

World Heritage Sites

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TASSILI N'AJJER NATIONAL PARK ALGERIA

The Park is located on a plateau of outstanding scenic and geological interest, covered by eroded sandstone forests of rock. The area has one of the largest and best preserved groupings of prehistoric cave art in the world, an immense gallery of neolithic art of international importance. More than 15,000 drawings and engravings record the climatic changes, the animal migrations and the evolution of human life on the edge of the Sahara from 8000 to circa 1500 years ago. It is also a floristic and faunal island of Sahelian life in the middle of the desert, and harbours a relict Mediterranean cypress, one of the rarest trees in the world.

Threats to the site: Natural erosion of the art and increased vandalism owing to improved access, along with uncollected tourist litter are beginning to degrade the quality of the site.

COUNTRY

Algeria

NAME

Tassili n'Ajjer National Park

MIXED NATURAL & CULTURAL WORLD HERITAGE SITE

1982: Inscribed on the World Heritage List under Natural Criteria vii and viii + Cultural Criteria i and iii.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE

The UNESCO World Heritage Committee issued the following Statement of Outstanding Universal Value at the time of inscription:

Brief Synthesis

Tassili n'Ajjer is a vast plateau in south-east Algeria at the borders of Libya, Niger and Mali, covering an area of 72,000 sq. km. The exceptional density of paintings and engravings, and the presence of many prehistoric vestiges, are remarkable testimonies to Prehistory. From 10,000 BC to the first centuries of our era, successive peoples left many archaeological remains, habitations, burial mounds and enclosures, which have yielded abundant lithic and ceramic material. However, it is the rock art (engravings and paintings) that have made Tassili world famous as from 1933, the date of its discovery. 15,000 engravings have been identified to date. The property is also of great geological and aesthetic interest: the panorama of geological formations with "rock forests" of eroded sandstone resembles a strange lunar landscape.

Criterion (i): The impressive array of paintings and rock engravings of various periods gives world recognition to the property. The representations of the Round Heads Period evoke possible magic-religious practices some 10,000 years old, whereas the representations of the Cattle Period depicting daily and social life, and which are amongst the most famous prehistoric parietal art, have an aesthetic naturalistic realism. The last images represent the taming of horses and camels.

Criterion (iii): The rock art images cover a period of about 10,000 years. With the archaeological remains, they testify in a particularly lively manner to climate changes, changes in fauna and flora, and particularly to possibilities provided for farming and pastoral life linked to impregnable defensive sites during certain prehistoric periods.

Criterion (vii): With the eroded sandstone forming "rock forests", the property is of remarkable scenic interest. The sandstone has kept intact the traces and marks of the major geological and climatic events. The corrosive effects of water, and then wind, have contributed to the formation of a particular morphology, that of a plateau carved by water and softened by the wind.

Criterion (viii): The geological conformation of Tassili n'Ajjer includes Precambrian crystalline elements and sedimentary sandstone successions of great paleo-geographical and paleo-ecological interest. Humans lived in this area by developing cultural and physiological behaviour adapted to the harsh climate; their vestiges date back to several hundreds of thousands of years. The rock art of Tassili n'Ajjer is the most eloquent expression of relationships between humans and the environment, with more than 15,000 drawings and engravings testifying to climate changes, wildlife migrations, and the evolution of humankind on the edge of the Sahara. This art depicts water-dependent species like the hippopotamus, and species which have been extinct in the region for thousands of years. This combination of geological, ecological and cultural elements is a highly representative example of a testimony to life.

Integrity (2009)

The property contains all the key rock art sites and landscapes representing its natural beauty and all the sites of biological and ecological diversity that compose the attributes of Outstanding Universal Value. The boundaries and the size (72,000 sq. km) of the property ensure the maintenance of the geological process and the cultural heritage integrity of the site.

Authenticity (2009)

The richness of the cultural heritage of rock art and archaeological vestiges, together with the natural diversity of the ecosystem, fauna, flora and wetlands, fully reflect Outstanding Universal Value. It is vulnerable to deterioration caused by climatic phenomena, and to damage caused by visitors.

