Stereoscopic Projection With the Magic Lantern.

In Mr. Anderton's system, the two pictures are projected by two optical systems onto the same screen by polarized light, the light of one optical system being polarized at right angles to that of the other optical system. The superimposed images are viewed by a pair of analyzers also set at right angles to each other, so that each eye shall receive its proper image. A correspondent of the *Optician* has seen a trial projection according to this system, the experiment having been made at the premises of Messrs. Field & Co., of Suffolk Street, Birmingham, where Mr. Anderton is manager. The correspondent in question says: "I was shown into a darkened room, in which was a double lantern, apparently an ordinary make, so far as form was concerned. On the other side of the room was a screen 12 feet by 10 feet, covered with a frosted white metallic surface, being apparently a large number of small sheets of the ordinary tin foil pasted together, and as a consequence it had a number of reflecting surfaces of different gradations, which were more diversified than pleasing. This can, however, be remedied easily enough by the manufacture of proper screens now that the invention is protected. On taking a seat I was handed a simple-looking apparatus, something like an opera glass with a handle, but only about 1¼ inches each way, and very light. I looked at the pictures when thrown on the screen through this glass. The first picture thrown on, and occupying the whole screen, was the interior of Ledburgh Abbey. Viewed without the eye-glasses it presented the appearance of an ordinary lantern picture having some of the details slightly blurred. Some alterations were evidently in progress, and a long ladder could be seen lying on the floor with its end toward the spectators. I then looked through the eye-glass, and the whole scene was instantly changed. The architectural details of the building stood out in bold relief. The male figure in the middle distance started into apparent life, and the vista of the aisle stretched out into magnificent perspective, while each rung of the ladder was in a stereoscopic relief. The next picture was a splendid colored tiger. This and other natural history subjects were taken from instantaneous photographs of the animals in the Zoological Gardens, and the results were almost startling in their realism. The next picture, that of a group of elands, showed in a very marked manner the impossibility of superposing two dissimilar pictures so as to register accurately. A juvenile eland in the background had so abnormally large a number of legs as to qualify him for a very high position in a museum as a monstrosity. On looking through the eye-glass, however, the extra legs disappeared, and the whole group stood out stereoscopically in a most life-like manner."—*Photographic Work.*

An Aerolite Falls in the Great Desert of Sahara.

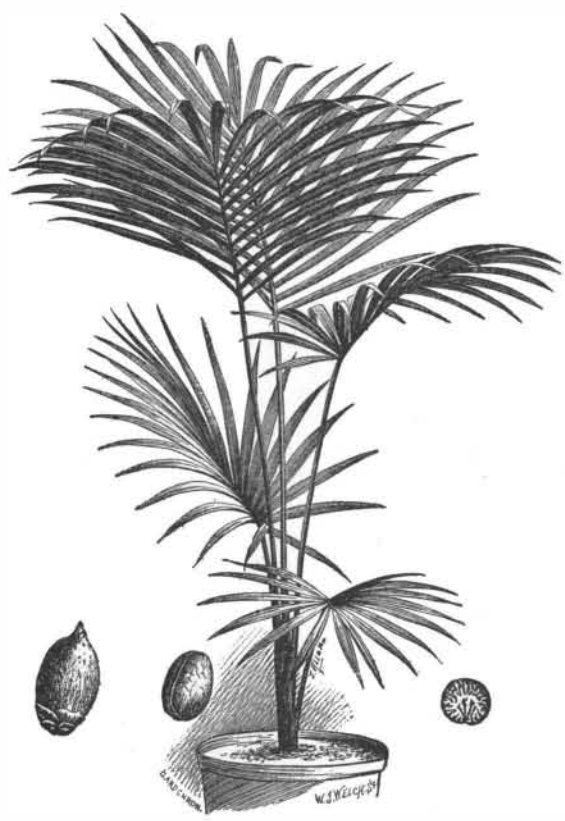
Mons. Stanislas Meunier has just contributed to the literature of the Academie des Sciences some interesting particulars of a ferric aerolite, which has been acquired by the Paris Museum, and which recently fell into the middle of the most extensive barren tract on the surface of the globe, to wit, the Sahara Desert. The exact contact point, says *Iron*, was a spot situated in latitude 28·57° north and longitude 0·49° west, in contiguity to the pits of Hassa-Jekna, on the caravan road from El Golea to Gourara. A mouadhi of the Chamba tribe, having established his camp in the locality, had departed on a hunting excursion with his men. In his absence, the women, who were seated outside the tents, became suddenly cognizant of a tremendous rushing noise. The next instant they saw, at a distance of some 500 yards, a dark body dash to the ground, the force of the impact causing the sand to belch into the air, with an effect almost like that of the outrushing waters of an Icelandic geyser. The Moorish Nimrods, who had also been attracted by the sound of the falling meteorite, shortly afterward returned, and proceeded to investigate the cause of the phenomenon.

