Scientific American.

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

O. D. MUNN, S. H. WALES, A. E. BEACH.

☞ "The American News Company," Agents, 121 Nassau street, New York
☞ "The New York News Company," 8 Spruce street.
☞ Messrs. Sampson, Low, Son & Marston, Booksellers, Crown Building, 188 Fleet street, London, are the Agents to receive European subscriptions or advertisements for the SCIENTIFIC AMERICAN. Orders sent to them will be promptly attended to.

VOL. XIX., No. 6....[NEW SERIES.].... *Twenty-third Year.*

NEW YORK, WEDNESDAY, AUGUST 5, 1868.

Contents:

(Illustrated articles are marked with an asterisk.)

INSTRUCTION AND AMUSEMENT COMBINED.

Within a few years the business of toy making has assumed considerable proportions in this country; and it is not strange, considering the utilitarian character of our people, that the style of toys made should be different from those made by poor Caleb in Dickens' "Cricket on the Hearth." Our toys are either artistic or mechanical—perhaps both. Certainly they are incomparably above our imported toys, especially when they simulate life. They are not repulsive exaggerations, nor caricatures, but life like Even our dolls are pleasant to look at; almost instinct with life. All our toy representations of animal life are of a similar character. This taste, this striving after the actual, even in these little things, as some would call them, is very encouraging. Our young derive their knowledge of the world from things rather than from their representatives, words, and first impressions are lasting. Toys during the period of childhood are their constant companions, and from them, as models of the real, they derive their only actual knowledge. For this reason their toys should be reasonable.

But in mechanical toys particularly the Americans excel. Walking dolls, running steamboats, fire engines, carriages, etc., with many other similar contrivances, worked by simple clock work and driven by a coiled spring are both common and cheap. Some of them beautifully illustrate mechanical movements and may be made a means of instructing children in the principles of mechanics, while at the same time amusing them. The same may be said of chemical toys which illustrate some of the most important principles of chemical science.

But we think there is room for still further attempts, and successful, in this direction. It seems strange that the simplest of machines—the steam engine—has not been presented to the public as a toy. Miniature steam engines are common enough; but they are usually more than necessarily elaborate in finish and therefore costly in price. They are built either by amateurs as specimens of their mechanical skill and regarded as curiosities, or constructed by machinists or model makers to fill orders from educational institutions to be used to illustrate problems in natural philosophy. The amount of finish put upon these miniature specimens places them beyond the reach of the mass, or the vagaries of their builders in adopting unheard-of plans for their engines deprives them of practical use as means of instruction. Beside this, many otherwise sensible people believe that the steam engine with its necessary boiler is simply another form of a gunpowder magazine, ready at the touch of a match to blow their house into "finders" and themselves into eternity. Perhaps the discussions in the SCIENTIFIC AMERICAN in regard to steam boiler explosions and the records of accidents in our daily papers conduce to this feeling of insecurity. But really a toy steam engine standing on the table or the mantel and running at lightning speed is much less dangerous than a common kerosene lamp.

Probably few machines are simpler in principle or easier in construction than the steam engine Of course a large machine, with all its appurtenances and its exactions, appears to be complicated, and it is so in one way; the larger the engine the more accurate must be the fit and working of the parts to hedge in and control the subtile element of steam. But a small engine, such as would be appropriate as a toy, may be built by the most ordinary mechanic; and it may be made plain, light, and cheap. The mechanic who shall introduce this as one of our mechanical toys may be assured of a handsome return for his outlay, while the public will be gainers in a familiarity with what is now thought by many to be a mechanical mystery and a dreadful agent of evil.

ENCKE'S COMET.

This celebrated comet is now expected to make its appearance again, and it is not improbable that it will be observed before this article is printed. As it will probably be much talked about, a few words in regard to it may not be uninteresting to our readers. Encke's comet was discovered by the astronomer Pons, at Marseilles, in 1818. Encke, however, was the first to calculate its elliptical elements, and hence his name has been given to it. One of the results of Encke's calculations was to establish its identity with the comets observed in 1786, 1795, and 1805. After its observation by Pons, Nov. 26, 1818, it remained in view until 1819, since which time it has been regularly observed at each return. Its period is approximately three and one fourth years. It can rarely be seen by the naked eye, and it then appears as a star of the fifth or sixth magnitude, exhibiting, under favorable circumstances, a faint nebulosity.

