

power between hoisting, swinging and truck motion with a lever and link to control the speed in the engine. These are placed at a commanding position on the floor of the frame.

The lift is three part, using a 1½ inch chain.

The boiler is vertical, of 75 h. p., carrying 100 lb. steam pressure, placed over the counterweight, which is ballasted with 75 tons of iron. The total weight of each crane is 192 tons.

They were built by Wm. Sellers & Co., Philadelphia.

Improvements in the Manufacture of Dyestuffs.

BLACKISH BLUE AZO DYE.

This new dyestuff is derived from equal molecular proportions of diazotized dianisidin, the sodium salt of mono-sulpho-dioxy-naphthoic acid, and (1/4) alpha-naphthol alphanono-sulphonic acid of Neville & Winter, and which is a grayish black glittering powder of a metallic luster, easily soluble in water with a blackish blue, in concentrated sulphuric acid with a green-blue coloration; difficultly soluble in alcohol and insoluble in ether and benzene.

IMPROVED DYE FROM ALPHA OXYUVITIC ACID.

The improvement consists in the new process of manufacturing of meta-azo compounds serving as coloring matters, said process consisting in combining alpha oxyvitic acid with diazo compounds.

GRAY BLACK TETRAZO DYE.

This dyestuff is produced in combining one molecular proportion of tetrazo-diphenyl or ditolyl with two molecular proportions of the sodium salt of mono-sulpho-dioxy-naphthoic acid, and which is a dark glittering crystalline powder of metallic luster, which dissolves easily in water with a red-violet, in concentrated sulphuric acid with a pure blue coloration, and is insoluble in alcohol, ether, and benzene.

NEW PINK DYE.

This is a new article of coloring matter, manufactured from the alkali salt of a sulphonic acid derived from fluorescein chloride and mesidine, and having the formula C₂₀H₁₂O₃N₂SO₂ alk.; a light red powder easily soluble in hot and cold water, difficultly soluble in alcohol, giving vivid red color, mineral acids precipitating from its aqueous solution, the sulphonic acid in the form of red flakes.

A NEW RED DYESTUFF.

This new red azo dye coloring matter is derived from diazotized mono-nitro-benzidine, salicylic, and alpha-naphthol-alpha-mono-sulpho-acid (Neville & Winter), and which is a red brown powder difficultly soluble in cold water and alcohol, insoluble in benzene, but readily soluble in warm water, with a yellow-red color.—*Textile Record.*

Silver Mining.

The president of the Huanchaca Mining Company, of Bolivia, was recently reported as saying that he expected that silver would still further decrease in value, but that such decrease would have no effect on the Huanchaca Company, because it could produce silver at a profit even if the price dropped to 270 francs per kilo, or say 42 cents per ounce. This is by no means an idle boast. During 1891, this company mined 5,497,963 ounces of silver at a total cost of \$2,414,360, or 44 cents per ounce. This cost in detail as follows: Mining, 16 cents; new works, 6 cents; reduction and smelting, 9 cents; taxes and export dues, 5 cents; general expenses, 8 cents. Notwithstanding the low price of silver during the past year, the output of this mine increased nearly 15 per cent, amounting to 6,667,703 ounces, and the ore reserves are larger than before. For the 15 years ending with 1891, this company produced bullion valued at \$43,033,899, paid \$14,168,038 in dividends, and has set aside a reserve fund of \$1,776,765.

This mine by no means stands alone as regards cheapness of working, although it stands second among the silver mines of the world in point of output. Thus the Broken Hill Proprietary Company, of Australia, the greatest silver mine in the world, produced in six years and a half ending May 30, 1892, a total of 36,512,445 ounces of silver and 152,000 tons of lead, at a total cost of \$21,356,235. The cost per ounce of silver varied from 66 cents in 1887 to 41 cents in 1890, the average being 47 cents; the cost per pound of lead varied from 23 cents in 1887 to 14 in 1892, the average being 165 cents. This company has paid dividends amounting to \$19,480,000.

In the United States the Ontario Mining Company has, since 1880, produced 26,261,076 ounces of silver at a total cost of \$14,771,862, an average of 55 cents per ounce. The Granite Mountain Mining Company has, since 1883, produced 21,430,000 ounces, at a total cost of \$8,376,620, an average of 39 cents per ounce. Some of these mines are becoming exhausted, notably the Granite Mountain, but new ones are constantly being discovered, and in all probability will continue to be discovered for many years to come. Thus the recently discovered Creede district produced 5,000,000 ounces in 1892, of which it is said that the greater part was produced at an average cost of less than 40 cents per ounce.—*Eng. and Min. Jour.*

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Contents.

