sented on some of the existing remains of classical art, and that none such, so far as they knew, could be adduced.

I am glad to supply this deficiency in my argument, and thus place my identification beyond question. When in Paris, in September, I examined the galleries of ancient art in the museums of the Louvre with this in mind, and was fortunate in finding a striking and beautiful example in point. It is No. 68 in the 'Salle des Caryatides,' and is labelled 'Athlete Vainqueur au Pugilat.' Each hand is wrapped in a cestus, and each is armed with a three-pointed *Murmex*, as accurately represented in the marble as this material allows. The statue is late Greek, from Rome, and the originals of the arms are now in Rome. No more conclusive evidence of my argument could be desired.

### THE GODS OF THE MAYAS.

SERIOUS students of the Mayan archæology will receive with great satisfaction the revised edition of the essay by Dr. Paul Schellhas on the figures of the gods in the Mayan manuscripts (Die Göttergestalten der Mayahandschriften, pp. 34, Dresden, Richard Bertling, 1897). It first appeared in the *Zeitschrift für Ethnologie*, 1892, but the author justly considers that the progress in this line of research called for a revision of the text. He pursues the same method as before, designating the divinities by letters, and discussing their proposed identifications as questions still open. All the important attempts in that direction are referred to, and such value assigned to them as he believes they merit. The mythological animals in the Codices are also named and figured, and their possible significations explained. The essay is dedicated to Dr. E. Förstemann, and certainly no one could be found more worthy of such a tribute.

A colored reproduction of page 11 of the Dresden Codex is given as the frontispiece, and a number of illustrations in the text render the descriptions clear to the reader.

### ORIGIN AND IMPORT OF THE TOTEM.

THE institution of the Totem, or something equivalent to it, prevailed widely in savage conditions of life in both hemispheres. It has generally been considered to indicate kinship, either real or ceremonial. Miss Alice C. Fletcher, in her paper on 'The Import of the Totem,' read at the Detroit meeting, takes up the totemic bond as found among the Omahas, and argues that among them it was not primarily a tie of relationship, but a purely religious lien, which connected together individuals and groups who had received similar revelations from the gods. These joined in certain similar rites and formed societies devoted to special cults. In this manner the gentes and tribes came to be based on spiritual, not physical relationship. Although the origin was thus in one sense individual, it is recognized that a man of uncommon ability and fortune might impress the group who dwelt together with the power of his totem, that is, his vision, and this would naturally be sought after and found by his descendants. This would unite the physical and spiritual kinship.

The paper is quite original in thought and founded on close personal study of the savage mind, as is evident on every page.

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### *NOTES ON INORGANIC CHEMISTRY.*

*Nature* for September 23d contains an account of the series of micro-photographs of polished and etched surfaces of alloys, which were exhibited by Mr. J. E. Stead at the last conversazione of the Royal Society. These photographs show in many alloys, imbedded in the eutectic or what was once the mother liquor, crystals of alloys of definite

composition. Thus in copper-tin alloys rich in tin, crystals are found of the composition (approximate) Cu Sn, $Cu_3 Sn_2$ and $Cu_2 Sn$, according to the amount of copper present, the first mentioned separating from an alloy with 2% copper. In ternary alloys it has been found possible to detect two, and sometimes three, distinctly different compounds in the same microscopic field. The study of alloys by the microscope is a field which has hardly as yet been entered upon, but it promises very valuable results.

A new method for producing artificial diamonds is described by Dr. Q. Majorana in the *Rendiconti* of the Roman Academy. Carbon, heated in the electric arc is submitted to a pressure of 5,000 atmospheres generated by the action of an explosive compound on a small piston. The mass formed, which consists chiefly of graphite and amorphous carbon, is found to contain minute crystals, which show the properties of the diamond. It thus appears possible to transform amorphous carbon into the diamond directly without the medium of a solvent, which is used in Moissan's process.

The manufacture of mosaic gold (sublimed stannic sulfid) by the sublimation of tin-amalgam, sal ammoniac and sulfur was known to the later alchemists, but the part played by the sal ammoniac in the process has been a matter of conjecture, though the old process is in use to-day. It is often possible to obtain the mosaic gold by subliming the precipitated stannic sulfid with sulfur, but unless sal ammoniac is present this method often fails. In the *Zeitschrift für angewandte Chemie* J. Lagutt clears up the reaction by showing that the chlorin of the ammonium chlorid forms with the tin the volatile tetrachlorid, which is in turn decomposed by the sulfur, giving the sublimate of mosaic gold, while the ammonium chlorid is re-formed. Ammonium bromid can be substituted for the sal ammoniac, but no other ammonium salt. The formation of the mosaic gold from the direct sublimation of stannic sulfid and sulfur is accounted for by the presence of hydrochloric acid in the stannic sulfid. If this is thoroughly washed free from hydrochloric acid no mosaic gold is found.