This comet is remarkable not only on account of its periodicity—many comets having no periods—but also on account of the fact that its period is shorter than any other known periodical comet. It also exhibits a peculiarity in its motion which has given rise to much speculation. Observation has shown that its period is constantly diminishing, at the rate of about two hours and a half for each revolution. A similar retardation has been discovered in the motion of other comets having short periods. It is argued from this fact that the orbits of these bodies are constantly shortening, and that they are gradually approaching nearer to the sun, upon the surface of which they must ultimately fall. The cause for this retardation is attributed to a medium existing in the interplanetary spaces, of such tenuity that it does not perceptibly affect the motions of the denser heavenly bodies, but which opposes resistance to the attenuated masses of comets, the amount of resistance being assumed to increase with the square of the velocity of the moving body. Herschel and many others have dissented from this hypothesis, and have attributed the retardation of its motion to the gradual loss of its tail. However, it has only twice been observed to present the appearance of a tail. In 1805 it was observed by Prof. Huth, of Frankfort, when it exhibited a tail three degrees in length. In 1848 Professor Bond, at Cambridge, also observed a tail extending toward the sun. It appeared like a faint brush of light. This discovery attracted great attention, as it is very unusual for comets to exhibit any appearance of a tail in the direction of the sun. Some weeks afterward another tail was discovered extending from the sun, also very faint and about two degrees in length, the one first discovered still remaining visible. The same peculiarity was also presented in the appearance of the comet discovered in December, 1823. The projection of the tails of comets toward the sun completely upset many ingenious hypotheses which were supposed to approximately account for both the material and the direction of these singular appendages, and after ages of observation and speculation we are still in the dark as to the real nature of cometary matter. It is probable, however, that the spectroscope will hereafter be used to great purpose in the solution of this problem. Indeed some facts have been already added to the former stock by its use, although nothing has been attained that can be considered a sufficient basis for a complete and satisfactory theory.

The orbit of Encke's comet lies wholly within that of Jupiter, and it performs nearly four revolutions to one of that planet. Its frequent proximity to the planets of our system, and its small relative weight, give rise to marked perturbations in its motions, which have furnished valuable data for the determination of the masses of those bodies. By the use of these data important corrections have been made in previous computations of the respective masses of Jupiter and Mercury.

The observation of this comet has confirmed the truth of the assertions of Hevelius and Newton, that the volumes of comets contract as they approach the sun, and enlarge as they recede from it. This is accounted for by the supposition that the heat of the sun disperses the exterior portions until they become invisible from their extreme attenuation. As the comets pass into colder regions, the reverse takes place.

We have said that the period of Encke's comet is shorter than any other known. The comet of 1264 is supposed to have the longest period of any known, it being over three hundred years, making some allowances for imperfect data and calculations. The distance traveled by one of these bodies in such a period, flitting through the heavens at rates far exceeding any other of the heavenly bodies, is beyond all human conception. What wide and obscure regions are visited by them after they have disappeared from human observation, to what unknown systems and mysteries of space they penetrate, must forever remain a subject of doubt and speculation to the human mind. We may in a future article say something in regard to other remarkable comets, and the hypotheses to which we have alluded.

SHOULD THE PATENT LAWS BE EXTENDED TO HORTICULTURE.

Under the above caption the *The Horticulturist* discusses the value of the Patent Laws and suggests an extension of their benefits so that they may do for the farmer, the florist, and the horticulturist what they have already done for the mechanic. Our cotemporary says, let there be, in connection with the Agricultural Bureau, an office of record, where the name, character, quality, description, etc., of new varieties of fruit and grain, originating in this country, shall be entered and secured to the originator. Let specimens be sent to trustworthy correspondents of the bureau in various sections of the country, so that its value for general cultivation may be determined. Let the result thus arrived at be publicly announced under authority of the bureau, and the right to vend the article be vested in the originator and his licensees for a term of years. Something of this kind would wonderfully stimulate to continued improvement in the production of choice varieties of plants and grains to the great advantage and profit of the country. While it would secure to the originator the just reward of his skill and labor, it would protect the public from the thousand impositions now put upon them by the venders of new varieties of untried and doubtful value. As this business is now conducted, we have no hesitation in asserting that many thousands of dollars are annually thrown away in the purchase and planting of fruits, for example, which, however valuable they may have proved in their original locality, are totally unprofitable and useless for cultivation in other sections under an altered condition of soil and climate.