Protection and Management Requirements (2009)

Given the contemporary geostrategic challenges, and the new patterns of territorial development and rehabilitation of the bordering Saharan regions, and in the framework of the cultural heritage law (Law 98-04 on the Protection of Cultural Heritage), the Ministry of Culture introduced a new category of protection of cultural and natural values: the cultural park - a concept of protection of geographical spaces in which the different cultural and natural values are interlinked and juxtaposed in an intelligible configuration.

Based on this identification, rules for organization and management have been defined, as well as the structures and mechanisms that govern these spaces, from the prehistoric cave to the existing urban fabric, in a general territorial development plan, a legal and technical instrument for policy and planning that associates the sectors of culture, the interior and local collectivities, the environment, forests.

Thus, sustainable management of the heritage of Tassili is included in the framework of the implementation of the Cultural Heritage Law and its texts of application concerning the creation and organization of the Tassili Park Office, a public establishment of an administrative nature (EPA), the missions of which are the protection, conservation and enhancement of the cultural and natural heritage. This establishment is run by a director appointed by decree, and managed by an Advisory Board which includes representatives of the various ministerial departments and local representatives. It has an annual operating budget for the implementation of the Action Plan, in the framework of a participatory management policy integrating the different partners, and a capital budget for the realization of major development projects and infrastructures.

The research programmes underway in the Park respond, firstly, to the major challenges in the conservation of the fragile and vulnerable cultural and natural heritage subjected to extreme weather conditions, then to the demands of socialization, education and the promotion of best practices for the sustainable use of the cultural and natural diversity amongst the park residents. The property management also reflects the strong regional value of Tassili n'Ajjer as one of the essential elements of an ecological belt, which includes plant and animal species typical of the Sahara, as well as tropical and Mediterranean species, adapted to the rigors of the climate. Tourism activity which generates income and jobs for local people is subject to conditions which ensure better use of natural and cultural resources. Tourism is strictly controlled; the groups of visitors are always accompanied by an official guide. One of the long-term imperatives in this immense property will remain tourism management.

INTERNATIONAL DESIGNATIONS

1986: Designated a Biosphere Reserve under UNESCO's Man & Biosphere Programme (7,200,000 ha).

2001: *La Vallée d'Iherir* (6,500 ha) partly within the National Park designated a Wetland of International Importance under the Ramsar Convention.

2003: *Les Gueltates Afilal* (20,900 ha) adjoining the Reserve designated a Wetland of International Importance under the Ramsar Convention.

IUCN MANAGEMENT CATEGORY

II National Park

BIOGEOGRAPHICAL PROVINCE

Sahara (2.18.07).

GEOGRAPHICAL LOCATION

The Park is on a high plateau in the Sahara in far south-eastern Algeria between 22° 30'N to 26° 50'N and 5° 20'E to 12° 00'E. The northern boundary runs east 440 km from Amguid on the Tamanrasset road via Illizi to the Libyan border. The east and south sides adjoin the Libyan and Nigerien borders for 600 km. The southern boundary runs northwest 700 km from the Nigerien border to Amguid, curving in to exclude the sands of Erg d'Admer.

DATES AND HISTORY OF ESTABLISHMENT

1972: The Tamrit plateau east of Djanet designated a National Park by Decree 72-168 (300,000 ha) to protect the archaeological heritage;

1979: More areas designated Historical Monuments and Sites;

1986: The Park was extended to 7,200,000 ha by Decree 83-458, all to be subject to National Park conservation legislation which protected the cultural but not the natural resources;

1986: The Tassili Plateau designated a UNESCO Biosphere Reserve;

1987: The nearby Ahaggar Mountains declared a National Park (of 450,000 sq.km.);

2001/3: Oued Iherir and the Afilal pools designated Ramsar Wetland sites.

LAND TENURE

State property in the Wilayas (provinces) of Illizi (Djanet, administrative capital) and Tamanghasset. The local nomadic tribes have rights of pasture. Settled tribesmen are the main landowners in the oases. Administered by the *Office du Parc National du Tassili* (OPNT) and the *Direction Du Patrimoine Culturel*, in the Ministry of Culture.

AREA

7,200,000 ha.

ALTITUDE

1,150m to 2,158m (Mt. Afao) in the Adrar mountains. The plateau averages ~1,500m in the north and northwest, and 1,800m in the centre and south.

