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 $170 \\ 165 \\ 170$

168

17

163

Contents

Concents.		
(Illustrated articles a	re marked with an asterisk.)	
Air through water, forcing (23)	170 Locomotives, domes on (53)	
American salmon in New Zealand	163 Mahogany, imitating (20)	
Answers to correspondents*	170 Man, the descent of*	
Apothecarles' symbols (46)	171 Mitrailleuse, shots from a (1) 164 New books and publications	
Astronomical notes	164 New books and publications	
Bank vaults, can we protect	164 Painting, cracks in (27). 171 Painting floors. 165 Painting wire work (30)	
Battery for magnets (37)	Til Painting noors	
Bicycle vs. horse	165 Painting wire work (30)	
Boats, propellers for, etc. (8)	170 Paper, impression (24).	
Boller heating surface (18)	170 Parent decisions, recent 163 Parent rights vs. State rights	
Rollers and pipes, covering	163 Parent rights vs. State rights	
Bollers, floats for (55)	171 Patents, American and foreign	
Bollers for hoars (6)	170 Patents, official list of 171 Pedigree, the human*	
Bollers for engines (50)	171 redigree, the numan*	
Bridge, the St. Charles railroad*.	162 Phosphides of silver. new 170 Photo surfaces, sensitive (51)	
Business and personal	110 Photo surfaces, sensitive (51)	
Case-naruening from (59)	171 Power, new source of*	
Cat racing	168 Power, utilizing waste (26) 170 Practical mechanism—No. 43*	
Circle, area of a (29)	170 Problem solved, the (57)	
Circle, center of a (19)	163 Pumps, air chambers in (11)	
Cost unst fuel (56)	171 Railroads, the first (54)	
Curve the entimation (3)	170 Railway car signals, English	
Cullinder condensation	161 Rolling hot brass, etc. (10)	
Dueing veneers green (49)	171 Ruby, a large (48)	
Felinge solar March 1876	163 Saltpeter in alcohol (40)	
Electric currents (32)	171 Sash holder, improved *.	
Electric machine plates (33)	171 Sawmill, power for. etc. (5)	
Flociro magnets (36)	171 Saws, rim-bound (34)	
Emperor the coming	160 Saws, speed of circular	
Duradu can dan nuasidant an	164 Constitute conde (41)	
Engine, lead on an (15)	108 Schlattve Cards (31) 170 Sizing walls (33) 171 Sielf h shoes, fron and steel (58) 160 Steam and the atmosphere (52) 170 Steam passing through pipes (2)	
Eves, artificial (44)	171 Sleigh shoes, fron and steel (59)	
Father of waters the	160 Steam and the atmosphere (52)	
Fingers, sore (28)	170 Steam passing through pines (2)	
Flour and meal chest*	111 Strains on short with (41)	
Furnace economy	168 Tempering burnt tools (9)	
Gear-cutting attachment, new*	166 Tempering butchers' steels (13)	
Gold, heat for melting*	159 Tobacco, removing smell of (31).	
Heat of slags, etc	168 Tunneling for squeducts (14) 162 Turning felt wheels (7)	
Impressions of objects	162 Turning felt wheels (7).	
Inventions patented in England	169 Valve, pressure on slide (12)	
Iron dust, impaipable (25)	169 Valve, pressure on silde (12) 170 Vinegar, making (47) 171 Wash bottle, improved*	
Iron for grinding mills (42)	171 Wash bottle, improved*	
Jack, improved lifting*	166 Water, deposit from (48) 170 Water, flow of (22)	
Lathe spindles, setting (17)	170 Water, flow of (22)	
Lime water (21)	170)	

THE SCIENTIFIC AMERICAN SUPPLEMENT. No. 11.

For the Week ending March 11, 1876. TABLE OF CONTENTS.