We know of many instances where other deserving horticulturists and agriculturists, who have devoted their best years to the public good, have had only their labor for their pains; other persons, to whom they have sent specimens of their plants, in various sections, to test their value, having stepped in to rob them of their reward. Every year the nurserymen of the country are mulcted in large sums of money for the purchase of new and professedly valuable plants, which too often prove of little or no value. These being sent out at extortionate prices, for general cultivation, and failing to answer the expectations excited by the glowing descriptions published of their merits, tend to discourage cultivators and bring the profession of Horticulture into disrepute. Were some such system adopted as we have suggested, however, the honest experimenter would be protected in the product of his labor, and the prices of new plants would be set at a more reasonable figure, so as to be within the reach of all, because the originator would, instead of, as now, being compelled to realize his profits out of his first season's sales, be secured in their enjoyment for a term of years.

We know it may be urged that such a provision as this has never yet been incorporated into the Patent Laws of any nation; but of its necessity, its justice, there can be no question. As the United States, by its greater liberality to inventors, has stimulated the arts and sciences, and added to the industrial wealth and resources of the people more than any other government in the world, let it go one step farther and by judicious legislation, stimulate the husbandman to take rank among the highest order of productive agents, and elevate and dignify that profession which, however much lauded by poets and extolled by politicians as an ennobling one, has heretofore been of the earth, quite too earthy.

THOUGHT AND EXPRESSION.

The eyes have been called "the windows of the soul." They are not only windows, but they and all the other organs of sense are doors by which impressions and ideas obtain ingress to the mind. The organs of speech, the hands, the muscles of expression, and the eyes, are the doors through which thought passes out of one mind to enter another. The perfection of these mind-valves has, probably, as much to do with what is commonly called mental vigor as quality of brain or its size. We think in language, and the more limited our language, the more limited must be our thinking power.

It is not essential to thought, however, that we should think in language of our own. We may think, in the language of another, thoughts which our limited means of expression are inadequate to utter. This is the case with mutes who possess the sense of hearing. They know and think in a language which they cannot speak. The same is true of animals to a very limited extent. If the mind of man were only accessible through such channels as that possessed by the dog, and if his means of expression were equally limited, it may well be doubted, whether the texture of his brain would enable him to exhibit higher mental manifestations than that animal.

It is possible that in the search for the causes of man's mental superiority to animals, too much stress has been laid upon the differences in the constitution of the brain, and too little attention has been paid to the effect upon mental development produced by his vastly superior physical organization.

We once heard an eminent professor, in a lecture upon the brain, make the statement, that the proportion of gray vesicular nerve matter which is found upon the surface of the white substance which forms the largest portion of the mass of the brain, was an index of the intelligence of animals, and that as the depth of the convolutions upon the brain increased its surface, such animals as possessed deeply convoluted brains would be found to possess a higher degree of sagacity than those having brains of more even surface. As an instance, he mentioned the horse, and declared that on account of his deeply convoluted brain, he possessed greater intelligence than any other animal.

We think the majority of our readers will hardly believe that the horse is more intelligent than the dog, or the elephant. We feel certain, however, that a dog will express such ideas as his limited powers permit with greater facility than the horse. As to how far physical organization influences mental manifestations, it is difficult to say, but that it it has more effect than is usually attributed to it seems probable.

MEASUREMENT OF HIGH TEMPERATURES.

We have lately received several communications requesting information in regard to the best means of measuring high temperatures in kilns and furnaces. We reply to these queries, that Daniell's Pyrometer is undoubtedly the best instrument for the purpose. The well-known Wedgewood's Py-

rometer was the first used, and its operation depends upon the fact that clay, when highly heated, parts with some of the water which it always contains, and new chemical combinations take place which result in its permanent contraction. Wedgewood assumed this contraction to be in a ratio to the degree of heat employed, but this has been found by subsequent experiments to be erroneous. The amount of contraction corresponds to the time the clay is exposed, rather than to the degree of heat, and is found to vary also with the character of the clay used.

Daniell's Pyrometer consists of a bar of platinum inclosed in a sheath of black lead (graphite). The expansion of the platinum is indicated on a graduated arc. From the known rate of the expansion of platinum, the degree of heat may be computed. Platinum expands .000884 of its entire length from 32° Fah., to 212° Fah. It will be sufficiently accurate for ordinary purposes, to consider the rate of expansion as having the same ratio to the increase of heat for high temperatures, although not absolutely correct. There are other pyrometers in use, but for practical purposes we prefer Daniell's.

