

Artesian Wells.

The origin of Artesian Wells is very ancient—the first diggings of which we have any record were made in 1126, in Artois, in France—hence their name Artesian wells. Divers European nations, among which are England, Germany and France, claim the priority of the invention; but both the Chinese and Egyptians were acquainted with Artesian wells. The nature of Artesian wells is held to be that the subterranean waters are thrown to the surface by an expansive force resulting from the central heat, and independent of any law of gravity—the same as water is suspended as moisture in the atmosphere, and sustains itself there until some cause changes its condition, then it precipitates itself in the form of rain, &c. The earth's crust is composed of parallel beds, which are separated by joints well drained, and these beds have been modified by the successive deposits of water which have coursed at different epochs, the surface of the continents. The earths regularly stratified in horizontal beds have received successive shocks which have dislocated and inclined them. The Artesian well is but a research made by means of the drill for a stream underground, whose reservoir will give it sufficient force to cause it to ascend to the surface of the earth. When these waters, which are met by the drill, do not mount to the surface, it proves conclusively that the location of the work is higher than the level of the reservoir which nourishes these streams. Such waters are called ascending waters, but when, on the other hand, the waters elevate themselves above the earth's surface, the work has been executed *en contre bas*—that is, below the level of the source of the ascending stream, and these streams are called spouting waters. It is therefore necessary that a sound geological survey should be made in locating the well, in order to obtain a spouting instead of an ascending stream. Before determining the location of an artesian well, it is necessary to examine the section of country, the level of its rivers and valleys, and the dip of the strata. With these given, the scientific man can determine approximately the necessary depth of the well. As a general rule, attempts to obtain water with the bore should be made in the earths only of formation, and not in the primitive earths. Artesian wells not only give soft water to cities, towns and villages, but are equally valuable to extensive farms and factories, guarding them against the long droughts which sometimes happen in summer time.—Were the theory of the Artesian wells better understood, manufacturers would not suffer for want of water in the driest summer time; their reservoirs could be constantly supplied; and the extensive farmer could also derive an equal benefit by judicious irrigation. These borings must, of course, be conducted by experienced men, who will fitly and appropriately select their locations for digging, and who will combine geological knowledge with practice, but at the present moment the theories of geologists are undergoing a severe test at Charleston, S. C. Time will try all. Within a few years, this means of obtaining water has been extensively prosecuted in Europe, where there are now more than 3000 wells.—Venice, situated on the Adriatic sea, and entirely surrounded by salt water, with a population of 125,000 souls, is supplied abundantly by four Artesian wells, which were made in 1847. The wells of Grenelle, at one of the extremities of Paris, furnish water to more than 70,000 people. The inhabitants of the town of Sheerness, England, are supplied with water from two Artesian wells. The provinces of Modena and Bologna in Italy, for a long time have been supplied in the same manner, and so have some parts of London. The quantity of water to be obtained from a well depends entirely upon its geological and hydrographic conditions. It may vary from 100 to 1,100 gallons a minute, or from 144,000 to 1,728,000 gallons every twenty-four hours. This will depend greatly upon the talents of the engineer who is charged with the work; for after having met the first stream, an experienced man must decide whether or not it is best to go further in search of better jets, at a greater depth. The depth to which it is ne-

cessary to penetrate, and the difficulties to be overcome, vary greatly, according to the localities.

The Inventions of this Age.

This is the age of great discoveries in all directions. The railroad has become the magician's rod, the electric telegraph a wire of wonders, and ether and chloroform mysterious alchemies. A tooth can be extracted, a leg cut off, or an incision made into the most sensitive parts, and the patient at the close ask if the operation has begun. Speeches uttered at ten o'clock at night are printed while we are asleep, and they appear in beautiful type upon our breakfast tables at eight o'clock in the morning. The rapidity with which change follows change is also remarkable. Things that took a century to do some time ago, are now finished off in the course of a day. A new feature, however, of the present age is, that religious men have ceased to be afraid, as they used to be, of the discoveries of science. Religious men, on the contrary, hail them. They used to be in fear lest light from the stars should put out the sun of righteousness; they used to be apprehensive lest the hammer of the geologist should break the rock of ages, or lest some arrangement among the strata of the earth discovered by some Buckland, should discredit the truth of God.

