been expended for pure research in anthropology under one direction as during the past year; and praise and honour are due to the business men forming the directory of the Exposition in Chicago, who have so cordially met my proposals and furnished the means for carrying them out on so grand a scale. Notwithstanding the vast material interests involved in the Columbian Exposition, it must be admitted that Chicago has nobly supported pure science in this connection and has shown an appreciation of its high aims.

On the Honduras Expedition Prof. Putnam reports as follows:—

It was stated in the last report that an expedition had just started to make the preliminary explorations for the ancient ruins of Copan, and in that report is given a brief outline of the origin and plans of this undertaking on the part of the Museum to be carried on by the assistance of patrons of archæological research. It is indeed a pleasurable duty to announce that the first season's work of the expedition has proved a decided success; and that although the party had many trials and difficulties to overcome, no serious accidents or sickness occurred. Messrs. Saville and Owens returned in safety, in May last, bringing with them a large number of most interesting and important objects illustrating the wonderful carvings in stone; several vessels and many fragments of pottery; numerous ornaments made of stone, shells and bone; stone implements; and portions of human skeletons. Among the latter are several incisor teeth, each of which contains a small piece of green stone, presumbly jadeite, set in a cavity drilled on the front surface of the tooth. We had before received from very ancient graves in Yucatan human teeth filed in a peculiar manner, and now we have teeth from the ancient graves in Copan ornamented in another way. This is of particular interest in adding one more to the several facts pointing to Asiatic arts and customs as the origin of those of the early peoples of Central America. A most striking resemblance to Asiatic art is noticed in several of the heads carved in stone,—one in particular, if seen in any collection and not labelled as to its origin, would probably pass almost unchallenged as from Southern Asia. These may prove to be simply coincidences of expression of peoples of corresponding mental development brought about by corresponding natural surroundings and conditions. At present we must admit that there are many resemblances in architecture, sculpture, ornament, and religious symbolism, between Central America and portions of Asia. The true meaning of these resemblances will be made known as authentic materials for study are obtained by such thorough and exhaustive field work as the Museum has been carrying on; and none is so important for this special subject as that of the Honduras expedition. For this work, however, a large sum of money is required. The ten years allowed for the work in Honduras by the edict of that government must be utilised to the fullest extent; and each year must find the Museum ready to put its party in the field well equipped and provided with money for the very expensive work to be performed.

It is not my intention to give an abstract of the results of last year's explorations at Copan. It is far better that the report should be carefully prepared by those engaged in the actual field work from year to year. After sufficient information has been obtained about the ruins themselves, and the architectural and chronological relationship of the various structures; and after a thorough knowledge of the different modes of burial has been acquired, and all possible objects have been collected, then conclusions can be drawn which will be of scientific value, since they will be based on a thorough knowledge of all the facts. An important beginning was made by the expedition last year, plans of the plaza and of the principal structures forming the great mass of the ruins having been made, many photographs taken, and paper moulds of important sculptures, lines of hieroglyphs and several of the large idols or carved monoliths secured. Considering the difficulties of transportation (wholly by mules to the coast—a seven days' journey), both Messrs. Saville and Owens, and all associated with them must be congratulated on what they accomplished. Since the return of the expedition the photographs have been printed, preliminary reports have been prepared, and casts have been made from the moulds. These casts are now being placed in the Museum, and a series has also been made for the Boston Art Museum, and another for the Columbian Exposition.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Prof. Liveing announces a course of demonstrations in spectroscopic chemistry, to be given during the first three weeks of the Easter term, daily (except on Saturdays) at 11, beginning on April 24.

The examination in Sanitary Science for the Diploma in Public Health will be held from April 4 to April 8.

The honorary degree of Doctor in Science will be conferred on Prof. Virchow, at a special congregation on Tuesday, March 21.

A grant of £65 has been made from the Worts Travelling Scholars' Fund to H. Woods, of St. John's College, for the purpose of palæontological research in Saxony and Bohemia.

Lawrence Crawford, B.A., Fifth Wrangler, 1890, has been elected to a Fellowship at King's College.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 16.—"The Value of the Mechanical Equivalent of Heat, deduced from some Experiments performed with the view of establishing the Relation between the Electrical and Mechanical Units, together with an Investigation into the Capacity for Heat of Water at different Temperatures." By E. H. Griffiths, M.A., Assistant Lecturer, Sidney Sussex College, Cambridge, assisted by G. M. Clark, B.A., Sidney Sussex College, Cambridge. Communicated by R. T. Glazebrook, F.R.S.

If a calorimeter is suspended in a chamber, the walls of which are maintained at a constant temperature, we can, by observations over a *small* range across that outside temperature, deduce the rate of rise due to the mechanical work done in the calorimeter, when the supply of heat is derived from stirring only. By repeating the observations in a similar manner over ranges whose mean temperature θ_1 differs from that of the surrounding walls θ_0, we obtain the change in temperature due to the combined effects of the stirring, radiation, conduction, and convection at all points of our whole range of temperature. As the success of the method depends (1) on the possibility of maintaining the exterior temperature unchanged, and (2) on the regularity of the supply of heat due to the stirring, we briefly indicate our method of securing those conditions.

1. The calorimeter[1] was suspended within an air-tight steel chamber. The walls and floor of this chamber were double, and the space between them filled with mercury. The whole structure was placed in a tank containing about 20 gallons of water, and was supported in such a manner that there were about 3 inches of water both above and beneath it. The mercury was connected by a tube with a gas regulator of a novel form, which controlled the supply of gas to a large number of jets. Above those jets was placed a flat silver tube, through which tap water was continually flowing into the tank, all parts of which were maintained at an equal temperature by the rapid rotation of a large screw. Thus, the calorimeter may be regarded as suspended within a chamber placed in the bulb of a huge thermometer—the mercury in that bulb weighing 70 lbs. A change of 1° C. in the temperature of the tank water caused the mercury in the tubes of the regulating apparatus to rise about 300 mm. Special arrangements were made by which it was possible to set the apparatus so that the walls surrounding the calorimeter could be maintained for any length of time at any required temperature, from that of the tap water (in summer about 13° C. in winter 3° C.) up to 40° C. or 50° C. We know by observation that the temperature of the steel chamber (when once adjusted) did not vary by 1/500° C., and we believe the variations were much less.

2. We experienced great difficulty in devising a suitable form of stirrer; and we attribute the failure of our earlier experiments to defects in the ordinary forms. We find it impossible, without a lengthy description, to give a clear idea of the stirrer ultimately adopted. We can only state here that it was completely immersed when the depth of the water exceeded 1 cm., that

[1] The calorimeter was of cylindrical form, and suspended by three glass tubes. It was made of "gilding metal," which both internally and externally was covered with a considerable thickness of gold. All metal surfaces within the calorimeter were thickly gilded.