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16th century mining in Europe and a shipwreck on the Namibian Coast

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In 1533 AD, the Portuguese trade vessel *Bom Jesus* sunk off the coast of southern Namibia, near the modern town of Oranjemund. It would take almost 500 years before the wreck was found again on 1 April 2008, in the course of diamond mining activities behind coffer dams that allow the pushing back of the sea.



Copper Ingot with Fugger Trademark

Coming from Lisbon on its way to Western India, the *Bom Jesus* contained a multifold load of naval equipment and commodities for trade and exchange. Of paramount importance are the 1,845 copper ingots, which show the trademark of the Fugger company from the *Freie Reichsstadt* of Augsburg, Germany. Historical accounts prove massive copper and silver production of the Fugger-Thurzo company in the area of Neusohl, in the Slovak Ore Mountains.

Geochemical analyses of 60 copper ingots show an extraordinary homogeneous composition with appreciable concentrations of lead, silver, antimony, nickel, and arsenic indicating the smelting of fahlores.

Lead was found to be added deliberately to the copper to extract silver by the Liquation Process. This technological innovation is one of the numerous hallmarks of the Renaissance period, the “Age of Discovery”. Lead isotope abundance ratios point to an origin from lead deposits in Cracow-Silesia. The ore districts of Neusohl and Cracow-Silesia were intensively connected to mining and metal production during the post-medieval period.

This study forcefully shows the advantage of combined historical and natural science studies.

