

capitalists; for the capitalist has his thoroughly trained experts at command, men who are retained at generous salaries for the express purpose of investigating schemes in which he is a prospective investor. Somebody once said that there is nothing so shy as a million of money, and nobody knows this better than the gentlemen who begin to scatter alluring prospectus literature broadcast, immediately upon the appearance of any well-authenticated invention that promises to catch the eye of the too-little informed and over-eager small investor.

The class of people who desire to get rich by "short-cut" methods has always been a large one, and it draws its recruits chiefly from the people of limited means who draw a weekly or monthly salary, and find it difficult to make the bank account cover the rather broad stretch of their social and other obligations. It is among this restless and over-eager class that the average promoter finds his most lucrative sphere of operations.

It is not so very many months ago that the SCIENTIFIC AMERICAN warned its readers against being led away by the exaggerated representations which were being made of the commercial possibilities of liquid air; and it seems now that on account of the brilliant accomplishments of Marconi, we are to have a revival of bogus promotion in its most objectionable and harmful forms. We do not for a moment question that wireless telegraphy has come to stay, and that it will play a most important part in the great world of telegraphic communication; but we are perfectly satisfied that it will by no means sweep out of existence the already established and most highly organized systems of communication by cable. Within the next few years we shall of course see powerful companies established for the legitimate exploitation of the new system, and no doubt there will be considerable profits accruing to those who have the good fortune to be associated with the properly organized corporations.

Unfortunately for the small investor, the prospectus fiend is already opening a vigorous campaign, and there are several concerns organized for the express purpose of relieving a more or less ignorant public of their money, by inducing them to invest, at anywhere from 75 cents to \$10 a share, in so-called wireless telegraphy companies. The Editor has now before him a choice assortment of advertising literature, culled, most of it, from the daily press and current magazines, and much of it from pamphlets of the most alluring and up-to-date kind, which goes to prove that pure-minded philanthropy is not yet dead on the earth. There are corporations that are willing to take the public into their confidence, and for a nominal subscription of 75 cents a share are willing to let it reap the "golden harvest." Lest the reader should fail to grasp the magnitude of his opportunities, he is informed that within two or three days prices will be raised from 75 cents to a dollar; that the stock, in fact, will soon be selling in the open market at two, three, four or even twenty times its par value.

Now, there is no question but that ninety per cent of this literature is a tissue of lies, from its scare-head title page to its final announcement of the "make payable" address. And unless the public has learned well the lesson of the frauds which were perpetrated in connection with liquid air, the extraction of gold from sea water, and other famous prospectus swindles of the past few years, we much fear that there will be many an honest but foolish investor to whom the future mention of wireless telegraphy will come to have anything but pleasing suggestions.

#### RECENT MEETING OF THE NATIONAL ACADEMY OF SCIENCES IN WASHINGTON.

BY MARCUS BENJAMIN, PH.D.

The spring meeting of the National Academy of Sciences was held in the United States National Museum in Washington on April 15 to 18, with Dr. Alexander Agassiz presiding.

Prof. Henry F. Osborn, who holds the Da Costa chair of zoology in Columbia University, New York, was the first of the members to address the Academy, presenting a brief communication entitled Homoplasmy and Latent Homology. At the last meeting of the Academy the subject of Potential or Latent Homology was discussed, especially as bearing on the independent origin of certain bones of the skull and other parts of the skeleton, as well as upon the cusps of the teeth, particularly the grinding teeth. It was shown that structures which are ordinarily considered analogous by comparative anatomists have not been derived from each other, but arise independently in different groups of animals, and this presents an interesting question as to how far these structures are latent or potent in the ancestral forms which have given rise to these different groups.

A second paper by the same author, entitled Evidence that North America and Eurasia Constituted a Single Zoological Realm During the Mesozoic and Cenozoic, and that Correlations can be established as a

Basis for Uniformity of Geological Nomenclature, was then presented.

