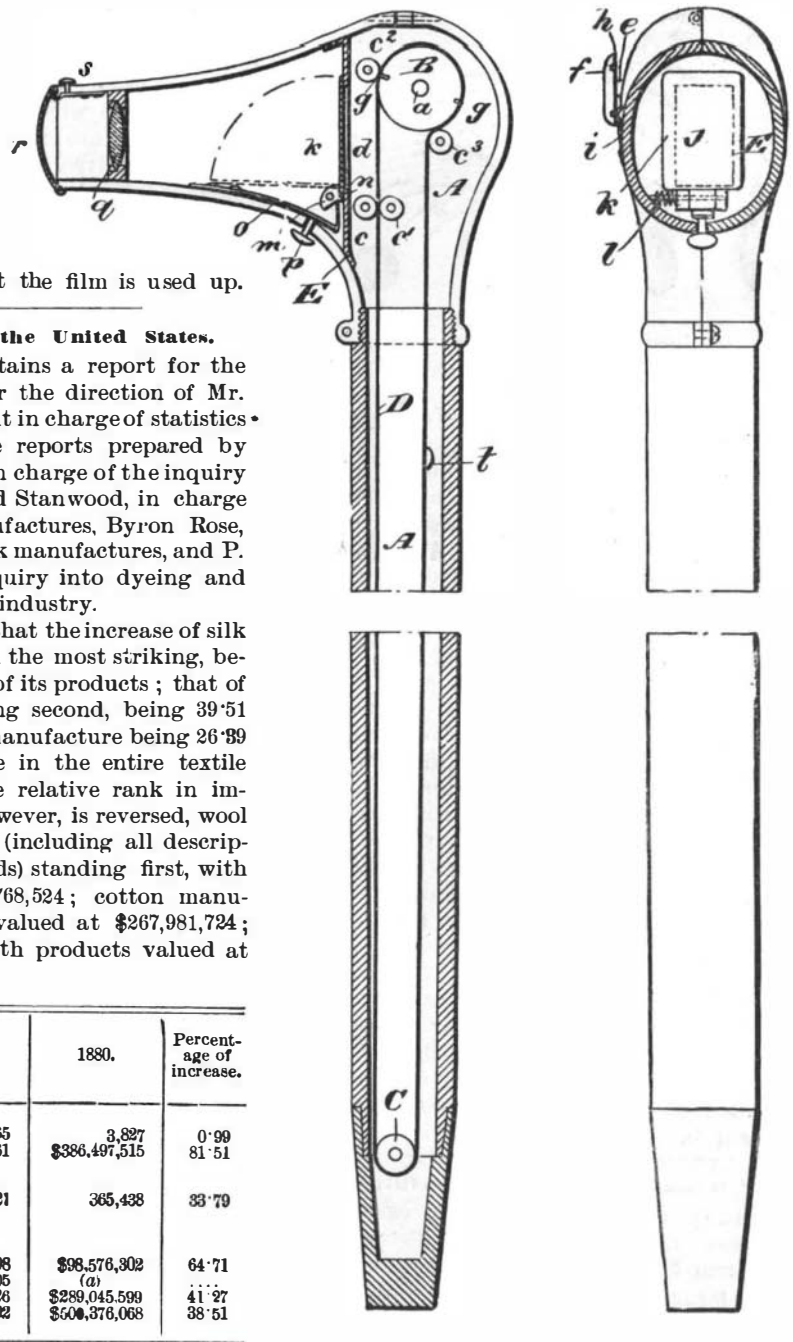
PHOTOGRAPHIC CANE.