(Illustrated articles are marked with an asterisk.)

| | | | |
|---|-----|---|-----|
| Agricultural inventions, recent..... | 363 | Exhibit, life saving..... | 355 |
| Air, foul, removing from a well..... | 356 | Exploration, African..... | 355 |
| Arctic regions, life in the..... | 359 | Exposition, Columbian, elec- tricity at..... | 357 |
| Barge, pleasure, for an Indian Prince..... | 356 | Exposition, Columbian, statue of La France at..... | 358 |
| Books and publications, new..... | 363 | Exposition notes..... | 355 |
| Brass coloring..... | 354 | Feathers and lightning..... | 359 |
| Brass, dip for (5123)..... | 364 | Fire jets..... | 359 |
| Carriage indicator, Blake's..... | 361 | Flour mill, largest in the world..... | 359 |
| Coal and ore drier and separa- tor, Tencher's..... | 356 | Heat concentration by a lens (5128)..... | 364 |
| Commercial National Bank, Chicago..... | 354 | Inventions, recently patented..... | 363 |
| Cornell University, a \$50,000 gift to..... | 355 | Japan, family relations in..... | 361 |
| Cotton press, pneumatic, Mau- er's..... | 361 | Jupiter and his satellites..... | 359 |
| Cranes, large, Brooklyn navy yard..... | 363 | Manure, the industrial..... | 357 |
| Diamonds at the World's Fair..... | 361 | Patents granted, weekly record..... | 357 |
| Drowning, methods of rescue from..... | 360 | Perfumes of flowers, localizing..... | 357 |
| Dyestuffs..... | 360 | Photography at Exposition..... | 354 |
| Earthenware ignition tubes..... | 360 | Photography of the photograph Photography on marble..... | 357 |
| Electricity, tanning by..... | 357 | Pocket, Diefenbach's safety..... | 357 |
| Electric railway conduit, Mof- fett's..... | 356 | Railway appliances, some new..... | 363 |
| Electric tramway propulsion by accumulators..... | 358 | Silver mining..... | 354 |
| Elms, the Twin..... | 356 | Stars of the Milky Way..... | 359 |
| Engineering in Mexico..... | 362 | Steam hammer, 100 ton, and large rolling mill..... | 361 |
| Etainings iron works, the, France..... | 361 | Submarine blasting..... | 356 |
| | | Telegraph decision, a..... | 356 |
| | | Thermometer systems, the..... | 357 |
| | | Wood, insect-infested (5120)..... | 364 |
| | | Wrench, Wells'..... | 357 |

**TABLE OF CONTENTS OF
 SCIENTIFIC AMERICAN SUPPLEMENT
 No. 910.**

For the Week Ending June 10, 1893.

Price 10 cents. For sale by all newsdealers.

| | |
|--|-------|
| I. AGRICULTURE. —The Loss of Nitrogen in Manures.—By A. MUNTZ and A. CH. GIRARD.—A great source of deterioration in natural manures.—The inefficiency of coppers and gypsum in preventing it, and the simpler methods available for the farmer..... | 14550 |
| II. ANTHROPOLOGY. —Among the Cliff Dwellers.—By CLEMENT L. WEBSTER.—A most interesting discovery.—A mummy of a child of the Cliff Dwellers.—Description of the locality where the mummy was found and of the mummy itself.—2 illustrations..... | 14549 |
| III. ASTRONOMY. —Novel Theory of the Moon's Surface.—A theory of the formation of the mountains and other superficial irregularities upon the moon.—The probability of the impact upon the moon's surface of smaller bodies..... | 14550 |
| IV. COLUMBIAN EXPOSITION. —The World's Columbian Exposition.—A very valuable and timely paper on this subject, giving the views of different foreign journals upon the Fair, with numerous illustrations of the buildings, grounds, and personnel, showing the favorable impression the great American Exhibition has produced upon different authorities abroad.—32 illustrations..... | 14538 |
| V. ELECTRICITY. —The Telectroscope.—By LEON LE PONTAIS.—A suggestion for the electrical transmission of vision.—Seeing at a distance by means of electricity.—A suggestive and interesting paper.—3 illustrations..... | 14546 |
| VI. MECHANICAL ENGINEERING. —Improvements in Tool Holders and Cutting Tools.—A very ingenious tool for use on the lathe.—The use of circular eccentrically pivoted cutters adjustable by a set screw in the end of the tool bar.—5 illustrations..... | 14547 |
| VII. MINING ENGINEERING. —The New Hydrogen Miner's Safety Lamp.—By Prof. F. CLOWES.—A miner's lamp capable of supplying at once the ordinary illuminating flame, and when desired a hydrogen flame for testing by means of the "flame cap" for the presence of explosive gas..... | 14544 |
| VIII. ORNITHOLOGY. —The Cockatoos.—An interesting family of the parrot order.—A full description of their habitat.—Their habits of life and other interesting particulars with reference especially to the cockatoos in the Paris Garden of Plants.—1 illustration..... | 14548 |
| IX. TECHNOLOGY. —Skim Milk for Manufacturing Purposes.—By J. CARTER BELL.—The curious utilization of skim milk for making artificial bone or ebony and similar substances, as proposed to be carried out in England.—An American patent for similar purposes..... | 14545 |
| X. VITICULTURE. —The Use of Poisons as Fungicides and Insecticides.—By L. R. TAFT.—The use of sulphate of copper and other poisonous substances for making spray mixtures for vines and fruit.—The necessity of care in the application of such poisons, with minimum strength required to do efficacious work..... | 14549 |