Prof. Edward W. Morley, of Adelbert College, Cleveland, Ohio, then read a paper on Determination of the Weight of the Vapor of Mercury at Temperatures Below 100 Degrees.

The next paper to be read was one on The Atomic Weight of Cesium, by Theodore W. Richards, who fills the chair of chemistry in Harvard University. He began with a general discussion of the subject of atomic weights, and then passed to a description of his work on cesium. The material on which the research was conducted came to him from Prof. Wells of Yale, and he established the fact that cesium was an element, that the material on which he worked was pure, and gave as his result 132.878. This figure he checked by similar determinations obtained by using the nitrate, from which salt he secured results that averaged 132.877.

James M. Crafts, formerly President of the Massachusetts Institute of Technology, Boston, presented a summary of his recent progress in the admirable researches made by him on Catalysis. He referred in opening to the old theory of solution and similar chemical processes, and then passed to the more recent beliefs of the new chemistry. Formerly it was claimed that life could only be produced from life, but results are now obtained by the action of enzymes on chemical compounds that were believed formerly to be due to vital force. He then described the special results obtained by him during the past year. These were highly technical, and not susceptible of condensation for popular presentation.

The Significance of Changing Atomic Volume was the title of a second paper by Theodore W. Richards, and was a brief presentation of the recent theory on the construction of matter advanced by this brilliant young chemist; his contention being that atoms in chemistry are compressible. This subject he has already presented before the American Academy of Arts and Sciences in two papers, entitled, The Possible Significance of Changing Atomic Volume, and The Probable Source of the Heat of Chemical Combination, and a New Atomic Hypothesis.

On Thursday afternoon Alexander Agassiz presented his two papers, both of which embodied results of his recent expedition to the South Pacific Ocean. The first paper was On the Coral Reefs of the Maldives, in which he described the formation of these islands as consisting of numerous atolls, contending that the theory of subsidence, advanced by Darwin, was not satisfactory as an explanation of their origin.

His second paper, On the Theory of the Formation of Coral Reefs, was a more elaborate presentation of the subject, and in it he argued that the rims of the atolls had first been elevated, and on these rims the sand had found a resting place, leaving lagoons in the center. He referred to his finding large nodules of manganese, which he believed to be of volcanic origin, and his contention was that the atolls, the rims of which were of limestone or of coral formation, had been raised up by volcanic action as they rested on a volcanic foundation. In closing he referred briefly to the vegetation on these islands, most of which he thought had been brought by the agency of man.

William Sellers, the well-known engineer, then presented a paper on The Compulsory Introduction of the French Metrical System into the United States. He made an exhaustive review of the metrical system and its various features. He also reviewed the bill now pending in Congress making its adoption compulsory by the manufacturers and the merchants of the United States. Mr. Sellers declared that he did not favor the proposed law, for the reason that he believed it would work a severe hardship and injury to the manufacturing concerns of the country, and would seriously affect trade. He declared that he could not see any advantage to be gained from the use of the system in lieu of those now in vogue in the United States, and that, to his mind, the only difference was one in the standard of measurement, from the inch to the centimeter, and from the yard to the meter.

The next paper was on Psychophysical Fatigue, by J. McKeen Cattell, of Columbia University, in which he described the measurements of fatigue of the senses, of the muscular system, and finally of the mind itself. He illustrated his paper by means of small diagrams, in which he showed, for instance, how the eye became tired on examining a piece of cardboard in which part of the surface is practically darkened.

Prof. Edward L. Nichols, of Cornell University, then presented a paper On Some Optical Properties of Asphalt. When a thin layer of asphalt varnish is spread upon glass and allowed to dry, and some luminous source, such as the filament of an incandescent lamp, is observed through the film, it is found that a considerable amount of red light is transmitted, the unusual purity of which is readily ascertained by means of a spectroscope. The suddenness with which the rays beyond the red are cut off indicates the existence of a well-defined absorption band with a very steep gradient on the side toward the greater wave-lengths;

and one would expect to find a considerable degree of perviousness in the infra-red and anomalous dispersion in the region where the change from transparency to opacity occurs. The purpose of his paper was to describe his studies in this direction, concerning which nothing appears to have been previously published. The paper in full will appear in the Physical Review for April, 1902.

