

off, and there is no reason to limit our ideas of possible wrought-iron smooth-bore ordnance under a caliber of 30 inches. If we desire to throw a heavy shot with a low velocity we can do so now by simply increasing the length of the projectile and decreasing the charge. So the English guns can 'rack' it if they wish, while the American guns cannot penetrate targets that may be easily pierced by rifle shot at high velocities. But, though the 12-inch shot did not get through the 8 inch plate, and backing, it would have penetrated most of our ships, though not as easily as our guns would have penetrated theirs. It is an easy matter of calculation, from data received on Wednesday, that the 15<sup>1</sup>/<sub>2</sub>-inch American cast-iron shot would have been stopped by the *Lord Warden*, *Bellerophon*, *Lord Clyde* and ships of that class, but the steel shot would have penetrated all except the *Hercules* or *Monarch*, which are not yet afloat. This supposes a range of 70 yards, and a direct blow. At 500 yards, or at a slight angle, it would penetrate the *Warrior*, but not ships of the classes named above. It is for the Navy to say what protection they desire to have. The question of gun power may be considered as settled; only it must not be forgotten that the target fired at on Wednesday had been struck on previous occasions by more than 11,000 lbs. of iron, propelled by above 1,900 lbs. of gunpowder, the work done upon it being over 130,000 foot tons."

#### Origin of the "Dollar Mark."

The new "Dominion of Canada" is exercised because the \$ sign was not invented for its special use. A Toronto paper says: "It is suggested that the letter D be used for dollars in the Dominion instead of \$, which is a contraction of the letters U. S. and stands for United States. The adoption of D is urged on the grounds that it is particularly appropriate as being the initial letter of Dominion as well as Dollar, and moreover, that it would show the currency meant, without any other distinctive mark. For example, \$ would at once convey the idea of United States currency, and "Dominion Currency."

Where did the Canadian editor make the novel discovery that \$ was a contraction for U. S.? It has generally been supposed to stand for the figure eight, and to mean eight reals, which was the Spanish dollar from which our coin was imitated. The two parallel lines were drawn across the "8" to distinguish it from the ordinary numeral.

There is another origin sometimes given to this design, which refers to the old pillar dollar. There were on that coin two pillars or columns connected by a scroll, and the \$ bears a rude resemblance to this device.—*Evening Post*.

#### Editorial Summary.

**ASTRONOMICAL OBSERVATIONS.**—Prof. Safford, who has charge of the famous "Clarke Telescope," mounted in the Dearborn Observatory, at Chicago, in reply to an English astronomer's inquiries as to what had been done with this great telescope, writes that he has discovered about seventy new nebulae, mostly small, with distinct nuclei; of these, one is triple, three in a row; one, a large, rather diffuse nebula, of singular shape, in Perseus; another is an irregular ring, known previously as a nebula, not as a ring. The nebula of Orion astonished him by its brightness and distinctness, and he has discovered a branch preceding the main nebula which has a roundish opening in its center. He is preparing to publish a report of his observations in full.

**AMERICAN VOLCANOES.**—In the Andes-Rocky-mountain chain, extending entirely through both continents, there are no less than fifty active volcanoes, the most interesting being located in South America. Those in the neighborhood of Quito are remarkable for vomiting forth enormous quantities of water and muddy substances, which fertilize the land to the extent of eight or ten leagues around them. The subterranean noise of Cotopaxi extends to the distance of upwards of 500 miles. The reason why melted lava is not thrown out, is supposed to be the vast depth at which it lies. It frequently throws out fith from the crater, which is 2,500 or 2,600 fathoms above the level of the sea.

**THE MANUFACTURE OF SHOES.** It appears, differs according to the locality of the market for which they are destined. A broad shoe, wide in the shank is best adapted to the Eastern trade, a narrow sole meeting with little favor. The Middle States require smaller shoes and higher in the instep than the New Englanders. The instep grows higher as we proceed southward, and the foot shorter and more plump. While at the North a full grown man rarely wears less than a No. six, running upward as high as size No. eleven; at the South many men wear fours and fives, and seldom over nines.