Guided by the wild gesticulations of the females, they hurried to the passage which the aerolite had bored for itself in the earth, and they saw the strange body at a depth of about a yard. Their first impulse was to bring the meteorite to the surface, but their initiatory efforts in this direction received a rude and unexpected check. The quondam quarrymen who essayed to raise the intruder quickly and unanimously dropped their burden and ran howling with pain to the tents. The celestial visitor, still very hot from the friction engendered in its terrific flight through the atmosphere, had severely scorched their fingers. On the following day the aerolite had cooled sufficiently to permit of easy withdrawal from its arenacious bed. It was, after all, but a comparatively small piece of meteoric iron, of pyramidal shape, and remarkable for its rounding contour, which contrasted strongly with the fragmentary and angular character of the majority of similar bodies. A section sawn, polished, and etched, showed a very clean Widmanstatten figure. The density measured at 14° was 7·67. Analysis gave: Iron, 91·32; nickel, 5·88; cobalt, 0·81; copper, trace; sulphur, trace; the remainder, insoluble, 1·04. This composition, Mons. Meunier says, accords with the physical traits of the lithological series of meteors, and the Hassa-Jekna iron may therefore be classed with the rare aerolitic type which the French mineralogist distinguished in 1870 by the appellation of schwetzite.

PTYCHORAPHIS AUGUSTA.

This is an elegant little stove palm, which has been introduced to Kew this year from the Nicobar Islands. It is as graceful as Cocos Weddeliana or Geonoma gracilis, and it grows as freely under cultivation as either of these popular palms. Nurserymen and others interested in palms would, I believe, find it worth while to introduce this Ptychoraphis in quantity, and the following information may serve to put them on the scent.

Kurz, writing in the *Journal of Botany* in 1875, of some plants of the Nicobar Islands, says of this palm: "One of the most conspicuous features of the Nicobarese vegetation is Areca Augusta. It pushes its head above the highest forest trees, and forms, so to say, a palm forest above the true forest, rendering thus the aspect of the landscape more Brazilian than Indian. It is frequent all over the so-called northern group, while it becomes scarce in the southern group." He also states that it seeds abundantly, each tree yielding about a maund of fruits yearly. It forms a slender tree 80 to 100 feet high, the smooth annulated trunk only a foot in diameter. The leaves ultimately become 8 to 12 feet long, the pinnæ 2 to 3 feet, narrow linear, acuminate, bright green. The fruits and seeds, of which figures are given in the accompanying picture, are elliptical, oblong, red when ripe, a groove,



PTYCHORAPHIS AUGUSTA.

similar to that of the date stone, running along one side of the seed, the albumen of which is ruminated as in a nutmeg. A quantity of the seeds have recently been distributed from Kew.

The genus Ptychoraphis was created by Beccari and comprises only three species, all Malayan. It is allied to Ptychosperma and Pinanga.

A second species of Ptychoraphis, viz., P. singaporensis, also called Ptychosperma, is also in cultivation at Kew, and the third one is the plant which has lately been distributed as Rhopaloblaste hexandra.

Palms appear to have been exceptionally unfortunate in regard to nomenclature. Horticulturists will, no doubt, regret that Kurz's simple name for the plant here figured, viz., Areca Augusta, proved a wrong shot. What are termed "crack-jaw" names by the laity are abundant among palm names. The unoffending little brother of the plant here figured has been well (or ill) treated in this respect by the botanists. One called it Ptychosperma singaporensis, another followed with Rhopaloblaste, and now we are to call it Ptychoraphis. Would plant sponsors be offended if cultivators appealed to them for simpler names? The new generic names are much more "crack-jaw," as a rule, than the old.—*W. W., in the Gardeners' Chronicle.*

Remarkable Railway Facilities.

