Scientific American.

[NOVEMBER 17, 1883.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors. PUBLISHED WEEKLY AT

No. 261 BROADWAY, NEW YORK.

O. D. MUNN.

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A CENTENNIAL COTTON EXHIBITION.

having such exhibition next year. But the idea has since grown into a world's fair project, on a larger scale than was even the Philadelphia exhibition of 1876. The main building, as determined upon by the Directors, will cover an area of one million square feet, or 15 per cent. more than was occupied by the principal structure at Philadelphia, and, although it is yet too early to say definitely whether the project will be generally popular enough to insure a brilliant success, on the elaborate plan contemplated, it is certain that, in the Crescent City and throughout the south, as well as in many of our manufacturing centers, the idea is received with much enthusiasm, and warm promises of hearty support are made.

ADULTERATIONS -- WHAT THE WHOLESALE DRUGGISTS SAY.

country.

place of pure is equated only by the life and health of the¹ community which it seeks to guard."

A delegate was also present from the American Pharmaceutical Association, and in his remarks indorsed the statement that it was "dishonorable and criminal knowingly to buy or sell adulterated articles that are used as medicinal agents upon which human suffering and life depends." Not the least of the benefits, therefore, to be realized by this association of the druggists, is the great influence which its declarations against adulterations must exert in shaping future legislation.

BEARINGS AND FRICTION.

A bright and well-known mechanic insists that on his swiftest moving journals he obtains the best results with cast says that for exceptionally high speeds, as 4,000 revolutions he employs untempered steel and hard Babbitt metal well hammered into the box and then bored out. He tried the spindle as well as the boxes. For heavy weights and be protected from the grinding influences of dust, but cast those which are turned direct from the bar. iron, if kept well oiled, soon forms a glaze that is almost indestructible. In all cases the journal should give space enough for a film of oil, especially for high speeds under journals and boxes are injured by binding, the consequence of a too finical fit.

has fallen from 65 to 45 cents a gallon, and the crushers are About a year ago the Cotton Planters' Association of complaining that the business is unprofitable and largely America began to agitate the question of holding a grand overdone, although they have not been crushing one-half Centennial Cotton Celebration, at New Orleans, in Decem- of the amount of seed actually available. One part of Mr. ber, 1884. The first bale of American cotton ever exported Atkinson'sprogramme, however, contemplated a large inwas shipped to England in 1784, hence the significance in crease in the number of cattle raised in the South, to be fed with the oil cake. This could come about only gradually, of course, but crushers are not likely to furnish oil cake unless they can profitably market the oil, and the probabilities seem to be that it will be some time yet before there will be enough call for cotton seed oil in the world's markets to result in the utilization of all the cotton seed. The demand for the oil has been steadily growing, but its properties, and the uses to which it can be put in our industries, are now pretty generally understood, so that nobody looks for a " boom " in this line.

PRESENT STEAM ENGINE PRACTICE.

It is generally believed that the improvement in steam engine economy that has been made within the last fifteen or twenty years has been owing mainly to the introduction of high speed practice-that all, or most of the increase of Nearly every special line of business of any prominence power for diameter and stroke of cylinder and piston. now has its trade association or organization, for the pur- and most of the economy in fuel, are due to the increased pose of discussing matters of common interest and endeavor- piston speed. To some extent this is true; but it is also true ing to secure united action therein, and also for friendly so- that engines are built on better plans and under the guidcial intercourse in their more or less frequent gatherings. The ance of better mechanical judgment than was formally pos-National Wholesale Druggists' Association is one of the sible. Much of this improvement is to be attributed to the most considerable of these organizations, and, at its annual increasing use of the indicator, which not only points out convention, held in New York October 17-19, nearly two; the faults of the engine, but designates the reason and therehundred delegates were present, all sections of the country by suggests the remedy. The head of a large engine buildbeing represented. This association is now in the seventh ing establishment recently pointed out a discarded engine year of its existence, and represents a department of trade in the setting-up department which was in perfect order, and amounting to more than \$100,000,000 in the commerce of the which eighteen years ago was a type of the best style of horizontal stationary engines then in use. When running This association has always taken advanced ground in its it had a piston speed of 450 feet, and developed, by the treatment of the matter of adulterations and sophistications, indicator, about 100 H. P. Another engine of the same in food as well as in medicines, and has been urgent in its diameter of piston and same length of stroke, of the appeals to Congress for such legislation as shall be most modern style, was running at a speed of 490 feet per minute effective for their prevention. Their committee on this and yet was developing nearly 200 H. P.-twice as much subject reported to the meeting its belief that the reason as the other. The reasons for this difference were several, why the laws heretofore to prevent the adulteration of food that of 40 additional feet of piston speed per minute being and medicine had generally been failures was that too much only one. The modern engine had generous ports, both of had been attempted, but the spirit of the members on this ingress and egress; the friction was, by careful balancing question was better expressed by the President, who in his and exact workmanship, reduced to a minimum; all the report said: "The commercial honesty which instinctively thrusts were exactly in line, with no canting leverage; and recoils from all profit made by selling adulterated goods in the journals, crank pin, weight and length of connecting rod were all adapted $\bullet \mathrm{ne}$ to the other and made for the work they were to do. Not a pound of superfluous metal, not a suggestion of a makeshift, nor a fancy of a draughtsman could be found on the modern machine.

