Scientific Museum.

Artificial Silicification of Limestones.

It is some years since M. Kuhlmann of Lille proposed to preserve pieces of sculpture, etc., by impregnating them with a solution of silicate of potash. This process has been used on a grand scale in certain parts of the cathedral Notre Dame. The architect of the cathedral reports as follows: 1, that the infiltration of silica has preserved the stone from the green moss that covers stones in moist places; 2, that the gutters and flagging of limestone subjected to this process present surfaces perfectly dry, covered with a silicious crust: 3, that upon the stones so prepared, dust and spiderwebs are less common than upon the stone in the ordinary state. The report also states that tender stones have been rendered hard; they have lost part of their porosity, and after being washed, they dry more rapidly than stones not silicified. The process has succeeded completely on all calcareous blocks, whether isolated or forming part of the structure, new and old.

It is not yet known how this process will act on mortars; but if successful, the silicification of an entire monument may be accomplished, and its restoration when old. The old exterior might be thus covered with a thick bed of artificial silicate of lime, and a whole edifice be protected by this means from all atmospheric causes of destruction.—[Silliman's Jour.

The Assyrian Empire.

A letter was read from Colonel Rawlinson, at a late meeting of the Royal Asiatic Society, detailing his progress in the work of collecting and interpreting the Assyrian inscriptions. - He considers it now to be pretty well established that the Assyrian empire was founded about 1250, B. C. The Assyrian empire must now be considered comparatively modern, and any real antiquity must be sought for in the ante-Assyrian period. The names of three more Assyrian kings have been discovered, which must be interposed between Tiglath Pileser and the original founder of Caleh, but the list cannot yet be regarded as complete, and he fears that the obscurity in which the genealogy is involved cannot be cleared up until a complete tablet of dynastics or more bricks are discovered. From the tablets and syllabaria he has made out a list of some 300 or 400 monograms, with their explanations; but he feels quite bewildered at the immensity of the work, as the number of ideographs and compound signs surpass all belief. In one tablet he has found a regular catalogue of all the gods of Assyria and Babylonia, and of the temples and cities in which they were worshipped. This list, although only a fragment contains nearly 500 names. Mr. Hormugd Rassam was to work with 100 men at Kileh Shergat during the whole of November.—Colonel Rawlinson mentions the discovery of a third obelisk at Nineveh. The historical part of this obelisk is very interesting, as it commemorates the exploits of a naval expedition in the Mediterranean, which set out from Adradus in thirty-four Phœnician vessels, and advanced as far as the Grecian Archipelago.

The Thoroughly Educated.

A man entering into life, says Mr. Ruskin, ought accurately to know three things,—First, where he is; secondly where he is going; thirdly, what he had best do under these circumstances. First, Where he is—that is to say, what sort of a world he has got into; how large it is? what kind of creatures live in it, and how; what is it made of, and what may be made of it. Secondly, Where he is going—that is to say, what chances or reports there are of any other world besides this; and whether, for information respecting it, he had better consult the Bible, Koran, or Council of Trent. Thirdly, what he had best do under these circumstances—that is to say, what kind of faculties he possesses; what are the present state and wants of mankind; what is his place in society; and what are the readiest means in his power of attaining happiness and diffusing it. The man who knows these things, and who has had his will so subdued in the learning them, that he is ready to do what he knows he ought, I should call educated, and the man who knows them not, uneducated, though he could talk all the tongues of Babel.

[For the Scientific American.]

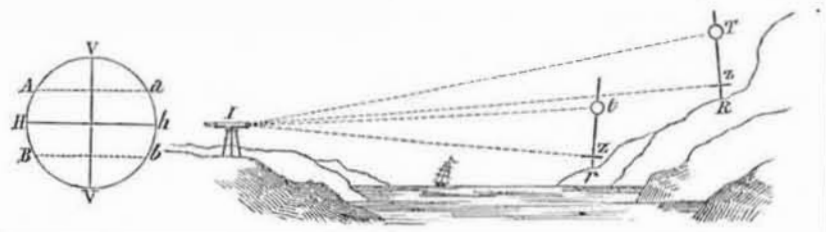
Measuring by Inspection.

It is very desirable for surveyors and civil and military engineers to be able to measure distances at once, and by simple inspection, especially on rough ground. In fact the usual mode of measurement with a chain and pins has always seemed to me a clumsy contrivance, tedious, expensive, and very liable to error.

The annexed engraving and description is a mode of ascertaining distances, by inspection merely, which was invented by me more than twenty years since, and employed in measuring distances less than 1000 feet, with an error not exceeding one-twentieth of one per cent., which is much less than the usual error of the chain, especially over uneven surfaces. I never used it to measure greater distances, although the principle will apply just as well to them.