In addition to many lines of street cars drawn by horses, the city of New York is supplied with a steam street system known as the elevated railways. They consist of large iron bridges which occupy several of the finest avenues and streets of the city. The need for steam cars in great cities is illustrated by the immense numbers of people who use the elevated roads in New York. The ordinary daily movement amounts to nearly half a million passengers, but on the day of the great parade in honor of Columbus, October 12 last, the number of people carried was 1,075,537, and the number of trains employed for their transportation was 11,688.

This is an extraordinary showing, and is indicative of high ability in the management. These elevated railways are under one management, the Manhattan Elevated Railway Company, and embrace the following lines:

Third Avenue line, length	8·48 miles.
Second Avenue " "	8·76 "
Sixth Avenue " "	10·76 "
Ninth Avenue " "	10·07 "
Suburban branch line, length	3·70 "
	41·77

Cheap Engineers and Expensive Lawyers.

We frequently receive very decided expressions of opinion from those whose experience makes them the best judges against the old-fashioned, short-sighted, penny-wise and pound-foolish policy of employing the cheapest possible service in engaging professional engineers, while, when it comes to lawyers' fees and presidents' and managers' salaries, large sums are paid without hesitation. Any one who will take the trouble to find out how much time must be spent and what the amount and nature of the studies are to become a good engineer, and then compare this with that required to become a good lawyer, cannot fail to notice how much greater the former is. Moreover, in the engineering profession one must continue to study and keep abreast with the rapid progress made in engineering, while in the lawyer's profession the term "progress" hardly exists. Of the four professions, medical, theological, law and engineering, the latter is certainly the one in which one's reputation depends entirely on ability, that is, the one which requires the most conscientious work in order to gain and keep a good reputation. When an engineer is ignorant, and makes mistakes in building a bridge, machine, or a mining plant, for instance, which thereby breaks down, there is no question where the fault lies and whose it was, and, what is worse, the lives of innocent victims are often at stake. Of all professional men, therefore, the engineer must work, study and practice in the most thorough and conscientious manner. He should, therefore, be selected with the greatest possible care, and receive the most liberal remuneration. The man who will take the greatest care in engaging a physician, regardless of cost, will go to his factory and engage cheap and incompetent professional engineers, and practically intrust the success of his manufactured products or constructions to their care, and then wonder why other manufacturers who pay for able talent are more successful. Some companies pride themselves, and with right, on the professional engineering talent which they employ and can retain by paying properly for it, but there still appears to be many who stick to the short-sighted policy of underpaying the one in whom the success of their products to a great extent lies.—*The Electrical World.*

Removing the Odor from Sulphured Goods.

How can the bad odor be removed from sulphured goods? is a question frequently asked, and various remedies are proposed. The general course of procedure is reeling in cold water, or a treatment in the washing machine. The following suggestion, however, differs somewhat from the general drift. The question is how to remove the smell from sulphured flannels.

In reply it is said that occasionally in textile publications is the washing with soda recommended for the purpose of removing the disagreeable smell from goods which have been exposed to the sulphur chamber. Many seem to think that they are dealing with carbonized goods, and they must themselves have had very little experience with sulphured white goods; otherwise they would not have recommended so dangerous a remedy to those who avowedly have had no experience at all in this line. Nothing is more erroneous than to suppose that, because carbonized goods are neutralized with soda, this process might also be successfully used with sulphured white goods. It should be remembered that washing with soda always makes the wool fiber yellow. It would consequently entirely counteract the effect of the sulphuring process. This fact is also the principal reason why fabric intended to be sulphured must not be carbonized, if a handsome, pure white is desired. For such goods choose wool as nearly free from burrs and as white as possible. If there are any who think that the odor of sulphur cannot be removed effectively with clear water alone, let them wash the fabric with good, entirely neutral tallow curd soap before rinsing, or else let it pass through a properly prepared chalk bath. Any one will be able after a little practice to manufacture white sulphured fabric that will, when finished, not have the least smell of sulphur about it. —*Industrial Record.*

Electricity in Chemical Industries.

