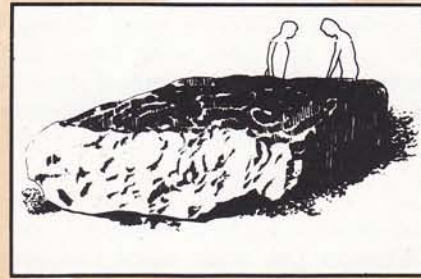


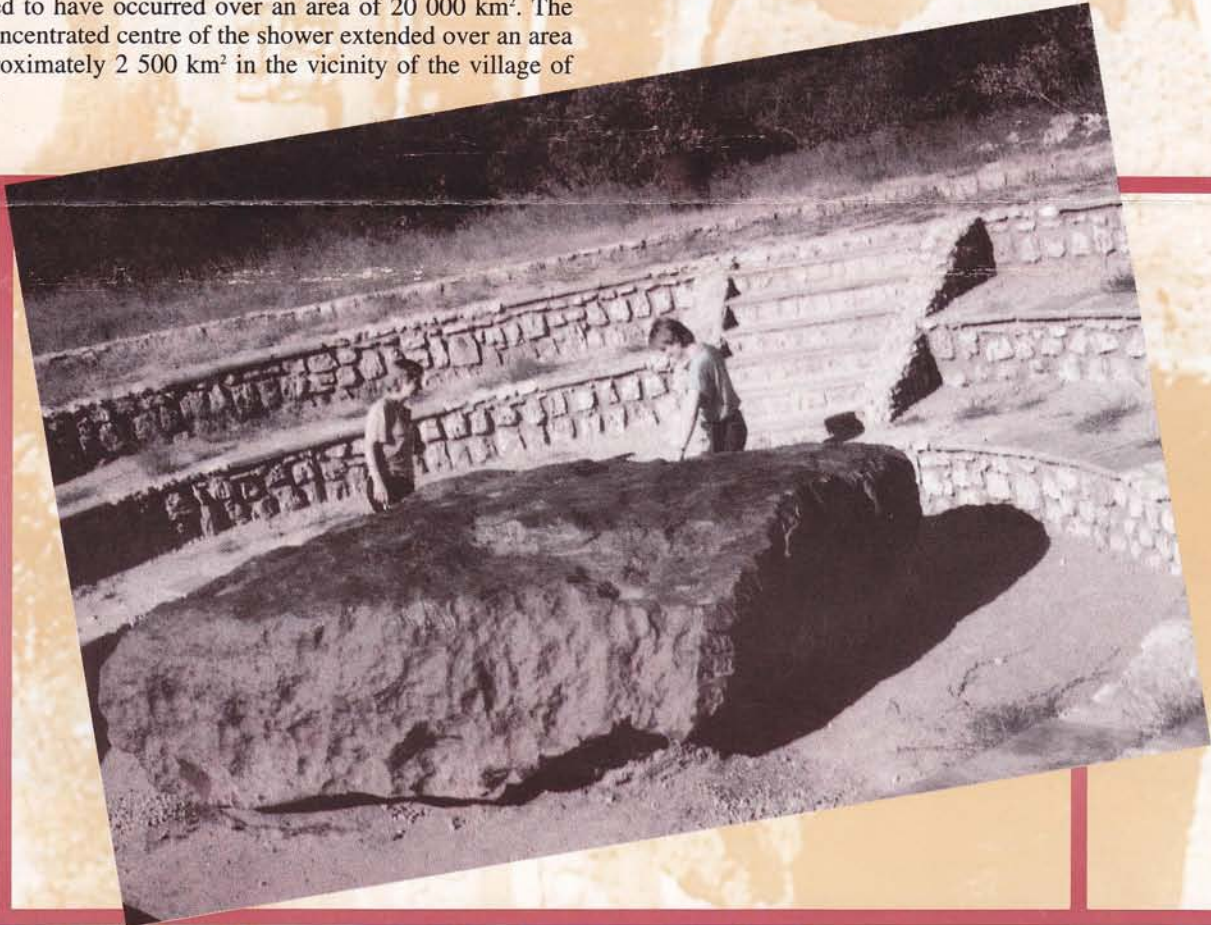
HOBA METEORITE

When a meteorite enters the earth's atmosphere at an extremely high speed, the friction is so great that it burns up. In the process it produces a bright streak of light which is readily visible at night and is commonly called a shooting star. A huge belt of such meteoritic material, the so-called asteroid belt, is present in the space between the planets Mars and Jupiter. Scientists have not yet reached agreement about the origin of meteorites. It can, however, be stated that whatever falls onto the earth from space is part of our solar system which developed some 4 600 million years ago. There are two main types of meteorites, namely iron meteorites and stony meteorites.

Namibia is world-famous for its meteorites. The most extensive meteorite shower known, is found in the southern part of the country and is called the Gibeon Meteorite Shower. It is estimated to have occurred over an area of 20 000 km². The more concentrated centre of the shower extended over an area of approximately 2 500 km² in the vicinity of the village of Gibeon.



Relative size of the Hoba Meteorite



The Hoba Meteorite is the largest single meteorite known in the world today. It was first described by Johannes Hermanus Brits in 1920 and was declared a national monument on 15 March 1955 with the permission of the farm-owner at the time, Mrs. O. Scheel. The meteorite weighs approximately 60 tons and measures 2,95 by 2,84 m. Its thickness varies between 122 and 75 cm. The shallow pits and depressions on the horizontal upper surface of the meteorite are typical of high-temperature meteorite corrosion during the passage through the earth's atmosphere. Minor oxidation has occurred on the surface.

Due to the presence of a rare radioactive nickel isotope with a half life of less than 80 000 years, scientists were able to determine that the Hoba Meteorite fell to earth less than 80 000 years ago. Analyses of the age of the meteorite vary between 190 and 410 million years.

The Hoba Meteorite consists of 82,4% iron, 16,4% nickel and

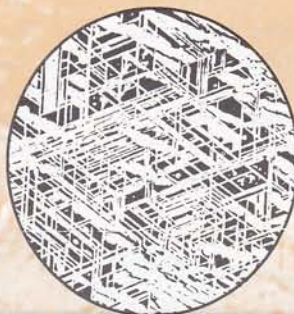
