detect traces of platinum if the solution contains large quantities of iron or other elements.

A second test of the residue from the aqua regia solution after it has been dissolved in hydrochloric acid to form the thick mass described is to add to it potassium chloride (KCl), which, if the dissolved residue contains platinum, will precipitate yellow crystals or potassium platinic chloride (K_2PtCl_6).

A third test may be made by adding to the aqua regia solution ammonium chloride (NH_4Cl), which, if the solution contains platinum, will precipitate yellow crystals of ammonium platinic chloride.

The precipitates from the second and third tests are both insoluble in alcohol but are soluble in water and by heating may be reduced to platinum sponge.

The tests described above, though they are comparatively simple and positive if made on single grains, can not be relied upon if the material tested contains other elements than platinum. They should therefore be restricted to grains of a single mineral picked from concentrates obtained by panning a sample of either rock or gravel.

The adequacy of the future supply of platinum in the United States, as far as it can be assured, depends on the results of work of three kinds—first, the determination of our present supply, particularly of unmanufactured platinum metals, in order that it may be mobilized; second, systematic search for new deposits, and third, scientific exploitation of the deposits discovered, to assure their maximum yield. Work of the first two kinds is now being done by the Geological Survey, and it is hoped that work of the third kind—the technologic work—may be in part done by means of federal and private investigations.

A detailed report on the production of platinum in 1916, with information on the world's resources of this metal and hints for prospectors, by J. M. Hill, of the U. S. Geological Survey, is now in preparation and will be ready for distribution in July. Copies of this report may be obtained by addressing the Director, U. S. Geological Survey, Washington, D. C.

SPECIAL ARTICLES

IS THE HOUSE OF TCUHU THE MINOAN LABYRINTH?

WHILE going through a back number of the *American Anthropologist*[1] the writer's attention was attracted by the figure illustrated in Fig. 1. This was in a short paper by Dr. J. Walter Fewkes entitled "A Fictitious Ruin in the Gila Valley, Arizona." In this he showed that this symbol which was first observed by an eighteenth-century Spaniard scratched in the sand by a Pima Indian did not represent the plan of a ruin as previously interpreted, but was used in some way in a game "the house of Tcuhu" (Tcuhiki).

It was curious but this diagram was familiar to the writer and his familiarity came from a distant part of the world. As shown in Fig. 2 this diagram appears on the reverse of a silver coin of Cnossus in Crete of the Greek Period (B.C. 200–67). In this case the figure represents the Minoan Labyrinth. On other coins from Cnossus it sometimes appears in a square form, but even then it has the same ramifications. A comparison of this Greek coin, with House of Tchuhu when inverted, shows that the two are identical in every respect.

There are three possible explanations for the coincidence. First, these symbols may have arisen independently in the new and the old world. Secondly, the symbol may have originated in the old world and have been transported to the new in pre-Columbian times. Thirdly, that the symbol was introduced into America with the Spanish conquest.

On the one hand, it has been pointed out by Fewkes (*loc. cit.*) that the symbol or something like it was early known to the Pima Indians, as the diagram in slightly modified form appears scratched on the adobe wall of the Casa Grande ruin among obviously Indian pictographs. On the other hand, it is possible that this diagram may have had a Spanish origin.

While it is quite generally accepted by American ethnologists that such simple forms

[1] N. S., Vol. IX., 1907, p. 501.

as the cross, the swastika, the wall of Troy, etc., arose in the new world as well as in the old; yet it is hard to believe that such complicated labyrinths similar in every detail could have had separate origins. Similar environments often call forth similar responses in different organisms. In such cases the similarities when carefully analyzed are found to be superficial. The details will not agree. In this case, however, the agreement is exact.

Again there is a possible question that the figure from Fewkes is not of genuine Pima origin. A brief history of this symbol will make this clear. It seems that an unknown Spanish traveler visited the Pima country in the year 1761 or 1762. An account of this visit exists in the form of a manuscript.[2] On

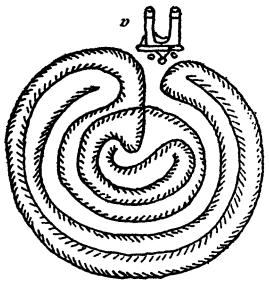

Fig. 1. After Fig. 34, *American Anthropologist*, Vol. IX., 1907, p. 511 (inverted).

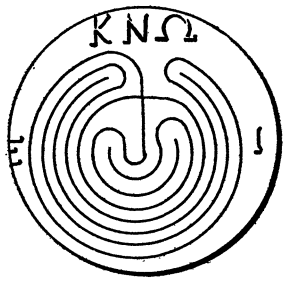

Fig. 2. After a Coin from Cnossus in Crete (200–67 B.C.). (Cat. of Greek Coins in British Museum, Vol. 1887, Plate VI., Fig. 5.)

the margin of one of the pages of this manuscript appears the figure which I have reprinted from Fewkes (Fig. 1). According to the unknown Spaniard the Pimas draw the symbol on the sand. He stated that it represents "a house of amusement rather than that of a magnate." As no ruin has ever been discovered with such a ground plan, Dr. Fewkes was led to question an old Pima concerning it.

When Higgins (the name of the Indian) was shown the figure and told the opening lines of the quotation (from the Spanish narrative), the last clause being withheld, he responded that he knew of no ancient house in that region which had a ground plan like that indicated in the figure. He was acquainted with a children's game that employed a similar figure traced in the sand. The Pimas, he said, call the figure *Tcuhuki*, the house of Tcuhu, a cultus hero sometimes identified with Moctezuma.

A search in Russell's work on the Pima Indian[3] and Culin's "Games of the North American Indians"[4] failed to discover a description of such a game. However, Russell did describe a game called *Tculikwikut*, a dart and ring game in which count is kept by means of little stones. These are moved on a diagram made up of a series of small holes in the sand arranged in the form of a whorl arising from a center called *Tcunni Ki* (the council house).

According to Russell *Tcuhu* in the mythology of the Pima is Gopher, who dug the spiral hole through which the Pima clans came up from the underworld. From this it seems possible that both Russell and Fewkes were dealing with the same game. Strength is given to this idea by the fact that Dr. Fewkes showed "Higgins" the diagram and the Indian said that it was the House of Tcuhu. The Indian did not draw the diagram. He may have simply recognized the spiral character of the labyrinth and not have considered the details.

With such fragments of evidence and with so many gaps to be filled it would be premature to draw any conclusion as to how this complicated symbol happens to be found in both the old world and the new. The writer publishes this in hopes that some reader will also be familiar with the symbol and can aid in its interpretation.

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[2] Rudo Ensayo.

[3] Twenty-sixth Ann. Rept. Bur. Eth.

[4] Twenty-fourth Ann. Rept. Bur. Eth.