

Correspondence.

"Tapping the Rock for Water."

To the Editor of the SCIENTIFIC AMERICAN:

I read with interest your article in last week's issue, "Tapping the Rock for Water," showing how pure water has been obtained from the granite rocks along the coasts of Norway, despite the old geological theory that water cannot be found in granite.

You say, "The boring in hard rock would probably have the same result in other countries." Let me tell you the result here in South Carolina:

This town of 5,000 inhabitants is built over granite. The stratum is from 15 to 50 feet beneath the surface. Recently we became suspicious of water from shallow wells, because of the danger of surface drainage and contamination; and, there being no convenient stream from which to get a supply, an artesian well was suggested. Notwithstanding the old theory against water in granite rock, the work was undertaken by the advice of Prof. Powell, an up-to-date geologist of our college.

The first 40 feet was through clay and loam; then a hard granite rock was struck. The drill was kept going for weeks. At the depth of 285 feet a stream was struck in a crevice of the rock. Every inch of the way, except the first 40 feet, had been through solid granite, and only the short segment of 40 feet required to be curbed. A test was made with a steam pump and the minimum flow was found to be 200,000 gallons a day.

The water stood within 3 feet of the surface, on a steep hillside. A trench was cut, and for several months before the waterworks were completed it was a flowing well.

We have now an excellent system of waterworks with an abundant supply of water absolutely pure and wholesome—not simply wholesome, but possessing valuable medicinal properties, containing, among other ingredients, lithia and sodium sulphate.

The experience here has been repeated, under similar circumstances, at Chester, 50 miles away, and at Laurens, 30 miles.

Artesian wells have solved the question of pure water in South Carolina; not only in the marshy, malarial seacoast country—where fevers have been reduced more than 30 per cent—but in the middle and upper sections also that rest on solid granite. W. H. W. Newberry, S. C., January 24, 1898.

Prices for Works of Art.

The private or public sale of works of art by the great masters is always sure to awake great interest in the cultivated. In the "Almanach Hachette," for 1894, there is a table of fifty pictures which have sold for the highest prices in recent times. The largest price which a picture has brought was paid for Raphael's "Madonna Ansdei," which was purchased for the National Gallery of London by the nation for \$350,000. The National Gallery also has the unique distinction of owning the second most expensive picture, a portrait of a man by Morone, which sold for \$300,000. Next in order comes Jean-François Millet's "La Bergère," which was purchased by M. Chauchard for \$200,000. The same collector is the happy possessor of the celebrated "Angelus," which was sold to him for \$110,000. The Rothschild family have a number of almost priceless masterpieces. Edm. de Rothschild paid \$160,000 for Rubens' "Jardin d'Amour," he also purchased three of Gainsborough's portraits of women for \$375,000. Alph. de Rothschild paid \$120,000 for Raphael's portrait of Cæsar Borgia, and \$250,000 for two works of Rubens. Gust. de Rothschild paid \$150,000 for two works of Rembrandt. The late Duc d'Aumale purchased Raphael's "Three Graces" for \$125,000, and Madame Guinness, of London, paid \$240,000 for two works of Rembrandt. The Museum of the Louvre, Paris, purchased "The Assumption" by Murillo for \$120,000. The portrait by Albert Dürer in the Museum of Berlin was acquired for \$90,000. Munkacsy's "Christ Before Pilate" was sold for \$100,000. Meissoniers bring enormous prices in relation to their size. The "1814" was acquired by M. Chauchard for \$110,000; his "1807," now in the Metropolitan Museum, was bought for over \$60,000. Van Dyck's portrait of the Marquise of Spinola was sold for \$100,000. The National Gallery, at the sale of the collection of the Duke of Lansdowne, bought three works by Velasquez, Morone and Holbein for \$300,000. There have been a number of other pictures sold for \$60,000 or over, among them being Mr. Havemeyer's "Gilder," by Rembrandt, which cost \$60,000. It is not often that a Raphael is on the market. At the present time the "Virgin with the Candelabra" is for sale. It was bought at the Monroe collection of 1882 for \$100,000. If this second or third rate work of the great painter of Urbino is worth over \$100,000, it is an interesting question to know what the market price of a masterpiece like the Madonna of San Sisto or the Madonna of Foligno would be.

In Buenos Aires (Argentine Republic) and Para (Brazil) street cars are drawn by mules at a speed of ten miles and over per hour.—La Vie Scientifique.

Miscellaneous Notes and Receipts.

