

out of employment by the introduction of the new process made a riot, and drove its introducer out of town; but it was generally adopted. A similar disturbance had taken place in 1880, on the introduction of the stamping machine. The machine for pointing is of still more recent introduction.

Communications.

Our Washington Correspondence.

To the Editor of the Scientific American:

The following appeared in the *Star* of this city:

A board appointed by Secretary Schurz, consisting of Z. F. Wilbur, examiner of interferences in the Patent Office; N. S. Howe, of Assistant Attorney General Marble's office; and J. A. Armstrong, chief of the private land claim division of the General Land Office, met to-day to inquire into the truth of the charges preferred by Mr. Doolittle, Assistant Commissioner of Patents, against J. McClary Perkins, a patent attorney of this city. The charges allege malpractice and irregularity on the part of McC. P. When the board have finished their investigation they will report to the Secretary, with their recommendations.

This is the same J. McClary Perkins that reported that he had preferred charges against the Commissioner some time ago.

Among the patents recently issued, I notice several to Mr. Holly, of waterwork fame, for his system of warming a city by steam, supplied as gas and water is now through a series of mains. The idea of distributing hot air and steam for heating buildings, etc., from a number of heaters or boilers in a central location has been a favorite idea of many inventors, and some have proposed the distribution of cooled air in the same way, one at least of which proposed to erect a tall tower to draw down from the upper regions cool and pure air. Mr. Holly, therefore, is not the first worker in this field, and all that he can cover is his peculiar arrangements, which, it must be confessed, are very comprehensive, as they include, besides heating buildings, furnishing steam for driving machinery, operating steam fire engines by connecting them direct to the mains, protecting hydrants from freezing, freeing the streets from snow and ice, heating greenhouses, supplying steam and hot water for culinary purposes, etc.

One of the members of the Virginia Legislature, having invented a register, succeeded at the last session of that body in getting a law passed to compel every barkeeper to purchase one of his instruments to record every drink sold, and on every drink thus registered the landlord was to pay a tax to the State. This, of course, caused considerable excitement among the dealers in the "ardent," and they no sooner became aware of the law than they set about finding some means to evade it. Having learnt that the Moffett liquor register had been rejected in the Patent Office, they bought up the patent that formed the basis of the rejection and engaged Messrs. Hill & Ellsworth, of this city, to bring suit against the manufacturer of the Moffett register, which was done, and an order has been issued by Judge Hughes, at Norfolk, restraining the issue of the registers until the question as to a preliminary injunction can be argued.

General Le Duc, the new Commissioner of Agriculture, has instituted a series of inquiries from which he expects to procure such information as will enable him to prepare a plan of operations that will very much increase the economic value of the department under his charge. The department has been of little real use so far, as very little has been accomplished beyond the collection of statistics regarding crops and the ravages of insects, which, though in themselves valuable to the commercial and agricultural interests of the community, are not all that the country has a right to expect from the operations of the department. General Le Duc proposes, among other things, to establish a comprehensive system of inquiry into the physical characteristics of the various sections of the country, with a view to the propagation of various products thought to be adapted to certain localities, but as yet have not been cultivated there, and also intends to stimulate, as far as practicable through the agency of the department, the cultivation of those agricultural productions for which we have now to send to foreign countries. The reports so far received show that the climate and soil of the Pacific coast are apparently very well suited to the cultivation of teas, which he thinks could be made an important industry, especially in view of the number of Chinese already on that coast, and the ease with which more could be had if found desirable. Sugar, also, though now largely cultivated in the South, it is believed could be made a much larger item in our annual production, if properly tried in other suitable regions. In view of this proposed action, the Commissioner recently addressed letters to prominent senators and representatives, asking them to furnish the department with all information in their power as to the character and diversity of the crops in their sections, the kind of soil and climate, and any other data that they might consider of interest on the subject; and also requesting them to furnish the names of such leading farmers as would be likely to receive and experiment with such seeds and plants as might be sent to them from time to time.

The Bureau of Statistics having now received full returns from all the customs districts, of the exports and imports during the last fiscal year, furnishes the following corrected statement: Total exports (specie values) \$602,474,581; total imports, \$451,307,549—showing an excess of imports over exports of \$151,167,032. In the fiscal year 1876, the excess of exports over imports was \$79,463,481. In the fiscal year 1877, the exports of coin and bullion amounted to \$56,163,

and the imports to \$40,774,414, while in the preceding year the exports were \$56,606,805, and the imports only \$15,936,681.

