

with smoke, dust, and exhalations, and puts box stoves full of hot coals in the corners, ready to cook the human stew whenever a frisky car shall take a notion to turn a somersault. The invention needed is a conscience for corporations—an invention, by the way, scarcely less difficult than the one advertised for in our last issue, namely, a plan for preventing the sale of intoxicating liquors and tobacco in New Jersey.

The *Railroad Gazette*, imitating the English ideal of prolixity in discussion, for which *Engineering* has recently patted it on the back approvingly, treats us, in its issue of February 11th, to a page article, to be continued, under the title of "Warming and Ventilation of Railroad Cars." In this article the writer takes the ground that people in general are ignorant of the effects of pure air, and not being able to "see the foulness," they "therefore do not believe it exists." It is quite possible they may not be able to see the foulness, but if in the majority of railroad cars run in this country, they are not able to feel it in gritty, grimy accumulations on skin and linen, and smell it in suffocating stench which serve, with sneeze-provoking dust, to stifle anything like comfort, their skin must be thicker, their linen more neglected, and their noses less sensitive than those of the majority of fellow travellers it has been our fortune to be cooped up with for a day's railroad journey.

The *Railroad Gazette* makes this wholesale charge of ignorance and insensibility the excuse for an essay on the physiology of respiration, mostly extracted from Huxley's "Elementary Lessons in Physiology," and therefore excellent in its way, though having a somewhat remote bearing upon the subject as announced in the title of the article. We trust that before this journal concludes its series of articles thus commenced, it will tell how to breathe into the breasts of the corporations which choke us in their human packing boxes, something resembling the soul which they are universally acknowledged to be destitute of. When this is done, carbonic acid, ammoniacal smells, organic exhalations, smoke, and dust, will be invited to shun the interiors of railway cars, and comparative comfort will descend upon the perigrinating public.

THE MINERAL RESOURCES OF MISSOURI.

The incalculable wealth, which lies hid in the bosom of Mother Earth, in our vast possessions of the West, is undoubtedly centered in the State of Missouri; and the development of this fund of riches must add to the national prosperity, not only by its immeasurable intrinsic value, but by its affording occupation to armies of laborers, the latter being the highest and most important consideration.

In 1852-3, a geological survey of the State was wisely decided upon, and a liberal provision for its execution made. Two valuable reports, by Professor Swallow, have been printed, in the year 1855, but the notes of his subsequent investigations have not been made public.

In the session of 1869-70, further action, in this important public work, was taken by the State legislature, and arrangements made for a still more accurate and detailed examination, under the direction of Professor A. D. Hager, of Vermont.

The distribution of metals all over the State will be seen in the following figures, taken from the *St. Louis Journal of Commerce*, which show the number of counties in which the various ores are found: Iron in 46 counties, lead in 43, coal in 36, copper in 24, marble in 11, zinc in 27, fire clay, in 16 barytes in 10, nickel in 6, granite in 4, tin in 4, plumbago in 2, gypsum in 2, alum in 1, antimony in 4.

There is probably no country in the world so endowed as this. Of iron alone, according to the State geologist's report for 1855, there is ore of the best quality, sufficient to furnish 200,000,000 tons of iron; and this quantity lies in a small space, in the vicinity of Pilot Knob and Iron Mountain, and within 100 miles of St. Louis.

The quality of the iron is highly spoken of by the manufacturers, and the capacity of the smelting appliances has reached to over 150,000 tons per annum. The coal is well suited for reduction of ores, either by hot or cold blast treatment. The *Scotia Iron Co.* commenced operations in January, 1870; and, although the materials for building blast furnaces had to be carried 80 miles into a desert, the first furnace was blown into blast in August, 1870. This furnace will run about 24 tons per day. The company procures ore from a hill, near the furnace, in which there is an apparently inexhaustible supply of red oxide and brown specular. This ore yields 60 per cent of pure metal. The erection of mills for making wrought iron is contemplated, and the high quality and prodigious quantity of the raw material will justify and reward any outlay of capital in this direction.

The shipment of ore to other States goes on constantly, the last year's account showing that 246,555 tons were dispersed over Indiana, Ohio, and others. The furnaces at Kingsland, South St. Louis, Lewis Iron Co.'s Works, Carondelet, and Maramec are all well situated as to coal and limestone, the Maramec Works having a most valuable water-power. These latter works also ship about 40,000 tons red hematite ore yearly.

SCIENTIFIC INTELLIGENCE.

According to *Petermann's Mittheilungen*, the new German empire, including Alsatia and Lorraine, will embrace 9,901 square miles, with 40,148,209 inhabitants. Russia alone will exceed it in extent and population, for Russia in Europe has 100,285 square miles with a population of 69,379,500. France, after the loss of Alsatia and Lorraine, will have 9,588 square miles of territory, with 36,428,548 inhabitants. Austria will number 35,943,592 inhabitants spread over a larger extent of

country, namely, 10,880 square miles. Great Britain and Ireland has 5,732 square miles, with 30,838,210 inhabitants; and Italy, including Rome, has 5,376 square miles, with 26,470,000 inhabitants. In the order of population, the Governments will stand: Russia, Germany, France, Austria, and England; but in military power, the first position must henceforth be accorded to Germany.