THE COMMERCIAL NATIONAL BANK OF CHICAGO.

In our issue of May 27, 1893, alluding to the reported failure of the bank established in the Administration building, our correspondent in Chicago inadvertently gave the name as the Commercial National Bank of Chicago, whereas the real delinquent was the Chemical National Bank of that city. Those who are at all acquainted with the monetary affairs of Chicago must have observed the error at once. The Commercial National Bank is well known as one of the safest and most reliable banking institutions in the country, while its officers and directors are distinguished for their sterling integrity and business ability. Such a calamity as the failure of the institution, at the present time, in the height of its prosperity, is out of the question. We greatly regret that the error should have crept into our columns.

PHOTOGRAPHY AT THE WORLD'S COLUMBIAN EXPOSITION.

It is an easy matter for people inclined in this direction to find fault, and in such an enormous undertaking as the World's Columbian Exposition there are naturally many things to which exceptions can be taken. But the Exposition is such a grand success, as a whole, and it has been carried out on such a broad plan that fault finding in most instances can only be of a dyspeptic sort. There is one matter, however, that has been allowed to drag which should have been taken up long ago, and which should, even now at this late day, be discussed in such a manner as to bring the attention of the Exposition management to it and lead to reform. We refer to photography in connection with the Exposition.

At the time of the Centennial Exposition dry plates were just coming into use and amateur photography was beginning to be popular. During these intervening years there have been no startling or radical changes in photography, but amateurs have become so skilled, and in many instances have produced such perfect specimens of work, that public taste has been educated up to a point where it accepts only good photographs—pictures in which the subject is well chosen and which also are well developed and printed with care and judgment. So much progress has been made in this direction since the Centennial that people naturally expect to find on sale at the Columbian Exposition photographs that the photographic fraternities would feel proud of. There never has been opportunity for such a harvest of fine pictures as this exposition affords. It has a large amount of ornamental statuary that is acknowledged to be thoroughly artistic and beautiful. Its buildings are infinitely finer in design than anything ever seen in the new world. The grounds in which the Exposition is located are a masterpiece in landscape gardening. Many people of this country as well as many Europeans who have traveled extensively are astonished at the conception of the Exposition and at the beauty to be found in Jackson Park.

Yet, in spite of all these things, it is not possible to procure thoroughly good official photographs at the World's Columbian Exposition. The workmanship is in no respect better than was to be found at the Centennial. In fact, it is not as good, considering the fact that so many years have intervened and that so many improved processes have since been introduced. The subjects are selected with a lack of judgment and taste, and the developing is of ordinary quality. An exhibition by amateur photographers in any part of the country, judging by the samples that have been seen by members of photographic societies, could show specimens of work superior to the pictures offered for sale at the World's Columbian Exposition. The photographic department is such an appalling failure from the standpoint of the photographer, whether he be amateur or professional, that some public protest should be made against this condition of things before it is too late to have the necessary photographs taken to preserve some of the beauties of the Exposition.

Brass Coloring.

A fine black color, which can be varied to a light brown, can be produced on brass by treatment with an ammoniacal copper solution made by dissolving one part of copper nitrate in two parts of ammonia of specific gravity 0.96 while keeping the solution cool. The brass articles, which must be carefully cleaned, acquire a light tone on first being immersed, but on exposure for some hours become deep black. The treatment can be interrupted when the desired tint is reached. A luster can be put on the articles by rubbing with a little wax or vaseline. The process can be varied and other color effects obtained by treatment of the article after the development of the black color with very dilute hydrochloric acid, which dissolves the coating gradually and thus modifies the tint. The composition of the brass also has an influence on the result, and the coloring produced recalls that seen on Japanese bronze, which has possibly been obtained by a similar method.