THE PROPOSED SUSPENSION BRIDGE BETWEEN NEW YORK AND BROOKLYN.

The islands of Manhattan and Long Island are separated by an estuary connecting the waters of Long Island Sound with those of the harbor and bay of New York. It is generally but incorrectly designated a river—the East River. The connection between the two cities is by a series of ferries, which during the most of the year afford sufficient accommodation, but when the estuary is encumbered by ice, are entirely insufficient for the convenient accommodation of the people. The The subject of a bridge between the two great and growing cities is not new, having been discussed for many years. Only lately, however, have any steps tending or looking to a decisive result been taken. A charter from the legislature, preliminary surveys, and estimates sum up the work done and exhibit the present condition of the project. The city of Brooklyn in its short-sightedness, has unwisely refused to make any appropriation for carrying forward the enterprise, and the work at present remains in abeyance. The engraving gives an excellent view of the proposed bridge, which will eventually be erected by private enterprise, even if municipal aid is not furnished. The following succinct description we copy from *Leslie's Illustrated :*

The engineer, Mr. John A. Roebling, a Prussian by birth, is a resident of Trenton, New Jersey. His reputation as a bridge builder has been established by the most successful practical illustration of his abilities in this country. Under his direction were built the suspension bridges at Niagara and that triumph of engineering skill, the bridge across the Ohio, at Cincinnati. The more stupendous enterprise in contemplation can be safely entrusted to a man whose credentials are the massive and beautiful structures already reared by his master hand.

The terminus of the bridge on the Brooklyn side, by the terms of the company's charter, must be at or near the junction of Main and Fulton streets.

The New York terminus : The Park line commences opposite the Registrar's office, on Chatham street, then crosses North William, Rose, Vandewater, Cliff, Franklin square, Cherry, Water, Front, and South; thence to the end of the end of the old Pier, No. 29, now broken down, the line continues in a straight course across the river, and passes on to the Brooklyn shore, nearly through the centre of the spare slip of the Fulton Ferry Company ; thence passing over Water, Dock, and Front; a part of James street, near Garrison will be occupied by the Brooklyn anchorage. Leaving the anchorage, the line continues to pass over James, and then crossing York and Main streets obliquely, deflects toward Fulton. After crossing Prospect, near its intersection with Fulton, it terminates finally in the block which is bounded by Fulton, Sands, and Washington streets.

The total length will be 5,862 feet. The central, river span, will be suspended on one swing of 1,600 feet from centre to centre of tower. Those parts between the anchor-walls and the respective termini are technically called "approaches." The streets will be crossed by iron girders at such elevation as will leave them unobstructed. The iron framing forming the floor of the bridge will be 80 feet wide This will be divided into five spaces. The two outside spaces will be 15 feet feet wide between the chords, and will form a roadway for all kinds of common travel. The next spaces will be 13 feet wide. On it will be laid steel rails for running cars back and forth alternately. These cars are proposed to be operated by an endless wire rope, impelled by an engine under the flooring on the Brooklyn side. The degree of speed attainable by these cars is put at twenty miles an hour as the minimum rate. Twice that speed is declared to be perfectly practicable and safe.

The fifth division of the bridge is called in the plan proposed the "Elevated Promenade." It is intended exclusively for walkers. At each terminus, the bridge floor is widened out to 100 feet; this central promenade will be 17 feet wide. The carriage of the bridge is based upon the carriage of the Union Ferry Company. This corporation officially figures its passengers at 40,000,000 yearly. This averages 109,539 per day. It is plain at least this number can be passed over the bridge and many more.

The dimensions of the towers will be a base of 134 feet long, measuring on the water line, and a width of 56 feet in the extreme part. Below the upper cornice, at the top of the tower these dimensions will be reduced to 120 and 40 feet. One of these towers is shown well in the foreground of our picture, and the architectural details will be apparent. The elevation of the flooring of the tower will be 118 feet above high water; the height of the roofing above the floor will be 150 feet; thus the total height of the towers will be 268 feet from high water to top of roof, not including balustrade and ornamental blocks. The towers will be built hollow. The impression of the whole will be that of massiveness and strength.