Most of the numerous and various applications of electricity are of such a nature that engineers and the reading public soon become familiar with them; but this is not always the case with new developments in electro-chemistry, as chemical processes, when not secret, are, as a rule, of less interest and of little importance to the public, says *The Electrical World*, except in so far as they result in the cheapening of a product. Many people, therefore, do not know the great and important progress which is being made in this field. The great cheapening in the price of pure aluminum and of the aluminum alloys, for instance, is largely due to electric processes. Electric bleaching is much more common than is generally supposed. Electric processes for extracting metals from ores are becoming of more importance every day, although comparatively little appears about it in current electrical literature. A cable dispatch just received from England announces the discovery of a new electric process for obtaining caustic soda, chlorine, and other commercial chemicals from salt water. It is stated to have been pronounced a great success by prominent chemists and to cost but half as much as the present methods. The dispatch gives no other details, and until it is verified and accompanied by further details little need be said about it here. That such processes are possible, however, is well known to all educated electricians, as they may be performed in any laboratory; it remained only to bridge the gap, which often is very wide, between the laboratory experiment and a cheap and practical chemical process. If these difficulties have been overcome, as the dispatch leads one to believe, and if such a saving is really effected, the result will doubtless be not only of importance to the manufacturing chemist, but also to other industries in which such important chemicals as caustic soda and chlorine are used. The oceans are practically inexhaustible mines of these products, which are and always will be free to the public; this "raw material" can never be taxed by any artificial protective tariff, and monopolies and trusts for raising the price of this raw material are forever beyond the control of politicians and legislation. A better source of supply could not be desired. It remains only for ingenuity and enterprise to develop processes for converting this free raw material into commercial products, which, if this report from England is reliable, appears to have been accomplished.

The Cotton Industry of the United States.

Census Bulletin No. 237 presents a preliminary report on the manufacture of cotton in the United States, prepared by Mr. Edward Stanwood, special agent, under the direction of Mr. Frank R. Williams, special agent in charge of statistics relating to all branches of manufactures.

The growth of the cotton manufacturing industry of the United States has been constant. One of the most gratifying features of the situation is the great extension of this industry in the South, where a marked addition is shown in the number of cotton mills established and successfully operated. The magnitude of this movement is demonstrated by the fact that the consumption of raw cotton in the Southern States in 1890 exceeded that of 1880 by 166,308,889 pounds, while in New England, the chief seat of this manufacture, the excess of consumption of 1890 over that of 1880 was only 173,317,834 pounds. Nevertheless, the development of cotton manufacture throughout the country, measured by any test, was large and healthy. Inasmuch as the manufacture of cotton is one of the principal industries to which the factory system is applied, its condition throws much light upon the industrial situation.

The tables herewith given do not include the returns of special mills employed in working raw cotton, waste, or yarn into hose, webbing, tapes, mixed goods, or fabrics which are not classed as specific manufactures of cotton.

The general facts attending the increase are shown in the following comparative statement:

	1890.	1880.	Percentage of increase.
Number of establishments reported	904	756	19·58
Capital invested	$354,020,843	$208,280,346	69·97
Number of hands employed (officers and clerks included)	221,585	174,659	26·87
Amount of wages paid (amount paid officers and clerks not included)	$66,024,538	$42,040,510	57·05
Amount of wages paid to officers and clerks	$3,464,734	...	....
Miscellaneous expenses	$17,036,135	....	....
Cost of materials used	$154,593,368	$102,206,347	51·26
Value of product	$267,981,724	$192,090,110	39 51
Number of spindles	14,088,103	10,653,435	32·24
Number of looms	324,866	225,759	43·90
Pounds of raw cotton consumed	1,117,945,776	750,343,981	48·99

So far as these figures can be taken as a full statement of the financial results of the manufacture of cotton, it appears that of every dollar received for goods made and sold, 43·81 cents represent the cost of cotton consumed in the manufacture, 13·88 cents the cost of other materials, 6·36 cents the amount of miscellaneous expenses, and 25·98 cents the cost of labor, including the amount paid to officers and clerks. The sum of 10·02 cents remains as residue to cover the depreciation of plant (a large item in cotton mills), as well as the visible profits of the manufacture.