> Another instance of the improvements that have been made in engine building and engine practice was noticed at the same establishment, where an engine of the modern type, 11 inches by 21 inches, was performing all the work that had been done until recently by an engine 18 inches by 36 inches that was built about seventeen years ago, and yet was not requiring two-thirds of the fuel used to furnish steam for the old time engine running the same number of hours.

SOME CURIOSITIES OF STEEL.

Eight master taps, or hobs, were made from the same bar iron on cast iron, and he is willing also to depend on an of four-inch steel, each cut to a pitch of three to the inch, emery-ground fit. Another, perhaps equally authoritative, each scored, heated, hardened, and drawn to temper at the same time. Six hours after the tempering one of them per minute, cast iron and cast iron are inadmissible, but "exploded," or at least cracked into three pieces with a report. The fractures give to the trained mechanical eye the appearance of good steel, and show no water cracks or hardened steel boxes and soft steel spindle for that speed, other evidence of previous fracture. At the same establishand found that the boxes cut so rapidly as soon to destroy ment where this breaking occurred, one of its most important departments is the production of taps, reamers, dies, large journals there appears to be nothing that gives better and similar tools. It has been abundantly proved that satisfaction than good Babbitt boxes hammered solidly. forged taps and reamers are inferior to those made direct Castiron boxes with wrought iron or steel spindles have from the sized commercial bar, not only in their resistance done well where the weight and speed are not excessive. to torsion, but in the retention of their integrity under the All soft metal bearings, as Babbitt or composition, ought to exactions of hardening and tempering; the best taps are

There seems to be a tendency of forged steel, under certain forms, to return to the shape of the original bar. This is shown especially when the forging from a square bar which it may become heated and slightly expanded. Many is flattened. Sometimes a flattened piece will curve in the hardening as though its fibers had been stretched, and, when relaxed by the heat and again placed under tension by the cooling process, contracted toward the original condensed

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COTTON SEED OIL.

square form. A singular example was noticed recently. A When Mr. Edward Atkinson, at the time of the Atlanta plug gauge two and five eighths inches wide and one and Cotton Exhibition, made a most able argument to show three-sixteenths inches thick was forged from a square bar, the great wealth certain to come to the Cotton States when finished, and hardened. After hardening it was to be ground they began to really utilize cotton seed, which had theretofore to exact size by a corundum wheel, when the ground side been principally a waste product, many people were really immediately swelled in the center almost enough to be seen surprised that resources for such prosperity already to hand by the unaided eye, but was quite apparent with the straight had not previously been employed. This was two years edge. The other face, from which the skin of hardening ago, when a good deal of cotton seed had been crushed, the had not been removed, remained straight, but as soon as that oil marketed, and the oil cake sold to planters for feed and had been ground it acted just as the other did and both the for fertilizing purposes. There has since been a large in- side faces were swelled, and so much so that the increase in crease in the manufacture of cotton seed oil, with a proport thickness by the micrometer gauge was more than onetionate amount of oil cake offered to the planters, with hundredth of an inch. On treating the edges a contrary whom the past two years have been the most prosperous result was produced; each edge face became concave, so probably ever known in the South. But it seems that the users that when the grinding was completed the plng had two of the oil and the oil cake are not yet sufficiently numerous opposite convex sides and two opposite concave edges. The to call for the crushing of anything like the whole amount plug was then annealed and redressed to truth; then reof seed grown. The last year's production of oil has been hardened and reground with the same results as at first. A not far from 500,000 barrels, with the result that the price second time it was annealed, trued, and then case-hardened,

but even then it continued its perversity, and it is to be kept at 95 cents per pound; and those fed entirely on mulberry at There are several comets with a computed period of from as a curiosity as it is, unless it is decided to saw it in two \$1.11 per pound. This, M. Des Lauriers thinks, seems to 70 to 75 years. Halley's comet with a period of 75 years is to inspect its interior.

