the central organs mainly through the full-line connections. A simultaneous stimulus of all the end organ from A to B would then reach the central organ mainly through the dotted connections just as would a stimulus moving from B to A.

W. S. FRANKLIN.

OCCURRENCE OF THE VIRGINIA OPOSSUM IN SOUTHERN CENTRAL NEW YORK.

DURING the present year several Virginia opossums (*Didelphis virginiana*) have been killed near Owego, Tioga Co., N.Y. Some twelve years ago a farmer residing near here told me he had killed one. Last fall a large female was killed on a mountain side two miles east of this village, and while myself hunting a mile farther east, on December 3d, I met a hunter who had just caught two. He had tracked them a mile or so through the snow, and finally dug them out of a woodchuck's hole. They were both dead when found, probably having starved, as their stomachs were empty. Their skulls are in my possession. Several days later he secured another, an old one, the sex I do not know. It was taken four miles west of where the two young ones were captured. The animal is alive and in his possession. This man is an old-time hunter and trapper, and considered truthful. He told me he had seen their tracks several times before. I have failed to learn of anyone who has liberated a pair of these animals or even had a pair in captivity. The capture of two, early in the fall, has come to me, but I cannot say if it is authentic.

I wish particularly to note that this record comes from Owego, N. Y., not Oswego, two widely separated places.

J. ALDEN LORING.

OWEGO, N. Y.

NOTES ON INORGANIC CHEMISTRY.

THE December number of the *Journal of the American Chemical Society* contains an extended review of the year's progress in applied chemistry by Dr. Wm. McMurtrie. Development along these lines is going on more rapidly than ever before, and it is encouraging to note that this country is taking its place as an important factor in chemical technology. While Germany will long hold the first place in those industries in which chemistry plays an important part, America has already become an important factor, especially in the field of electro-chemistry, and it requires little effort of the imagination to see, in the not-far-distant future, the supremacy crossing the water. Dr. McMurtrie's review is well worth careful perusal by the economist as well as the chemist. Only a few points can be noticed in this column. In Germany, at the close of 1896, 96 chemical works, with $64,000,000 capital, gave a return of nearly $8,000,000, an average of 12.3% as against 8.9% for 1897. Of these the coal-tar industries gave the highest returns, 24%, while the fertilizer industries gave the lowest. An interesting announcement has been made by Dupre that gold can be extracted from ores by an inexpensive solution containing sodium thiosulfate, ferric halids, with an acetate. The solution extracts fifteen to twenty times as much gold as a cyanid solution in the same time, and does not attack sulfids; hence, if the success of the process is confirmed, it may be expected to replace the cyanid and chlorination processes for low-grade and sulfid ores. Great progress has been made in the metallurgy of zinc, and there is every reason to believe that within a few years the old and unsatisfactory process will be entirely displaced, except for very pure ores. The use of the electric furnace is revolutionizing the preparation of phosphorus, and with the increased production in France and Russia, and prospective developments in Germany and at Niagara Falls, the English monopoly is seriously threatened. The advantages of the new processes are both the reduction of price and the increased protection of the health of the operatives. The electrolytic alkali industry is still in an experimental stage, but with the certainty of future success, indeed, it may be said that the great question to-day is the selection and development of the *best* electrolytic method. Already in the manufacture of potassium chlorate the electrolytic methods have taken the lead, with a consequent marked fall in price. The commercial production of liquid air and of oxygen on a large scale will render possible many new developments along many lines. The production of calcium carbid

and acetylene continues to attract much attention. Ten French factories are now making calcium carbid and four more are being built, and it is said two French villages are lighted wholly by acetylene gas, at a cost of 50 per cent. less than coal gas. On the other hand, Welsbach is making improvements in his burner, and Nernst gives hope of a yet more brilliant and economical source of light, as has already been described in the columns of SCIENCE. In conclusion, Dr. McMurtrie says: "In every direction industrial progress is suggestive, and we may expect advancement in all directions with increasing intensity. Commercial artificial indigo, commercial artificial silk, commercial mercerized cotton in its various forms, the new colors and medicinal substances from carbon compounds, new concentrated nutritive substances, synthetic albumen, the various toxins and extracts of animal matters of therapeutic value, all claim a large share of attention; and so do hundreds of other substances and processes in which the principles of chemistry find application to human needs."

IN the Italian *Gazetta* Rebuffat contributes an exhaustive study of hydraulic cements. These he divides into two classes: (1) amorphous, compact cements, which consist of lime, calcium orthosilicate and calcium aluminate, in which, however, the free lime may be wanting; this class contains the hydraulic limes and quick settling cements. (2) Crystalline cements, consisting of a crystalline compound of calcium orthosilicate and lime, with a varying quantity of calcium aluminate; this class contains Portland cements and those rich in silica. After hardening, however, all these cements have the same qualitative composition, consisting of a mixture of calcium hydrate, hydrated calcium silicate of the formula $2(SiO_2, 2CaO), H_2O$, and hydrated calcium aluminate, with a small amount of inert matter. In cements rich in silica a small amount of a double silicate of calcium and aluminum is present, which accounts for the resistance of these cements to sea water. The hardening of cements is chiefly due to the hydrating of the calcium silicate, and to a lesser degree to the hydrating of the calcium aluminate.

IN a recent English patent Weil and Levy claim to electroplate aluminum in baths to which various organic substances are added. Thus for the deposition of silver, hydroquinol is added to an ammoniacal cyanid solution; for copper, ammonium gallate or pyrogallate is used; for nickel, milk sugar, and the same for gold.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

CLIMATE AND HYGIENE OF THE CONGO FREE STATE.

AN important volume on the climate, soil and hygiene of the Congo Free State has been issued as the second part of the Proceedings of the *Congrès National d'Hygiène et de Climatologie Médicale de la Belgique et du Congo*, held in Brussels, August 9–14, 1897. The investigation, of which the results are embodied in this report, was undertaken by a commission of the *Société royale de Médicine publique et de Topographie médicale de Belgique*. On this commission meteorology was represented by M. Lancaster, Director of the Meteorological Service of Belgium, which is equivalent to saying that whatever concerns meteorology and climatology in this report is admirably done. As a whole, this volume gives us the most complete and most scientific account of the meteorology and medical climatology of this interesting district that has yet appeared. The first chapter, of 404 pages, is devoted to the meteorology, and presents a careful summary of what is known concerning the atmospheric conditions and phenomena of the region, including many tables and diagrams. This portion of Africa is one of great interest to meteorologists on account of the seasonal migration of the belt of equatorial rains, and the data concerning the rainfall at Vivi and other stations are, therefore, especially welcome. Chapter II., of twenty pages, is devoted to the geology and soil conditions. Over 400 pages are concerned with the medical climatology and hygiene of the region in general and of the different stations in particular. This last chapter is an extremely valuable one. Of especial interest at the present time is the evidence afforded (p. 464–5) by the result of European colonization in the Congo Free State