It is reported that the Post Office authorities here have serious apprehensions of a general strike of the engineers and firemen of the various roads throughout the country, which it is thought will begin towards the close of the present month, or the beginning of next. The information is said to come from reliable sources; and it is feared that great inconvenience in all the departments of business, and especially in the postal service, will be caused by it. *Per contra*, Chief Arthur of the Brotherhood of Locomotive Engineers positively contradicts these rumors and says that his society is at present on amicable terms with the railroad companies, and that in the event of a future disagreement the brotherhood will not resort to a strike until all other efforts at a settlement have failed.

Mr. O'Sullivan, who has been prominent in the Nicaragua Canal scheme, has been at the State Department on diplomatic business connected with that enterprise. He says that the work will cost about \$80,000,000, and can be completed within five years. It is said that no appropriation is to be asked of Congress, but subscriptions are to be opened in all the money markets of the world. He speaks confidently of the success of the work, the surveys of which have been made by United States officers.

Since the first of July the Secretary of the Navy has given employment to 3,400 men at the different navy yards throughout the country. The appropriations for the several bureaus of the departments, although smaller than usual, have been liberally distributed so as to give employment to as many men as possible; and that it may be made to go as far as practicable, the wages paid per day to each man have been reduced to some extent, so that the more men may be employed.

There has been more activity in the Navy Yard in this city during the past month than for many years, except for a short time during the Cuban trouble.

Captain Howgate of the Polar expedition has returned from New London, where he has been superintending the sailing of the Florence for the Arctic seas. He is well pleased with the success that has so far attended his enterprise and will not let the grass grow under his feet, but, it is said, will immediately urge all the members of Congress that he can reach to aid him by passing the bill which was presented to the last Congress, making an appropriation to aid him in his exploration. He does not, however, intend to rely wholly upon the rather uncertain favors of Congress, but hopes to take such steps that, in case it refuses him any aid, he will still be able to leave in August, 1878, with the second and most important part of the expedition.

There are imprisoned in Fort Marion at St. Augustine, Fla., some seventy Indians, and Clark Mills the sculptor, of this city, has been sent down by the Government to take casts of the more prominent among them. Some anxiety was felt as to the success of the operation, as it was quite uncertain how the Indians would relish the operations incident to having their casts taken. They, however, made no trouble, and were quite interested in the matter, allowing sixty-two casts to be taken, which are to be given to the Smithsonian Institute, and are said to be the most remarkable collection of Indian heads in the world.

Washington, D. C.

OCCASIONAL.

A Question of Axial Change of the Earth.

To the Editor of the Scientific American:

Granting the axial motion of the earth to have been communicated by the sun, at the time it was thrown off from the sun: First, does it necessarily follow that the present axis is the same as at the time the earth took position in its orbit after severance from the sun? Second, would not the destruction of individual fixed stars and planetary bodies by combustion or disruption change the position of the earth relative to our solar center, affect its orbital motion, and change its original axis? Third, if the axis of the earth has changed, or its obliquity to the plane of its orbit has changed, from any cause within or outside our solar system, could not the glacial drift be imputed to this cause as necessarily producing climatic disturbances resulting in the conversion of the frigid to the torrid zone, and *vice versa*?

Nashville, Tenn.

JOSEPH PHILLIPS.

Leaks in Gas Pipes.

To the Editor of the Scientific American:

It sometimes happens in fitting gas pipes, no matter how careful or cautious the workman has been, small leaks will occur. Any one who had the mercury go down on him, after he has used every endeavor, made every precaution against leaks, knows how exceedingly annoying it is. It often takes nearly as much time to locate the leaks and stop them as it does to do the work previously done.

If gas fitters will act on the following hints, which is my plan, they will save themselves a large amount of unnecessary labor. I am going on the idea of a job worth doing at all is worth doing well. I have no patience with botches, or workmen whose highest ambition is to deceive the inspectors, or those who will do a job and leave without being able to tell truthfully whether their work is tight or not.

In getting out pipe, I notice each length and see that it is perfect. It sometimes gets damaged in transportation. In screwing on the fittings, see that they are cemented inside and out. Have the pipe just warm enough to melt the cement. Have the fitting as hot as it can be without burning the cement. Screw together tight, and when cold the

fitting, by reason of its greater heat, will contract more in proportion than the pipe. You will not lose much time by this extra care, and certainly no reputation.

If, after all your pains, a leak is indicated by the gauge, you may be sure it is a very small one, or, as for that matter, the rapidity of the mercury's descent will indicate the character of the leak.

