

## Brief Reports

### Discovery of A Spectacle Made in Millennia BC

The Europeans consider Roger Bacon as the inventor of spectacles, and the 13<sup>th</sup> Century, as the beginning of using lenses as spectacles. It can truly be said that the lenses had not been born all of a sudden then. It may be concluded that the lenses had been available long before that time.

We are all familiar with quartz, a transparent volcanic stone that begins its journey in the rivers after it forms. In the river, it rubs to the other stones and water and finds the shape of a lens. This beauty and transparency causes man to make glasses and put it in front of his eyes.

Reports on the joint excavations in Eastern Azerbaijan Province in Iran (Tabriz, Khosroshah, Newly excavated, Yanik Tappeh, 1962), by Professor Charles Bernie<sup>1</sup> from the University of Manchester were published in the book "History of Archeology" by Dr. Gholam Reza Masoomi.<sup>2</sup>

Following studying the reports by Professor Charles Bernie in Yanik Tappeh and also by examining the spectacle being kept at Iran-e Bastan museum, we concluded that during the excavations, Dr. Sarfaraz (The main archaeologist in Excavation at Yanik Tappeh, Azerbaijan) had tried to see remains from the Iron Age. He found iron only one meter deep, and quite accidentally, a grave had been found with some items put next to the body of a girl. There had been a bony-like piece on the nose of the corp., looking like a pair of spectacles with two small circular holes the size of a penny on both sides of the bony piece analogously and parallel to each other. Nobody at the scene could have ever believed such a thing. Professor Bernie had been quiet on the issue, yet, Dr. Sarfaraz had believed that one day, it would be proved that they were spectacles. The researchers of the present paper tried hard to find that spectacles without any information regarding that important event. They finally found not only the spectacles, but also the lost history of the culture and technology of optometry of this nation. In order to perform technical comparative studies on the spectacles, it was necessary to consult an osteologist and later

with a veterinarian familiar with historical aspects of domestic animal environments. It was finally agreed that the spectacles were originally made of the bone of a domestic herbivorous mammal.



The picture was taken in 2007 of the spectacles made of bone.

The spectacles found in Yanik Tappeh, in Azerbaijan Province, Iran, were under scrutiny by the authors. The results surprised everyone. Unlike what had been expected, the eye-piece in the inferior side was carved in an inclined form. In other words, it started from the 22 mm diameter up to when it was reduced to 14 mm. On the posterior side, it started from 14 mm and ended up to 22 mm. Why have they been carved in this way? We believe that the posterior side of the spectacles had had an arch without any decoratives. They had been probably used for inserting lenses, or transparent stones. The inferior side had been decorative which had been used for sector patch. Since the user of the spectacles had been suffering from strabismus, the maker had used thin patches for the healthy eyes, while for the eyes with strabismus; he had used a wider form of patch. With a total turn (180 degrees) of the replacements had been done. With a complete circular turn, the necessary replacements were done; in this case the locations for frame nose position had been well followed; in other words, the datum line had been correctly chosen.

With circular turns, the spectacles will change position in front of the eyes. The healthy eye would be placed in front of the spectacle with refraction and the wide patch would prevent the eye from moving to the temporal side, while the refractive eye would be positioned with the narrow patch. In this case, the amount of refraction is observed and the eye would try to be placed in a normal

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form till the refraction is corrected. The spectacles under our discussion had been made for a girl who had died in her youth; she had probably used them for sometimes. The ancients believed that the necessary properties of the dead would be used in the next world, so the spectacles had been placed on her eyes when burying.

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