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cous Combustion of Charcoal and Lampblack. Explosions of Coal Dust in Mines. A comprehensive statement of the dangers from Dust in various manufactures, and how many Fires occur.—The American Patent System.

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TECHNOLOGY.—The Waste of Gaslight. How one quarter of all gas used might be saved. Relative light-absorbing power of Dark and Light Walls. Globes, and how much Light they Waste. Coronets. Gaslight Waste from a Sanitary Point.—The Merchant Fleets of

Light Walls. Groves, and any Gastight Waste from a Sanitary Point—The Merchant Fleets of the World.

Paint in Construction. By Robert Grimshaw.—Lime, Paris White, White Lead, Zinc White, Baryta White, Blende, Antimony White, Iron Oxide, Red Lead, Prussian Blue, Cobalt Blue, Smalt, Coal Tar, Soluble Glass, Yellow Ocher, Raw Sienna, Fuller's Earth, Lampblack.—Black Stains for Wood. Logwood. Treatment for Veneers Special Treatment for Oak. Treatment with Amiline Black.—Cleaning Oil Paintings.—Restoration of Writing.—Rallab's Bleaching Process.—Albertite.—The Chains of Egypt.

III. ELECTRICITY, LIGHT, HEAT, ETC.—A Lunar Landscape.—Varley's Magneto-Electric Machine, 3 illustrations.

ley's Magneto-Electric Machine, 3 illustrations.

V. MEDICINE AND HYGLENE.—The Art of Preserving the Eyesight.

Fromthe French of Arthur Cleralier. No. I. The Anatomy of the Eye.
The Socket; the Muscles; the Inner Surface of Eyelids. The Tear
Apparatus; the Rodes and Cones; Coats of the Eye; Sections of the
Retina; Optic Neves; the Humors. An exceedingly plain and concise description of the Anatomy throughout, with 9 engravings.

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CHARLES C. PIKE, M.D. Symptoms, Treatment, Death, and Autopsy.
Conclusions.

Conclusions.

Alcoholism, Intemperance, and Insurance. The New York Mutual Life I surance Company. Average Risks of the Temporate and of the Intemperate. The Average Expectancy of Life. Statistics of Disease. The Physiological Action of Alcohol. Stimulating Action. Alcohol Retarding the Circulation. Alcohol Oxidized in the System. Insomnia, Congestion of the Lungs, and Deteriorations of Structure, as effects of Alcohol. Calculus and Liver Diseases, as results of Drink. Universal Medical Testimony against Alcohol.—Speech for the Dumb. Past Wrongs and Sufferings of the Dumb. The German Method of Teaching Articulation. The French System. Professor A. Graham Bell's Lecture. The Vocal Organs of the Dumb not Defective. The Sign System; Lip-reading.—The Founder of Modern Histology.

V. AGRICULTURE, HORTICULTURE, ETC.—Value of Hen Manure.—White and Yellow Corn.

white and reliow corn.

VI. CHESS RECORD.—Biographical sketch and Portrait of Samuel Rosenthal. of Paris, with one of his Blindfold Games—Problem by Samuel Loyd.—Initial Problem by Eugene B. Cooke.—Frank Leslie's Problem Tournament of '55. Enigma by Samuel Loyd. Enigma by T. M. Brown.—Problem by Isaac S. Loyd.—Solutions to Problems.