The cost of the bridge will be between $6,000,000 and $7,000,000. The engineer's estimate is $6,675,357. Great as this amount, there can be no doubt that it would be advantageously and profitably applied in the construction of this grand hanging thoroughfare between the two great cities.

HYDROPHOBIA.

It is customary to regard the midsummer as tending to increase the prevalence of hydrophobia, and extra care is taken at this season to prevent danger from this cause by confining and muzzling dogs, if they are not otherwise finally and summarily disposed of. The practice of killing dogs upon the arrival of summer heat is of ancient date, and has the sanction of custom to reccommend it. Some have, however, expressed the opinion, that dogs are no more liable to attacks of rabies at this season than at any other, and no doubt there have been enough cases which have occurred in colder portions of the year to justify in some measure such an opinion. If, as has been stated, this terrible disease originates in the first instance from excitement consequent upon the ungratified sexual instinct of the male dog, it is hard to see how the excessive heat of July and August, in this latitude, could fail to aggravate such excitement, and thus assist the development of the disease.

Whatever may be its cause at the outset, its propagation by the contact of the saliva of the diseased animal with the mucous membranes, or the abraded skins of man and animals, is certain. Some have, however, been so bold as to regard the sequences of bites from rabid animals, as the result of an imagination over excited from the terror which usually accompanies such occurrences, rather than as the results of infection. We were, however, personally cognizant of a case which could not thus be accounted for. A young man of our acquaintance, upon returning to his home one evening discovered a strange cat upon the steps of his house. He playfully ordered it away, accompanying his speech with a gesture as if about to strike, upon which the cat seized and bit his hand, not, however, very severely. The next day he went about his usual business, scarcely incommoded by the wound, and without the least suspicion of the real condition of the animal, or of the terrible consequences that were to follow. Weeks after, the wound having entirely healed, and the circumstance being nearly forgotten, he suddenly manifested symptoms of hydrophobia, and died after three days of terrible agony. We deem this case as conclusive, that rabies is the consequence of infection. There may be, and undoubtedly are, cases where terror induces an hysteria, which strongly resembles genuine hydrophobia, but this is not by any means the rule in a large majority of cases. The disease is so appalling in its nature, that such terror is not to be wondered at especially among people who are unaware that the bite of a mad dog does not produce hydrophobia in more than about one in twenty-five instances. When the disease is developed, it may be regarded as fatal, good authorities inclining to the belief that in cases of supposed recovery, the disease is simulated by hysteria accompanied with tetanic symptoms.

The muzzling of dogs, by the use of a strap tightly buckled around the jaws, is a bad practice. It causes the dog a great deal of unnecessary suffering, and, by preventing him from cooling himself by thrusting out his tongue, adds greatly to any febrile condition of the body, which he may chance to be laboring under. If any muzzle at all be used, it should be one of reticulated wire, and sufficiently large to admit of his opening his mouth wide, and permit his drinking as freely as he could do without it. Such muzzles are not only safer, but more comfortable to the dog.

The only certain preventative of ill results from the bites of rabid dogs, is to cut out completely the wounded part, before the poison can be absorbed. It is recommended in order to do this quickly and thoroughly, that a stick be whittled to a shape resembling a dog's tooth, and inserted in the wound. This supports the part and renders the cutting more easy and certain. This should be followed by cauterization, either by the use of a hot iron, or some strong caustic substance.

Dogs, if they must be kept, should not be over-fed upon a stimulating diet of meat, and bones especially should not be given them, as the phosphate of lime they contain greatly stimulates the sexual instinct. Indian meal, made into a pudding, is eaten, when cold, with relish by most dogs, and used with thickened sour milk, it contains so much of what is required for the proper sustenance of the dog, that meat will be seldom required. A dog kept in this way will rarely become spontaneously rabid. A large majority of the dogs now kept are, however, a nuisance, and would be much better out of existence.

THE HORSE AND APPLIANCES FOR HIS USE.

So far as is known the earliest employment of the horse was for purposes of war. The ancient Egyptian chariot was drawn by two horses, attached to the chariot by a yoke suitably supported by straps, to which the pole of the vehicle was secured. To this harness were appended a breast strap and girth fastened to an ornamented saddle, a head stall with frontal, cheek-straps, a noseband, a bit with cheek-pieces, and reins for the guidance of the animal. The whip consisted of a wooden handle and a double thong, with a loop whereby it might be suspended from the wrist while the warrior was using his bow, the reins being often tied around the body.

