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Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles and their page numbers, including American Geological Society, Lock, safe or vault door, Business and personal, etc.

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SCIENTIFIC AMERICAN SUPPLEMENT

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Table listing detailed contents of the supplement, including I. AERONAUTICS, II. ARBORICULTURE, III. ARMS OF WAR, etc.

THE AMERICAN GEOLOGICAL SOCIETY.

The American Association for the Advancement of Science took its origin in a convention of geologists at Philadelphia, in 1840, who announced the object of that society to be the study of geology and natural history. During the Cambridge meeting, in 1849, a subdivision was effected into four sections—of physics, chemistry, geology, and zoology.

It is evident that this is an important movement. Among the original fellows are some of the foremost American geologists. It is not intended in any way to interfere with the American Association for the Advancement of Science.

MADNESS AND MURDER.

The deeds of murder recently done in that noisome quarter of London called Whitechapel, all, there is reason to believe, the work of the same hand, seem to have attracted the attention of the neurologist as well as that of the police.

neglected an extensive business, for the sudden impulse that came to him to commit murder. One, who was continually battling against an impulse to kill his wife, cut off his own right arm.

Such moods, it seems, may recur and may not. A young man could not see a fine dress without the impulse to injure it; running into the nearest drug store for vitriol, and before the mood was gone, ruining over one hundred fine gowns.

The "reasoning" mania would seem, from its description, to be one of the most dangerous, because attacking those from whom acts of violence are not to be looked for. One thus afflicted suddenly finds himself with a perversion of the emotions, derangement of the will; "knowing the impulse is a dangerous one, the act it imposes an unreasonable one."

MILK AND TYPHOID FEVER.

The agency that milk may assume in the propagation of fatal diseases has received much attention during recent years. Dr. Klein's investigations have confirmed the belief that milk has in a large number of cases been responsible for epidemics of scarlet fever.

Tuberculosis, it is also known, can be developed in cows, and can be distributed in like manner by their milk. Much consumption is believed to be due to this origin.

A recent epidemic which occurred in a New Jersey suburb of this city goes far toward reducing the probability of milk acting as a disseminator of typhoid fever to a certainty. A florist had been in the habit of supplying five families with milk.

On investigation the water supply of the milkman's premises was found to be far from satisfactory. He received water from the regular water works. He used a portion of the water pipes within his premises for the conveyance of a liquid fertilizer.

The lesson to be drawn from this is clear. Greater precaution in the use of water in dairies should be taken. The mere adulteration of milk is bad as a matter of ethics, but when the addition of water may involve the absolute poisoning of the milk, the responsibility for its addition is far graver.

can be absolutely prevented by attention to the purity of the water supply of dairies. Boiling the milk may also be accepted as an efficacious preventive.

It seems a little remarkable that modern science is finding in the cow an agent of injurious disease after the vaccine virus has been used for so many years as a palliative for smallpox.

THE TOTAL ECLIPSE OF JANUARY 1, 1889.

The total solar eclipse of January 1, 1889, visible in this country, will be observed by many American astronomers and possibly some from foreign countries. We present herewith a map of a portion of the path of totality, for which we are indebted to the circular issued by Prof. Holden, of the Lick Observatory, and to the *Sidereal Messenger* for the following particulars: The shadow of the moon will cross the west line of Nevada at the town of Verdi, and its width on the boundary will be 100 miles, the middle of the path being at a point 32 rods north of the 124th mile post of the Central Pacific railway line. The south edge of the shadow will pass about half way between Reno and the highest point of Peavine Mountain. Thus Reno will be just outside the shadow. The center of the path will be about six miles north of Winnemucca and 29½ miles north of Tuscarora. The south edge of the path will pass north of Wadsworth and south of Pyramid, Lovelocks, and Humboldt House. The north edge of the path will pass north of Buffalo

6. Spectroscopic observations of the lower atmosphere of the sun, prominences, and the corona.

7. Observations with the polariscope upon the polarization of the light of the corona.

8. Photography both of the partial phases and of the corona.

The above points are those suggested by Prof. Young in his *New Astronomy*.

