cremated remains were found in the vicinity of the pyral mounds. The skeletons, as a rule, were so frail that comparatively few could be preserved. Of the whole number about one hundred good skulls, and probably fifty tolerably complete skeletons, were collected. These were so frail that Dr. Wortman was compelled to use a goodly supply of shellac varnish to keep them from falling to dust. Silicate of soda was tried, but it was not found so good as the ordinary shellac dissolved in alcohol.

The objects which go to make up the collection are various, and consist of those of ornament and utility. Numerous shell carvings, some of which had been beautifully inlaid with turquoise, were found, while a very few copper ornaments in the shape of bells and ear-rings were also dug up. Their tools consist almost entirely of stone, and were, for the most part, polished, though such implements as potters' stones, rasps, mauls, metates, &c., were never polished. Their stone axes and hatchets are of the ordinary pattern, and are generally well polished; they are of various sizes and shapes, and some of them were no doubt used as picks in digging up the hard cement and gravel in the construction of their irrigating canals. Stone hoes, knives, and arrow-heads were also found in abundance.

The collection of pottery is large, and, according to Mr. Cushing, resembles that of Zuñi manufacture more than any other people. It is often highly decorated with quaint and unique patterns, in various colours, and some fragments exhibited a fine glaze, which indicates a high state of the ceramic art.

That they were acquainted with metals there can be but little doubt, although they do not appear to have made use of it except in the way of ornament. Some places in the neighbouring mountains seemed to indicate that they mined for ore, which they smelted in crude ovens. Whether this was copper or the precious metals is now difficult to determine, but that they were accustomed to bring these ovens or furnaces to a very high heat is indicated by the slag in their immediate vicinity.

It is perhaps premature to attempt to decide who these people were, to whom they were related, and what became of them. I think it fairly settled by these discoveries that they were the ancestors of the modern Pueblos. Whether or not they were in any way connected with the ancient people of Mexico and Yucatan the future alone can decide. It seems certain, however, that one part of them went north to found the later Pueblo civilizations which are now represented by the Zuñis of to-day.

If historical evidence is worth anything, and if we can trust the ordinary evidences of archæology, then these ruins are beyond question pre-Columbian, and may be as much as a thousand years old.

Mr. Cushing's final Report will be awaited with interest by all who are in any way interested in the subject. The archæological specimens have been shipped to Salem, and the skeletons will go to the Army Medical Museum in Washington.

SELF-REPRODUCING FOOD FOR YOUNG FISH.

IN a very interesting Report of the United States Consul at Marseilles on the above subject, he says that every person interested in the artificial propagation of fish, particularly those of the genus *Salmonidæ*, knows the great care which is necessary to carry the young fry through the period immediately following the absorption of the umbilical sac, and to bring them to such a stage of maturity that they can be safely turned loose in open ponds and streams to shift for themselves. The mere hatching of the eggs presents no difficulty, but with the commencement of artificial nutrition the serious part of the work begins, and it is usually only a small percentage of the swarms which are hatched that reach the maturity of yearlings. During the intervening months it has been customary to feed the young fish on curdled milk, coagulated blood, finely hashed meat and liver, grated yolk of eggs, macerated brains of animals, &c., the preparation of which, and the constant feeding of the little creatures, involves constant and costly labour. Besides, none of these forms of nutriment have been found entirely satisfactory; they are artificial, and different from the living organic food which Nature provides. A plan invented by Mr. F. Lugrin, of Geneva, and practised since 1884 with the greatest success in the piscicultural establishment at Gremaz, in the province of Ain, in Eastern France, seems to overcome all these difficulties. The apparatus at Gremaz occupies a gently-sloping piece of ground, about six acres in extent, watered by three springs, which collectively yield about 500 gallons of water a minute. The tanks are about 120 feet long, 12 feet wide, and 5 feet deep. On account of the gravelly nature of the soil, the walls and bottoms of some of the tanks are lined with cement. The tanks are divided by sliding gates of wire gauze sufficiently fine to prevent the passage of the fry. Mr. Lugrin spreads upon the bottom of these tanks a material impregnated with the elements necessary to produce spontaneously a limitless number of *Daphniæ*, *Cyclops*, *Limnæ*, as well as larvæ of various *Ephemeræ* which form the natural aliment of trout and other *Salmonidæ*. This producing material is of trifling cost. The water in the tanks, which is from 2 to 3 feet deep, is left undisturbed for a few weeks, and is then found to be peopled with myriads of the species above named. With a fairly abundant propagation of these organisms, 20,000 young fry and 3000 fish one year old can subsist and thrive for a whole month in a tank of the size of one of those at Gremaz. These 23,000 fish and fry will eat from 600 to 800 pounds in a month, and each tank at Gremaz will produce from 650 to 900 pounds of *crevettes* (freshwater shrimps), to say nothing of the myriads of other species which are produced at the same time. Trout raised by this method have the flavour and firmness of wild fish. One great advantage of Mr. Lugrin's system is, that once a tank is prepared it is permanently productive.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The lecture-lists for this term contain no considerable innovations in the physical and chemical teaching. The usual systematic courses are to be given at the University Museum, and at Balliol, Christ Church, and Trinity. We may notice especially the following lectures:—

Prof. Pritchard, Recent Speculations on the Structure of the Stellar Universe, Spherical Astronomy, and the Theory of Errors; Prof. Price, Optics; Mr. Walker, Double Refraction treated Mathematically; Mr. Baynes, Theory of Gases, and Practical Electrical Measurements; Prof. Odling, 5-Carbon and 6-Carbon Compounds; Mr. Vernon Harcourt, Volumetric Analysis.

In the Biological Departments two new Professors have just entered on their offices. Prof. Green is giving two courses of lectures on Geology, and improving the Museum collections, and Prof. Vines has begun a systematic course of Elementary Botany. The Morphological Laboratory is in charge of Dr. Hickson and Mr. Latter; and Mr. Mitchell lectures on the Geographical Distribution of Animals. Prof. Burdon-Sanderson is lecturing on Elementary Physiology, and Mr. Gotch has a more advanced course. Dr. Tylor's subject this term is Race, Language, and Civilization.

An important statute has just past Convocation, which introduces the biological sciences into the Pass Examinations of the University for the B.A. degree. It is expected that the change will be of great use, especially to medical students, who cannot afford the time required to read for an Honour Examination in Natural Science.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 15.—M. Des Cloizeaux in the chair.—On the deformation of the images of stars seen by reflection on the surface of the sea, by M. C. Wolf. An attempt is here made to calculate the extent of this deformation, attention to which has lately been drawn by M. Riccò. The calculation shows that the difference in the angular heights of the object and its image increases towards the zenith, at first rapidly, then slowly, attaining its maximum at the zenith, for which it is double the depression of the horizon. A luminous band stretching from the apparent horizon to the zenith of the observer, and subtending an angle of 90° 19′·2, would give an image terminating at the nadir, and with an angular extent of not more than 90° − 19′·2.—On the latent colours of bodies, by M. G. Govi. The experiments here described with the bi-iodide of mercury, minium, and some other substances exposed to the light of the incandescent vapour of sodium—that is, the nearly pure yellow light D—tend to show that ordinary diffused or transmitted light does not give us the true colour of bodies. To obtain this true, but *invisible* or *latent* colour, a special process of illumination is