In this cane, which is shown in front and side sectional elevation in the two figures, the head forms a camera, while the tubular body of the cane forms a reservoir for the sensitized celluloid strip. The head is screwed to the body and carries a plate, A, which extends down into the cane. On the stud, *a*, projecting from the plate is journaled the roller, B, and at the lower end of the plate, A, is journaled a roller, C. A celluloid strip, D, passes around the rollers, B, C. This strip is preferably made endless by joining its ends by means of two or three stitches or even a small pin to permit of giving suitable tension to the strip. The strip is guided by rollers, *c*, c^1, c^2, c^3. The rollers, c^2, B, and *c*, c^1, hold the section, *d*, of the film in the focal plane. The roller, B, is provided with a stem, *e*, which extends through the side of the cane head and is furnished with a milled head, *f*. The roller, B, is provided with points, *g*, on diametrically opposite sides for puncturing the sensitized film at the ends of the exposed portion, and the inner surface of the milled head, *f*, is provided with cavities, *h*, corresponding in position with the points on the roller, B, and to the side of the cane head is attached a spring, *i*, furnished with a projection which enters into one or the other of the cavities, *h*, and thus causes the film to register.

In the cane head near the film, D, is secured a plate, E, provided with a rectangular aperture, *j*, through which the exposure is made. To the front of the plate is hinged a shutter, *k*, the pivot of which is prolonged and furnished with a spring, *l*, which tends to close the shutter and keep it closed. The cam, *m*, formed on the hinge is provided with a notch, *n*, for receiving the end of the spring, *o*. A button, *p*, extends through the lower wall of the cane head. When the button, *p*, is pushed the shutter is thrown open and the cam, *m*, trips the end of the spring, allowing the shutter to close. If it is desired to prolong the exposure, the shutter may be opened more carefully and held open as long as may be required before pushing the button, *p*, far enough to cause the spring to trip.

The lens, *q*, is placed in the cane head in proper relation to the exposed portion of the film, D, and the end of the cane head is furnished with a small hinged cap, *r*, which is held in a closed position by the spring catch, *s*. When it is desired to make an exposure the spring catch, *s*, is pressed, when the cap, *r*, flies open; then the button, *p*, is pushed, opening the shutter in the manner already described, making the exposure. After the exposure is made the milled head, *f*, is turned a half revolution, when the camera is ready for another operation. Of course it is necessary for the operator to either count the number of exposures, or to attach to the film a button, *t*, which will not pass between the rollers, C. When the film can be turned no further, it will indicate that the film is used up.



PHOTOGRAPHIC CANE.

The Textile Industries of the United States.

Census Bulletin No. 242 contains a report for the eleventh census, compiled under the direction of Mr. Frank R. Williams, special agent in charge of statistics of manufactures, from separate reports prepared by special agents S. N. D. North, in charge of the inquiry into wool manufactures, Edward Stanwood, in charge of the inquiry into cotton manufactures, Byron Rose, in charge of the inquiry into silk manufactures, and P. T. Wood, in charge of the inquiry into dyeing and finishing of textiles as a distinct industry.

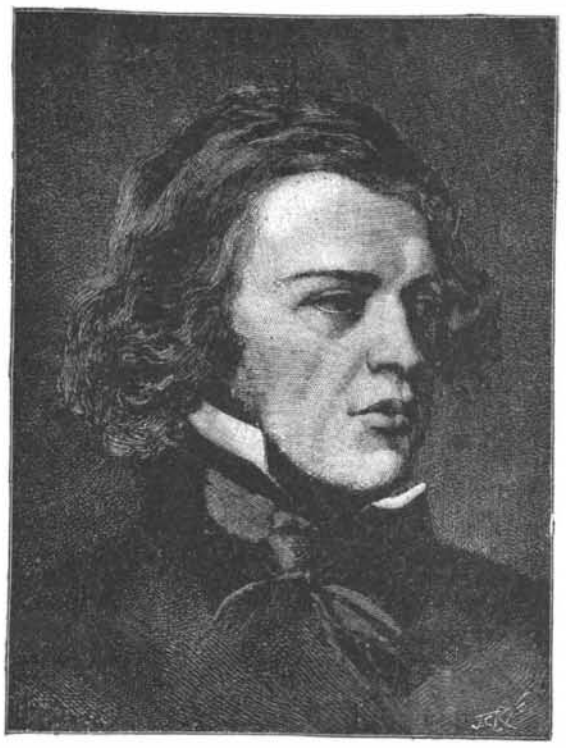
It appears from this bulletin that the increase of silk manufacture since 1880 has been the most striking, being 112·75 per cent in the value of its products; that of the cotton manufacture ranking second, being 39·51 per cent, and that of the wool manufacture being 26·39 per cent. The average increase in the entire textile industry is 38·51 per cent. The relative rank in importance of these industries, however, is reversed, wool manufacture in all its branches (including all descriptions of hosiery and knit goods) standing first, with gross products valued at $337,768,524; cotton manufacture second, with products valued at $267,981,724; and silk manufacture third, with products valued at $87,298,454.