AMERICAN INSTITUTE OF MINING ENGINEERS.

A circular has been issued by several mining engineers, proposing a meeting at Wilkes-Barre, some time in April or May next, of all persons interested in the general subjects of mining and metallurgy, for the purpose of establishing an association, to be called "The American Institute of Mining Engineers." The Institute will hold meetings periodically "in the great mining and metallurgical centers, when works of interest, such as mines, machine shops, furnaces, and other metallurgical works, can be inspected, and the members exchange their views, and consult, for mutual advantage, upon the difficulties encountered by each." There will be the usual publication of "Transactions" and "Proceedings."

The idea of forming an association of persons thus mutually interested in each other's occupations, is an excellent one; but it has been suggested by a number of scientific gentlemen that the American Association for the Advancement of Science offers every facility for the accomplishment of the objects set forth in the circular, while it affords the very great advantage of an assemblage of men learned in all departments of knowledge, whose acquaintance mining engineers would do well to make, and from whom they could learn much, while at the same time imparting of their own knowledge.

As a section of the American Association, the mining engineers would have more influence before the country, and it would perhaps be well for them to stop and consider before establishing a separate institute.

CONSUMPTION OF SUGAR, COFFEE, AND TEA.

E. Behm gives in his geographical year book, for 1870, the following estimate of the consumption of sugar, coffee, and tea, *per capita*, in various countries:

COUNTRIES.	Sugar, lbs.	Coffee, lbs.	Tea, lbs.
Great Britain.....	35.96	0.90	3.190
United States.....	24.03	5.63
Holland.....	14.86	7.03	0.800
France.....	14.30	2.33	0.018
Norway.....	11.04	6.92	0.060
Sweden.....	9.80	0.80	0.060
Switzerland.....	9.60	5.28
Germany.....	9.42	4.03	0.035
Denmark.....	9.00	3.40	0.400
Belgium.....	7.18	8.59	0.018
Portugal.....	6.33	0.69	0.040
Italy.....	5.20	0.90	0.020
Austria.....	4.93	1.30	0.012
Spain.....	4.23	0.01	0.040
Russia.....	2.40	0.007	0.160

The entire consumption of sugar in Europe, has averaged, during the last few years, three thousand four hundred and ten million pounds (3,410,000 pounds), and for the whole world it is set down at nearly twice that amount. It is estimated that three fourths of the sugar is made from cane, and one fourth from the beet.

The consumption of coffee has doubled in most countries during the last twenty years.

Unpleasant Discovery in the Patent Office--Levying Black Mail.

"The Patent Office has been, during the past week, in a high state of excitement, occasioned by the discovery of the operations of E. W. W. Griffin, clerk in charge of the draftsmen's division, who, it appears, has been levying black mail on the lady employes of the office, for nearly two years. During the administration of Colonel Fisher, late Commissioner of Patents, a large number of ladies were employed, for the purpose of recopying drawings, when ordered by the inventors, of patents already on file.

"These ladies were placed under charge of Griffin, with power to retain them in office so long as their services were satisfactory. It has been proved that Griffin hired the ladies at regular salaries of \$1,000 per annum, the most of whom he blackmailed to the amount of \$400 per year each. It is estimated that he has made \$1,000 per month for the past two years.

"The matter was brought to the notice of Commissioner Duncan, and an investigation ordered, which resulted in the dismissal of Griffin.

"It is thought that there are other cases of this kind, and the Commissioner expresses his determination to ferret them all out, and make a clean sweep of all parties in his department engaged in swindling operations, against the government or against individuals.

"The Patent Office has for a long time been considered a rich field for operations of this kind, and investigations have often been suggested, but passed unheeded by the proper authorities.

"It is openly stated that an investigation into the relations existing between certain examiners of patents and certain patent agents, would disclose a more fearful state of black-mailing than exists in all the other government departments combined."

[We find the above sensational paragraph among the recent Washington items of the *Evening Mail*. We are in a position to say that "the high state of excitement" alluded to has existed only in the brain of the newspaper correspondent. The facts, in brief, are these: In July, 1869, a lady, and wife of one of the clerks in the

draftsmen's room, made application to Commissioner Fisher for a position in the copying division of the same department; and, upon the urgent solicitation and recommendation of Mr. E. W. W. Griffin, chief of the division, she was appointed, and has held the position from that time until now, receiving as salary \$1,000 per annum, which, with the full knowledge of her husband, she has divided with Griffin, in consideration of his services in procuring for her the appointment. About a month ago, one of the lady's friends got hold of the matter, and reported it to the Court, which resulted in an investigation and the subsequent dismissal of Griffin. This is the only case of the kind that we have heard of, and we have no reason to believe that there is any other, or that corruption exists in the Examining Corps, as alleged. —Eds.

