

Institute of Mining Engineers have been submitted to him for many years, from the publication office in New York, for critical proof-reading and correction. Of this extensive society he is a life member, his election dating from 1871, and he has been a co-worker with its secretary, Rosater W. Raymond. He was one of the original fellows of the Geological Society of America; a fellow of the American Association for the Advancement of Science; in which he was general secretary in 1887; a member of the American Academy of Arts and Sciences during his residence in Massachusetts; and a member of the American Philosophical Society of Philadelphia.

To his colleagues no characteristic of Mr. Pettee was more impressive than his fidelity to truth. Overstatement, exaggeration, disproportionate display were impossible to him. 'True of word and tried of deed' may well be inscribed to his memory as a Christian gentleman.

Your committee beg leave to recommend that the sincere and profound sympathy of the senate be extended to the bereaved family of our departed friend, and that a copy of this memorial be transmitted to them.

ALBERT B. PRESCOTT,
ISAAC N. DEMMON,
Committee.

EXCAVATIONS IN TURKESTAN.

PROFESSOR RAPHAEL PUMPELLE, who is engaged in explorations in Russian Turkestan under the auspices of the Carnegie Institution, has written a letter to Dr. D. C. Gilman, the president of the institution, in which he says:

The streams that rise in the high mountains of northern Persia emerge on to the Turkoman plains forming fans, or sub-aerial deltas, covering many square miles and each making an oasis. The water is all used in irrigating these fertile spots. Beyond them is the desert. Anau, where we have excavated, is on one of these fans.

Here at Anau, about seven miles east of Aschabad, there are two great tumuli, and the ruins of a city—Anau—surrounded by moat and wall, and occupied till within the last

century. The two tumuli, nearly half a mile apart, are nearly equidistant from the city at a distance of less than a mile. We have explored both of these tumuli and I have done some work in the city.

The northern and older tumulus rises 40 feet *above the plain*; the southern and younger tumulus rises 52 feet *above the plain*. Both of these start with their lowest culture strata on slight elevations in the same original plain-surface—more than 20 feet below the present surface of the surrounding plain. That is to say, the plain has grown up more than 20 feet since the settlements began. I will show, further on, the different phases of this growth.

In the older tumulus, we find a culture occupying the lower 45 feet, and distinguished by the technique and decoration of its wholly handmade and interesting pottery. This is succeeded in the upper 15 feet by a more advanced culture in which the finding of some remnants of bronze implements and lead beads (all wholly altered to salts of the metals) show a beginning acquaintance with bronze, while the still handmade pottery has changed and become more developed. Throughout this tumulus we have found nothing recognizable as a weapon of offense in either stone or metal, though flint knives abound.

The southern, younger tumulus, starts with a developed wheel-made pottery, unpainted and of a technique wholly different from that of the older tumulus—though some hand-made pottery occurs not unlike some of the younger products of the older tumulus.

From its base under the plain to its summit this tumulus has 74 feet of culture strata. There are evident here at least two successive cultures. Of these, that of the lower 62 feet is wholly in the bronze stage (but with survival of flint implements), while the upper 14 feet are marked by decided changes and by the introduction of iron, of which the wholly oxidized remnants of some implements were found.

We have thus at least four distinct cultures occupying 136 feet, with a break in the column between the end of the old and the beginning of the new tumulus. We do not know how great this gap may be, but the presence of

some fragments of wheel-made pottery on the surface of the older tumulus, as well as in the neighboring irrigation column, seems to represent a transition from the older to the newer. This suggests the possibility that the gap was filled by the strata which has disappeared through wind and water erosion, and which must, in any event, have been of considerable thickness.

Through all the cultures except the last—that of the iron stage—there ran a remarkable and characteristic burial custom. The children—at least certain children—and seemingly only children, were buried in the houses, under the floor, in a layer of fire-hardened earth. I was struck last year by the fact that all the human bones I sent from here to Professor Zittel were those of children. The skeletons lie on the side with the knees drawn up in the 'liegende höcker' position. With them have been found beads of turquoise, lapis lazuli, carnelian and other minerals. Eighteen of such burials have been studied.

THE GOLDEN TROUT OF MT. WHITNEY.

THE most beautiful and in many respects the most interesting of all the trouts is the famous golden trout of Mount Whitney. It is known only from a few small mountain streams high up in the Sierras on the western slopes of Whitney, the highest mountain in the United States. It was formerly abundant in Volcano Creek, tributary to the South Fork of Kern River, and has been introduced into Cottonwood Creek and perhaps other streams on the east slope of the Sierras, tributary to Owens Lake. Its original home seems to have been Volcano Creek and in that stream only above the falls.

During the last few years many camping parties have gone into the region and reports have reached the Bureau of Fisheries that the species is in danger of extermination. Recently Stewart Edward White, the author of 'The Blazed Trail,' called attention to the danger, and President Roosevelt, the true naturalist that he is and always alive to more matters of interest than any one else, addressed a letter to the Commissioner of Fish and Fisheries, asking that an investigation be

made to determine what steps should be taken for its preservation.

In compliance with the President's request, Commissioner Bowers is sending a party to the Mount Whitney region to find out all they can about the golden trout. It is intended to determine its present distribution, in what streams it is now found, into what it has been transplanted, into what additional streams it might be introduced, and whether the species can be propagated artificially. It is believed there will be no difficulty with cultivating the species if a few individuals for breeding stock can be gotten to one of the government fish hatcheries. This will not be an easy task, as the fish will have to be carried on pack-horses for 24 to 48 hours down the east slope of the Sierras through a semi-desert region to Lone Pine, or 3 or 4 days to Visalia.

The expedition that will conduct these investigations will be under the immediate direction of Dr. Barton W. Evermann, assistant in charge Scientific Inquiry in the Bureau of Fisheries. The other members of the party will be Dr. Oliver P. Jenkins and Professor Rufus L. Green, of Stanford University, Professor Chancey Juday, of the University of Colorado, and Captain Charles B. Hudson, the artist, who will paint the golden trout in life colors. Professor Juday will make a special study of the food and feeding habits of the trout, Professor Green will study the physical characters of the streams to be examined, while Drs. Evermann and Jenkins will give their attention to the biological and fish-cultural problems involved and to the geographic distribution of the species. The party will outfit early in July at Visalia, California, with pack outfit and enter the High Sierra by way of Three Rivers and Mineral King. About a month's time will be devoted to the investigations and it is believed that the results will be of great interest to anglers and fish-culturists.

SCIENTIFIC NOTES AND NEWS.

HARVARD UNIVERSITY has conferred the degree of doctor of laws on Dr. William Osler, professor of medicine at the Johns Hopkins University.