

first brought into contact; then separated and maintained (notwithstanding the variation of the charcoal points as the result of the electric action) at a given and unvarying distance from each other. These objects have been accomplished by passing the electric current itself through a coil of copper wire surrounding a bar of soft iron. The bar becomes magnetised, and is adapted to rise or fall as the current is strong or weak. These motions of rising and falling act upon the escapement, by means of which an equal current of electricity is always maintained, and the charcoal points held at a distance from each other proportionate to the passing amount of electric current. Thus the difficulties of this invention are said to be overcome. It has been stated that it amounts only to *one-twelfth* of the cost of gas—but this with regard to expense, is doubtful. The advantages of the light are, that it does not deteriorate the air of the apartments in which it is employed, and will not blacken or soil the most delicate fabrics, being unaccompanied by smoke or vapour; there is no danger from fire; its light is white, and exhibits objects in their true colours; its intensity is much greater than that of gas, and may be employed on railway trains, on board ships, and in mines, without danger of explosion.

THE ECONOMY OF CREATIVE POWER.

The Lord of hosts, wonderful in council, and excellent in working."—Is. XXVIII, 29.

It is a *thing observable* through every province of nature—a *principle* to which every science lends its authority, that the power of God, *infinite in its development, is infinitely economized in its operation*—a principle to be traced in every manifestation of force in inanimate matter, and under every form of independent motion. All that we call design in natural things has in some way a direction to it. The very weed under our feet shews it in the form of its stalk; and the tree of the forest shapes out its trunk, moulds its branches and tapers the very stems and fibres of its leaves, in obedience to it. That economy of creative power which thus manifests itself in the works of God, infinitely *perfect* in its degree, has its remote but visible *type* in the *imperfect* husbandry of our efforts, which impels us to use the simplest possible means of effecting that which we have to do, and which is implied in what we call the best means of doing it. In us this economy has for its object the preservation of our living powers; and for its immediate origin, a sense of lassitude and fatigue, for that end especially implanted in every living thing. In him by whom this sense was laid upon us as a law, but whose own arm is "not straitened," and who "fainteth not, neither is weary" (Ps. xl. 28), that which in us he has made a necessity of nature, is but a principle of wisdom in operation.

Let us now seek if there be any evidence by which it is given us to perceive the operation of this principle in the architecture of the heavens. Let us listen if, in the stillness of the universe, there be not a *voice* recorded from worlds which, "without speech or language," traverse its unfathomable regions, and stars which silently repose in its depths—the voice of revelation: "by His wisdom hath he made the heavens, and stretched them out by his understanding."

It is a high privilege thus to be able to commune with God in his works—to feel (as it were) with a *sense* of the understanding) his wisdom guided the hand of his power. It is to enjoy here a knowledge of which, little though it be, that of heaven, as far as it includes the mysteries of creation, cannot but be a continuation—to hold here a few links of a chain which proceeds from the throne of God. And although now it is to the silent monuments of nature that the researches

of science are limited, and in respect to these although now we see but as "through a glass darkly," yet is there a spirit of devotion which, regarding these things as *beginnings*, with a faith almost invigorated into knowledge, anticipates, walking in this twilight,—the daylight of heaven—when we shall see "face to face," and "know even as we are known;"—a time when to the soul, now released from the corruptible body, in some degree (however slightly) schooled by the instruction of faith and knowledge, and no longer straitened by the imperfections of sense, the works of Grace, the works of Providence, and the works of Nature, shall present, under one vast but simple and united scheme, the equal evidence of God's mercy, his wisdom and his power.—*Moseley's Astro-Theology*.

ETCHING AND ENGRAVING IN BLACK MARBLE.—An interesting feature connected with the manufacture of black marble, is the depicting, by the application of an acid, representations of figures, flowers, Egyptian hieroglyphics, and other objects upon a polished surface. The method employed in doing this kind of engraving is similar to that pursued with respect to copper, viz., by first tracing with wax or varnish upon the marble the object intended to be represented; then, when the preparation is perfectly set, with a point marking in the finer parts of the figure, it is then covered with an acid, which bites off the polished surface of the marble, which was not covered with the preparation, leaving those parts which were covered standing in slight relief; the wax is then cleaned off. Thus it will be seen that any one with a knowledge of drawing could practise this part of the art; not so, however, with regard to another style of engraving on marble, which I will mention, and which is peculiarly English, such productions from abroad being unknown. There is no preparation of wax, or application of acid used here; the entire process is done by graver's points and diamonds, hence called the "diamond engraving." It must be observed, that for effect in this work, the artist is confined to a most limited space, viz., from a black polished surface to a grey ground, the natural colour of the marble before it is polished.—*The Builder*.

WHEELBARROWS.—The greater the diameter of the wheel of a barrow, and the smaller the axis or spindle on which it turns, the less power will be required to drive it forward; for the friction is proportionately reduced.

The diameter of the wheel might be increased with manifest advantage to double that now employed, for even then it would be below the point of draught or impulsion, (the hand of the labourer,) and the nearer it can be brought to a level with this, the more efficiently he exerts his power.

The breadth of the wheel's periphery, or fellos, might be also increased two inches advantageously, for as it is always employed upon a surface in some degree soft, such an increased breadth would decrease the depth to which the wheel of a loaded barrow usually sinks into the soil, and would proportionately decrease the power required to overcome the augmented opposition. In a wheelbarrow so constructed, a man might move with more ease 8 cwt., than he now impels 5 cwt., which is a full barrow load.

If a wheelbarrow be made of wood, the feet and handles should be clasped with iron, and its joints strengthened with bands of the same metal. If so guarded it will outlast two others left unprotected.

Barrows are now very frequently employed, made entirely of wrought iron, and Mr. Straton informs me that they weigh 92 lbs., being but little heavier than common wooden barrows. The wheels are of wrought iron, 16 inches in diameter, and the ends of the gud-