A METHOD of testing the purity of samples of water, by watching the rapidity of its action on soap and similar compounds, has been introduced by the French savants, MM. Boutron and Boulet. The experiment tests, at the same time, the purity of the soap. Dissolved in water in which lime is held in solution, the soap is precipitated in hard white flakes. If the quantity of soap put in the lime water be noted, it will be found that the smaller the quantity producing precipitation, the purer the soap. The *Journal de Pharmacie et de Chemie* (of Paris) reports some experiments, on this subject, by M. F. Schulze.

LOUISIANA STATE FAIR.—The fifth State fair of the Mechanics, and Agricultural Fair Association of Louisiana will commence in the city of New Orleans, on Saturday, April 8, 1871, and continue nine days. Over \$20,000 in premiums are offered. Rules, regulations, and schedule of premiums may be obtained of the Secretary and Treasurer, Luther Homes, Esq., New Orleans, La.

KNITTED GOODS.—John Kent advertises, in this paper, valuable machinery for the manufacture of knitted goods, to which we invite the attention of all who are interested in this branch of industry. Mr. Kent has devoted many years to the perfection of these machines.

KAOLIN, a white clay, used largely in the adulteration of flour, starch, and candles, is found near Augusta, Ga., and is sent to the Northern States in large quantities.

We are indebted to James Vick, practical florist, Rochester, N. Y., for a choice variety of flower seeds.

NEW BOOKS AND PUBLICATIONS.

A COMPLETE GUIDE FOR COACH PAINTERS. Translated from the French of M. Arlot, Coach Painter, for Eleven Years Foreman of Painting to M. Eherler, Coach Maker, Paris. By A. A. Fesquet, Chemist and Engineer. To which is added an Appendix, containing information respecting the Materials and the Practice of Coach and Car Painting and Varnishing, in the United States and Great Britain. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street. London: Sampson Low, Son & Marston, Crown Buildings, 188 Fleet street. 1871. Price, by mail, to any part of the United States, \$1.25.

This is another of the large number of practical works and industrial treatises issued from the press of Mr. Baird. It is intended as a practical manual for the use of coach painters, and we must say, upon examination of its contents, that we think it admirably adapted to meet the wants of that class of artisans for which it has been prepared. There is perhaps no department of decorative art in which there is greater room for the display of skill and taste than in coach painting. This work, however, does not deal with the subject of art, to any great extent. Its aim is to give information in regard to colors, varnishes, etc., and their management in carriage painting in the plainest manner, and in this way it thoroughly fulfils the intention of the author.

ON THE GENERATION OF SPECIES. By St. George Mivart, F.R.S. London: Macmillan & Co. 1871.

The Darwinian theory of the Origin of Species, has, perhaps, aroused more attention, excited more dispute, and won more converts in a shorter time among scientific and unscientific men, than any other of equal importance promulgated in the 19th century. It seems to be the rule either to swallow the thing whole, or reject it as unworthy of belief, and as conflicting with orthodoxy. The author of the work before us has, however, taken a middle ground, from which we opine it will be difficult to dislodge him, though it is within full range of the batteries of both the contending parties. While he admits the truth of Darwin's views regarding the operation of natural selection as a cause of the origin of species, he denies that it is the sole cause, yet maintains that if it could be demonstrated to be the sole cause, it would in no manner conflict with orthodox belief in the Scriptures as the revelation of God to mankind. The perfect candor of the author is one of the marked features of the discussion, and his style is a model of pure terse English writing, seldom, if ever, excelled by any scientific writer. The work is an octavo, most beautifully printed on tinted paper, and illustrated by many fine wood engravings.

THE ARCHITECT'S AND BUILDER'S POCKET COMPANION AND PRICE BOOK, Consisting of a Short but Comprehensive Epitome of Decimals, Duodecimals, Geometry and Mensuration; with Tables of U. S. Measures, Sizes, Weights, Strengths, etc., of Iron, Wood, Stone, and Various Other Materials; Quantities of Materials in Given Sizes and Dimensions of Wood, Brick, and Stone; and a Full and Complete Bill of Prices for Carpenter's Work; also Rules for Computing and Valuing Brick and Brick Work, Stone Work, Painting, Plastering, etc. By Frank W. Vogdes Architect. Philadelphia: Henry Carey Baird, Publisher, 406 Walnut street. Price by mail, postpaid, \$2.

This is a small work, but printed in small type, and containing a large amount of useful matter, thoroughly indexed for reference; bound in morocco; and provided with a clasp, so as to be conveniently carried in the pocket.

GAS SUPERINTENDENT'S POCKET COMPANION for the year 1871. By Harris & Brother, Gas Meter Manufacturers, Nos. 1115 and 1117 Cherry street, Philadelphia. Philadelphia: Henry Carey Baird, Industrial Publisher, 406 Walnut street.

We find in this pocket-book much of interest to gas consumers, as well as to gas makers. The subject of meters is fully discussed. The work is bound in pocket-book style, in flexible morocco binding. Price, by mail, postpaid, \$2.