RECENT INVENTION.

New Ribbon Holder.

The annexed engraving shows a very simple and convenient ribbon holder recently patented by Mr. John Mellette, of Winamac, Ind. It consists of a wire bent V-shaped, with the ends bent toward each other and with a bend at or near the middle, so that the wire acts as a spring to hold the ribbon from unrolling accidentally, while it admits of unwinding any desired amount by simply drawing it from the roll in the usual way. When the roll is of wood, the ends of the wire are inserted in the center of the block from opposite sides. When the roll is of pasteboard or other thin material, the central holes are eyeleted to prevent wear.

Cloth from Nettles.

Though not in these days generally cultivated, at least in Europe, the despised nettle was at one time, and that for several centuries, held in high honor and esteem throughout the world. In an old medical book of the fifteenth century, many pages are devoted to a description of its healing virtues. During the Irish famine, it is said that hundreds of poor people subsisted entirely upon it; while in Russia, Sweden, and Holland it is still mown several times a year as fodder for the cows, whose milk it is found greatly to improve both in quality and quantity, though they will not touch it in its green state. In Kamschatka the fibers have long been used for fishing lines; in France they have been made into paper; in Hindostan and China, woven into so-called "grass cloth;" and in Scotland and some parts of England the stalks have been dressed, spun, and woven into linen as good as that made from flax; while the old German name for muslin, "nettle cloth," shows that it must have been at one time extensively used for weaving purposes on the Continent. The change in the estimation in which the nettle was held began when cotton was introduced from America, now a century or more ago; and in a few years the home grown plant was entirely superseded by the foreigner, and sank into the state of utter neglect and oblivion in which it has remained till within the last few years, when efforts have been made in Germany to draw attention once more to its capabilities and good qualities. After the exhibition in Philadelphia, when it became evident to the German manufacturers that they must bestir themselves in real earnest if they hoped to compete successfully with their neighbors in the future, Professor Reuleaux, their representative in America, seriously advised them to turn their attention to their own native industrial products, with a view to becoming less dependent on foreign countries. He reminded them among other things of the stinging nettle, and then people suddenly remembered that it had once been as highly esteemed as flax and hemp, and scientific men began to talk and write about the proper methods of cultivating it. For the most part, however, it was the foreign species which found favor in their eyes, and above all the snow white, stingless, Chinese nettle, which yields a glossy fiber, like the finest silk or spun glass. An enterprising lady, however, Madame Roeszler-Lade, had already determined to try what could be done with the common stinging nettle, the *Urtica dioica*, and made her first experiment on her own estates in 1873. It failed, simply and solely, as it would appear, because the peasants could not be induced to do as they were told, and were absolutely contemptuous when directed to treat the nettle stalks as they did their hemp. But now, when Professor Reuleaux came forward as the champion of the native nettle, Madame Roeszler-Lade applied to him for advice, and then planted her nettles on a piece of poor, rocky ground, having but a thin layer of soil; and this time she succeeded so well that, at an agricultural exhibition held in the autumn of 1877, she was able to exhibit specimens of nettle fiber in all stages of preparation, ending with the spun yarn. This was a triumph, and the unbelievers who had turned up their noses in derision were now convinced, and hundreds determined to begin growing nettles without delay, and this not only in Germany, but in Switzerland, Belgium, Hungary, Poland, Sweden, Austria, and North America. Two years later the first German "China grass" manufactory was established by Herr F. C. Seidel in Dresden, and after many failures and much expense he has succeeded in spinning the nettle fiber in a manner which is perfectly satisfactory. He uses the common nettle, but prefers the Chinese nettle as yielding, at present, a better looking and much stronger fiber.—*Cassell's Family Magazine.*

Reticulated Structure of Living Matters.

At a recent meeting of the New York Academy of Sciences, Mr. Romeyn Hitchcock read a paper on the above subject on the "Bioplasm Doctrine."

The speaker devoted most of his paper to objections to Heintzmann and Elsberg's claim of having discovered a reticulum or network in red and white corpuscles and in the amœba. He said that if these microscopists had seen it, others ought to be able to see it also. Few people, it is true, know how to *use* a microscope, but most people can see the most minute objects under a high power glass when it has been properly adjusted and focused, hence he denied Heintzmann's assertion that because a tyro can't see a thing is no proof that it don't exist.