for them. If the "reason why" could be discovered the Osage orange can be used with some advantage during the cords its first return. The comet of 1815 with a period of causes could be removed and the working of steel be made first two ages of the worms, thus allowing the mulberry trees 74 years is confidently anticipated in 1889. an exact and certain art. Still, there has been great progress to grow more leafy for feeding during the last three ages." in this direction during the last twenty years; the percent- The experiment, although interesting, is not conclusive from age of loss in hardening and tempering steel has been re- the simple fact that different races were used in the different duced to a very low figure. These improvements have been tests and not the same race, so that the result may have been owing to the greater uniformity in the character of the steel due to race and not to food.-C. V. Riley. produced as well as to the greater skill in its after manipulation. We may not despair of yet being able to make the production of hardened steel articles as even and certain as those from any other material.

A NEW TREATMENT FOR THE DEAD.

Ch. Depérais announces in the Cosmos les Mond s a new the clime of the sun, and was known as comet Brooks, or may be some who will at first carry the two kinds of time, method of treating corpses by which they are rendered in- comet b 1883. nocuous

centers of infection for the diffusion of epidemic maladies, known as Pons' comet from the name of the discoverer, and that their neighborhood is a menace by reason of their or, more simply, as the comet of 1812. Encke, an astronoemanations and their influence upon percolating waters. mer of the time, found that the comet moved in an ellipse true time only four minutes, there will probably be less op-This hurtful influence has long been recognized. In India the with a probable period of nearly 71 years, so that its return natives yet expose their deadupon the banks of the Ganges was looked for about this time. or at the summit of the Towers of Silence. They become a The Rev. George Searle, of New York, was the observer prey in both instances to rapacious animals, and become who discovered the identity of comet Brooks and the comet partially harmless through their destruction.

The Jews, Etruscans, Ethiopians, Greeks, and Romans had satisfies the requirements of modern sanitation. The em- is simply wonderful that, with the data at his command, he balmment as practiced to day demands cares and expenses should have reached a result so nearly accurate. Within a which are never applied, and it has been shown that the few years, however, two series of observations of the comet chemical bodies employed are insufficient to destroy all the have been discovered which were unknown to Encke. Two sorts of germs, spores, bacteria, etc., which arise. It only French astronomers, Messrs. Schulhof and Bossert, undermomentarily protects the body.

long and complicated. It was based upon the use of reagents pamphlet of 209 pages. From time to time, the enthusiasand upon drying in the air or in furnaces. Cremation as at tic French observers issued memoranda of the probable present executed is completely satisfactory, every atom of position of the comet when near enough to be seen. Unfornoxious gas even being consumed. Nevertheless, the feel tunately, the first observations of comet Brooks did not seem ings of most people are opposed to it, and there are practical to agree with the French ephemeris, and it was hastily difficulties connected with it not always easily overcome.

while it guarantees the destruction of the causes of infection, planet. conciliates our customs and desires and is reasonable in its expense. M. Depérais has explained a process based on the and verified the comparisations more accurately. He proved fact or statement that at 106° Cent. these pernicious germs are beyond question that the positions marked out for comet destroyed. He utilizes the well known fact that saline solu- Brooks were identical, at the time of observation with those tions do not boil until after the boiling point of water (100°) in which a comet would be found that was traveling in Cent., 212° F.) has been passed. The salt he employs is the the ellipse computed by Encke. He went further, using the chloride of calcium, on account of its cheapness, the ease of new orbit of the French astronomers, and proving that the its management, and because it is antiseptic and tanning in comet was observed in the exact position where it should its effects. Plunging a corpse into such a solution at 47° have been found according to the orbit computed 70 years 3° Baume and slowly raising the temperature of the bath, it is ago. evident that when the temperature passes 100°Cent. the water of the flesh and tissues will evaporate.

disease spores, and the hardening and antiseptic properties distance of the sun. of the salt partially embalm the body; as, however, chloride of calcium is deliquescent, the body would not dry on re-1 the appearance of an irregular nebulous mass, with the tail moval from the bath. It is removed by immersion in a entirely wanting. In September, the nucleus was 5 in diabath of sulphate of soda, by which the lime salt remaining meter, and the tail was 2° 17' in length. Though not very in the body and incrusting all its fibers becomes the sulphate 'bright, it was distinctly visible to the naked eye, and was of lime, and the chloride of sodium is free in the bath. Then sobserved for ten weeks before it disappeared in the star the body is dried either in the open air or in an oven.