- ENGINEERING AND MECHANICS. With 9 illustrations.—The Al, luvial Basin of the Mississippi River. by James B. Eads, 2 figures being a review of the Report of the Levee Commission.—Direct-Acting Pumping Engine, 1 figure.—Bioomington, III., Standbjee, 5 figures.— Blakes' Vertical Steam Boller, 1 figure.—Novel Rotary Engine, 1 agures. —Ventilation of Kallway Tunnels.—The St. Gothard Tunnel, by D. K., Clark. History and Details of the Great Work.—Cost of Cast Iron Water Pipe.—Cost and Durability of Steel Rails.—Fiction between Thres and Italis, 1 figure.—Railway Resistances.—Railway Accidents.—London Inderground Railway.—New Pilot Snow Car.—Midiand Railway Stock. The Steam Sapper in France.
- The Steam Sapper in France.

 TÉCHNOLOGY. With 9 engravings.—File-Holding Appliances, by JOSEUA ROSE. 3 figures.—Instrument for Measuring Highis and Dis-tances.—Ratchet Brace Support, 2 figures.—Competition for Dry Plate Processes.—Thoil Decoration.—Prospects of Architecture in the Uni-ted States.—The Architect and Civil Engineer.—Military Instruction by Machinery.—New Brick Machine, 1 engraving.—Boring, Turning, and Fitting of Car Wheels and Axles, by COLEMAN SELERS, 3 figures.—The Large Textile Manufacturing Companies of Lowell.—New Zealand Flat.
- FIAX. III. THE INTERNATIONAL EXHIBITION OF 1876. 8 figures. New Jer-sey State Building, lengraving. The Japanese Building and Japanese Tools, with 7 figures. An Old Railway Engine for the Centennial.
- IV. CHEMISTRY AND METALLURGY.--Crystallized Glycerin.-Sebate of Cobalt.-Narcotine, etc.-Bismuth.-Chromium.-Blue Color in Bread Incineration.-The Fryer Process, 1 engraving.-Relations of Chemistry to Modern Thought.-New Thermic Researches.
- V. ASTRONOMY, ETC .- The Large Telescopes of the World. VI. PROCEEDINGS OF SOCIETIES.-British and American Archæologi cal Society, Rome.-Chemical Society, London.-French Academy of Sciences.
- I. NATURAL HISTORY, with 10 figures.—Sea Stars, 1 engraving.—Mi-croscopic Mineralogy, 9 figures.—Stromboli Lava.—Rbyolithe.—Trap Rock.—Granite.—Vesuvian Lava. Santorin Lava.—Albite.—Variolyte, —Serpentine.

Scientific American.

THE COMING EMPEROR.

When the sovereign of a great country visits a sovereign people, not imperially, to conquer or conciliate, but as a private gentleman, to study their works and ways for the benefit of his own subjects, it is obvious that a new order of royal entertainments is called for. The greeting which a barbaric empire like India accords to its future ruler may fitly be characterized by barbaric shows, parades, illuminations, and festive entertainments; but from a free people, to an enlightened sovereign like the Emperor of Brazil, such things would be out of place, and utterly distasteful.

He comes for information, not to be bored with windy speeches or pretentious dinners. Our local cooks and officeholders have few charms for him, compared with the achievements of our explorers and pioneers, our engineers and inventors, our scientific and industrial leaders. We shall, therefore, entertain him most royally by furthering to the utmost the real objects of his visit, showing him, in the most unobtrusive and sensible way, our physical and industrial resources, our works of internal improvement, the means by which a great wilderness has been conquered for man. The great region which he is doing so much to improve is still very largely similar in condition to what the Great West was a few years ago-a land of fertile plains untilled, broad rivers barren of commerce, mountains of precious metals undisturbed. He has railways to build, internal navigation to develop, immigration to foster, and a wild country to subdue and make tributary to the needs of men. His expressed desire is to study on the spot the means and methods by which this country has been so rapidly and enormously developed, withal so largely brought under the dominion of science and civilization. And we may be sure that he will not thank us for any attentions which may draw him away from the grand purpose of his visit.