The speaker had several elegant microscopes on the table fitted with the best high power objectives, and under one of these he placed an amœba, under another a pus corpuscle, and under two others red blood corpuscles, to demonstrate the fact that no *reticulum* or network exists, because none can be seen. It has been claimed that this reticulum contracts and expands, thus causing motion, and that some such reticulation is necessary to account for the motions of protoplasm, but it may be asked how this can of itself contract and expand. It is an explanation which fails to explain. The speaker next referred to the three sources of error in microscopic: work first, error in illumination; second, error in the correction of objectives; third, errors in focusing. To demonstrate the reticulum on red blood corpuscles, it is necessary to touch them with a dilute solution of bichromate of potassium, but this causes them to become granular, and as this action continues, it breaks up the corpuscles. Such an effect was visible in one of the slides exhibited under the microscope. It is claimed that reticulum can be seen in the white corpuscles without this treatment, but such was not the case here. Minute granules can be seen in amœba, but no reticulum. In microscopy errors of interpretation are easily made; dots may merge into each other and be taken for lines, and such may have been the case in the amœba.

Dr. Schene made some interesting remarks on bioplasm, and thought that microscopists should make allowance for "personal errors," just as astronomers do in a different way.

Mr. George F. Kuntz then exhibited a specimen of cretaceous amber from the marl of Gloucester County, N. J. When found, the mass was 20 inches long, 6 inches wide, and about an inch thick, weighing 64 ounces, the largest ever found in New Jersey. Its specific gravity is 1·061. It was found at a depth of 28 feet, in the middle bed of the upper cretaceous, and was covered with greensand.

Several specimens of amber from other localities were also exhibited, including some very rare specimens from Sicily. Drs. Martin and Newberry and Messrs. Julian, Brittain, and Hadden took part in the discussion that followed. Prof. Hidden also exhibited some nuggets of gold from Burke County, N. C.

Drawbridge Safety Switches.

The New York, New Haven, and Hartford Railroad Company has adopted a set of drawbridge signals which, it is claimed, will render it absolutely impossible for an accident to occur. These signals are worked by a series of levers, five in number, the first two working semaphore signals at a distance of 1,900 feet and 800 feet, respectively, from a bridge. The other three work the switches of the siding and the lock of the bolt which holds the draw in place. Before the bridge can be unlocked, that a vessel may pass through the draw, these levers must be worked in their order. It is impossible to work them in any other way, the interlocking preventing the draw-tender or signalman from moving the higher numbered lever until he has first moved the lower number. He cannot, when the draw is closed, replace the levers except in the regular reverse order. It follows that a danger signal must first be shown at a distance of 1,900 feet from the draw, and if that warning to bring his train under control for a stop is neglected by the engineer, the signal is again given at 800 feet distant. Should this warning be neglected, the engineer will find his train shunted to a side track, and thus prevented from plunging into the open draw; for the draw cannot be opened unless it has been previously unlocked; it cannot be unlocked until the safety switch has first been unbolted and set for the siding; the switch cannot be set until the home signal has been set for danger, and the home signal cannot be set for danger until the distance signal has been so set. These operations are repeated on the other side of the draw, which is fitted with a bolt at each end. Supplemental apparatus is provided, so that the signalman may know at a distance of 1¼ miles that a train is approaching, so that the draw may not be opened and trains delayed unnecessarily. It is further claimed that when the draw, even if closed, should be unlocked, the safety switch cannot be thrown on the main line either by accident or design, and therefore no train can possibly run into the draw. By this apparatus the impossibility of a drawbridge accident is secured independently of the engineers, and the risk substituted is only that of running over a misplaced switch, and in this case the risk is reduced to a minimum by two outlying and interlocked signals which must show that danger if it exists.—*New York World.*

Biting Horses.

Horses have been successfully cured of this vice by putting a piece of hard wood an inch and a half square in the animal's mouth, about the same length as an ordinary snaffle bit. It may be fastened by a thong of leather passed through two holes in the ends of the wood, and secured to the bridle. It must be used in addition to the bit, but in no way to impede the working of the bit. Rarey adopted this plan with the zebra in the Zoo, which was a terrible brute at biting. Mr. Rarey succeeded, however, in taming and training him to harness, and drove him through the streets of London. Animals with this vice should be treated kindly in the stable, and not abused with pitchfork handles, whips, etc. An apple, crust of bread, a piece of beet, etc., and a kind pat, but firm, watchful hand and eye, with the use of the above wooden bit, will cure the most inveterate biter. The fact that he cannot shut his mouth or grip anything soon dawns upon him, and then he is conquered.—*Toronto Globe.*

A Burglar Trap.