The public session on Thursday began with the presentation by Charles S. Minot of a paper descriptive of The Physiological Station on Monte Rosa, by Henry P. Bowditch. It consisted largely of lantern slides taken at high altitudes, showing the construction of this new enterprise established in the Italian Alps under the direction of Italian scientists, but which, it was hoped, would pass under the care of an international committee of scientific men. The paper was a special plea for its recognition by the National Academy of Sciences. The lantern slides of the Alpine peaks were especially interesting, and received the well-merited applause of the Academy.

Charles S. Peirce followed with three papers, entitled, The Classification of the Sciences, The Postulates of Geometry, and the Color System, which, however, were read only by title.

The meeting was then practically turned over to the astronomers, and brief abstracts were presented by Asaph Hall of a paper on The Disintegration of Comets, followed by one of Ira Ibsen Sterner, entitled A New Computation of the Co-efficients of Precession and Nutation. Prof. Edward C. Pickering, of Harvard Observatory, presented briefly The Distribution of the Stars and The Variability in Light of Eros, both of which were highly technical, and were illustrated by means of mathematical formulas, which cannot here be produced. Several papers biographical in character were then read.

In the evening Prof. Charles F. Chandler, of Columbia University, delivered a lecture on The Electro-Chemical Industries at Niagara, in honor of the Academy. In that brilliant way, so familiar to those who have been so fortunate as to study under him, Dr. Chandler held an audience almost spell-bound for nearly two hours, during which he described the marvels of chemistry and the splendid results obtained at Niagara Falls by the application of electricity to chemical compounds. The tearing apart of the molecule of common salt, resulting in the formation of caustic soda and bleaching powder, which has come about from the inventions of his pupil, Hamilton Y. Castner, whom he described as a natural-born genius, were strikingly set forth, as well as the original invention of Castner, by means of which the aluminium industry was created.

#### SCIENCE NOTES.

William Flinders Petrie, the distinguished Egyptologist, in an address to the supporters of the Egypt Exploration Fund, said that they had completed the most important historical work that had yet come into their hands, settling, in a manner which had hitherto seemed beyond hope, the very foundations of Egyptian history, says the Sun. No such complete materialization of history had been obtained by one stroke in any other country or age. He detailed the discoveries of the gold scepter of Nena, the founder of the Egyptian monarchy, gold vases and jewels of the same period, twenty engraved tablets and dozens of fragments of tablets, and 100 inscriptions on vases, giving more information of dynasties ruling 6,600 years ago than is known regarding half the Saxon Kings of England. The discoveries were all made in the neighborhood of Abydos, in ground abandoned as exhausted. The next work would be done on the site of the Temple of Osiris at Abydos, which was probably the burial place of the head of Osiris, which drew around it the burials of historic times and probably those of the earliest dynasties also.

Two-thirds of all the letters which pass through the post offices of the world are written by and sent to people who speak English, says Bradstreet's. There are substantially 500,000,000 persons speaking colloquially one or other of the ten or twelve chief modern languages, and of these about 25 per cent, or 125,000,000 persons, speak English. About 90,000,000 speak Russian, 75,000,000 German, 55,000,000 French, 45,000,000 Spanish, 35,000,000 Italian and 12,000,000 Portuguese, and the balance Hungarian, Dutch, Polish, Flemish, Bohemian, Gaelic, Roumanian, Swedish, Finnish, Danish and Norwegian. Thus, while only one-quarter of those who employ the facilities of the postal departments of civilized governments speak as their native tongue English, two-thirds of those who correspond do so in the English language. There are, for instance, more than 20,000 post offices in India, the business of which in letters and papers aggregates more than 300,000,000 a year, and the business of these offices is done chiefly in English, though of India's total population, which is nearly 300,000,000 fewer than 300,000 persons either speak or understand English.