The increase in the number of spindles reported is 3,434,668, or 32·24 per cent, and in looms 99,107, or 43·90 per cent.

The number of spindles reported in idle mills is 166,143; the number of cotton spindles in woolen mills proper, not as yet exactly ascertained, is about 196,000. The total number of spindles, active and idle, is therefore about 14,450,000.

The numerical and proportionate increase in the number of spindles, as reported in these tables, by geographical divisions, is as follows:

Geographical Divisions.	Spindles. Increase. Number.	Per cent.
New England States	2,104,068	24·37
Middle States	242,558	17·44
Southern States	1,011,952	186·69
Western States	76,090	86·33

The paramount fact concerning the progress of cotton manufacturing between 1880 and 1890 is the prodigious growth of the industry in the South. In each of the States of North Carolina, South Carolina, and Georgia the increase is almost exactly a quarter of a million spindles, which is a larger number by far than that which indicates the increase in any other State except Massachusetts.

The commercial estimate of the crop of 1889–1890 was 7,313,726 bales, of which 2,342,328 bales are supposed to have been consumed by spinners in the United States, averaging 495 pounds to the bale.

SUMMARY OF GOODS MANUFACTURED—1890.

Products.	Quantity.	Value.
Total value of all products	....	$267,981,724
Plain cloths for printing or converting (square yards)	955,294,320	43,550,174
Brown or bleached sheetings or shirtings (square yards)	962,238,062	55,193,439
Drills, twills, and sateens (square yards)	334,020,091	23,601,239
Ginghams (square yards)	268,996,715	20,686,390
Cotton flannels (square yards)	132,524,706	10,574,924
Fine or fancy woven fabrics (square yards)	127,373,179	12,545,929
Duck (square yards)	55,192,538	8,664,395
Ticks, denims, and stripes (square yards)	167,121,426	16,987,546
Upholstery goods	....	2,070,239
Bags or bagging	....	3,107,413
Tape and webbings	...	1,759,512
Yarns for sale (pounds)	166,397,003	33,247,596
Sewing cotton (pounds)	13,868,309	11,637,500
Twine (pounds)	8,533,730	1,364,300
Batting or wadding (pounds)	20,470,556	2,094,232
Rope (pounds)	3,590,228	479,415
Waste (pounds)	141,109,597	5,679,701
All other products	....	14,737,780

The total amount of piece goods reported is more than 3,000,000,000 square yards, almost enough to cover an area of 1,000 square miles, and more than enough to encircle the earth at the equator sixty-eight times. The importance which the manufacture of sewing cotton has assumed is one of the striking facts developed in the above table. Substantially, the whole supply of spool thread is now both spun and finished in the United States.

As to the geographical distribution of the production of the several classes of goods, it will be seen that nearly six-sevenths of the print cloths and a much larger proportion of the finest goods are woven in New England. The manufactures of the Middle States run largely to sewing cotton, yarns, and duck, and almost all the upholstery goods are produced in these States. The mills of the South are chiefly devoted to the production of yarns and sheetings.

Bee Keeping in Utah.