**AMATEUR ANTIQUARIANS,** in towns on the London and Southwestern Railway, have been badly victimized by two sharp vendors of what purported to be rare and valuable curiosities, which they had unearthed at Windsor. The relics were claimed to have been found in an ancient urn, and consisted of weapons, coins, spoons, and other articles of Roman or Saxon workmanship. The forgery was discovered by certain well-informed archaeologists, and the principals engaged in perpetrating the fraud, were arrested. On examination, the specimens were found to be all modern-cast brass coated with a green oxidation to give them an antique appearance.

**TEXAS PAPERS** assert that the various patent processes for preparing beef for northern markets, by canning, infiltration, etc., have practically failed. By manufacturing ice on the premises, the atmosphere of rooms in which the beef is packed for transportation, may be kept so cool that the meat will not spoil during the operation. As the cattle are in the best condition for slaughtering during the warmest months of the year, the serious trouble heretofore has been that the beef spoiled before it took the salt, but the late introduction and use of ice machines has obviated this difficulty.

**THE TENDENCY TO FERMENTATION** in alcoholic spirits is so far diminished by heating the liquors above 113° Fah., that they may be kept for an almost indefinite period. The liquid must be raised to the required temperature rapidly, in a closed vessel, and cooled suddenly, being kept between 83° and 136°—the temperature most favorable to fermentation—for the shortest time possible. The higher the temperature the greater its preservative power, but the more it diminishes its fine flavor.

**DENSITY OF OZONE.**—M. Loret, of Geneva, experimenting to determine the density of ozone, by Graham's law, viz: that diffusion takes place inversely as the square of the density, diffused two mixtures, one of oxygen and chlorine, the other of oxygen and ozone. Thus compared, the density of ozone to that of chlorine or oxygen was as 1 to 6.

**UNFLAMMABLE FABRICS.**—M. Kletinski takes equal weights of sulphate of zinc, sulphate of magnesia, and sal ammoniac, mixed together in a mortar. The addition of three times the weight of ammonia alum produces a pasty mass which is to be carefully dried. To make light fabrics indestructible by fire, he uses one part of the above mixture with two parts of starch. This compound is much cheaper than tungstate of soda.

**THE GREAT TUNNEL.**—The cutting of this tunnel through the crest of the Sierra Nevada mountain chain has generally been looked upon as a three years' job, but the enterprising Californians made the attack at both ends, and then sunk a shaft in the middle down to the level of the grade and worked both ways. The total length is sixteen hundred feet, cut through solid rock. Operations were begun in September, and since last June the rate of progress has been nearly forty feet per week. The 15th instant is the date fixed for the passage of the first locomotive. The rails are now being laid on the easterly slope, where twenty miles of the road is graded. It is confidently expected that the road will be completed to the Nevada line by September next, and as there are no serious obstacles to overcome for many miles beyond, the Californians feel sure of reaching Salt Lake before the Eastern division of the great work gets there.

**THE TELEGRAPH** in Switzerland being the property of the state, is probably managed better and more economically than in any other country throughout the world. The Federal Council have decided on further reducing the rates, already lower than the average of other nations, making the charge for telegrams sent for any distance in the country, uniform at 1 franc 50 cent., or about ten cents, for twenty words. The new rate is to come in force on the 1st of January, 1868.

**A MUSEUM,** which will be of great interest, is forming at the Springfield, Mass., arsenal. It will contain an almost endless variety of guns, American and foreign, federal and rebel, muzzle and breech-loading. A valuable feature will be specimens of the scores of breech-loaders which were presented to the Commission for examining such arms, which met in Springfield some time ago; also, photographs of every part of each. Of course war relics will comprise a prominent part of the collection.

**VARIEGATED MARBLE.**—To imitate any of the fine veined marbles an exchange advises to heat the solid block to be operated upon, so that its pores will be opened to receive the colors. These latter consist of an alcoholic solution of alkanet root, to produce a rich lavender; madder lake to make a rich crimson; indigo a blue; verdigris, green; and gamboge, yellow. The several colors are to be tastily put on in the desired pattern, and will be rendered permanent by being absorbed in cooling the marble.