PHYSICAL FEATURES

Tassili n'Ajjer means plateau of chasms. The Park comprises two geomorphic units: sandstone plateau and mountainous volcanic ridge. The plateau (*tassili*) is part of an ancient sandstone layer surrounding the Precambrian granite massif of the Ahaggar. This extends northeast down to a lower plateau edged by a 600m escarpment which runs for 700 kilometres in a gentle arc from west-northwest to east-southeast. The plateau is between 80 and 300 kilometres wide, of extremely broken terrain towards the north. Its north-facing cliffs are cut by several deep gorges and steep-sided watered valleys running northward into sands. The red to black-weathered sandstone has been deeply eroded into forests of 20-30m pillars like ancient ruins (Dubief, 1959, 1963; Fabre, 1978) and rises towards the southwest-facing escarpment above the shifting dunes of the Erg d'Admer and Erg Tihodaine. The Park's southwestern boundary runs along the foot of this escarpment.

The ridge of relatively recent volcanic rock, the Adrar massif, rises 30-50 km behind the scarp to 2,158m in Mt. Akao and is crossed at a few *aqbas* (passes) only. It is part of a central African continental divide between northward and southward flowing watersheds. The area was most recently formed in a wet climate 10,000 years ago when the ergs were lakes fed by rivers from the mountains: There are springs and 300 permanent and many temporary *gueltates* (pools) on the plateau. In the north-flowing Oued Imirhou 20 km of water sometimes runs for six months (Hughes & Hughes, 1992). Another semi-permanent river is on a tributary, Oued Iherir, with 45 permanent pools, waterfall, marshes and springs, where secreted travertine forms natural dams and pools which cascade from one level to another (Kerzabi, 1986). There is a hot spring, and near Amguid on the western edge there is a huge crater.

CLIMATE

The plateau is hyper-arid, very exposed and barren, but there are sheltered more humid microclimates where relict Mediterranean fauna and flora survive. The annual rainfall is scant and variable, with a mean of 25mm, locally occasionally 150mm. The plateau's summer temperature range is between 20°C and 30°C and the winter range is between 31° and 1°C (FAO, 1986); snow is recorded on the peaks (Hughes & Hughes, 1992). The annual mean at 1,100m is 20.3°C (Verschuren, 1984) but the diurnal range is large: in summer Djanet at this elevation at the foot of the southern escarpment has experienced 50°C.

VEGETATION

The Adrar mountains and Tassili N'Ajjer plateau, owing to their elevation and the humidity of deep shaded valleys, possess relict Mediterranean as well as Sudano-Deccan and Saharo-Sindien vegetation (Leredde, 1957; Ozenda, 1958). With the Ahoggar Range, it forms a Centre of Plant Diversity. The most notable Mediterranean species are the endemic Saharan cypress *Cupressus dupreziana* (EN) (*tarout*), the only conifer of the central Sahara, first known to science in 1924, along with occasional Saharan olive *Olea europea laperrinei* and myrtle *Myrtus nivelii* (Barry *et al.*, 1970), also *Teucrium* species and *Lavandula antineae*. There are only some 153 *tarout* left in the world, about a 100 of them scattered in the 'Valley of the Cypresses' between Tamrit and Jabbaren northeast of Djanet. They grow between 1000-1800m and are extremely drought-resistant; all are old, some perhaps over 2000 years old and all have been mutilated for fodder and wood (FAO, 1986). The olives and myrtles with oleander *Nerium oleander* which is common, and planted date palms *Phoenix dactylifera*, grow on the wadi floors and beside *gueltas*.

The humid valleys and *guelta* banks have Sudanian riverine vegetation: French tamarisk *Tamarix gallica*, with sycamore fig *Ficus sycomorus*, *Acacia nilotica*, toothbrush bush *Salvadora persica* and doum palm *Hyphaene thebaica*. Other wadi-bed species include *Trianthema pentandra*, a valuable fodder plant, *Silene kilianii*, *Lupinus pilosus* and *Convolvulus fatmensis*. Riparian species include bulrush *Typha capensis* and reed *Phragmites australis*, which are common, rush *Juncus buffonius*, clubrush *Scirpus holoschoenus*, and maidenhair fern *Adiantum capillus-veneris* (Ozenda, 1958; Zeraia, 1983). Submerged vegetation includes *Ceratophyllum demersum*, *Myriophyllum spicatum*, *Potamogeton hoggariensis*, *Chara* and *Ekebergia* sp. (Ozenda, 1958; Kerzabi, 1986; Hughes & Hughes, 1992). In the unpolluted fresh water of the Iherir valley, aquatic mosses secrete travertine, creating dams, waterfalls and pools (Kerzabi, 1986). There are many other Sudanese species such as *Maerua*, *Ferula* and *Calotropis*.

