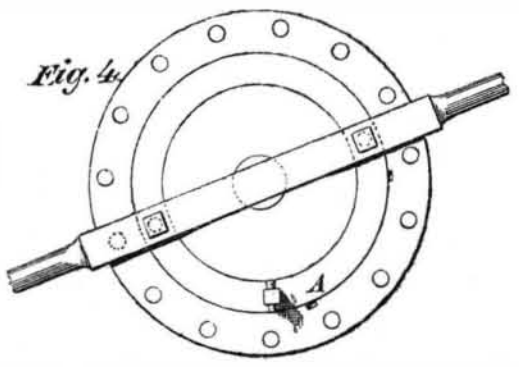

Fig. 4.

by two long bolts, a wooden lever extending above and across the cylinder. Two men walked around pushing the lever, and when the tool at each revolution arrived at the groove, a fresh cut was taken by moving the engine so as to raise the piston the necessary amount. It is obvious that the piston head may be steadied and held true in the bore of the cylinder by means of a few wooden wedges. Thus we see that in this operation the junk ring was made to serve as a boring bar head, the men furnishing the necessary rotative motion, the feed motion to the tool being obtained by advancing the piston toward the end of the cylinder where the work was being done.

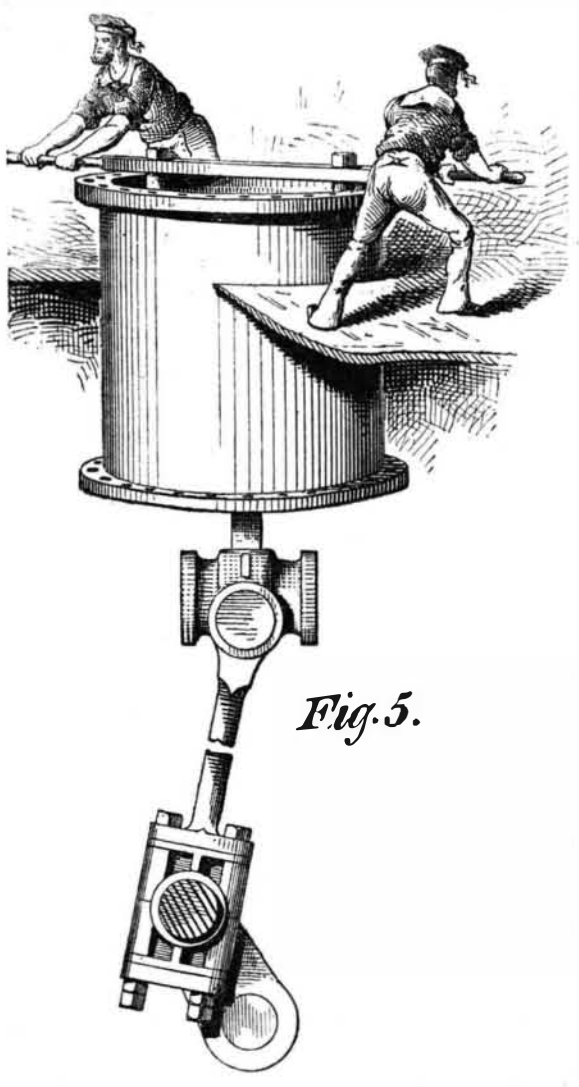
Fig. 5.

Testing for Salicylic Acid.

This is best done either in wine or urine, says M. Harty, by Yvon's process. The liquid, to which is added a few drops of hydrochloric acid, is agitated with a little ether. The ether combines with the salicylic acid and abandons it, by spontaneous evaporation above a weak solution of perchloride of iron, producing a strongly colored violet ring.

ASTRONOMICAL NOTES.

OBSERVATORY OF VASSAR COLLEGE.

Positions of Planets for September, 1877.

Mercury.

On September 1 Mercury rises at 7h. 53m. A.M., and sets at 7h. 18m. P.M. On September 31, Mercury rises at 5h. 34m. A.M., and sets at 5h. 24m. P.M.

Venus.