	1890.	1880.	Percentage of increase.
Number of establishments...	3,865	3,827	0·99
Capital invested.....	$701,522,861	$386,497,515	81·51
Number of hands employed (not including officers and clerks in cotton industry)..	488,921	365,438	33·79
Amount of wages paid (not including wages paid officers and clerks in cotton industry).....	$162,365,598	$98,576,302	64·71
Miscellaneous expenses.....	$40,910,405	(a)	....
Cost of materials	$408,328,226	$289,045,599	41·27
Value of product.....	$693,048,702	$500,376,068	38·51

(a) This item was not reported at the census of 1880.

LORD TENNYSON.

The recent death of Lord Tennyson, Poet Laureate, brings to a close the career of probably the greatest literary genius of the present century. Alfred Tennyson was born August 6, 1809, at Somersby, and died at Aldworth, Sussex, October 6, 1892, being a little over 83 years of age. He was the son of Rev. Dr. G. C.



TENNYSON AT TWENTY-TWO.

Tennyson, rector of the church at Somersby. Alfred Tennyson was educated at Cambridge and soon became distinguished for his poetical compositions, which increased in power and beauty with maturing years. In 1850 he was appointed Poet Laureate in succession of Wordsworth. In 1884 he accepted a peerage of the United Kingdom with the title of Baron Tennyson. Of his many portraits, one of the most pleasing is that taken when he was a youth of 22 years, painted by Sir Thomas Lawrence, an engraving of which is here presented.

Instruments for Recording the Temperature of Blast Furnaces.

For some time Professor Roberts-Austen, the English metallurgist, has been impressing on iron masters the necessity of ascertaining and recording the temperatures at which the reduction of iron ores is conducted in the blast furnace. He holds that the composition of pig depends to a large extent on the temperature at which it is formed, and when our knowledge on this point is extended, it will be possible to regulate the thermal conditions which determine the passage of elements into iron.

Sir Lowthian Bell, of Middlesborough, was the first to adopt the suggestion, by placing a platinum-rhodium pyrometer in the hot blast mains in his furnace, and since then several other methods have been employed at many works to attain the same object. It is not until lately, however, that any attempt has been made to automatically record the temperature of the hot blast. A few months ago Mr. Martin, of the Dowlais Works, in South Wales, requested Professor Roberts-Austen to devise some method of doing this. Mr. Martin has already introduced a method of automatically recording the times at which the valves were reversed. Accordingly, the professor has recently arranged a set of instruments. There are six new blast furnaces at Dowlais. In the hot blast main of each a pyrometer has been placed, consisting of a thermo-junction of platinum and platinum-rhodium. The wires from these six thermo-junctions are brought to a switch in the laboratory, where they can be connected one after another with a D'Arsonval galvanometer. The spot of light is thrown upon a cylinder, which is covered with sensitive photographic paper and which revolves once in twenty-four hours. A datum line representing the required temperature is first drawn so that the distance of the line traced by the spot of light from this datum line represents the variation of temperature of the blast. By this arrangement it will be seen that the heat of only one blast can be recorded at a time, and that the full record of variation in temperature cannot be obtained. The reason for this is apparently that the apparatus is only experimental, and that if it is found to be perfectly reliable, a more complete set of instruments will be employed. In reading an article before the Iron and Steel Institute, on September 20, the professor stated, with Mr. Martin's corroboration, that excellent results had already been obtained, and that they could recommend the general adoption of the apparatus. In reply to questions he said that these thermo-junctions gave constant and reliable readings and did not deteriorate with usage.