**A SUBSTITUTE FOR PLASTER OF PARIS MOLDS.**—Chloride of magnesium, it has just been announced, can unite and associate with magnesia, forming an oxychloride of magnesium perfectly insoluble, and possessing the property of taking all variety of forms, in a degree incomparably greater than plaster of Paris. It also is capable of taking a high polish of a great number of substances with which it may be mixed in the proportion of a fifteenth to a twentieth of their weight.

**PRESERVING WINE.**—In the process of fermentation air bubbles are formed in wines. For a long time scientific men believed these bubbles to be cells of a vegetable nature, but their true character being discovered, the owner of a French vineyard, by exposing his liquid for two hours to the action of a vacuum, has succeeded in removing them. The same result is secured by a treatment with heat, but this latter system is superior in many respects, and above all, is much more economical.

**A VALUABLE SOUVENIR.**—The fortunate wife of the happy Frenchman who perished his life in attempting to preserve that of the Russian Emperor, has been made the recipient of a necklace from the grateful Czarina, made of diamonds, the largest weighing ten carats, the others two carats each. The clasp is formed of a splendid sapphire, to which is suspended a locket surrounded with four rows of pearls and diamonds. The value of the whole gift is given at \$80,000.

**THE SANDWICH ISLANDS.**—The native population of these islands is steadily decreasing, though more slowly than formerly. From 1822 to 1850 the decrease was nearly fifty per cent. The last census shows a population three times as many as it would have been had the former rapid rate of diminution continued. The increase of foreign population, during the last sixteen years, has been 117 per cent. Twelve hundred inhabitants from the Celestial Empire have constituted a portion of this foreign influx.

**BETTER ROOT SUGAR.**—One establishment engaged in this manufacture in Germany has a capital of \$16,000,000, employs 3,000 operatives, and occupies buildings which cover twelve acres of land. European makers annually dispose of 400,000,000 pounds. The importance of the attempts, in this country, to encourage this branch of industry is illustrated by the statement that during the year ending July 1, sugars valued at \$39,595,877 in gold, were imported into the United States.

**PATENTS.**—An examination of the work performed at the Patent Office shows that the number of applications, at the present rate of increase, will reach 20,000 during the present year, and that patents are being issued at the rate of nearly 300 per week. The applications have increased, during the past four years, on an average of nearly 5,000 per year, while the means for facilitating business have not been added in a proportionate ratio.

**CHOLERA AND POEY.**—A French medical paper asserts that a working man, well advanced in years, living in Paris, was seized with a violent attack of cholera, in its worst forms. Up to this moment he had certainly never manifested any literary ability, but, after his recovery, he commenced to write poetry, and has already published quite a volume of poems of considerable merit.

**WHITE LEAD.**—A Parisian has patented a process for obtaining white lead directly from the ore, by pouring the molten metal into cold water to render it as porous and bulky as possible. He next dissolves it in sulphuric acid and the sulphate is treated with pyroligneous or oxalic acid, combined or not, with tinctal dissolved in water, and next dried over the fire on stone trays.

**MESSRS. LONGSHORE & BROTHERS,** of Mansfield, Ohio, have sent us samples of their excellent household tool, in which is combined a tack drawer, a hammer, a pair of pliers, a stove-top handle, and we are not sure but something else that we have not discovered. All the housekeepers in our office have introduced the improvement with success. It is a good thing. Every family should have it. See illustrations in our paper for July 6th, last.

**THE SNIDER RIFLE.**—The arms, of all sorts, converted by the English government, on the Snider principle, up to the present time, amount to 200,000. A slight change has been made in the construction of the cartridge, with a view to cheapen its manufacture, while their efficiency has rather been increased than diminished thereby.