## THE BLACK SILK DECEPTION.

monstration that the quantity of black silk used for wearing the second, a little acid goes in. Ladies who think that soft apparel far exceeds the amount of colored silk similarly silks and stiff silks possess materially different qualities will employed. It may perhaps be said that there is no fabric thus perceive that there is really no ground for difference at made which finds a more extensive utilization than does all. After the thread is treated as above described it is black silk, and certainly there is none with which every re- wound and woven, and the fabric goes to the market. tailer of drygoods and every experienced fair shopper thinks he or she is more familiar. The seller is always quite terated. We are positively informed that such is the case. willing to affirm that his silk will "wear like a board," although his neighbor's, he insinuates, probably will not, and cent of dye. Twenty-five years ago the highest percentage he is equally ready to advocate the mooted questions of reached was 33, but then in the interval dyers have grown

cachemire" or "satin finish," or "soft" or "stiff" silk, wiser. just in accordance with the views of the customer being served. The latter has her own predilections in favor of folds is in the same way due to the extra weight. Just as "yellow edge" or "white edge," distinctions for which we an oilcloth cracks and breaks when folded at a sharp angle, never could trace any reason, as different manufacturers so does silk, and that the threads pull apart is not at all to do not seem to confine themselves to particular colored be wondered at when the miserable, thin little fabric which edges as indicative of degrees of excellence; and she further bears all the weight of dye is regarded. Colored silks, proknows that silks are apt, 1st, to crack wherever folded; 2d, bably in some measure owing to the smaller demand for to pull, so that where once was a smooth fit wrinkles apthem and in great degree to the difficulty of concealing the pear, which on nearer inspection are found to be due to swindle undervarious hues, are rarely adulterated. Browns, the opening of the threads; and, 3d, to become "shiny," drabs, slates, and similar shades contain, as a general rule, or rather to assume a greasy appearance at all prominent about 25 per cent weighting, which is not objectionable, but portions where the fabric is rubbed.

matter-of-course way, and the buyer is led to believe that the scure the delicacy and brilliancy of the hue. treatment which the silk undergoes is a quite necessary industrial process incident to its manufacture; and that it in and the average purchaser does not trouble herself, so long much of it is owing to the art of the dyer and how much of it to the silkworm.

when it is known that there is now no such thing as a good eral quality of all is good, and that that of Nos. 1, 10, 13, 7, black silk in the market: and that the black silks now sold in this country, whether domestic or foreign, are such grossly adulterated fabrics as to amount to impositions and swindles of the most reprehensible character. In justice to most retail dealers it should be said that they are the victims of the manufacturers' deceptions, and should, therefore, be classed with the public at large; but there are many firms who have their silks expressly made and expressly weighted according to their orders, and they sell over their counters, as silk, stuff which contains less silk than it does adulterant.

We have frequently stated the fact that by no means all the ingenuity in the world is enlisted on the side of rectitude, but that a very goodly share is devoted to nefarious ends. Progress follows experience regardless of the end in view, and this silk iniquity is an excellent example of the fact. Mr. Lewis Leigh, of Pittsfield, Mass. (a well known silk dyeing expert, to whom we are indebted for the facts in this article), has exhibited to us samples of silk from which he has removed all the dye, and has weighed the resulting pure silk fabric, the result showing, in many cases, that the dye exceeds 150 per cent, and in some reaches 400 per cent, as compared with the quantity of silk. It would astonish some of our fair readers vastly to compare with the original fabric the wretchedly thin webs to which fine, lustrous, thick silk becomes reduced after treatment. They might well wonder not merely how some silks wear, but how they even hang together, for the dye does not add a particle of strength, any more than does the paint on an oilcloth, to which it bears some analogy. The weighting of the silk is not done, as some dye. Omitting this sample and comparing averages of the suppose, by dyeing the finished fabric. In fact, the silk after others, the following relative percentages of weighting are leaving the loom, beyond simple brushing, undergoes no further treatment. The dyeing processes are carried out on the thrown silk thread, which after boiling receives a large quantity of nitrate of iron in solution. It is then treated with soap and alkali to "kill" the iron, or rather the acid effects of the salt. Another bath of nitrate solution follows, and then another application of soap, and thus these processes are repeated according to the weight desired. The operation is one of building up. When honest silks were made a single process or so of this kind answered all the purpose; but vicious ingenuity discovered that by repeating the operation the thread would be made heavier, and the more numerous the repetitions the greater the weight added.