The principle (one of the properties of similar triangles) is so well known, and its application so very simple, that it may have been used by others, though I am not aware of it. It has saved me some labor and expense in surveying in an open country, and is now handed over to the public that it may find its own level, and hoping, with the natural partiality of an inventor, that it may find a good many of them.

The circle, fig. 1, represents the field of view of the telescope of a theodolite or leveling instrument, with the usual horizontal and vertical cross-wires, H *h* and V *v*. A *a* and B *b*, are two additional horizontal wires, placed at such a distance apart (to be adjusted by experiment,)



that at 1000 feet their angle will subtend a chord of ten feet.

In figure 2, I represents the point on the telescope where the rays cross for the first time (to be marked on the outside), being the initial point of the triangle and of measurement. R represents a rod divided into feet and decimals. *z* is a fixed target at the zero point of measurement on the rod, with a + or other contrivance for adjusting the rod at right angles with the line from *z* to I. Now the angle at I, being always the same, and *z* always a right angle, if when the rod is at R (1000 feet distant from I) the lower wire (B *b* fig. 1) cuts the target, *z*, at zero, and the upper wire (A *a*, fig. 1) cuts the sliding target, T, at 10 feet above, then if the rod is removed to *r*, the lower wire (B *b*, fig. 1) being adjusted to the target, *z*, and the upper wire (A *a*, fig. 2) cuts the sliding target, *t*, at 6 84-100 feet above, the point, *r*, is 684 feet from I, and so for a greater or less distance, the base of the triangle, *z* I being always 100 times the perpendicular, *z* T.

If this mode is used for long distances, the wires, A*a* and B *b* may be vertical, and hundredths of feet on a tape line stretched horizontally at right angles with the line from the telescope to the rod, will give the distance, *z* I, in feet.

If a theodolite is used, the horizontal and vertical distances can be ascertained as well as the actual distance, all at one observation, and thus topographical surveys made with great accuracy and rapidity.

JAS. T. WORTHINGTON.

Chillicothe, Ohio, 1854.

New Kinds of Galvanic Batteries.

The combination used in one of these, is antimony, or some of its alloys, for a negative plate, with nitric acid of specific gravity 1·4, in contact with it, and unamalgamated zinc, for a positive plate, with a saturated solution of common salt in contact with it. A small quantity of finely powdered per-oxide of manganese is put into the nitric acid, which is said to increase the constancy of the battery. The alloys of antimony which Mr. Kuklahas experimented with successfully are the following:—Phosphorus and antimony, chromium and antimony, arsenic and antimony, boron and antimony.—These are in the order of their negative character, phosphorus and antimony being the most negative. Antimony itself is less negative than any of these alloys. The alloys are made in the proportions of the atomic weights of the substances. All these arrangements are said by Mr. Kukla to be more powerful than when platinum or carbon is substituted for antimony or its alloys. In this battery a gutta percha bell cover is used over the antimony, resting on a flat ring floating on the top of the zinc solution,—this effectually prevents any smell, and keeps the per-oxide of nitrogen in contact with the nitric acid solution. When a battery of twenty-four cells was used, Mr. Kukla found that in the third and twenty-first cells pure ammonia in solution was the ultimate result of the action of the battery; but only water in all the others. This experiment was tried repeatedly, and always with the same result. A battery was put into action for twenty-four hours,—at the end of that time the nitric acid had lost thirteen-twentieths of an ounce of oxygen, and one-quarter of an ounce of zinc was consumed. Now as one-quarter of an ounce of zinc requires only 0·06 of an ounce of oxygen to form oxide of zinc, Mr. Kukla draws the conclusion, that the rest of the oxygen is converted directly into electricity; and this view, he says, is confirmed by the large amount of electricity given out by the battery in proportion to the zinc consumed in a given time. In the above battery each zinc plate had a surface of forty square inches. The addition of per-oxide of manganese does not increase the effect of the battery, but it makes it more lasting—the per-oxyd of nitrogen, formed in the bell cover, taking one atom of oxygen from the per-oxide of manganese; this is evident from only the oxyd of manganese being found in the battery after a time: in the salt solution no alteration takes place but what is caused by the oxyd of zinc remaining in a partly dissolved state in the solution. For this battery Mr. Kukla much prefers porous cells, or diaphragms of biscuit ware, as less liable to break, and being more homogeneous in the material than any other kind. This battery is very cheap, the zinc not requiring amalgamation.—The second arrangement tried by Mr. Kukla was antimony and amalgamated zinc with only one exciting solution, viz. concentrated sulphuric acid:—this battery has great heating power, and the former great magnetizing power:—it, however, rapidly decreases in power, and is not so practically useful as the double fluid battery, which will exert about the same power for fourteen days, when the poles are only occasionally connected as in electric telegraphs. Certain peculiarities respecting the ratio of intensity to quantity when a series of cells is used, have been observed, which differ from those remarked in other batteries.—[London Athenæum.