Sleep.

Sleep is one of the least understood of physiological phenomena. A new theory of it (we learn, says *Nature*, from the *Revue Scientifique*) has been offered by Herr Rosenbaum. He supposes the essential fact in the fatigue of the nervous system leading to sleep to be a hydratation of the nerve cells, an increase of their water content. The greater the hydratation, the less the irritability. This hydratation arises through chemical change of the nervous substance during activity. A small part of the water escapes by day through the lungs, but the greater part is eliminated during sleep. Its passage into the blood takes place by virtue of the laws of diffusion, and depends on the quantity and density of the blood, its amount of fixed principles, speed of its flow, etc. Elimination of the expired air takes place according to the laws of diffusion of gases. The assimilable substances of the body take the place of the water eliminated in sleep. The repair of the physical and mental forces through sleep is due to this elimination and replacement. Intelligence is in inverse ratio of the proportion of water in the brain, and may be measured by this proportion, at least in the child. It may be doubted whether this theory explains the sleep of hibernating animals or that caused by opium and anæsthetics.

Azo-Cochineal.

Azo-Bordeaux and *azo-cochineal* are two new azo colors. Azo-Bordeaux dyes wool and silk in an acid bath a red, while azo-cochineal gives them a bluish red, much like cochineal red. They are excellent colors on account of their clearness and brilliancy, are fast to air and light, and do not bleed. They give even shades and can be used for heavy shades upon heavy goods, also for light and delicate shades. These two colors furnish shades that are absolutely fast to alkalies and sulphur, but those obtained upon silk do not resist washing, while those on wool are not fast to fulling and cannot be fulled with whites. Azo-cochineal and azo-Bordeaux can be used in mixtures with all azo colors which are dyed in an acid bath. These products cannot be used upon vegetable fiber. *Method of Dyeing.*—Dye the well scoured goods for one hour in a boiling bath, with from 2 to 5 per cent of sulphuric acid, 10 per cent of sulphate of soda, and sufficient color to give the shade; rinse, and, if necessary, add more acid, as the two colors take evenly, even in the presence of considerable acid.—*Journal de Teinture.*

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.

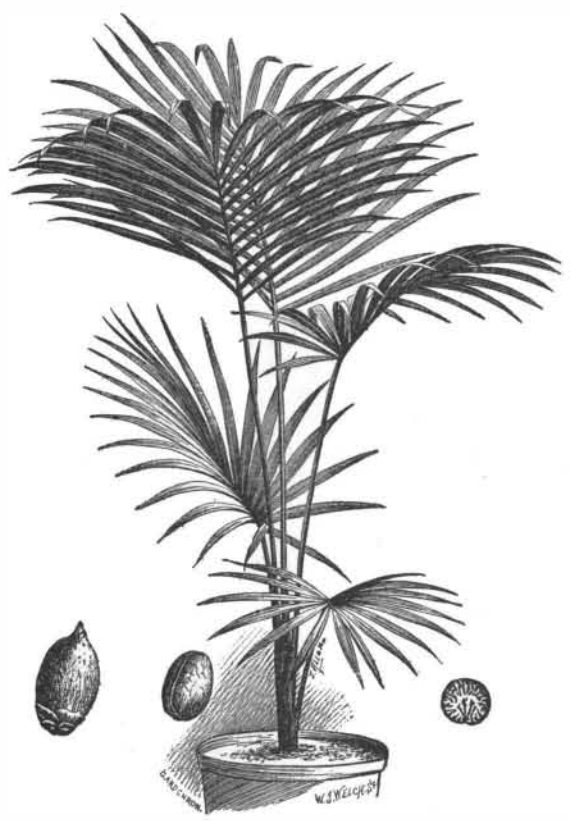
Mons. Stanislas Meunier has just contributed to the literature of the Academie des Sciences some interesting particulars of a ferric aerolite, which has been acquired by the Paris Museum, and which recently fell into the middle of the most extensive barren tract on the surface of the globe, to wit, the 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.*