

Miscellaneous.

VON RATHEN'S COMPRESSED AIR LOCOMOTIVE.—In noticing an experiment with the Baron's machine, identical, if we mistake not, with one some weeks since recorded in "THE BUILDER," even down to a stoppage at Wandsworth, a correspondent, who "hails with pleasure the ingenuity of the idea of fabricating, wholesale, a propelling power, as if it were cotton" [gun cotton?], says that "the plan of the inventor," so far as he understands it, "is to have large steam engines fitted up at stations, at nearly voluntary distances, to be regulated by the nature and extent of the traffic—say at 10, 20, or 30 miles the one from the other; also to have extensive stationary reservoirs at each of these stations, where the propelling power is extensively fabricated. The locomotive reservoir-tenders are filled with compressed air from these, of an adequate power calculated for the distance, and the locomotive is then charged." "The economy," he continues, "must be very great in thus fabricating the power wholesale, by one large steam-engine, for supplying or working ten or twenty locomotives, for which, in the present system, ten or twenty locomotive steam-engines have to be employed, and worked under the most disadvantageous circumstances. This might have been (long before the invention of the Baron Von Rathen) readily acknowledged; but the problem was to obviate the immense loss of power and difficulties hitherto experienced and never before resolved, in compressing large quantities of air to a high degree of condensation, and using it when expanded out to an uniform working pressure. This has been effected by the inventions of Baron Von Rathen." The apparatus we have already noticed. Without identifying our own opinion with that of our correspondent, or indeed offering any opinion on the merits of the Baron's persevering endeavours to perfect his new mode of propulsion, we may here remark that the idea reminds us of one some time since started for the fabrication of locomotive force by means of powerful springs, wound up by stationary steam-engines, and shipped—like the Baron's bottles of wind, or rather like the main-spring and drums of a watch,—with fitting apparatus, regulators, &c., on to some simple wheeled machinery for locomotion.

COAL AND GOLD.—A curious fact is stated in the Philadelphia newspapers. From the annual report of the Director of the United States Mint, it appears that the value of all gold coined during the twenty-four years prior to 1848, was 12,741,653 dollars, or somewhat exceeding the average sum of half a million a year—a very considerable addition to the stock of American wealth; but it appears, from the returns of the coal trade in Pennsylvania, that the value of this commodity brought to market in this State is annually equal to the above large amount: that last year, for example, the value of her anthracite brought down to tide-water—nearly 3,000,000 tons—was actually equal to the value of all the gold produced in the south during the twenty-four years. From this it appears that the northern (Maryland as well as Pennsylvania) "coal" mines are more valuable "gold" mines than those of that metal in the south.—*Miners' Journal*.

FIGURES.—Sir: Allow me to send you the rule by which the differences between the proportions and products of numbers are governed, which you allude to in your number of the 23rd September, under the head of "Figures."

If $n = 4, n - 3, n - 2, n - 1, n, n + 1, n + 2, n + 3, n + 4$, be any consecutive numbers, it is evident that

$$n \times n = n^2$$

$$(n - 1) \times (n + 1) = n^2 - 1$$

$$(n - 2) \times (n + 2) = n^2 - 1 - 3$$

$$(n - 3) \times (n + 3) = n^2 - 1 - 3 - 5$$

$$(n - 4) \times (n + 4) = n^2 - 1 - 3 - 5 - 7$$

&c. &c.

$$(n - s) \times (n + s) = n^2 - 1 - 3 - 5 - (2s - 3) - (2s - 1)$$

Hence, if $(n - s)$ and $(n + s)$ be the two sides of any rectangle, the area is always $= n^2 - 1 - 3 - 5 - (2s - 3) - (2s - 1)$, and if $n, n - s, n + s$ be any two rectangles, the difference of their areas $= 1 + 3 + 5 + 7 + \dots + (2s - 3) + (2s - 1)$.

WM. JEAKES, JUN.

THE CHURCH OF NOTRE DAME, AT BRUGES, remarkable for a spire 400 feet in altitude, contains a great number of pictures, and by a very judicious act, the name of the painter of each is placed on a tablet attached to the frame. The highest attraction is in a small chapel in the right side aisle, where are the magnificent tombs of Charles the Bold and Mary of Burgundy. The construction, including the reposing full-length figures, is of brass, chased to exquisite perfection, and entirely gilt, with the exception of the several armorial shields, which are richly enamelled in colours. The form and design of these tombs are well shown in a lithograph by Louis Haghe, among his scenes in Belgium. A little beyond, in a niche above an altar, stands a marble statue of the Virgin and Child, about 5 feet in height, said to be a work by Michaelangelo; the grandeur of the pose, the dignity of expression, the composition and the execution of the details, are of a very high order. It has always been attributed to this great master, and Descamps, in his travels, relates by what means it became placed in a church in Flanders. He says, "it was executed for the city of Genoa, but the ship which conveyed it was captured by a Dutch cruiser and carried to Amsterdam. A merchant of Bruges purchased the group and presented it to the Church of Notre Dame." The description of the church, written by Beaucourt, contains the act of donation by one Pierre Mouscron, who constructed the altar and was interred in front of it, where an inscription records the event on the sepulchral stone. Behind the high altar a pair of iron gates inclose the choir; they are of hammered iron, bearing the date of 1699, as well as the name of the artist who made them,—Ryckam, of Ostend: for elegance of design and exquisite workmanship, they are works of art of a high order: every figure or ornament is in full relief and worked up to the most exquisite finish.—*Art-Journal*.