Bluing by prussiate of potash, which is the next process, is followed by baths of gambier, cutch, or other astringents fastened with tin salts. The fabric after passing through this liquor is cleansed and treated with acetate of iron. Then another gambier bath, and as this stage of the operation also adds weight there is a chance for more repetitions. This, however, is virtually a tanning process through the action of the astringent on the gelatine of the silk, and the result is pretty much the same as that of tan on leather. The fabric is now a heavy, dirty, dulllooking stuff. To brighten it it is put in a logwood dye bath, with large quantities of soap, often as much as 8 ounces to the pound. The soap is retained in considerable quantities in the silk, and with the alkali already in the material forms a kind of grease which friction and wear speedily bring to the surface. This is the secret of "shininess" and the wearing smooth of black silks of all grades.

of silks. Now, however, the dyer's art extends to finishing an hour, moves pebbles as large as a hen's egg. Mr. Login the thread so that the completed fabric shall be soft and | believes that when a river has the proper load of sediment it satin like, or "scroopy," as the peculiar rustling quality loses in abrading power.

which a stiff silk possesses is technically termed. For the It is a matter of fact too well known to require any de- first the thread is sometimes treated with oil and soda; for

> It may be asked whether all black silks are thus adul-The normal condition of honest black silk is about 17 per

We have shown the cause of "shininess." Cracking at rather gives fullness to the goods. It is generally obtained There also exists among purchasers an undefined knowl- from a sumac bath. Silks dyed with the anilines being edge that black silk is weighted in the dyeing, that is, that specially bright and highly colored are not weighted, as the the dye makes it heavier. Dealers generally admit this in a addition of the necessary materials to this end tends to ob-

In order to exhibit the exact weighting of the black silk now sold in New York drygoods stores, we have collected no wise reduces wear, makes the silk richer, etc. It is true from the six leading houses below named twenty-eight enough that all dye must render the fabric more weighty; samples of silks of low, medium, and best qualities, as indicated by the price per yard. These, provided with identifias the silk is fine appearing and cheap, to question how cation marks which gave no clew to their maker's or seller's names, were sent to Mr. Leigh, with instructions to remove the dye, and send us the weights of the pieces before and More interest, however, might be and perhaps will be taken after the process. In returning them, he states that the gen-8, and 17 is especially excellent.

TABLE SHOWING WEIGHT NG OF BLACK SILK.

2	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

No. 22 Mr. Leigh states to be mainly made of waste, and to be of such poor quality that it can easily be sold at a low price without adulteration. Hence the low percentage of found:

From this it is evident that the lower the price the greater the weighting. Thus, when silk is bought at a dollar a vard. about fifty cents is paid for dye and fifty cents for silk; when purchased at \$3 per yard, \$2 goes for silk and \$1 for dye. Supposing a dress pattern of 20 yards of \$1 silk be purchased, then, one half of this being wasted in dye, the wearing value of the silk is represented by \$10, or half the amount paid. The same amount of \$3 silk costs \$60, and its wearing value would be \$40. But there is four times as much silk in the \$3 fabric as in the \$1 goods; hence \$40 must be divided by 4, which gives 10 as the wearing value. So that it would seem that the person who buys a \$1 silk really gets as much for his money as the buyer of the \$3 silk, assuming that the resistance to wear is directly proportional to the quantity of silk present. In fact, however, the discrimination is largely against the buyer of the \$1 silk, which is relatively of poorer material, besides being overloaded with a greater percentage of weight. So that in this, as in most all other cases where adulterations are brought to light, the cheaper goods are the most falsified, and, of course, the poorer people who are obliged to purchase these materials are the greatest sufferers.

Power of Rivers.—According to Dr. Young, water moving with a velocity of 900 feet per hour tears up fine clay; at So far the swindling process is the same for all varieties 1,800 feet carries fine sand; 3,600 feet, fine gravel; 2 miles