Autographic Ink.—Autographic ink is made by melting together the following substances: 10 parts soap (white grain soap), 10 parts wax, 3 parts tallow, 5 parts shellac, 5 parts mastic, 3 parts lampblack.

Formoform Powder.—This is recommended by the Crown Pharmacy, in Berlin, as a disinfecting remedy against perspiring feet. It is a white powder with a faint thymol odor, composed of 0.13 per cent of formaldehyde, 0.1 per cent thymol, 34.44 per cent oxide of zinc and 65.27 per cent of starch. Applied to wounds and purulent secretions, a great disinfecting power is said to be attained in consequence of the splitting off of formaldehyde.

Negative Lacquer.—1. Amber, 50 grammes; sandarac, 100 grammes; alcohol, 1,000 c. cm.; castor oil, 1 gramme. 2. (Hard negative lacquer.) Sandarac, 250 grammes; Venetian turpentine, 25 grammes; oil of lavender, 30 grammes; ether, 30 grammes; absolute alcohol, 665 grammes. 3. (According to Andres.) Sandarac, 150 grammes; oil of lavender, 110 grammes; chloroform, 20 grammes; spirit, 720 grammes. 4. (According to Andres.) Bleached shellac, 125 grammes; mastic, 25 grammes; oil of turpentine, 25 grammes; spirit, 885 grammes. 5. (According to Valenta.) Angola copal, 60 grammes; amber, 10 grammes; ether, 600 grammes; acetone, 100 grammes; chloroform, 20 grammes. 6. (According to Klausner.) Dammar gum, 110 grammes; mastic, 7 grammes; benzole, 883 grammes.—L. Drog. Ztg.

Some Cosmetics.—The Seifen Fabrikant gives the following recipes:

Wash.—1 liter of distilled water; rice flour, $\frac{1}{2}$ pound; violet powder, 135 grammes; glycerine soap, 10 grammes; bergamot oil, 6 grammes; and iris oil, 5 grammes.

Skin Gloss.—Potash, 50 grammes; spermaceti, 56 grammes; rice flour, 500 grammes; benzoin powder, 20 grammes; bitter almond oil as required.

Toilette Glycerine.—Glycerine of 20° B., 2 kilogrammes; rose water, 2 kilogrammes; sodium bicarbonate, 30 grammes.

Athens Water.—Calcium carbonate, 70 grammes; sassafras wood oil, 250 grammes; rose water, 4 liters; orange blossom water, 4 liters; spirit (96 per cent), 1 liter.

Cold Cream.—Almond oil, 500 grammes; white wax, 90 grammes; spermaceti, 90 grammes; rose water, 280 grammes; bergamot oil, 2 grammes; lemon oil, 8 drops; rose oil, 2 grammes.

Castor Cream.—Castor oil, 500 grammes; almond oil, 160 grammes; spermaceti, 65 grammes; geranium oil, 5 grammes; lemon oil, 5 grammes.

Mites in Sweet Wines.—For some time past there has been great excitement in the countries which produce sweet wines, says the Schw. Wein Zeitung, for it has been shown that a large number of mites are found in such wines as Malaga, Muscatel, Samos, etc. Up to the present it was believed that liquids, and especially alcoholic ones, were free from these animals and that mites only occurred on dry foods stored in dark and especially in damp rooms. Now this opinion must be discarded as erroneous, for the sweet wines do not contain isolated mites, but large quantities of them, full grown ones as well as numerous young, which shows that they multiply readily and quickly in the liquid. The mite discovered in the sweet wines is the *Acarus passulorum*, which is found on dried prunes, figs, etc. Examination of the wines infested with mites has on a whole not given a very bad result, inasmuch as the taste of the wine is not changed and its alcohol is not perceptibly decreased. The mite seems to subsist on the vegetable cells of the yeast, which it sucks out. It has also been established with tolerable certainty how the mites get into the wine. The name of *Acarus passulorum*, which has been given them, signifies mite of the dried currant, on which the animal is very frequently met with, as well as on the dried grapes which are used for making wine. In the wine made from the latter the mites are mostly found, as they pass from the dried grapes, which are often kept for years, into the beverage. They frequently show themselves in the Grenache wine, which does not only come from Roussillon, but also from Alicante, which is one of the principal exporting centers for dried grapes. As a general rule the wines produced from dried grapes are not considered detrimental to the health; but their commercial value is much below that of the wine from freshly pressed grapes. To substitute the former for the latter is a deception which can now be more easily proved by the presence of the mites. If wine prepared from fresh grapes should contain mites it may be taken for granted that it has been poured into an imperfectly cleaned cask, in which there had been a wine infested with mites. Hence attention should be paid to scald the casks previously with hot water. In any event it is not necessary to throw away wine containing mites. The animals remain on the surface, forming a whitish layer. Hence, it suffices to filter the wine before it is placed on the market. Finally, light also kills the mite, and by exposing the bottle to it for some hours, one is sure of exterminating the animals, if any are still present.