Rocky and sand plants include *Mesembryanthemum gaussonii*, *Pseuderucaria clavata* and *Acacia scorpioides* (Leredde, 1957; Ozenda, 1958; Quezel, 1962; Zeraia, 1983). Endemic Saharan species found on the massif include the pondweed *Potamogeton hoggariensis*, *Silene hoggariensis*, *Lupinus tassilicus* and *Senecio hoggariensis* (Ozenda, 1977). The Tassili is important for 28 plants rare in Algeria, among the most threatened being Saharan cypress *Cupressus dupreziana* (CR) and *Phagnalon garamantum* (Mathez *et al.*, 1985). Other rarities are *Olea europea* spp. *laperrinei*, red-leaved rock fig *Ficus ingens*, *Boerhaavia viscosa*, *Calligonum* sp., *Trianthema pentandra*, *Spergularia fontenellei*, *Bergia suffruticosa*, *Hypericum psilophyllum*, *Convolvulus fatmensis*, *Anticharis glandulosa* and *Utricularia exoleta* (see lists in Zeraia, 1983; Dobr, 1988).

FAUNA

The fauna contains both Mediterranean and Saharan Palaearctic species, relicts of a more humid climate: fish, brine shrimp and once even a dwarf crocodile *Crocodylus niloticus*, far from the nearest population in Egypt: the last crocodile was killed in the Imirhou wadi in the 1940s (Kerzabi, 1986). Remarkably, four species of fish are found in the lower pools near Iherir: *Tilapia zillii* being the commonest, with *Barbus biscarensis*, *B. ablabes* and the air-breathing mudfish *Clarias anguillaris*. The herpetofauna includes monitor lizard, *Varanus griseus*, green toad *Pseudepidalea viridis*, and the frogs *Ptychadina occipitalis* and *P. mascariensis* (Hughes & Hughes, 1992; Fishpool *et al.*, 2003). There is a dense but not species-rich invertebrate fauna, with relict Afrotropical and Palaearctic species including large numbers of spiders and insects; dragonflies include *Orthetrum ransonneti* and *O. sabina* (Aguilar *et al.*, 1986).

The 23 or so larger mammals are more typical of arid climates. These include the rare Saharan cheetah *Acinonyx jubatus hecki* (CR), striped hyaena *Hyaena hyaena*, Rueppel's fox *Vulpes rueppelli*, fennec fox *Vulpes zerda*, caracal *Felis caracal*, reed cat *Felis chaus* and sand cat *F. margarita*, slender-horned gazelle *Gazella leptoceros* (EN, IUCN 2010), dorcas gazelle *Gazella dorcas* (VU, Hughes & Hughes, 1992) and ruffled mouflon or Barbary sheep *Ammotragus lervia* (VU), once thought extinct in the area. Locally threatened species include Val's gundi mouse *Ctenodactylus vali*, Ahaggar hyrax *Heterohyrax brucei antinae* (EUJRC, 2010) and rock hyrax *Procavia capensis* (de Smet, 1984). Addax *Addax nasomaculatus* (CR) have disappeared from the region and the scimitar-horned oryx *Oryx dammah* (EX), present in the early 1980s, became extinct in the wild by 2000 (IUCN, 2006).

The entire region is important for resting migratory Palaearctic birds. Species recorded in the area include golden eagle *Aquila chrysaetos*, long-legged buzzard *Buteo rufinus*, bittern *Botaurus stellaris*, little bittern *Ixobrychus minutus*, night heron *Nycticorax nycticorax*, squacco heron *Ardeola ralloides*, purple heron *A. purpurea*, white stork *Ciconia ciconia*, glossy ibis *Plegadis falcinellis*, short-toed eagle *Circaetus gallicus*, lesser kestrel *Falco naumanni* (VU), hobby *F. subbuteo*, corncrake *Crex crex*, spotted crane *Porzana porzana*, pharaoh eagle-owl *Bubo ascalaphus*, stone curlew *Burhinus oedipnemus*, quail *Coturnix coturnix*, Lichtenstein's sandgrouse *Pterocles lichtensteinii* and fulvous babbler *Turdoides fulvus* (Ledant *et al.*, 1985). Breeding bird species include Palaearctic marsh birds such as coot *Fulica atra* and moorhen *Gallinula chloropus*, as well as a relict sub-species of Barbary partridge *Alectoris barbara duprezii* (Ledant & Jacob, 1982; de Smet, 1989; Fishpool & Evans, 2001).