**PROGRESS.**—The monitor's 15-inch gun used originally only thirty-five pounds of powder. Since the war, a charge of one hundred pounds has been safely used; while at a trial of the 20-inch gun at Fort Hamilton, the charges were raised from one hundred and twenty-five pounds of mammoth grain powder, at the first shot, to two hundred pounds at the fourth shot.

**COBALT AND NICKEL.**—A German chemist has been conducting some delicate experiments with these two substances to determine their respective atomic weights. The mean of five experiments with cobalt gave the number 29.496. The mean of four with nickel, the number 29.527. The atomic weights may therefore be taken as identical, i. e., 29.5.

**QUININE ALE.**—The British *Medical Journal* notices with favor the introduction of a new tonic wherein England's favorite beverage is made to do service in a medicinal way. The innovation consists in introducing one grain of quinine in an imperial pint of ale, the additional bitter element being considered a decided improvement.

**WHILE SLEEPING** with the head raised or bolstered up, the vessels through which the blood passes from the heart to the head, are lessened in their cavities; therefore, in all diseases attended with fever, the head should be nearly level with the body.

**PASTIME AND POWER.**—Philadelphians are amused over a rare mechanical combination whereby one can enjoy the pleasure of swinging, and, at the same time, by a wheel, cog, and treadle, attached to the swing, set in motion a churn, a wood-saw, a pump, or a washing apparatus, at pleasure.

**THE SUBMARINE TELEGRAPH** between Juliland and Norway is now in full working order.

**THE SOURCE** and exact length of the Ottawa river, the second largest river in the Dominion of Canada, has recently been determined by a party of explorers sent out by government in last March. The party went up the Du Moine to Gros Lake, which they explored, and by governmental instruction re-christened Victoria Lake. Thence up the "Grand Prince of Waters," until it overlapped the head waters of the St. Maurice. Pushing on further in a little south-easterly direction, they found themselves fifty miles distant from the head waters of the Saguenay. Making friends with the Indians, the party proceeded in safety to its destination, discovering the length of the Ottawa to be one thousand miles. The land on these upper reaches is of the best quality but the climate is cold. The explorers reached civilization after spending four months and a half in the wilderness.

**AN ARSENIC** manufacturer, in Boston, died lately from the continuous infusion of the poison into his system during his long employment in manufacturing it.

#### MANUFACTURING, MINING, AND RAILROAD ITEMS.

The total loss by the late freshet on the upper Mississippi is now set down at \$40,000, of which sum \$14,000, was the loss on bridges. Forty million feet of logs were carried away, which were valued by their owners at \$10 per thousand feet.

Professor Whitney, reports fifteen localities in California where diamonds have been found in the course of washings for gold, but in his view it would not pay to wash the gravel beds of those places solely for the precious stones; for diamond washings are not profitable in any country except with slave or convict labor.

The report of a survey of a railroad between Nashville and Knoxville just been published in detail. The projected line is one hundred and nine miles long, and runs on a natural route along the western slope of the Cumberland Mountains, the steepest grade being ninety feet to the mile.

Gold mines are being rapidly developed in Virginia. This fall there will be seventeen in Spottsylvania, Culpeper, Orange and Louisa counties.

A party of Pittsburg speculators representing a capital of \$3,000,000 are buying up crude petroleum for delivery at any time during 1868, at their option.

A stone sixty feet long, seven feet wide, and four feet thick, has been taken out of a quarry in Massillon, Ohio, by machinery. The specimen weighed one hundred and seventeen tons.

A new nail factory is being put in operation in Dorchester, Mass.

Mr. John Garey of East Weymouth, Mass., spent the winter in England engaged in selling the Patent Right of the American nail machine.

Mr. Newell Marden is now in Birmingham putting up machines for the American Nail Company, of Fairhaven Mass.

The railroad Committee of the Connecticut Legislature, reported unanimously against granting a charter for a new road from New Haven to New York parallel to the existing road, which latter now enjoys a monopoly of all eastern travel, by rail from this city.

There are now taken out of the hills of Lebanon County, Pennsylvania, 15,000 tons of iron ore per month. Two tons of this ore make one ton of iron.