OSAGE ORANGE VS. MULBERRY FOR THE SILKWORM.

for making money by the propagation and sale of mulberry and the comet increasing many times in brilliancy in the trees to underrate the use of Osage orange as silkworm food. course of two or three days. On the 23d, the nebulous mass We have thoroughly demonstrated by the most careful; was 2 in diameter; on the 25th, it was 4' in diameter and tests on several occasions that when Maclura aurantica is shone with a luster equaling a star of the seventh magniproperly used for this purpose, the resulting silk loses tude. The activity of the display is almost unparalleled in nothing in quantity or quality, and we have now a strain of cometic history, and is specially noteworthy on account of Seriearia mari that has been fed upon the plant for twelve the comet's great distance from the sun at the present time. consecutive years without deterioration. There is, perhaps, Since this curious outburst, the comet has been a well bea slight loss of color, which, if anything, must be booked

REAPPEARANCE OF THE COMET OF 1812.

On the third of September, Mr. Brooks, of Phelps, New

ly made known to the scientific world, and it was described as round and faint, and having no tail. Its course was to-

Instead however of being a new-comer, this comet is an To day a feeling generally prevails that the cemeteries are old friend that made its first recorded visit in 1812, and is

of 1812.

Cometic astronomy was comparatively in its infancy when recourse to embalmment or incineration. Cremation fully Encke made the computation of the orbit of this comet. It time throughout the country, instead of forty-nine, as at took to recompute the orbit, using all the data known. The The process of embalmment among the Egyptians was Paris observatory published the result of their labors in a concluded that the erratic visitor was a new member of the It seems therefore necessary to find a new method which, cometic family, come to take its first peep at our little

The Rev. Mr. Searle studied the question more carefully,

There is therefore no shadow of a doubt that our eyes behold $\begin{vmatrix} \text{utes}, f \\ \cdots \end{vmatrix}$. the long expected comet of 1812. Its perihelion passage will Continuing the heat, the body contracts and the chloride of take place on the 25th of January, 1884. It will then be calcium impregnates it. The prolonged bath kills the about 60,000,000 miles distant from the earth, two-thirds the

In 1812, the comet presented, when discovered in July, depths. The returning comet, when first seen, presented similar elements. About the 23d of September, however, a remarkable and unexpected outburst occurred, the nucleus There is a strong disposition on the part of those who look expanding into a confused circular nebulous patch of light,

show that the difference between Maclura and Morus as the only one of them that has made more than one return. The most vexations thing about these "queerities" is that no 'silk worm food is some "twenty-five to thirty per cent in Its last appearance was in 1835, and it is next expected in theory that bears the test of practice has, so far, accounted favor of the latter," while it is evident that "the leaf of the 1911. The comet of 1812 with a period of 71 years now re-

Clocks and Railway Time Tables to be Changed November 18.

The changes to be made on Sunday, Nov. 18, in the time by which about all the railroads in the country are run, cannot be brought about, at the best, without considerable friction. In Boston, for instance, there is no little opposition to the putting of clocks and watches back some 17 mi-York, discovered a telescopic comet. Its advent was quick- mites, as will be necessary under the new provision for "Eastern standard" time, but orders have been issued for many of the public clocks in that city to be so regulated. The question of cemeteries interests the public more and ward the earth, and it was hoped that it would become and, as the whole railroad system of the Eastern States will more, and in view of its hygienic relations has been discussed visible to the naked eye in two or three months. It was be controlled by this standard, the prevailing opinion seems by scientific societies, legislatures, and municipalities. M. generally accepted as a new-comer making its first visit to to be that the innovation will be generally accepted. There the "standard" and the true, as can be readily done by having two minute hands on a watch; this is now frequently practiced to keep both New York and Boston time, by those who travel much between the two cities. In New York city, where the change required calls for putting back the position to the adoption of the new standard, but it may be readily conceived that great confusion will inevitably be caused wherever it is attempted to use the two kinds of time simultaneously.

