Discovery of Rhenium

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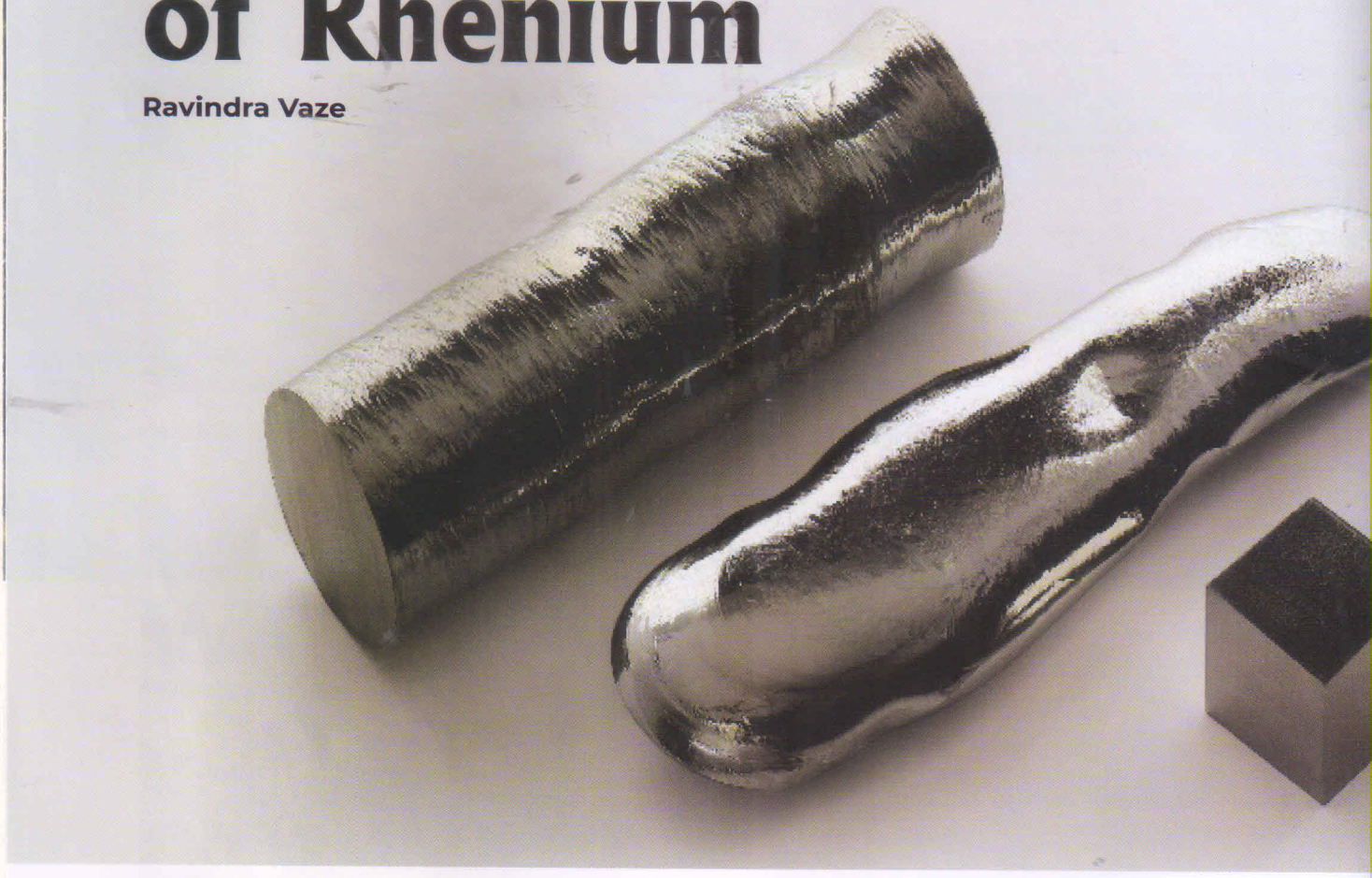

EXACTLY a hundred years ago, the last naturally occurring stable element to be discovered was Rhenium. This discovery was not accidental but involved an arduous search for minerals containing it, followed by a number of extractions and analyses. A systematic and coherent search for elements truly began with the discovery of the periodic table by the Russian chemist Dimitri Mendeleev in 1896. He placed the then-known element Manganese (Mn) in group 7 and left two gaps below it. He predicted new elements to fill these gaps and temporarily named them as Eka-manganese (Em) and Dvi-manganese (Dm). Later on, these gaps were filled with the discovery of elements Technetium (Tc) and Rhenium (Re). Out of these two elements, Rhenium was the first to be discovered in June 1925 by Walter Noddack, Ida Tacke (later Ida Noddack), and Otto Berg in Germany. The German discoverers named the element Rhenium after Rhenus, the Latin name for the river Rhine in Germany. The river flowed in the vicinity of their workplace. It would be worthwhile to have an overview of the historical development that led to the discovery of the element.

As mentioned earlier, Mendeleev had given the names Eka-manganese (Em) and Dvi-manganese (Dm) for the two elements yet to be discovered. He had also predicted the atomic weight for the two elements as 100 and 190, respectively. It is a remarkable fact that the predicted values were close to the actual values of 98 and 182.2, respectively. Before the discovery of Rhenium in 1925 by the Germans, another Japanese chemist, Mastaka Ogawa, had almost discovered it in 1908, but by an odd twist of fate, could not achieve accolade for its discovery.

Sir William Ramsay, a noble laureate and a distinguished British chemist of the 20th century, is known for his discovery of inert gases Argon, Krypton, Neon, and Xenon, which constitute group 18 of the modern periodic table. Students and visitors flocked to his laboratory from all parts of the world. One of them was Mastaka Ogawa from Japan. Ramsay was quick to notice the abilities of the young Mastaka and handed him a sample of Thorionite ore for analysis, which he had received from Ceylon (Sri Lanka). Ogawa immediately set himself to the task of analysing the sample and patiently carried out the fractionation of Thorionite ore for long hours. He was rewarded for the task as the spectroscopic analysis showed a line at 4882A^{0}, suggesting the discovery of a new substance in nature. Delighted with the achievement made by