From the new Davy-Faraday Research Laboratory comes a solution of another of the problems of the past. In 1841 Grove described a class of metallic nitrogen compounds to which he gave the name of 'nitrogurets.' These were formed by the action of six Grove cells on a concentrated solution of ammonium chlorid, with anode of zinc, cadimum, copper, etc., and kathode of platinum. Grove supposed the deposits to be compounds of ammonium analogous to ammonium amalgam, or of nitrogen and the metals. In the *Zeitschrift für Electrochemie* Heinrich Pauli describes a repetition of the experiments carried out in the Davy-Faraday Laboratory, and shows that with zinc anode Grove's zinc nitroguret is merely metallic zinc. With copper anode the deposit is a mixture of cuprous oxid and metallic copper, and with silver anode, silver oxid or silver according to the intensity of the current.

The proposal of Carnot to determine the geological age of a fossil by the relative quantity of fluorin and phosphate present has been applied, at the request of Dubois, the discoverer of the fossil remains of *Pithecanthropus erectus*, to determine whether this interesting specimen is really Pliocene. J. M. Van Bemmelen gives an account, in the *Zeitschrift für anorganische Chemie*, of an examination of the remains of a fossil elephant found in the same stratum with the *Pithecanthropus*. He finds the ratio of fluorin to phosphate in comparison with that of apatite to be 0.53, which is very close to 0.58, that given by Carnot as

characteristic of Pliocene fossils. This is a confirmation of the geological and paleontological evidence as to the age of the fossil.

SOME time since Dr. Matteucci announced the discovery of selenium in the fumarole products of Vesuvius. He now adds, in the *Rendiconti* of the Naples Academy, bromin and iodin, found for the first time in these products, though their existence was theoretically probable.

FROM an Associated Press dispatch of October 15th, we note the following, dated Berkeley, Cal.: "Gold from silver is not an impossibility, according to Edmund O'Neill, associate professor of chemistry at the University of California."

J. L. H.

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## *SCIENTIFIC NOTES AND NEWS.*

### THE AMERICAN SOCIETY OF NATURALISTS.

THE American Society of Naturalists and the affiliated societies will meet at Ithaca, N. Y., on December 28th, 29th and 30th. All the societies will assemble in Sage College at 1 p. m., on Tuesday, December 28th, when an address of welcome will be made by President Schurman. The chief meeting of the Naturalists in which the other societies join is on Wednesday afternoon, for which the following program has been arranged:

I. Reports of Committees.
II. Election of new members.
III. Appointment of Special Committees.
IV. Discussion. The Biological Problems of To-Day.

*Paleontology*, Professor H. F. Osborn, Columbia University.

*Botany*, Professor Wm. Trelease, Missouri Botanic Gardens.

*Anatomy*, Professor Burt G. Wilder, Cornell University.

*Psychology*, Professor J. McKeen Cattell, Columbia University.

*Physiology*, Professor Jacques Loeb, University of Chicago.

*Developmental Mechanics*, Professor T. H. Morgan, Bryn Mawr College.

*Morphogenesis*, Professor Charles B. Davenport, Harvard University.

(The time allowed each speaker will be limited to ten minutes.)

Special Papers.

In the evening there will be the business session of the Naturalists and the annual dinner of the societies, at which the President, Professor C. O. Whitman, will make an address. The Ithaca Hotel will be the headquarters, but there are many excellent boarding houses at the campus, and the University will provide a luncheon each day. The members of the local committee are: Chairman, Professor S. H. Gage; Secretary, Professor W. W. Rowlee; Professor G. C. Caldwell, Professor B. G. Wilder, Professor I. P. Roberts, Professor S. G. Williams, Professor R. S. Tarr, Professor P. A. Fish, Professor E. L. Nichols, Professor L. A. Wait, Professor E. B. Titchener, Professor G. F. Atkinson, Professor L. H. Bailey.

The officers of the Naturalists are: President, C. O. Whitman; Vice-Presidents, H. P. Bowditch, E. B. Wilson, W. P. Wilson; Secretary, H. C. Bumpus; Treasurer, John B. Smith; other members of the Executive Committee, elected from the Society-at-large, Leslie A. Lee, George H. Parker.

The other societies meeting with the Naturalists are: The Association of American Anatomists, The Association for Botanical Morphology and Physiology, The American Morphological Society, The American Physiolgical Society, The American Psychological Association, Section H. (Anthropology) of the American Association for the Advancement of Science. The New York State Science Teachers' Association will meet at Ithaca, December 30th and 31st.

### GENERAL.

THE National Academy of Sciences will hold its winter meeting next week in Boston, beginning on Tuesday, November 16th.

A COPE memorial meeting will be held in the Hall of the American Philosophical Society, Philadelphia, this evening, under the auspices of institutions with which Professsor Cope was connected. Addresses on the services to science by Edward Drinker Cope will be delivered as follows: Dr. Theodore Gill, Work in Fishes, Batrachia and Reptiles; Professor Henry F.