Science Notes.

Prof. Lenard, of Heidelberg, who first discovered the cathode rays, has received from the French Academy of Sciences its prize of 10,000 francs.

There was a time when the government of India had to import annually \$250,000 worth of quinine, and did not get enough of it even then. After a great many experiments, the cultivation of the cinchona tree was made successful in India, and now there are 4,000,000 trees in Bengal, and every rural post office in India sells a five grain packet of the drug for half a cent, while the government makes from \$2,000 to \$3,500 a year out of the profits.

M. Flammarion, the astronomer, has been discussing the hypothesis of Schiaparelli, recently supported by Mr. Lowell and other observers, to the effect that the planet Venus, by rotating round her axis in the same period as she revolves round the sun, always presents the same face to the sun, as the moon does to the earth for the like reason. Flammarion thinks that the marks on the surface watched by Schiaparelli are effects of atmosphere and sunlight, and not on the body of the planet. He points out that the deep atmosphere of Venus probably absorbs so much of the light from its surface that we are unable to see the latter. Even the earth's atmosphere absorbs one-third of the light from the surface.

Probably the most reliable data as to melting points is published by Prof. S. W. Holman, in conjunction with R. R. Lawrence and L. Barr, in the "Proceedings of the American Academy," November 13, 1895.

Aluminum, melting point,	660 degrees Centigrade.
Silver,	970 "
Gold,	1,062 "
Copper,	1,095 "
Platinum,	1,760 "

The aluminum experimented upon contained 99.93 per cent aluminum, with 0.07 per cent silicon. The silver, gold, copper and platinum were of the purest quality obtainable, probably with less than three one-hundredths of one per cent of impurity in each case.

A life of the late Sir James Simpson has just been published, written by his daughter, and contains many interesting facts connected with his life not generally known before. James Simpson was the son of the village baker at Bathgate, in Linlithgowshire. At the age of fourteen he went to the University of Edinburgh, and was one of the hard-working, frugal race of Scotch scholars. He lived on \$50 a year, his only extravagances being books. A significant entry is quoted from his diary, says The Medical Record. It is as follows: "Finnan haddies, 2d. (4 cents); bones of the leg, £1 10s." (\$7.50) In 1838, when he was twenty-seven years old, he became lecturer in obstetric medicine in the Extra-Mural School. Two years after he was appointed professor of obstetrics at the university. In 1847 he discovered chloroform. At the early age of fifty-eight he died, his end hastened by overwork.

Prof. F. E. Nipher has recently measured the frictional effect of moving trains upon the air near them. His apparatus consisted of a hemispherical cup, which he could fix at distances up to thirty inches from the window of a railway carriage. The mouth of this collector was turned toward the direction in which the train was moving at the time of observation; and the pressure due to the motion was conveyed to a pressure gage by means of an India rubber tube attached to the back of the collecting cup. The results obtained showed that a large amount of air is dragged along with a rapidly moving train, the motion being also communicated to air many feet away. Most people believe that it is dangerous to stand near a train going at full speed, and Prof. Nipher has now proved that the moving air is a real source of danger. The air not only possesses sufficient power to cause one to topple over, but it also communicates a spinning motion tending to roll a person under the train, if the nature of the ground does not prevent such a result.

Attention has lately been called to the investigation of Dr. G. S. Hall, President of Clark University, on the things that most arouse fear. Taking the subjects broadly, it appeared that out of 298 classes of objects dreaded by 1,707 individuals, thunder and lightning were the ones creating the greatest alarm and anxiety. And yet, as pointed out by one of the electrical journals, a thunder storm might compare with Mr. John Bright's express train as the safest thing on earth to be in. Records have been carefully kept of accidents and deaths from lightning stroke or thunderbolt, and they are apparently on the decline, the period 1890-93 showing only 193 deaths a year for the whole United States. On the other hand, 200 people are drowned in New York City every year, 150 are burned or scalded to death, and 500 die from falls of various kinds. It is the rarest thing in the world, literally, for any one of Greater New York's citizens to be killed by lightning, and yet when a thunder storm invades this region most of the three million inhabitants are decidedly fearful and uncomfortable. The statistics show that, in respect of immunity from accident by lightning, the modern city is infinitely safer than the open country.