If it is small, and you are pushed with other work, it may be stopped effectually by screwing a short piece of inch pipe, with a cap on one end, to the bottom of the receiving main, having previously poured into it some commercial hydrochloric acid—a half pint or thereabouts—with a handful of zinc scraps. A chemical action sets up between acid and zinc, liberating gas that soon rusts the leak tight. What might be termed large leaks can be stopped in this way. I have reference to new pipe. Whether this will stop leaks in old pipes or not I am unable to say.

Frankfort, Ky.

M. A. JONES.

Poison Ivy and Its Remedies.

To the Editor of the Scientific American:

Poison ivy, poison oak, mercury vine, *rhus toxicodendron*; climbing ivy, *rhus radicans*; poison sumach, poison elder, dog elder, poison dogwood, *rhus venenata*.

The milky juices of these shrubs are neutralized and made harmless by almost any alkali. Strong suds made from soft or potash soap, white lye, ammonia water—four or five teaspoonfuls to a pint of common water—or a little saleratus dissolved in water, make good washes for the purpose. These washes may be used as preventives and as remedies.

White lye is made by throwing a couple of quarts of the ashes of hard wood—hickory, oak, or any other hard wood—into a pail of water. Stir and let settle. The clear liquor is white lye, and is a good wash.

First, as preventives—when one is going, or thinks he is going, to be exposed to the influence of these plants—wet every part of the skin that is exposed or uncovered with one of these washes, and be sure to let the wash dry on the skin, by no means wiping it off. This treatment protects the skin from the influences of these poisonous plants.

It must be kept in mind that these shrubs, especially when crushed or cut, have the power of affecting some skins even at the distance of several feet. After one has been exposed, or fears he has, let him follow the same directions, being careful to let the wash dry on the skin.

If, by the swelling and reddening of the skin, by the heat and itching and stinging, one finds that he unawares has been "poisoned," use these washes freely on the inflamed parts, only let them dry on the skin. Keep cool and quiet, restrict oneself to a spare and cooling diet, and keep the bowels gently open.

If much of the skin is involved in the inflammation, some caution may be needed in applying the washes. I once knew a case where the inflammation left the skin—on the hands and face it was—and settled on the lungs. For a few hours it seemed as though every gasp of the patient would be his last. A large and very strong mustard poultice on the chest at last brought the poison all out of there. But it left on the lungs a cough that lasted for months.

Ithaca, N. Y.

W. M. KINNE.

Another Remedy for Poison Ivy.

To the Editor of the Scientific American:

I have a remedy which I have used for several years with success. It is one half ounce of salts of tartar dissolved in two ounces of water, and applied to the affected parts several times daily.

Branford, Conn.

R. O. SMITH.

Laboratory Conveniences.

To the Editor of the Scientific American:

Little laboratory experiences, the knowledge of which saves much annoyance and contributes greatly to the pleasure of working, are naturally overlooked by the inexperienced. The repetition here of some of them may be of benefit.

A piece of wire gauze soldered over the escape in a sink will prevent the pipes becoming clogged.

To clean greasy utensils, some pieces of newspaper, a soaped sponge, and a little powdered pumice does the work in a twinkling; whereas many will thoughtlessly and laboriously try the effect of soap and water alone. Profanity is known to have been occasioned by a hard water complication.

Bits of paper, with or without muriatic acid, are nearly always preferable to shot for cleaning bottles, of course when there is no thick sediment.

A wet cloth, on which the glass receptacle of a hot liquid is set, will, in some way I am unable to explain, obviate breakage.

A rubber band to keep the cloth used in straining from the sides of a funnel is a convenience.

F. E.

Belleville, Ill.

A Peculiar Appearance in Aniline Red.

To the Editor of the Scientific American:

A few evenings ago I put a small quantity of aniline red in a jar of water, to notice the minute division of matter. A lamp stood on one side of the jar. After the liquid had been stirred up and stood a while, I observed little specks of the aniline floating on the top, with what resembled little tails projecting in the opposite direction from the lamp, and as the specks appeared to have no motion I thought this rather peculiar. I changed the lamp to the opposite side of the

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 vertebrae, 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.

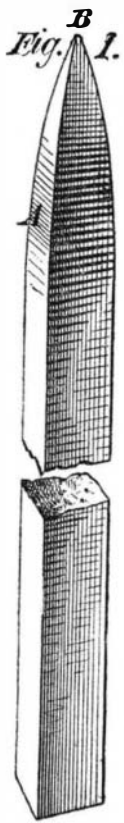
Preservation of Telegraph Poles.

