and 45 distinct species of insects have been reared from the excrement in which they passed their larval stages, and these include 35 distinct species of *Diptera*. Similar collections and observations have been made upon flies frequenting kitchens and dining rooms in different parts of the country. All of the material has been studied and specifically determined. The investigation will be continued and the results published next year.

Mr. Wm. H. Dall gave some informal 'Notes on Honolulu and the Hawaiian Islands,' from observations made there during a recent visit. He described the physical features of Oahu and their effects upon the climate, the characteristics of the flora and fauna of the city of Honolulu, laying particular stress upon their almost exclusively exotic character, and gave an account of the Bishop Memorial Museum, an institution reflecting the greatest credit upon the founder who endowed it, the board who have managed the investments, and the Director, Dr. W. T. Brigham, to whose energy, efficiency and wide knowledge is largely due the fact that Honolulu now has a Museum of Polynesian Ethnology and Natural History in many respects unique and which would be a credit to any city in either hemisphere.

Mr. G. K. Gilbert described the state of preservation of the celebrated 'Submerged forest of the Columbia River,' between the Dalles and the Cascades. From data connected with the geological history of the region he inferred that the submergence had taken place at least three hundred and fifty years ago. Since that time the roots of the trees, whose stumps still stand, have been continuously under water, but the upper portions of the shafts have been annually bared at low water and covered during flood. Despite this alternation of condition, which generally induces rot, the trunks are sound. The bark has disappeared, and several inches of the wood have wasted away, but what remains is firm and retains its natural color. Mr. Gilbert suggested that the continuous submergence of the roots may have operated in some way as a favorable condition, but it was the opinion of botanists present that the roots must have ceased to function immediately upon the death of the tree, and that the preservation of the trunks was merely an extreme illustration of the durability of the wood of the species *Pseudotsuga douglasii*.

O. F. COOK,
Secretary.

THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 505th meeting of the Philosophical Society of Washington was held October 28th, at the Cosmos Club. Informal communications were made by Dr. Artemas Martin, on a method of extracting roots by successive subtractions and by Mr. C. K. Wead, on Museum Labels. The Director of the Geological Survey, Mr. C. D. Walcott, gave the results of his observations on a recent 'Geological Trip to Newfoundland,' and Mr. C. K. Wead described 'Some Arab Musical Scales.' The facts presented were made accessible by Land's French Translation of Al Farabi's 'Treatise on Music,' and confirmed in part by other authorities. The principal scale for the Lute was shown to be peculiarly dependent on the length of the neck of the instrument in comparison with the size of the player's hand: the five strings were tuned in fourths, and the frets were located partly by geometrical principles, and partly by bisections of distances; so ten notes were provided on each string, giving twenty-two to the octave. Later theorists reduced these numbers to seven and the much-discussed seventeen. The Modes each consisting of a selection of seven or eight of these notes were also dependent on the structure of the lute.

Some long-necked Tambours had entirely different scales tuned by the use of two strings, being built up by musical addition or subtraction of equal intervals, *i. e.*, by a step-by-step method—these scales had seven to ten notes at intervals of about half a semitone. Our current theories of the scale are utterly inapplicable to these facts.

E. D. PRESTON,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE NEED FOR A CLASSIFICATION OF PREHISTORIC IMPLEMENTS.

ABOUT a year ago Mr. A. E. Douglas, of the American Museum of Natural History, published a paper in which he urged the need of an

archæologic nomenclature. He presented a table in which he showed the distribution of certain types and forms of artifacts.

Dr. Thomas Wilson, of the Smithsonian, has issued a number of reports in which he classifies and subdivides the multitudinous flint tools of the United States. Aside from this and what has been done by Messrs. Holmes, Fowke, Rau, Abbott and others, the various museums and individuals have confined themselves to the chronicling of explorations rather than to the detailed study of objects. Some of the more remarkable art specimens in copper, clay and shell have been reported upon. But I think it is no exaggeration to say that museums direct their attention to the accumulation of vast stores of material. This is apparent to archæologists visiting any of the five larger museums.

I agree with Mr. Douglass that too little attention is given towards the study of these interesting implements. By comparison and a careful study of localities and the objects themselves, much is to be learned.

I have begun several MSS. upon 'ornamental and ceremonial stones,' and 'implements and utensils,' etc. I shall be glad to have photographs, drawings or descriptions, together with observations and opinions from persons interested in prehistoric archæology. I shall feel encouraged if a more serious study of stone, bone, shell and clay objects results from the undertaking, although other observers may take exceptions to my views. An exchange of correspondence is desired.

Warren K. Moorehead.
Saranac Lake, N. Y.

NOTES ON INORGANIC CHEMISTRY.

In the *Zeitschrift für praktische Geologie*, H. Oehmichen describes some recently discovered auriferous cobalt ores in the Kruis river district in the Transvaal. The ore, which is found associated with diabase rocks, is exclusively smaltite, with its decomposition products, as erythrite, and carries gold to the amount of about 60 grams per ton. The gold seems to be in the smaltite, as no trace of free gold is found. Five kilometers further west is another deposit of pockets of smaltite, in a gold bearing quartz, the whole assaying 400 grams per ton. Here ninety per cent. of the gold is contained in the smaltite. These deposits promise to have a very considerable value.

The subject of the distribution of the so-called rare metals continues to interest chemists and in the same journal is an extensive paper by J. H. L. Vogt on the distribution of vanadium. A very considerable portion of the paper is taken up by a review of Hillebrand's paper (published last year in the *American Journal of Science*) on the same subject. From Hillebrand's investigations and his own, Vogt concludes that the average amount of vanadium in the solid crust of the earth is between 0.0025% and 0.005%. Vanadium is thus decidedly less abundant than titanium (which occurs to the extent of 0.3%), phosphorus (0.09%), manganese (0.075%) and sulfur (0.06%); and also rarer than barium (0.03%), zirconium (0.01–0.02%) and chromium (0.01%). It falls near lithium, strontium and nickel, each of which occurs to the extent of about 0.005%, but is probably somewhat less abundant than these elements. Still rarer elements are cerium and yttrium (each less than 0.001%), cobalt (0.0005%) and thorium (0.0001%). Zinc and glucinum are somewhat less rare. Vanadium is generally found in the basic eruptive rocks, while columbium and tantalum, which resemble it are found especially in granitic rocks. The elements of Group VI. show a similar condition, for chromium is found in basic rocks, while molybdenum, tungsten and uranium are more generally associated with acidic rock masses. It might be added that these occurrences are not unnatural, inasmuch as vanadium and chromium are themselves much less positive than the elements of the same groups with higher atomic weight.

There is given in a recent number of the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen* a description by E. Priwoznik of the Austrian mint methods of parting platiniferous gold and silver. The material is first digested with dilute nitric acid (1.109) in which only a trace of platinum dissolves. The residue is then treated with a somewhat diluted aqua regia in which the gold dissolves readily, while the platinum is only very slightly soluble. When silver is present a coating of silver chloride is gradu-