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(4661) J. Q. A. asks: 1. What truth is there in the theory that water impregnated with filth from drainage becomes pure or usable by passage over successive falls, or by being thrown to a height into the atmosphere? A. There is a good deal in the theory, not so much, however, but that every effort should be made to start a water system with pure water. Aeration cannot be relied on to destroy all injurious matter. It is known to do some good. 2. Is the Thames water at London made use of after simply throwing to a height of 50 feet? A. We do not know of any such use of the Thames water at London proper. Much of the London water comes from the New River. 3. Do any American cities use impure water after such treatment? A. Aeration is used in this country, and river water from below cities is often used, but how much of the improvement is due to dilution and how much to aeration is as yet unsettled.

(4662) A. B. asks: 1. Is there any simple method which can be relied upon to precipitate the lime contained in hard water and yet not injure the water for drinking purposes? We understand the lime cannot be eliminated by filtration. Is this a fact? A. Water may be hard from the presence of calcium sulphate or calcium bicarbonate. The latter can be precipitated by Clark's softening process, which consists in the addition of just enough lime water to precipitate the whole as neutral carbonate, followed by filtration or settling. Calcium sulphate cannot be removed by any practical process. For either impurity, simple filtration is useless. 2. How may branches and trunks of small trees be seasoned in the round to prevent splitting? A. Try painting the ends with metallic paint or coat with hot pitch.

(4663) V. N. asks if there is a chemical or chemicals which will prevent water from freezing, and if so, to how low a degree of temperature. A. A strong solution of calcium chloride will not freeze above -8°F. Glycerine mixed with water will lower its freezing point a number of degrees. Alcohol will do the same.

(4664) D. C. G.—Eight square feet of radiating to one square foot of heating surface in boilers is the usual practice.

(4665) Subscriber.—No reward is offered for perpetual motion.

TO INVENTORS. An experience of forty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted

January 24, 1893, AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with names and patent numbers. Includes items like Air or gas compressor, Alarm, Annunciator system, Armature for dynamo-electric machines, etc.

Table listing inventions with names and patent numbers. Includes items like Filter, A. Werner, Fire apparatus, M. A. Pauly, Fire escape, C. B. Johnson, Fire extinguisher, etc.

Table listing inventions with names and patent numbers. Includes items like Scale, letter, S. W. Babbitt, Scenic effects, apparatus for producing, S. MacKaye, etc.

TRADE MARKS.

Table listing trade marks with names and numbers. Includes items like Antiseptics and embalming fluids, Belting, metallic fastenings for leather, etc.

DESIGNS.

Table listing designs with names and numbers. Includes items like Alto-rilievo, E. C. Plant, Breastpin, etc.