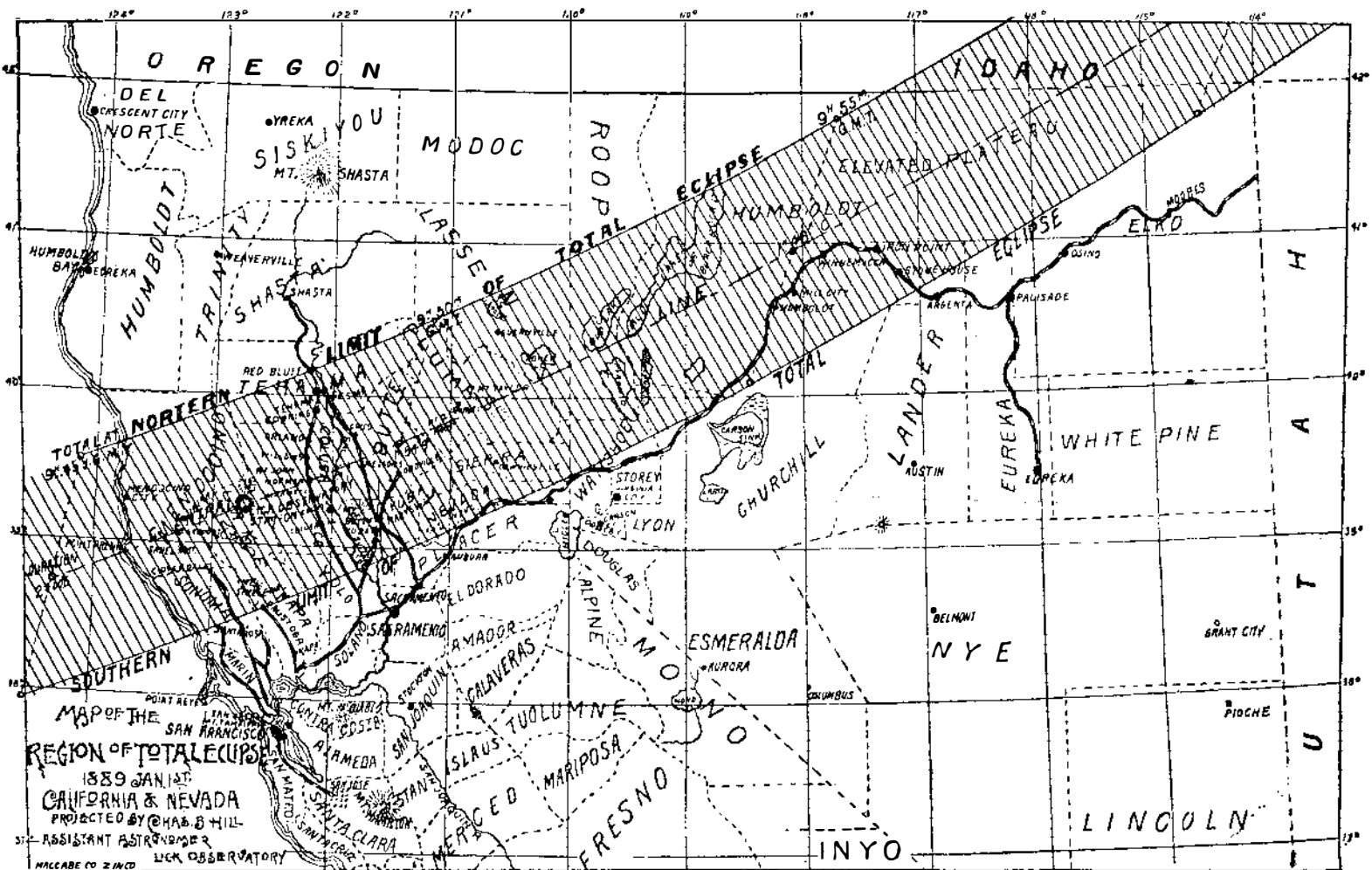
Steam Detrimental to Sewers.

On November 24 General John Newton, late Commissioner of Public Works of New York, in a report to the Mayor spoke of the defects of the sewerage system of the city. One point that was made in the report was of special interest. The evil effects of steam discharged from engine exhaust pipes was emphasized. The suggestions in the report were principally due to Mr. Rudolph Hering. Touching this question of steam, he proposed the use of intercepting traps or cooling basins, or else the discharge of all such steam into the air from pipes reaching above the roofs of the houses.

The admission of steam to sewers not only favors the production of sewer gas, but destroys the material of the sewers. Iron pipe lines, especially at the joints, become seriously weakened; tile pipes lose their hard, ringing character, and crumble away under rapid disintegration. In brick sewers the cement is attacked, and the arch soon becomes little better than a cementless structure. The recent leaks in the pipes of the

ate with the local governments. He also undertook to counteract the hostile public opinion in the United States. Active surveys of the isthmus were begun under his direction in January, 1880, and late in February he arrived in New York, and began a tour which extended from Boston to San Francisco, and embraced a trip to Washington, where he had a personal interview with President Hayes and a hearing before a congressional committee. His first estimate of the cost of the canal was 250,000,000f. On his return to France, he declared that his American tour had been successful, and that opinion concerning the scheme had been considerably modified. A preparatory force of engineers and skilled mechanics was sent out from Havre in January, 1881, and work upon the canal was begun soon after its arrival at the isthmus. This work has been prosecuted at intervals, with greater or less vigor, ever since, although the estimates of cost have been greatly increased, and the time for the completion of the canal extended.