CONSERVATION VALUE

The Tassili N'Ajjer has one of the world's great collections of prehistoric art, outstanding for its long record of Neolithic rock art and artifacts which documents climatic and social changes over 8000 years or more (Soleilhavoup, 1978, 1994). The area is also important for its geology, fauna and flora. These include a geology which records a fossil hydrographic system from fluvial to hyperarid conditions as well as yeilding striking scenery; and wildlife which includes 28 plant species rare in Algeria. One of these, the rare endemic cypress *Cupressus dupreziana*, is one of twelve critically endangered plants chosen by the Species Survival Commission of the IUCN to highlight serious threats to species around the world (Dobr, 1988). There are at least five endangered mammal species and the region is important for resting migratory birds. In 1987 a large area of the nearby Ahaggar Mountains was also declared a National Park.

CULTURAL HERITAGE

The rock walls of the plateau are covered by a vast gallery of prehistoric art of some 15,000 well-preserved neolithic rock engravings and cave paintings, the variety, vitality and continuity of record of which make them of international importance (Soleilhavoup, 1999; Campbell & Coulson, 2001). The area has been continuously inhabited since the last wet period about 8000 years ago despite desertification which was already evident by 1500 BC. Radio-carbon dating has placed most cave paintings and archaeological remains between 6000 and 2000 BC, some perhaps from 7500 BC (G. Aumassip, pers. comm., 1987). It has been suggested that the engravings may have been made by a

Berber culture from the north and the paintings by a negroid people who have moved south (Brown, 2001).

There is a sequence of styles which became increasingly abstract as the climate became drier. Following Lhote (1973, 1976) and Campbell & Coulson (2001) this ranged from an early naturalistic Bubaline style (featuring buffalos) of incised engravings only, in the early 9th to 5th centuries, to the Bovidian (cattle-herders') style of paintings of round-headed people, both huge and tiny, between the 6th and mid 2nd centuries, to the Caballine (horse-riders') style from ± 1500 BC, with smaller more stylised figures and mouflon hunting scenes, to the Camelian (camel-riders') style, from about 700 BC, a schematic art showing present-day animals, with inscriptions in *Tifinagh*, the alphabet still used by the Twareg (Lhote, 1973; Anon., 1986; Brown, 2001).

According to Kerzabi (1981) the most notable sites are the following. The National Park east and north-east of Djanet has frescos of several different periods, especially at Sefar, Tamrit and Tin Tazarift, amongst forests of weathered stone, and to its south are petroglyphs and rich archaeological remains. Some of the most beautiful Saharan neolithic engravings are also near Djanet. In the northern canyon of the Oued Djerat, paralleling Oued Imerhou, are 30 kilometers of rock engravings of man and animals, some full size, (hippopotamus, buffalo, elephant, rhinoceros and giraffe). The oasis of Iherir has large carvings of giraffe, many relics and interesting architecture; to its east and west the plateaux of Tasriert and Tadjilahine have scores of painted rock shelters. The plateau of Dider south of Iherir has not only petroglyphs of Saharan fauna (giraffe ostrich and gazelle) but also tumuli and frescoed shelters, and to its east the plateau of Ighassan has paintings and rich archaeological sites. On the plateau of Fadnoun southeast of Illizi are hundreds of stone monuments. The region of Tarat in the northeast is extremely rich in archaeological sites with neolithic sculptures, pottery, grinding implements and enclosures as well as lower and middle Paleolithic material (Anon., 1986). To the west, Adrar, Tasedjbest, Ifedaniouen and Aras are all rich in rock art, not all yet known to scholars, and there are palaeolithic sites at Erg (formerly lake) Tihodaine.