0,76% cobalt. Other elements present are traces of carbon, sulphur, chromium, copper, zinc, gallium, germanium and iridium. Scientifically it is termed an ataxite, a meteorite with a high nickel content.

Under the microscope, material from the Hoba Meteorite displays the typical compact ataxitic structure with faint lines, wedges and patches. The main minerals are kamacite (a nickel-iron alloy with 5-7% nickel) and taenite (a nickel-iron alloy with up to 65% nickel). High magnification shows intergrowths of kamacite and taenite needles of the typical Widmanstätten structure. The meteorite also contains the rarer meteoritic minerals schreibersite [(FeNi)₃P], troilite [FeS] and daubreelite [FeCr₂S₄].

The Hoba Meteorite is situated on the edge of the Kalahari plain which extends to the east and south-east. This plain is underlaid by white calcrete of the Kalahari Group which fills the valley floors in the area. Underlying the calcrete are ancient granites as well as dolomites and limestones of the

Otavi Group which also make up the surrounding hills. No crater or altered rocks have been found associated with the impact site. After the meteorite fell, it was gradually covered by a layer of calcrete. This calcrete was formed by the evaporation of near-surface groundwater, which carried calcium carbonate derived from the surrounding Otavi limestones. Today the region receives a maximum annual rainfall of only 750 mm and near-surface groundwaters are less abundant. The calcrete therefore suggests a more humid climate in the recent geological past.

Unfortunately, the meteorite has been damaged by vandals. In 1985, Rössing Uranium Ltd. made funds available to the National Monuments Council to combat vandalism. In collaboration with Rössing, the Council launched a project to protect the meteorite and made the surroundings more attractive for visitors. Mr. J. Engelbrecht, the farm-owner since 1987, donated an area for the development of the site. Subsequently, an information centre was established to meet educational needs. The facilities were opened on 31 July 1987.



A section of meteorite showing the Widmanstätten structure