A country store keeper in Connecticut having been annoyed by robberies of the contents of his cash drawer, lately contrived the following trap: He arranged in the floor a trap door which perfectly matched the boards of the floor. In the day time the door was securely fastened, but at night on leaving the store a catch was so fixed that the moment the unsuspecting burglar stepped on the door to operate on the money drawer, the trap door opened and dropped him into a pit in the cellar below. The sides of the pit were smooth and higher than a man's head, so that once dropped the burglar could not escape. The trap closed automatically by a spring, ready for a second burglar. A practical trial of the trap proved successful, for one morning the store keeper found evidence of an entrance to his store in the night and on looking into the pit discovered the imprisoned burglar. He coolly went about his business, and in due course had the burglar arrested.

A New Air Pump.

A double action mercury air pump, invented by Signor Serravalle, who was awarded a gold medal for it at a recent exhibition in Messina, is described in the *Rivista Scientifico-Industriale.* By a simple mechanical method two similar vessels are raised and lowered alternately with each other on opposite sides of a vertical support. A long caoutchouc tube connecting their bottoms lets mercury pass from one to the other. Each has at top a three way cock; one port of which in a certain position leads into a small open vessel to receive any excess of mercury, and another is connected by means of a caoutchouc tube with a spherical piece fixed laterally about the middle of the vertical support. This piece has three passages, communicating together; two of them are opposite each other, and lead into the tubes from the mercury vessels; the other is connected by tubing to the vessel to be exhausted of air. The three way cocks at the tops of the vessels are mechanically shifted at the top and bottom of their course by means of a toothed sector and rack in the one case, and a pin and projecting piece in the other.

The Cow Tree.

Sir Joseph Hooker, in his report on Kew Gardens, gives a sketch of a most interesting botanical curiosity, the *Palo de vaca,* or cow tree. This tree grows in forests at the foot of certain mountain ranges in Venezuela, and attains a height of 100 feet, and frequently the trunk reaches to 70 feet without a branch. The remarkable characteristic of the tree is the milk which exudes from the trunk when an incision is made. The flavor is of sweet cream with a slightly balsamic taste, but it is very wholesome and nourishing, the composition being said to approach very near the milk of the cow. From the fact that the milk is somewhat glutinous it would seem that the tree is of the caoutchouc order. Seeds which have been sent to Bombay and the colonies are said to be thriving well. It is noteworthy, as an example of the law of compensation traceable in nature generally, that this cow tree seems originally to have been a native of a country where milk giving animals were formerly totally unknown.

Simple Method of Measuring Refraction.

M. Piltschikoff describes an arrangement for measuring the refractive index of liquids of which one has but small quantities. A hollow lens is filled with the liquid, and with the aid of a graduated scale and a microscope one measures exactly the focal distance of a monochromatic flame placed at a given distance from the lens. The author gives a simple formula for calculating the index of the liquid, when the constants of the apparatus have been determined once for all. In one set of experiments, the index of glycerine was found=1·47298, with a probable error estimated at ±0·00001.

The Assistant Commissionership of Patents.

Mr. R G. Dryenforth, late an Examiner in Chief in the Patent Office, has been nominated by the President and confirmed by the Senate for the office of Assistant Commissioner of Patents. Mr. Dryenforth is a man of ability, and well capable to fill the office. His confirmation was opposed before the Senate Committee. The principal objection came from a notoriously untrustworthy man. This fellow alleged crooked proceedings on the part of the Examiner in connection with the issue of certain patents; but it was a good deal like Satan rebuking sin.

Steel an Alloy.

Professor D. E. Hughes, F.R.S., recently read an important paper on the molecular rigidity of tempered steel before the Institution of Mechanical Engineers. From the experiments he has made, he strongly favors the view that steel, when tempered, is an alloy containing fixed carbon in a far greater quantity than when soft.

R. J. FISHER, Jr., a Principal Examiner in the Patent Office, has been appointed Examiner in Chief, in place of Mr. Dryenforth, promoted to be Assistant Commissioner of Patents.