Do not be afraid of the discoveries of science; do not stand in the way of truth with your silly fears. Let truth emerge from the mine. Let it come from the laboratory of the chemist; let it descend from the observatory of the astronomer, it will fall in with and not darken the truth of the gospel. Another interesting feature is, that mind, genius, and talent are much more appreciated in the present day, under whatever guise, or garb or denomination they appear. Galileo saved his life by recanting the conclusive inductions of science. Locke was banished from Oxford; Selden was thrown into the tower; Milton sold the copyright of "Paradise Lost" for five pounds. In contrast with this, it is only needful to refer to the immense sums received for their writings by Scott, Dickens, Macaulay, &c. Such is the force of real genius, that it will publish itself, though its possessor should be dumb, and command the homage of all, while it appears to be the willing servant of all. Once it had no chance of emerging from obscurity, except by being tied to some great patron's tail. Now, the noblest patronage is fair opportunity.—Mind is admitted to be a competent element of true greatness. Coronets, prebends, purple robes and lawn sleeves, M. A.'s and D. D.'s are more and more felt to be mere wrappings; while the goods are in the inner man, the substance is the soul.

The Bread-Fruit Tree.

The earliest account of the Bread-Fruit, is by Captain Dampier, in 1688. "The Bread-Fruit," says this navigator, "grows on a large tree, as big and high as our largest apple-trees; it hath a spreading head, full of branches and dark leaves. The fruit grows on the boughs like apples; it is as big as a penny loaf when wheat is at five shillings a bushel; it is of a round shape, and hath a thick, tough rind. When the fruit is ripe it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for bread. They gather it when full-grown, while it is green and hard; then they bake it in an oven, which scorches the rind, and maketh it black; but they scrape off the outside black crust, and there remains a tender thin crust; and the inside is soft, tender and white, like the crumb of a penny loaf. There is neither seed nor stone in the inside, but all of a pure substance like bread. It must be eaten new, for if it be kept above twenty-four hours, it grows harsh and choky, but it is very pleasant before it is too stale. This fruit lasts in season eight months in the year, during which time the natives eat no other sort of bread kind. I did never see of this fruit anywhere but here.—The natives told us that there is plenty of this fruit growing on the rest of the Laerone Islands; and I did never hear of it anywhere else."

The scientific men who accompanied Captain Cook in his voyages, came home with

the most enthusiastic ideas of the Bread-Fruit. Dr. Solader calls it "the most useful vegetable in the world," and urges that no expense should be spared in its cultivation. The mere idea of bread, the most valuable food of man, growing spontaneously, was doubtless calculated to excite attention—almost, perhaps, as strongly as the subsequent description of the poet. The mode of propagating the Bread-Fruit is not, indeed, difficult; for the planter has only to lay bare one of the roots, and mound it with a spade, and in a short space a shoot comes up which is soon fit for removal.

Europeans are much fonder of the Bread-Fruit than negroes. They consider it as a sort of dainty, and use it either as bread or in puddings. When roasted in the oven, the taste of it resembles that of a potato, but it is not so mealy as a good one.

Chemitype Printing.

The art of engraving on wood is now generally considered to have arrived at its utmost pitch of perfection, and indeed the splendid effects which are occasionally produced by the artists of the present day, leave fault-finders little to say on the point. Still it may be urged, that although no question can be raised as to the beauty and artistic effect of illustrations of this kind, yet there are numerous deficiencies in its practice, which tend to prevent the supply of really good works being equal to the demand—these deficiencies are indeed inherent in the material used, so that we have slight hope of overcoming or even mitigating them. Nevertheless, we are without a single plan which may be said to offer even any advantages at all to be compared to those offered in wood. Glyphography, gypsography, and anastatic printing have severally passed in array before the tribunal of public opinion, and still, the effects produced by any of these three, are pronounced by the most competent of arbitrators, to be immeasurably inferior to engravings on wood. A fourth scheme has been added to the list, with the name of Chemitype Printing. By this method, an etching or engraving made in metal in the usual way, may be converted into a high relieve stamp, to be used for printing on an ordinary press as is the case with common wood engravings. The following statement may in general illustrate the character of the invention: On a highly-polished plate of pure zinc an etching or engraving is made in the usual manner, which, under common circumstances, would be fitted for impressions on an engraver's press, having the same harmony and proportion of all the respective etched or engraved lines. The tracery, thus deepened, is now to be fused or melted down with a negative metal, and the original metal plate, (zinc) corroded, or etched by means of a certain acid, thus making the characters of the former drawing appear in the shape of a high relieve stamp. This effect is only produced in consequence of the metal composition in the lines of the tracery not being acted upon by the acid on account of the galvanic agency subsisting between the two metals, and the acid corroding only the zinc.