> Full particulars relative to the adoption of the new plan, whereby there will practically be only four standards of present, were published in the SCIENTIFIC AMERICAN of Oct. 13. The time tables of many of the railroads will also have to be changed, as well as the clocks, in order to facilitate the making of connections between lines affected over considerable distances east and west. The following list of changes has, therefore, been furnished by Mr. W. F. Alleu, Secretary of the railroad conventions which decided upon the adoption of the new standard, the letter f denoting that the clock is to be set ahead, and the letter s that it is to be set back :

Atchison, Topeka, and Santa Fe, cast of Dodge City, clocks only, 9 minutes, f.

Atchison, Topeka, and Santa Fe, west of Dodge City, clocks and schedules, 51 minutes, s.

Baltimore and Ohio (west), both clocks and schedules, 28 minutes, s.

Boston, Hoosac Tunnel and Western, both clocks and chedules, 4 minutes, s.

Boston and Albany, clocks only, 16 minutes, s.

Canadian Pacific (Eastern division), clocks only, 6 minutes, s.

Central Vermont, both clocks and schedules. 12 minutes,

Chesapeake and Ohio, both clocks and schedules, 8 min-

Chicago and Alton, clocks only, 9 minutes, s.

Chicago and Grand Trunk, both clocks and schedules, 9 minutes, s.

Cleveland, Columbus, Cincinnati, and Indianapolis, both clccks and schedules, 28 minutes, s.

Delaware and Hudson Canal Company, clocks only, 4 minutes, s.

Delaware, Lackawanna, and Western, both clocks and schedules, 4 minutes, s.

Fort Wayne, Cincinnati, and Louisville, both clocks and schedules, 23 minutes, s.

Freehold and New York, both clocks and schedules, 4 minutes, s.

Hartford and Connecticut Western, clocks only, 4 minutes, s.

Lake Shore and Michigan Southern, both clocks and schedules, 28 minutes, s.

Lehigh Valley, clocks only, 1 minute, f.

Louisville and Nashville, clocks only, 18 minutes, s.

Missouri Pacific, clocks, schedules at St. Louis only, 8 minutes, s.

New York, Lake Erie, and Western, clocks only, 4 minutes, s.

of the family, but it is impossible to predict <u>ed member</u> upon as an advantage. It is more than likely, however, that what vagary it may next indulge in.

the different races will differ in their adaptability to the The comet of 1812 may now be seen in the evening in the minutes, s. Machura, and that for the first year the sudden transition to northwest in a telescope of moderate power, and is said to Maclura from Morus, upon which the worms have been fed, be visible in a good opera glass. In a few weeks it will be for centuries, may result in some depreciation. Mr. Virion easily perceptible to the unassisted eye, and when the year des Lauriers at the silk farm at Genito has completed some 1884 makes its advent, it will be near its culminating point. experiments which he details in the opening number of the It will not equal the superb comet of 1882 in size or brillian-"Silk Grower's Guide and Manufacturer's Gazette," on the cy, but it will be visible in the evening sky and will be so relative value of the two plants. Four varieties of worms much more convenient to observe that there will be compenwere reared. The race known as the "Var" was fed sation in its lessened splendor.

throughout on mulberry leaves. The "Pyrenean" and It is an astronomical triumph, that with the inadequate "Cervennes" worms were fed throughout on leaves and means at command for computing an ephemeris, an astrobranches of Osage orange, while the "Milanese" worms nomer seventy years ago was able to predict nearly the exwere fed on Maclura up to the second moult and then chang- act time for this comet's return. Our ancient friend is winging its swift flight toward us, and before long our eyes will nutes, s. ed to mulberry leaves.

At the close samples of each variety of cocoons were sent be gladdened by a sight of its face after a long travel of to the secretary of the Silk Board at Lyons, and appraised threescore years and ten, when almost every eye that noted by him. The Maclura fed cocoons were rated at 85 cents per its first appearance has ceased to behold the shining picture pound; those raised partly on Osage and partly on mulberry that nightly arches over the earth.

New York Central and Hudson River, clocks only, 4

New York City and Northern, clocks only, 4 minutes, s. New York and New England (east of Connecticut), both clocks and schedules, 14 minutes, s.

New York-and New England (in Connecticut), both clocks and schedules 4 minutes, s.

Pennsylvania, New York division, both clocks and schedules, 1 minute, f.

Pennsylvania, all divisions except New York, clocks only, 1 minute, f.

Philadelphia and Reading, both clocks and schedules, 1 mirute, f.

Rome, Watertown, and Ogdensburg, clocks only, 4 mi------

THE Swiss railroad companies now cover a portion of their carriages with a phosphorescent preparation, which makes them visible at night.