It is impossible to determine when the horse was first used for riding. There is reason, however, to believe that it was at a very early period in the world's history. It is referred to in some of the most ancient books extant. Xenophon mentions a double bridle and bit in his work upon Horsemanship. One bit was smooth and flexible, the other was armed with sharp points. The original method of guiding horses was, however, by means of a cord passed through the mouth and around the lower jaw—a method still practiced to some extent, under circumstances where bits of iron cannot well be obtained. Horses were anciently ridden bare-backed, or supplied with a cloth thrown over the back.

The invention of the saddle for riding purposes has been ascribed to the Persians, but there is probably room for some doubt as to its true origin. It is not certain that it was used before the fourth century of the Christian era. The first accounts of stirrups date from the fifth century. Spurs were early used among the Romans, but their precise origin has not been ascertained. The ordinary stable equipments, including the currycomb, brush, scraper, rake, sieve, and shovel, are also of ancient origin, although they, like other things, have been much improved in their form and materials in modern times. It will be seen from these facts, that appliances for the management and use of the horse, are mostly of ancient origin. We believe there is still room for improvement in means for the more efficient use of this noble and often ill-treated animal.

DEATH OF MOSES Y. BEACH.

We record with regret the decease of Moses Y. Beach, Esq.—father of Mr. A. E. Beach, of the Scientific American—at Wallingford, Conn., July 19th, in the 69th year of his age. He was a man of generous impulses, quick perceptions, great industry, and superior ability. He was in every respect a self-made, self-educated man. At fourteen he was an orphan, and learned the trade of cabinet maker at which he worked for many years. He was one of the builders of the first stern-wheeled steamboats on the Connecticut river at Springfield, Mass.

Afterwards he became the proprietor of a paper making establishment up the North River, supplied paper to the newspapers here, which finally led to his purchase of the New York *Sun* establishment. When Mr. Beach carried on paper making one of the large items of cost was that of cutting the rags. This was done by hand, the rags being spread on benches along which ranks of women were employed, each with a large knife fastened horizontally in front across which the rags were one by one drawn. It was a slow and tedious operation. Mr. Beach very quickly overcame the difficulty by inventing a rag-cutting machine, somewhat on the principle of the straw cutter, for which he received a patent. One machine does the work of a thousand hands and this plan of cutting is now used in all paper mills.

Moses Y. Beach was extensively known throughout the country in connection with the New York *Sun* newspaper, of which he was the sole proprietor for nearly twenty-five years, and which under his administration became very popular, rising from a small edition to a circulation of over 50,000 copies, at that time the largest edition of any daily newspaper in the world. This was before the days of telegraphs, or many railroads, when the newspaper folks had to work hard to obtain news ; and the rival publishers often resorted to strategy to get ahead of each other, employing horse expressmen, steamboats, and carrier pigeons. Mr. Beach was most energetic and successful in this respect, and the *Extra Sun*, containing important intelligence, hours in advance of other newspapers, used to be a familiar cry, in the streets of New York. Mr. Beach acquired a handsome fortune and retired from business several years ago.

During the Mexican war at the request of the President he went to the City of Mexico as Commissioner to negotiate for peace. This was an exceedingly delicate and hazardous mission.

Rigorous Apprenticeship.

Few persons have looked into the lives of so many remarkable men as I have, yet I cannot call to mind one of the acknowledged kings of business who did not in early life serve a long, rigorous apprecticeship to some occupation akin to that which he afterward exercised, and in which his great success was made. All my acquaintance with business men teaches me that the fundamental secret of success is KNOWLEDGE—*real* knowledge—such knowledge as is only practically acquired by becoming practically familiar with methods and processes—such knowledge, in fact, as a man gets by taking hold of work, and doing it until he can do it easily and perfectly. I should be sorry to say any thing to disparage our institutions of learning. Nevertheless, I feel confident that an intelligent youth, who remains at school until he is sixteen or seventeen, and then apprentices himself to a good trade, can get a better education out of his shop (with an hour's study of principles in the evening) than it is possible to get in any college in existence—that is to say, a better education for *this* new and forming country, where, for at least fifty years to come, no man can hope to play a leading part, except in wielding material forces.—*Parton, in Packard's Monthly.*

THE Commissioner of Patents has refused to grant to the heirs of the late James A. Cutting an extended term of the so called Bromine patent. Photographers will readily perceive the importance of the action of the Commissioner in this matter.