J. L. TOWNSHEND, UTAH.

When the pioneers settled in Utah in July, 1847, the valleys were a part of the great dry sage brush desert extending from the Rockies on the east to the Sierras on the west. By the pioneer's industry, the desert soon began "to blossom as the rose," and as the immigration continued, every tract of land that could be irrigated from the mountain streams was made a place of habitation, every cabin having its vegetable garden, with a variety of old-fashioned garden flowers to border the walks. Soon, by many a cabin, the common black bees were busily humming at the entrance of a bee gum made from a section of a hollow tree, or storing their honey in the old twisted straw rope hive, for at that early day movable frames and patent hives were still a dream of the future. The sweet clover (*Melilotus alba*), that came as a weed in our grain fields, found a congenial soil and climate, and took possession of the banks of the irrigating ditches and waste places, making a bee pasturage that produced the very finest quality of honey, and by the roadsides sprang up an abundance of the Rocky Mountain bee plant (*Cleome integrifolia*). Alfalfa or lucern, the plant that has done more for agriculture than any other in the West, was then extensively planted over large areas, and became the chief bee pasturage in Utah. With the growth of alfalfa the bee industry also started with renewed interest. The two or three cuttings prolonged the honey season. Improvements in beekeeping that were adopted in the Eastern States were promptly added here, the more enterprising small farmers importing the movable frame box hives and honey extractors. Utah honey was praised by all who tasted it, the flavor being delicious and quality unsurpassed. The demand for it extended until it is now a staple article of export, carloads of it being shipped to Omaha, Denver, and Chicago. The black bees are now replaced with Italian, or Holy Land colonies, as the latter are more docile and better gatherers of honey. Nearly all hives are of the American pattern, with frames about 11⅜ by 14⅝ inches, very few other patterns being used. Every apiary has an extracting house, containing a honey extractor and tank for holding the honey, comb foundation machine, boiler for melting wax for making foundation, machine for fastening foundation in sections, utensils for handling bees, and mechanics' tools for making hives, frames and sections.

Every apiary has some form of the improved sun wax extractor, all of them home made, and many ingeniously constructed. One of these, instead of being stationary, is pivoted on an upright post so that it can face the sun from morning until sunset, thus being more effective in prolonging the hours of sunshine upon the melting wax. In our bright sunshine and scarcity of cloudy weather these sun wax extractors are proving an excellent utensil for melting wax cappings and honey, and separating both from beebread.

At present, we have three classes of apiaries, those containing about thirty to fifty hives owned by small farmers who keep bees as one of their profitable industries; those having a hundred or more stands belonging to several parties and kept on shares by a successful beekeeper; and those having from 200 to 500 hives kept by an apiarist, who gives his entire attention to the industry of producing and exporting honey. The average yield is sixty pounds of extracted honey from each hive. One apiarist last year procured, from fifty-two colonies, an average of eighty-three pounds of extracted honey, and another, situated in a better pasture, extracted 30,000 pounds from 250 stands, and, besides, procured 6,000 pounds of section comb honey from 240 of these stands. One double hive of eighteen frames yielded 195 pounds of extracted honey, and another hive filled 140 one-pound sections with comb honey. During the honey season the combs are extracted about every eight days, but much depends on the condition of the atmosphere, a dry, hot wind decreasing, or stopping, the yield. A stand of good bees now brings three dollars in the local market, the price varying with the strength of the colony. Extracted honey sells at six cents a pound, the price always being less than sugar and more or less governed by that staple. Much of our fruit for home consumption is preserved with honey by those who produce it, but the preserves and canned fruit prove more liable to fermentation than when put up with sugar. No ill effects follow the eating of Utah honey, indigestion from its use and honey colic or cramp being unknown here. It proves a valuable food, and is too cheap to be longer classed as a luxury. When extracted honey is canned, or stored in vessels, it candies, or becomes hard and white, and is generally exported in this condition, but it only requires melting to resume the liquid state.

Legislation, in favor of beekeepers, was enacted by the Utah legislature last winter, empowering the county courts to appoint bee inspectors and district the counties for the suppression of foul brood, which is found in those stands kept by careless farmers with but few hives, and thence occasionally is carried into the apiaries. The county tax assessor is required to enumerate the hives kept by each person, and the county tax collector receives five cents for each hive in addition to the usual taxes. From this fund the bee inspectors are paid three dollars a day. They are required to examine every apiary and cleanse each hive found to contain foul brood by burning the diseased combs and burning out the inside of the box, and must make the rounds of their district at least once a year. Upon complaint by any beekeeper against another, the inspector must examine the suspected colonies.—*American Agriculturist.*

LORD CHIEF JUSTICE HALE was perhaps the first judge to call attention to inebriety as a cause of crime, requiring special study and attention. In 1870 he is reported as saying:

"If the murders and manslaughters, the burglaries and robberies, the riots and tumults, and other enormities committed during the last twenty years, were divided into five parts, four of them would be found to have been the issue and product of drinking."