We think Mr. Kukla must have been mistaken in his quantitive analysis. We cannot believe without further evidence that oxygen can be converted into Electricity, for if this be so, either oxygen is not a simple substance or oxygen and electricity are identical. Besides, there is a very wide difference between the ponderables and the imponderables in many important respects, so great a difference indeed, that we shall be slow to believe in their convertibility.

Satisfactory Evidence of Vitality.

The Durham Chronicle, an English paper, says that in the early part of December the proprietors of Wombwell's travelling menagerie, which was then in that vicinity, became very much afraid that their famous boa constrictor would die of cold. They accordingly placed two young crocodiles in the box beside it in order to impart heat, and then wrapped the three in flannel. Soon after, when the keeper went to examine his charge, he found that the boa had swallowed one of the crocodiles!

LITERARY NOTICES.

THE ILLUSTRATED HYDROPATHIC QUARTERLY REVIEW—Published by Fowlers & Wells, 131 Nassau street, at $2 per annum. The subject of Water Cure has elicited for some years a great amount of public attention, and these enterprising publishers were the first to spread among our people sound views concerning its proper use. The work before us is ably managed, and the general making up is excellent.

THE BIBLIOTHECA SACRA—We have received the January number (1854) of this able religious Review, published by A. F. Draper & Brother, Andover, Mass: it contains nine excellent original articles by clergymen, some of which articles exhibit a great amount of learning and keen logic. By our foreign exchanges we perceive that two great men in the Congregational Church have recently been called away to join the General Assembly above, we mean Dr. Ralph Wardlaw and Dr. Alexander, of Scotland—the latter, one of the editors of this Review. He was a very learned and pious man. A brief review of Dr. Beecher's "Conflict of Ages." is unfavorable to the theory set forth in said work. One article on the "Food of Man," affords us much useful information.

HAND-BOOK OF GERMAN LITERATURE—Is the title of a book just issued from the press of D. Appleton & Co. It contains Schiller's "Maid of Orleans," Goethe's "Iphigenia in Taurus," Tieck's "Puss in Boots," the "Xenia," by Goethe and Schiller, with various specimens of German prose. Edited by G. J. Adler, Prof. of German in the N. Y. University.

A new edition of "Les Aventures de Telemaque" has been issued by the same publishers. Its typography is clear and it is well bound. The Messrs. Appleton have lately opened a new store at Nos. 346 and 348 Broadway, The same enterprising publishers have also issued a manual of the French verbs, by T. Simonne, Prof. of Languages. Their publications are all creditable to them.

John B. Wickersham, Esq., No. 312 Broadway, New York, has just published an illustrated catalogue, entitled "A New Phase in Iron Manufacture," embracing a description of its uses for inclosing public squares, cemetery lots, dwellings, cottages, gardens, offices, gratings for stores, prisons, etc., window guards, bedsteads, tree boxes, verandahs, and articles of furniture, of which he is a large and enterprising manufacturer. The work is well got up, and will be useful to all interested in such matters.

BIBLICAL REPERTORY AND PRINCETON REVIEW—The January number of this able Review of the Presbyterian Church, Prof. Hodge, of Princeton College, Editor, contains six powerful original articles on various subjects: one on Dr. Beecher's new work, the "Conflict of Ages," will be read with great interest: it speaks of the author with respect, and deals with the work in a spirit of christian candor. This Review is published at Philadelphia.

THE NEW YORK MONTHLY—Is the name of a new Magazine which we have just received: Griffin & Farnsworth, the well-known editors of the "New York Dutchman," are the conductors of this new competitor for public favor. It is a spirited journal and we predict for it a large circulation. C. Reagles, publisher, 208 Broadway.

LITTELL'S LIVING AGE—Every number of this excellent weekly Magazine, is embellished with a beautiful steel engraving. Published by Littell, Son & Co., Boston, Mass.

SMITHSONIAN INSTITUTE REPORTS—We are under obligations to Prof Booth, for Reports and Transactions of this Institution. The Report on improvements in the "Chemical Arts," by Profs. Booth & Morfitt, is really a most useful and able work; it does great credit to those able chemists.

Putnam's Monthly for February has been received. Its table of contents is very interesting this month. The enterprising publishers are determined not to be eclipsed by any of their rivals.

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