Venus is in south declination, but may be seen for a little while after sunset. On September 1, Venus rises at 8h. 9m. A.M., and sets at 7h. 43m. P.M. On the 30th, Venus rises at 9h. 17m. A.M., and sets at 7h. 7m. P.M.

Mars.

On September 1, Mars rises at 7h. 10m. P.M., and sets at 5h. 44m. A.M. of the next day. On September 30, Mars rises at 4h. 54m. P.M., and sets at 3h. 22m. of the next morning.

The motion of Mars, which has been retrograde or westward among the stars, is becoming less so, and will scarcely be perceived during the latter part of the month.

Astronomers are interested in making observations on the change of place between Mars and the stars near it, in order to determine the distance of Mars and that of the sun. The observations will be made at night and at morning, when Mars is in the east and when it is in the west. Mars is in its best position early in September.

Jupiter.

On September 1, Jupiter rises at 2h. 19m. P.M., and sets at 11h. 19m. P.M. On the 30th, Jupiter rises at 0h. 35m. P.M., and sets at 9h. 35m. P.M.

Jupiter sets so early in September that observations upon it must begin as soon as twilight is over. If we take the hours from 7 P.M. to 9 P.M., Jupiter may be seen without its 1st satellite, on the 5th, 11th, 19th, 20th, 27th and 28th of September. Jupiter may also be seen between 7 and 9 P.M. with only three satellites, the smallest being invisible, on the 1st, 10th, 17th and 19th of September. Jupiter will be seen without the largest satellite on the 13th and 24th, and without the 4th on September 22.

When, with an ordinary telescope, these moons cannot be found, they are hidden by Jupiter, or they pass into the shadow of Jupiter, as our moon passes into the earth's shadow in an eclipse, or they come between us and Jupiter, and they are lost in the stronger light of the planet.

Saturn.

Saturn and Mars continue to rise at nearly the same time throughout the month of September. In the early part of the month Saturn rises before Mars, but will not be so readily seen, as its apparent size is less and it is a pale yellow in color. As soon as Mars is well up above the horizon, Saturn can be found from 4° to 5° further north than Mars.

These two planets will be in their best position early in September, and will be very brilliant near midnight. Jupiter, Saturn and Mars can be seen from about 7 P.M. to 9.30 P.M. in September.

Uranus.

Uranus makes its diurnal path so nearly with the sun that it cannot be seen except for a few hours in the early morning. On September 30, Uranus rises at 2h. 35m. A.M., about one third of a degree north of Regulus.

Neptune.

Neptune rises on September 1 at 8h. 51m. P.M., and sets at 10h. 20m. A.M. of the next day. On September 30, Neptune rises at 6h. 56m. P.M., and sets at 8h. 24m. A.M. of the next day.

A Good Word for the Crow.

Let me speak for the crow. Last year as I was harrowing corn with a vibrating harrow having teeth (you know it is a noisy thing), it uncovered a great number of white grubs, which you could see all about the ground. They are very destructive to vegetation of all kinds. They ate or destroyed thousands of hills of corn that year. You could see the track of the grubs as they traveled to get something to eat, for they travel when in search of food. You could see the surface of the ground a little elevated, and checked when the surface is hard and dry. Well, you see, when I was harrowing, as soon as the crows heard the harrow at work, they would come and light on the ground that was being harrowed, and the fresher the better they liked it; when going one way they would light after I had passed along; when I returned, and came within six or eight rods of them, they would rise gently and circle around in the rear again. I have counted as many as seventeen grubs that one crow has picked up at one lighting. They take any and everything, large and small—that is, worms, grubs, and beetles. Crows can't pull corn when planted with a machine; we have no fear of them from that source. Finally, wherever civilization is, there are rooks and crows.—*Letter to Chautauqua (N. Y.) Farmer.*

Indoline.

This name has been given by M. Schutzenberger to a new derivative of indigotine. It has the formula $C_{16}H_{14}N_2$. It dissolves by heat in dilute hydrochloric acid and sublimates in needles in concentrated sulphuric acid.

Influence of Light on Bacteria.

Arthur Downes and T. B. Blunt announce as a new result in their investigations, that light is inimical to the development of bacteria, and under favorable conditions may prevent their development.