A competitive trial of speed between two locomotives, one manufactured by Borsig, of Berlin, and the other by Sigl, of Vienna, was made at St. Petersburg, on June 30th. Each engine had to draw a weight of 600 tons up an incline of 1 in 125. The Austrian engine made twelve English miles in an hour, and the Prussian only eight.

An exchange informs us of a locomotive on the Louisville and Nashville railroad, which has been in active service thirty months, running 90,000 miles without needing any repairs, and with every promise of increasing her mileage 30,000 more before going into the shop. This engine, considering the great wear and tear on our American roads, it thinks compares very favorably with the record of a French locomotive which, with a similar history, was entitled to a prominent place in the Exposition.

A New York geologist has discovered evidences of gold in the soil of Huntington Co., Indiana, one ton yielding \$49 worth of the precious metal. A company has been formed and the necessary machinery purchased to commence operations at once.

Diamonds to the value of \$3,250,000 are annually sent abroad from the port of Bahia, Brazil.

The India, China, and Colonial Telegraph company organized in England, propose laying a cable from Falmouth to Gibraltar, and then through the Mediterranean Sea, to Malta.

The mills are running at a loss in Lowell, Lawrence, and most of the other manufacturing towns in Massachusetts and throughout New England. The Manchester mills and print works have goods on hand unsold of the value of two millions of dollars. The same state of things exists with the Amoskeag Company.

The pioneer firm in the manufacture of the patent sponge now being introduced into all kinds of upholstery, is located at Birmingham, Conn. The company have over 500 hands employed in gathering the material, on the Bahama islands. The sponge is first subjected to a process which destroys its animal character, and completely deodorizes, and purifies it. A chemical preparation now serves to keep it from drying and shrinking, and the fibres remaining soft and retaining their full elasticity, are never known to pack like horse hair or moss. Moths will not approach the sponge. The company turn out about four tons weight per week, and fill but one half their orders.

The Northfield Knife Company was started about twenty years ago, on the co-operative plan, by some "striking" workmen, who invested \$5 each. The business has largely increased, and the proprietors are now independent.

The new railroad between Mount Holly and Camden, N. J., nearly completed, passes through one of the richest agricultural districts of that state, and must prove a peculiarly successful investment. The road is to be extended eastward to Hightstown, where it connects with the Camden and Amboy track.

California now exports 10,000 tons of copper annually, an amount five times as large as the whole production of the United States ten years ago.

Pennsylvania furnishes seventy-three and three fourths per cent. of all the coal produced in the United States.

The nickel mine near Landaster, Pa., which has lately attained something of a notoriety, was worked a short period for copper, just about the time of the Revolutionary war. Nearly fifteen years ago a company of Philadelphia capitalists re-opened the copper mine, but the ore found was soon discovered to be very rich in nickel, a more valuable mineral, and since then the greater part of the supply for governmental coinage has been drawn from this source.

In Norway very successful results have been obtained with lines of railway of 3 feet 6 inches gage, the rails weighing but 40 lbs. per yard. Mr. Carl Pihl, the government railroad engineer, believes that still lighter railways of the same gage are likely to be yet constructed in that country, the rails weighing only 30 lbs. or possibly even 24 lbs. per yard.

The expansion of the rails of a railroad 500 miles long, amount in a hot summer's day to nearly a quarter of a mile, from the point of the extreme contraction in winter.

One of the most deplorable mining disasters on record occurred last month in the neighborhood of Ludgan, in Saxony. By the accidental blocking up of the pit with an impenetrable mass of timber and rock, one hundred and two men working at the bottom of the mine were imprisoned and in spite of all attempts to rescue them, miserably perished from starvation or suffocation.

The shoe business at Lynn, Haverhill, Randolph, and other large shoe manufacturing towns in New England is said to be in a very low condition, as compared with what it has been in former years.

Utah comes in for her share in the gold discovery mania. Late advices from Salt Lake state, that forty ounces of gold dust were brought in from one of these acquisitions, which were crushed from the quartz in two days.