We may be equally sure that he will be royally grateful for any proper assistance that may be given to the prosecution of his studies. There is talk of his entering the country by way of the Mississippi. That course would be singularly happy, since it would lead him straight to an engineering enterprise in which he cannot but take the highest interest; and at the same time his visit would give éclat to the completion of a work which may do very much to increase the social and commercial relations of the two countries. It is morally certain that, by May, the Mississippi will be open to navigation by vessels of the highest class, and nothing could be more appropriate than for the ruler of the Amazons to be the first to demonstrate the freedom of the Mississippi to the commerce of the world. It requires no prophet to foresee that the largest river of the world and the longest are plainly destined to furnish each the principal market for the produc, tions of the other. The one extends, from north to south almost across the temperate zone, draining the heart of the most productive valley-and likely to be the most populousin the temperate regions of the globe. The other drains a vast basin, almost wholly within the tropics, and extending across a tropical belt covering thirty degrees of longitude. Between the two there can be no rivalry, for their products are wholly diverse, yet each produces what the other lacks. Before the next Centennial celebration of our country, the trade between these two regions will be vast beyond the wildest dreams of to-day.

A passage from New Orleans to St. Louis, on one of the floating palaces of the Mississippi river, will show the Emperor, as no other journey can, the future aspect of his own great river when it shall have become the highway of a boundless commerce. How many of the cities of the West he proposes to visit, we cannot say : enough, no doubt, te enable him to study the working of our railway system, and other great works of internal improvement. Compared with these, the Exhibition, great as it promises to be, will be but a secondary attraction.

The termination of his visit may be as happy as the beginning, for he will take his departure from this city just about the time when the Hell Gate improvement will be ready for the finishing stroke, and we venture to say that no ceremony of state could give him half the pleasure, as to witness the final victory of Science over Nature, in opening up a new and better channel for the commerce of our metropolis. It is to be hoped that obtrusive placemen will respect his wish to travel as a private observer, and leave him free to enjoy a most unconventional "royal" welcome by the scientific and industrial magnates of the land.

THE FATHER OF WATERS.

By reference to the review, it will be seen that Engineer Eads and the Levee Commission have arrived at diametrically opposite conclusions, not only as to the best method of executing the work, but as to the results that might be expected from the adoption of their respective plans. The subject is a grand one, but the principles involved are simple, and their relative correctness would seem to be capable of determination without serious difficulty. The most curious thing is that practical engineers should disagree about the matter.

The Levee Commission aver that the volume of the Mississippi is too great; hence the overflow, to prevent which they recommend a reduction of the river volume by means of side channels. These are expected to conduct large portions of the water to the Gulf, and thereby reduce, as they allege, the flood discharge to the limits of the levees. They further advise the raising of the hight of the artificial banks or levees, the cost of which they estimate at forty-six millions of dollars (\$46,000,000). This expense, although large when exhibited in figures, is as nothing compared with the gain to be derived from a successful reclamation.

The chief questions to be settled are: Is this plan practicable? Will a reduction of the river's volume diminish the food discharge? What has been the experience on the Mississippi and on other rivers having analogous bottoms? Is it not a fact that, below the points where side channels have been formed and water drawn off, the river bottom has become filled up, and the flood level raised? Is it not true, in respect to other rivers, that their flood levels have been lowered by increasing rather than by diminishing the river volume, by stopping up old side channels rather than opening new? Is it not plain that, in an alluvial bottom like the Mississippi, the quickest and best way to lower the flood level is to deepen the bed of the river ?

Will not the river deepen its own bed if its volume is increased ?

The weight of evidence, derived from past experience on the subject, clearly gives an affirmative answer to the latter question, and this, substantially, is the position taken by Engineer Eads. He declares that the recommendations of the Levee Commission are founded in error. He avers that the proper way to lower the flood line of the Mississippi is to do the very opposite of that recommended by the Commission. He advises that the side channels be closed, so as to increase the volume of the water; and that, excepting repairs, the levees be not raised, because the increased flow will deepen the river bed, rendering the artificial buildingup of the levees unnecessary. He adduces an array of practical evidence, in support of his position, that seems unanswerable.

We shall recur to the subject hereafter.

SOME ANNALS OF A SUCCESSFUL INVENTION.