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 $\frac{3}{8}$ inch square and three feet six inches long; forge it at one end to the shape shown in Fig. 1.

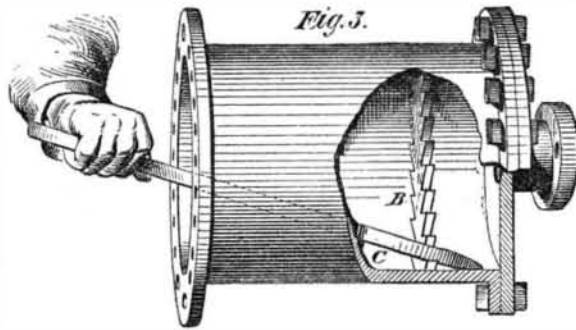


in which from A to B is the forged end. This end must then be heated along its entire length to a cherry red, and dipped vertically into cold water to harden it; after which it must be ground from A to B on all four faces square across, and as nearly of an even curve as can be ascertained by the eye. 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

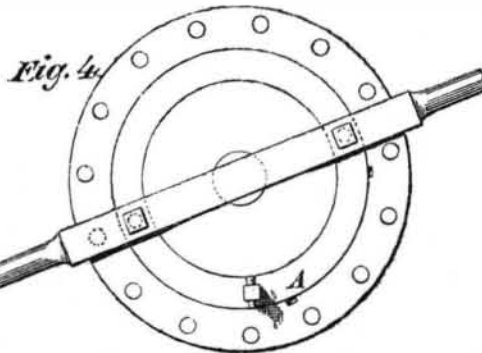
the open end and in the cylinder bore at the closed end of the cylinder, hence we make it large enough for the counterbore, and after having removed the ridge at that end we cut the length of the wood down to fit the cylinder bore, whereas if we made our rest to fit the bore at first, we should require 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.

A plan was lately resorted to on the White Star line of steamships for re-boring a cylinder. The cylinder heads and

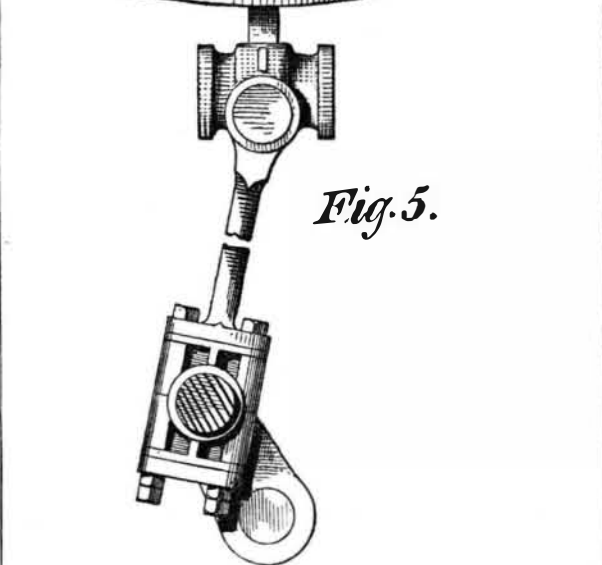
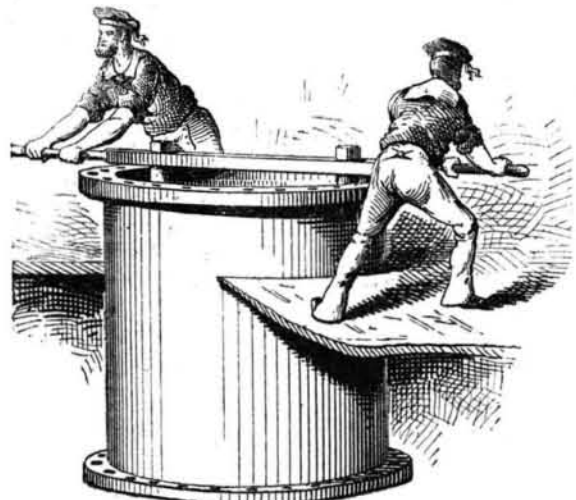
piston follower were taken off; a groove was cut from the outer end of the cylinder along the bore as far and as deep as the counterboring was required to be done. The counterboring was then accomplished in the manner shown in Figs.



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,



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.

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 *Charutarqua* (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.