After these details there cannot be the least doubt of the specific difference between the chemitype printing and glyphography, relieve etching in copper, and other similar artistical processes and practices lately invented. Its principle rests upon the positive and negative nature of the metals. As every drawing on the metal plate is completely exact on the relieve stamp, the practice is absolutely independent; the exact and accurate representation of the original sketch is always to be expected. Wood-engraving cannot in most cases, be superseded by this novel method; but in many other instances the new practice is preferable, chiefly when colored printing is required, in the representation of maps, plans, architectural drawings, &c., &c. At the same time, the correction or improvement of any drawing can be much better executed than in wood-engraving.

It is impossible to say what will eventually be the fate of this invention, whether it is to follow the list of its predecessors just enumerated, or to ascend through successive stages of improvement, so as to cope successfully with our present well-tried system.

In the representation of plans, engineering, and architectural drawings, where, unlike the free sketches in which wood shows to so much advantage, and exactitude of lining, and attention to a microscopic degree of minuteness is indispensable, we should be inclined to say that Chemitype offers some advantages. In the illustration of scientific works, where the artist is fettered by the absolute necessity of adhering to the requisition given above, not only is wood incapable of giving a sufficiently fine and even a line, but is not attainable in sufficiently large blocks for drawings of even moderate size, and the disadvantages attending the junction of several pieces, is clearly shown by the white lines which disfigure all cuts on blocks exceeding a few square inches in area. To attain the first class of these desiderata, copper-plate-engraving must be substituted, and here again, we have the evil, of a difficult and expensive mode of printing, which precludes the introduction of intaglio engraving into the majority of works. Neither of these disadvantages can affect the new process.

Effects of Climate on the Anglo Saxon Race.

The following singular information and views respecting the effects of Climate on our race, are taken from "Lyell's Second Visit to the United States," and will be found of no inconsiderable interest.

I suspect that the principal different aspect or the Anglo Saxon race in England and America is the climate. During both our tours through the United States, my wife and I enjoyed excellent health, and were delighted with the clearness of the atmosphere, the bright sun and the great number of cloudless days; but we are told that, if we stayed a second year we should feel less vigorous. Many who have been born in America, of families settled there for several generations, find their health improved by a visit to England just as if they had returned to their native air; and it may require many centuries before a race becomes thoroughly acclimatized. The great difference of the species of indigenous animals and plants in North America, those of the Middle and Southern States being almost all distinct from the European, points to a wide diversity of climate, the atmosphere being drier, and their being a much greater annual range of the thermometer than in corresponding latitudes on the eastern side of the Atlantic. Even so cosmopolite a being as man may demand more than two centuries and a quarter before he can entirely accommodate his constitution to such altered circumstances, and before the successive generations of parents can acquire themselves, and transmit to their offspring the new and requisite physiological peculiarities. English travellers often ascribe the more delicate health of the inhabitants here to their in-door habits and want of exercise. But it is natural that they should shrink from exposing themselves to the severe frosts and long-continued snows of winter, and to the intense heat of the summer sun. An Englishman is usually recognized at once in a party, by a more robust look, and greater clearness and ruddiness of complexion; and it is surprising how distinguishable he is from persons born of English parents in the United States. It is also a curious fact, which seems generally admitted, that the native Anglo-Australians bear a considerable resemblance to the Anglo-Americans in look and manner of speaking, which is a mystery, for there is certainly in that case no analogy between the climates of the two countries.

The Expense of Whiskey.

Robert Bantoul, jr., in a recent temperance address, asserts that the single state of Massachusetts might save an amount of money, in the space of thirty years, of greater value than the whole wealth of England, by simply abstaining from the use of intoxicating liquors; that, from the time of the Revolutionary war, the money expended in this country, for alcoholic drinks, has exceeded in value that of the whole present property of the nation, personal and real.

[The above is from an exchange, and must be exaggerated.]