LOCAL HUMAN POPULATION

The plateau itself is very sparsely inhabited by the nomadic Kel Ajjer Twareg, the total present population being at most 1,000, many, after droughts, having settled in Illizi on the northern border, at Zaouoatallaz and at Djanet (Kerzabi, 1986). Stock raising and agriculture are confined to the settlements; grazing is generally on the wadi floors. Wheat, root and fruit crops are grown in a few northern valleys such as Oued Iherir where more than 1000 people live (Hughes & Hughes, 1992). Most of the area is peopled by the Da'ira, totalling some 10,000. Djanet oasis at the foot of the ridge in the southeast has a population of some 5,000 (Anon.1986). The traditional economic basis of local Twareg society has suffered much change in the last 30 years and it has become increasingly dependent on tourism, especially at Djanet (Saharatec, 2002).

VISITORS AND VISITOR FACILITIES

The number of tourist numbers (and vandalism) grew until the 1990s, and an international airport was built near Djanet to cater for this growth. Package tours are now returning and with them the need for protective surveillance. Crossing the massif is generally only practicable for four-wheel drive vehicles, and requires permission from the Tassili National Park office (OPNT) in Djanet, which prepares itineraries, and supervises and guides tourists within the area of the nearby Park and elsewhere (Ministry of Information & Culture, pers. comm., 1995). Tourist festivals and shows now occur at Illizi and Djanet.

SCIENTIFIC RESEARCH AND FACILITIES

An experimental centre has been set up at the archaeological site of Timenzouline, on the Tassili of Djanet, where a meteorological station operated from 1979-86 (Ministry of Information & Culture, pers. comm., 1995). Cypresses on the plateau have already been catalogued and numbered (Kerzabi, 1986) and since 1987 a Czechoslovakian project with WWF/IUCN assistance has set out to re-introduce *tarout* cypress to the Tassili plateau (Dobr, 1988). A research station is planned. At present, most

facilities are located in the surrounding villages. Ongoing studies include the dendrochronology of *tarout* cypress, natural resource inventories and conservation of the rock art (Anon., 1986).

MANAGEMENT

In January 1987, draft recommendations for conservation management were drawn up (MAB Algeria, 1987). There is a management plan for the area of the National Park near Djanet, where wardens and guides manage visitor movements. Other wardens have been recruited in nearly every area of the Park (Ministry of Information & Culture, pers. comm., 1995). Patrolling so vast an area is made easier by the difficulty to strangers of crossing the very broken terrain so only the few passes and main track junctions are presently watched. A management plan for both the natural and cultural aspects of the National Park is being studied (MAB Algeria, 1987).

MANAGEMENT CONSTRAINTS

The impacts of tourism pose problems, particularly of litter and of vandalism to archaeological remains, which are attractive to collectors, and to the rock engravings and paintings. These have been damaged by erosion and collectors - often Twareg souvenir peddlers - though not yet as drastically as in Morocco (Soleilhavoup, 1994). Nevertheless it has been estimated that at least two million archaeological artifacts have been removed from the Ahaggar/Ajjer region, the more accessible Ahaggar being the more affected (Saharatec, 2002). Some plant species such as the cypress, incapable of reproducing in their natural surroundings owing to the changing climatic conditions, will eventually become extinct unless conservation measures succeed. Pollution is affecting the moss-formed travertine in the *gueltates* of Azarif near Iherir (Kerzabi, 1986).

STAFF

There are 44 members of staff, including the Director, 3 researchers and 39 wardens and guides (Ministry of Information & Culture, pers. comm., 1995). The National Park office (ONPT) has a Director and Research Officer as well as wardens stationed at Djanet, Illizi, Zaouatallaz and Iherir. The wardens are trained to act as wildlife guides and to ensure that the rock art and other archaeological sites are protected and that there is no hunting, collection of plants or damage to the trees.

BUDGET

The OPNT is financially independent. Its budget covers staff salaries and maintenance of a small fleet of vehicles. Resources earmarked for conservation are extremely limited and are used for documentation, essential equipment and the living expenses of experts on projects (Ministry of Information & Culture, pers. comm., 1995). The *tarout* cypress project (#II 3781 of 1987) is funded by WWF and IUCN.

LOCAL ADDRESS

Office du Parc National du Tassili (OPNT), BP 11 Djanet, 33100 Algeria Direction Du Patrimoine Culturel, Ministere de la Culture, Les Anasser-Kouba, Alger.

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