The project was the cause of a long and very important correspondence between the British and United States governments, in 1881 and 1882, over the question of an American protectorate, which finally resulted in the practical abrogation of the Clayton-Bulwer treaty. During all this time M. De Lesseps has been the leading spirit in the canal company, and such progress as has been made is the result of his untiring energy and, it must also be said, of his blindness to the



THE ECLIPSE OF THE SUN ON JANUARY 1, 1889—MAP OF THE PATH OF TOTALITY.

Meadows, Willow Point, Paradise Valley, Spring City, Willow Creek, Cornucopia, and White Rock, and will pass ten miles south of Fort McDermitt.

In California, Susanville will be 14½ miles north of the center of the shadow, and Quincy three miles north of it. Nevada City will be thirteen miles north of the south line of the path. All the towns named are inside the shadow path, as are Loyalton, Oneida, Long Valley, Milford, and all the settlements about Honey Lake. All places in or near the center of the path will be in darkness two minutes of time. All those at the edges of the shadow will see the sun momentarily eclipsed. The eclipse will begin at about 1:52 P. M. at Quincy, 1:53 at Honey Lake, and 1:54 at Winnemucca. The shadow travels a northeast course across the State, leaving it at the northeast corner. Mr. Irish very kindly offers to furnish further information concerning localities in the path of the eclipse which observers may desire to know.

The points that may profitably receive observers' attention are:

1. Times of the four contacts and the direction of the line joining the cusps during the partial phases.
2. Search for intra-Mercurial planets.
3. Observation of fringes which show themselves at the beginning of totality.
4. Photometric measurements of the intensity of light at different stages of the eclipse and during totality.
5. Telescopic observations of the details of the prominences and of the corona.

steam heating company in New York have produced similar troubles, and produced serious annoyances through the streets in which the steam is conducted. The insulation of underground electric lines has been seriously affected, and all who travel upon Broadway can testify to the disagreeable odors produced. It seems clear that the distribution and use of steam should be attended with more restrictions on the part of our city authorities than now apply to it.

Failure of the Panama Canal Company.

The telegraph brings the announcement of the financial collapse of the Panama Canal Company, due to its failure to negotiate the further sale of its bonds and its inability to meet the now gigantic calls upon it for interest and current expenses. Whether any new arrangements can be made to prosecute and complete the great work is questionable. Strenuous efforts in that direction will undoubtedly be made. The following sketch of the enterprise is given in the *New York Times*:

It was in 1879 that M. De Lesseps first turned his attention to the construction of a canal across the Isthmus of Panama. He was then flushed with the glory of the successful Suez enterprise, and a second attempt of a similar nature was the natural outgrowth of his triumph in the first.

He began his preparation with the earnestness and vigor which have always characterized him. Notwithstanding the fact that he was then nearly seventy-five years old, he undertook a journey to Panama in order personally to explore the proposed route and to negoti-

practically insurmountable obstacles in his path. It is, indeed, taking a charitable view to assume that he was merely a self-deceived enthusiast, and not a monstrous swindler. In the history of visionary undertakings and financial bubbles there are few things comparable to this old man's canal at Panama. For two years or more it has been a demonstrable fact that he was moving rapidly and with a sure step toward inevitable bankruptcy, and at least one honest journal in France, the *Economiste*, has not concealed the bitter truth from the French people. But they preferred to put their trust in De Lesseps and their savings into his always empty treasury.

He has issued shares and bonds amounting to \$400,000,000 at par, and this immense sum in obligations has been taken by the French people, who have probably paid him over \$250,000,000 in cash; and the greater part of this has come from the peasantry and small landholders of France. He has resorted to the most unwarrantable financial devices in order to avert the fatal day of bankruptcy, such as issuing new bonds to obtain funds to pay interest on former issues.

The coming bankruptcy of the company has of late been clearly visible, even to many of its former defenders.

The estimates of the expense of the Post Office Department for 1890 are \$66,812,073. The revenues of the department for the fiscal year ending June 30, 1890, are estimated at \$62,508,658. This will leave an apparent deficiency for the year ending June 30, 1890, of \$4,403,414.