

part. But that we shall at no very distant day be able to explore the shallower parts of the ocean, and recover some of the enormous wealth that lies hidden in wrecked vessels, there is little doubt. Already powerful electric lamps are used to illuminate the oyster-beds for the pearl-divers, being lowered to any depth required; and it is easy to predict that before long some submarine boat, propelled and powerfully lighted by electricity, will be searching for the wrecks of galleons and treasure-ships. The things most needed are faith in the success of the plan, daring, money for equipment and experiment, and, what is so often needed for a new application of electricity, a more perfect storage-battery.

ANOTHER NEW STORAGE-BATTERY. — Patents have just been granted to Louis Duncan of Baltimore for an improvement in secondary batteries. A great objection to the present battery lies in the fact that the inactive support-plate is heavier than the active material, — only one-third to one-fourth the total weight of plate is active in the ordinary cell, — while the limited surface prevents a heavy discharge-rate. With ordinary lead supports, an increase in surface causes an increase in the local action and depreciation of the cell, while any decrease in the thickness of the support also decreases the life of the cell. In this patent it is the intention to get a large surface, and a large proportion of active material to total weight, without decreasing the life of the cell. Broadly the idea is to coat the support-plate — a thin sheet of copper, washed with lead, in one of the claims — with a very dense layer of an oxide of lead, deposited on it from a solution of litharge in caustic potash, by means of a weak electric current. The deposit is so dense that it completely shields the sheet underneath from contact with the liquid: so, when the plate is put in sulphuric acid, there can be no local action between this coating and the lead beneath. By increasing the strength of current in the solution of litharge, the character of the deposit completely changes, becoming porous, and having a considerable electrical capacity. The positive plate, then, has four layers, — first, an outer active layer of peroxide of lead; second, a layer of dense peroxide that has no capacity; third, a thin coat of lead; and, lastly, the copper plate. Between the first and second layers there is no local action, because they are of the same chemical constitution; between the second and third there is no local action, since there is no liquid between them, while of course there is no action of the lead on the copper. We have no data as to any actual results. If the protective action of the dense peroxide claimed in the patent is really perfect, then a cell can be made with an immense surface for a given weight, and an excellent capacity. Such a cell should be of the greatest value, especially in traction-work; but no opinion as to the practical value of the cell is worth any thing unless supported by experiments carried on for a considerable time.

UNDERGROUND CONDUITS. — A meeting of the committee on underground conduits and conductors, of the National Electric Light Association, was held at the association headquarters, 16 East 23d Street, New York, on Tuesday, Dec. 11. The meeting was called to order at 2 o'clock P.M. by Mr. E. T. Lynch, jun., chairman. A preliminary discussion as to the present state of the art was entered into by the members present, and there seemed to be a very general impression that one of the most important things at present was to ascertain more fully and accurately than had heretofore been done, just what has so far been accomplished in this country touching upon the undergrounding of arc-light conductors. Several plans for accomplishing this were discussed, and the committee adjourned until Monday, Dec. 17, when definite plans for carrying out the work of the committee will be consummated. The members of this committee are E. T. Lynch, jun., chairman; F. B. Crocker; Gen. C. H. Barney; and Walter C. Kerr.

NOTES AND NEWS.

OBSERVATIONS have been made in India, South Africa, and Australia, which led to the conclusion that certain carboniferous rocks were formed by the action of ice. Conglomerates were found which contain large boulders of various materials, some of which have characteristic scratches and striæ. Recently A. Derby found similar rocks in southern Brazil. The general appearance

of these rocks is much like those of India and South Africa, and it seems probable that their origin is due to the same causes which formed the latter. So far, no striæ have been observed; but, as the region has not yet been investigated thoroughly, their existence is quite possible. The wide distribution of strata of this character is an undoubted proof that their origin is due to a general, probably a cosmic, cause; and among these, glacial action seems to be the most probable.

— It will be remembered that a number of elements had atomic weights which seemed not to be in correspondence with the demands of Mendelejeff's periodical system. Recent experiences have shown that these discrepancies were due to inaccurate determinations of atomic weights. K. Seubert has proved that the last of these discrepancies is due to the same cause. The theory demanded that the atomic weight of osmium be smaller than that of iridium, while former experiments gave the opposite result. Seubert has shown that the determinations which had been made by Berzelius and Frémy were inaccurate. He finds the atomic weight of osmium to be approximately 191, while that of iridium is 192.5.

— Hypnotism thrives in Washington. Two gentlemen interested in psychological studies, Mr. W. A. Croffut, executive officer of the Geological Survey, and Gov. N. J. Colman, commissioner of agriculture, give occasional *soirées hypnotiques*, at which they hypnotize numbers of "sensitives." During some recent experiments by Mr. Croffut, two young ladies, temporary victims of the hypnotic hallucination, were taken into an imaginary picture-gallery and there left, while the operator turned his attention to a young man who was engaged in the dangerous pastime of catching crocodiles. On returning to the ladies, Mr. Croffut found that he could not make them cognizant of his presence. They did not appear to see him, or hear his voice, and when he stood directly in front of them they took no notice of him whatever. It was a new and somewhat alarming experience, and a quarter of an hour passed before the hypnotizer re-established his domination, and brought them back from the land of dreams.

— Prof. J. P. Lesley has sent out a few final proofs of the first signatures of his report on the fossils of Pennsylvania, in the form of a dictionary, for the convenience of students and collectors of fossils in that State. It will be useful to them, and perhaps to others; but Professor Lesley claims no scientific merit for it, excepting that it contains a small number of new species discovered in the State collections, and named and figured by Mr. G. B. Simpson, in consultation with Prof. James Hall of Albany. The book itself is a compilation, which Professor Lesley made from various sources, mostly classical, and much of it old, and of difficult attainment by students of the present day. In the preface, when printed, all these sources will be fully recited. The book is going through the State Printing-Office at Harrisburg, will be bound in two volumes, and each volume distributed, when bound, separately.

— Mr. George F. Kunz, Hoboken, N.J., will purchase or take in exchange meteorites for fine crystallized or rare minerals. Intact falls, all the pieces of a fall, and newly found and undescribed ones, are especially desired; also aboriginal objects made of jade, jadeite, chlormelanite, pectolite or other allied minerals, or new occurrences of same; facts in regard to and specimens of American pearls, and American amber from all localities, especially if containing enclosures of wood, vegetable, or other living matter; gold and silver ornaments from the United States, and data concerning them. He is also desirous of securing the gem writings of certain ancient authors.

— It has long been known that rails of tracks in actual use oxidate much slower than those of dead tracks, but so far no satisfactory explanation has been found. W. Spring, in the Bulletin of the Royal Belgian Academy, shows that this is due to the formation of a coating of magnetic oxide of iron under the influence of humidity and pressure. In order to prove the correctness of this view, Mr. Spring has brought moistened rust and a clean plate of iron under a pressure of from a thousand to twelve hundred atmospheres, which corresponds to that of the wheels of a locomotive of a thousand hundredweights. He found that the rust-powder had penetrated the iron, and formed a coating of magnetic oxide.