HOUSES OF THE ANCIENT PERUVIANS.

—All large towns had a square in their centre, where the religious dances were performed. From the square a certain number of regular roads and streets always ran in the direction of the four quarters of the firmament. There are great varieties in the construction of the houses. Small insignificant huts often stand close to a palace having twenty or twenty-five windows in one front. Private dwellings in the mountainous parts are built of unhewn stone, cemented with a very strong calcareous mortar. On the coast the walls are of brick. In the departments of Junin and Ayacucho, I met with the ruins of great villages, consisting of dwellings of a peculiar construction, in the form of a tower. Each house is quadrangular, with a diameter of about six feet, and seventeen or eighteen feet high. The walls are from one to one and a half feet thick. The doors which open to the east or the south, are only a foot and a half high, and two feet wide. After creeping in (which is a work of some difficulty), the explorer finds himself in an apartment about five and a half feet in height, and of equal breadth, without any windows. In the walls there are closets or cupboards, which served to contain domestic utensils, food, &c. Earthen pots with maize, cocoa, and other things, are still often found in these closets. The ceiling of the rooms is overlaid with flat plates of stone, and in the centre an aperture, two feet wide, is left, forming a communication with the second floor, which is precisely like the first, but has two small windows. The roof of this apartment has also an aperture, affording access to the third floor, the ceiling of which forms the roof of the house, and consists of rather thick plates of stone. The upper room is usually less lofty than the two rooms below it, and seems to have been used as a provision store-room. I found in one of these upper rooms the mummy of a child very well embalmed. The family appear to have lived chiefly on the ground-floors. The place for cooking is often plainly perceptible. The second floor was probably the sleeping apartment.

INTERESTING TO RAILWAY CONTRACTORS.

WARD V. DAVY AND COOMB.—In this case (which was heard at the sitting of the County Court, Birmingham, and reported in the *Birmingham Journal*) the plaintiff claimed

19l. 14s. 11d. for work done by him on the South Staffordshire Railway, according to contract, at 12s. 6d. per chain, and was the balance claimed for fifty-eight chains, and other work done. The defendants endeavoured to show that the contract had not been completed, and that the account had been settled. The contract and price were admitted by Mr. Coomb, but defendants attempted to deduct 2s. 6d. per chain without having the plaintiff a party to the new contract, while they were the cause of the incomplete execution of the original contract; and Kent, a witness for the defence, swore that he only knew from what his master told him. The price, according to the original contract, was therefore maintained. Ward was not able to read or write, or to ask a question, and was also unwilling to admit the settlement of the account, which his honour also affirmed did not appear to be settled by the statement produced by defendants. In his judgment his honour stated that it was the bounden duty of an employer to see that no mistake occurred between him and the persons employed by him; the agreement at 12s. 6d. per chain was proved and quite clear, and the same could only be set aside by the same parties who made it; it could not be set aside by one party only. The case contained three clear points, two (the contract and its execution) to be proved by the plaintiff, and the other (the payment according to the contract) to be proved by the defendants. This the defendants had failed to prove. Therefore the verdict must be for the plaintiff.

IMPROVEMENT OF CLERKENWELL.—The street to Clerkenwell-green, in continuation of the new street from Farringdon-street, will shortly be completed under the Act obtained in the late session (11 & 12 Vict., c. 162—local). It seems that difficulties have arisen in raising sufficient money for the completion of the street, the security offered being deemed insufficient. The sum of 25,000l. advanced by the Treasury has been expended, as also 27,000l. borrowed on mortgage. It is now provided that money may be raised by the sale of the property to be completed, and the existing mortgages paid off, so that the subscriptions to be raised for the purpose do not exceed 20,000l. If the Commissioners of Woods and Forests, or the City of London, should carry the improvements into effect, the powers of the Act are to be transferred to them. Under this new Act, which has recently been printed, the street is expected in a short time to be completed.

METALLIC LAVA FOR STONE, BRICK, TILE, CEMENT, &c.—A patent has been taken out by Mr. J. Orsi for a composition of gravel, or stone broken into small pieces, 3 parts; pounded chalk, 2 parts; tar, 1 part; wax, 1-10th. The tar is first melted in a cauldron, and the wax, gravel, or broken stone, chalk, and mineral colour are successively added. The artificial stone, or metallic lava, thus formed, is cast in moulds, either into solid blocks of any required form, or into hollow vessels, as troughs and tanks. It is also made into pipes, by rolling on a circular core of wood, enveloped in paper, three or more iron ribs being attached lengthways above the first coating, by winding wire round them, when a second coating is added, by rolling as before.—Also for ornamental tiles, bricks, and quarries, a combination of ground flint, 2 parts; marble broken into small pieces, 3 parts; resin, 1 part; wax, 1-10th part; and some mineral colour, 2-10th parts.—Also for cement from either combination in a comminuted state, and used while warm.

VALUE OF LAND IN SOUTH WALES.—Landed property has for some time produced a very high price in South Wales,—a circumstance which the *Gloucester Chronicle* partly attributes to the effect expected to be produced by the railway, and partly to the great capabilities for improvement which much of the land in the southern division of the principality, especially in the western counties, possesses. Some considerable freehold estates in Carmarthenshire, which were sold by auction, by Mr. George Goode, at Carinarden, last week, realised on an average from 35 to 40 years' purchase on the present rentals.

HEALTH OF TOWNS.—Steps are being taken for the adoption of the salutary provisions of the Health of Towns Bill at Cambridge and Ely, and also at Worcester and Birmingham.

* From Teichard's "Travels in Peru."