If we may judge from Punch's frequent cartoons, and from the attention paid to the subject in the English journals, all England is undergoing a skating mania, which outrivals the velocipede furore of six years ago. It is not gliding over the ice on glistening steel blades which has captured the British fancy, for frozen lakes and rivers in England are of rare occurrence, and it is now several years since any regular skating club has had its winter carnival. Asphalt floors have replaced the ice; and over their smooth surface John Bull cuts "spread eagles" and "figure eights," and otherwise disports himself on that ingenious Yankee invention, the roller skate. There is an interesting history connected with that device and its inventor, which may here be reviewed. It is a record of how an enterprising man has managed, and is managing, an invention so as to make it yield a fortune, how he has fought and triumphed in protecting his right; and, at the same time, it conveys suggestive thoughts as to the value of popular devices, not merely at home but abroad, emphasizing in brief our oft-repeated assertion that the inventor's field is not restricted to any one country, but is as wide as the world itself.

It was about eighteen years ago when a then-termed "parlor" skate furore broke out in this vicinity. Halls in various parts of the city were fitted up with smooth floors, and one part of the public flocked thither and hired the skates at so much per hour, while another portion paid for the privilege of viewing the others learn how to manage the new invention. Education in that direction, though vastly amusing to lookers-on, was just the reverse to the learners; for however good skaters on ice the latter might be, they soon found out that managing roller skates was a very different affair that gliding straight ahead was easy enough, but to attempt reason public interest in the first forms of parlor skate soon waned. Meanwhile, however, Mr. J. L. Plimpton, of this ity, perceiving the difficulty, set to work to remedy it by devising a skate which would keep the floor without reference to the angle of the body or the sharpness of the curve turned. With remarkable perseverance he labored on for several years, expending some \$25,000 in fruitless efforts. Finally, however, he produced a device which a learned English judge has recently pronounced "almost as ingenious as the wonderful adaptation of bones to be found in a horse's pastern and fetlock." In the center of the sole of the skate, he fixed a spherical spring of india rubber, yielding to the slightest inclination of the foot, a mere change of motion by well known mechanical means causing the axles of the roller wheels to converge. This invention was patented in this country, through the Scientific American Patent Agency, in January, 1863, and subsequently in England, in 1866. His device perfected, Mr. Plimpton began its introduction

- VIII. METEO ROLOGY.-Remarkable Wind Storm in California.-Climate of the Poles.-The Internal Heat of the Earth.
- IX. MISCELLANEOUS.—Instinctive Temperaments.—Remarkable Dis covery in Florida.—Trees as Preventives of Fires.—British Pedestrian ism.—Constitution of Magnets.

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37 Park Row. New York. 38 Single copies of any desired number of the SUPPLEMENT sent to any address on receipt of 10 cents.

THE publishers of Forest and Stream have opened, at their office, 17 Chatham street, in this city, a "Kennel Stud Book," or register for recording the pedigree of thoroughbred dogs. This work will undoubtedly in time occupy the same important position among the owners and breeders of pointers, setters, and spaniels that the "Herd Book" now does among the admirers of fine cattle.

We publish in this week's SCIENTIFIC ERICAN SHE PLEMENT, a remarkable document written for our paper by James B. Eads, C. E., of St. Louis, being a review of the to guide oneself by turning the foot was to invite sudden Report of the United States Levee Commission, made and painful precipitation to the floor. Perhaps for this in 1875. This board was appointed, by authority of Congress, to report a permanent plan for the reclamation of the alluvial lands of the Mississippi river. The subject is one of extraordinary importance, as will be readily understood if it is considered that the area of the lands that might be saved to agriculture, by a proper system of reclamation, is estimated at about 70,000 square miles, of unsurpassed natural fertility, and capable, if peopled as thickly as Belgium, of supporting a population of over 300,000,000.

In this aspect of the subject, the work of reclamation may be justly regarded as perhaps the most useful and important engineering enterprise now before the civilized world. Its successful accomplishment would vastly add to the prosperity of our own country, and benefit all nations, by enlarging the special domain of food supply, besides opening the Father of Waters to the free commerce of the world, floating the largest vessels for an inland distance of fifteen hundred miles.