

From Expedition Cartography to Topographic Mapping: Italian Military Maps of the Southern Libyan Desert from the 1930s

Summary

In the 20th century different modes of mapping from traveller reports and expedition route maps to triangulation and topographical surveys still co-existed for a short period before systematic surveys started by colonial administration and the military. The extreme geography and the changing political conditions in the region resulted in remarkable interconnections between scientific research expeditions and surveying and mapping institutions, as well as intelligence and military cartography in colonial context. This paper investigates unique material, a series of reproductions of Italian military maps, made in the 1930s and preserved in Budapest to demonstrate the process of cartographic information acquisition and the practice of topographic map making in Italian Libya.

Zusammenfassung

Im 20. Jahrhundert bestanden für eine kurze Zeit verschiedene Arten des Kartographierens nebeneinander: Diese reichten von Karten, die Reiseberichte und Expeditionsrouten darstellen, bis hin zu kartographischen Produkten, die mittels der Triangulation und aufgrund von topographischen Aufnahmen entstanden sind. Wenig später starteten systematische Aufnahmen, die durch die Kolonialverwaltung und das Militär durchgeführt wurden. Die extreme Geographie und die sich verändernden politischen Bedingungen in dieser Region resultierten in bemerkenswerten Querverbindungen zwischen wissenschaftlichen Erkundungsexpeditionen und kartographischen Institutionen ebenso wie mit dem Geheimdienst und der Militärkartographie im kolonialen Kontext. Die vorliegende Studie untersucht einzigartiges Material, nämlich eine Serie von Reproduktionen von italienischen Militärkarten aus der Zeit der 1930er Jahre, die in Budapest verwahrt werden. Diese Karten zeigen den Prozess der Beschaffung von kartographischen Informationen und die Einarbeitung derselben in topographische Karten des von Italien besetzten Libyens.

Italian Military Maps in Budapest

There is a remarkable set of maps and sketches relating to the exploration and mapping of the Libyan Desert preserved in the *Military Historical Institute and Museum*¹ in Budapest, Hungary. Earlier it was suggested that the maps were connected to “*the English Patient*”, the Hungarian explorer LÁSZLÓ EDE ALMÁSY (1895–1951). However, as soon as the book of inventory was checked, this appealing hypothesis failed. The notes revealed that the material was a relatively recent acquisition of the library as the maps were purchased as a smaller collection from a private person in Budapest in 1985 [Török, 2009]. Why and how these Italian maps would find their way to the Hungarian capital are certainly the questions one would put but we can not answer.

However, there are even more intriguing cartographic problems in connection with this collection as whole and in particular regarding to a smaller group we selected and separated from the rest (see Table 1 below). Our research work in Florence, Italy, demonstrated that, while the Budapest map group is perhaps unique, it is closely related to the vast historical material kept in the archives of the *Istituto Geografico Militare*². Based on our research findings, in this paper we would like to interpret these maps in their cartographic and historical context, and we try to analyze their possible documentary sources.

The study of this remarkable cartographic material is a contribution to the deeper understanding of the historical role of expedition cartography, especially route surveys in the classic period. The 19th century exploration and mapping of Africa demonstrates the *traditional period* of expedition cartography [Brunner, 2004, p. 26] which was followed by topographic mapping in the 20th century. We would like to demonstrate that there was an interesting *transitional period* where methods of classic expedition cartography and modern surveying methods were still in parallel use, and both cartographic modes provided information for the compilation of topographic

¹ Honvédelmi Minisztérium Hadtörténelmi Intézet és Múzeum <http://www.militaria.hu/> – last access: April 11, 2012.

² <http://www.igmi.org/> – last access: April 11, 2012.

maps [Török, 2004]. In historical context the set of maps we describe and analyse below is also highly significant for the study of Italian military colonial mapping in the southern Libya before World War II.

The map sheets are still kept in two large cardboard folders in Budapest, each containing mainly printed material from small scale to topographical map sheets. The coverage as well as the publishers' names – *Istituto Geografico Militare* and the Italian colonial government in Benghazi, Cyrenaica –, suggest that the cartographic material as a whole reflects Italian colonial interest in Africa, in particular Libya and Ethiopia. While the majority of the set is topographical map sheets, not uncommon printed material, a smaller group of maps requires special attention. All but one of the sheets of various sizes (Map (I) in Table 1) are reproductions of manuscript sketches and maps which, in my opinion, were drawn around the same time by the same hand or by a group of draughtsmen. The language of the maps was Italian and some spelling mistakes also suggest that the map makers were Italians, presumably working in a colonial military office in Cirenaica (later Libya).

Photographic Reproductions of Military Manuscripts

Except for the only printed map (Map (I)) the method of their reproduction is unknown. As there is no trace of printing ink, presumably it was a kind of photographic reproduction. By the 1930s the slightly different *blue-printing processes*, discovered in the 1880s, were available everywhere. The importance of these methods has not been realized in the history of cartography. Examples of blueprints and similar reproductions are not exceptional, although certainly underrepresented, in archival material worldwide. These technologies were once popular and widely used especially for the reproduction of original drawings if a smaller number of copies were needed. The maps in the group could actually be direct positive copies of original drawings on transparent original. The lines and letters are brownish; and due to fading the colour is presumably lighter than it was originally. The process used could be a '*Sepia-kopie*' or a version of a *Diazo* printing process (or its German version, '*Ozalid*'), which allowed for the making of positive monochrome copies on paper [Bosse, 1953, p. 96, p. 127].

Table 1: The group of Italian maps in Budapest.

Map number	Inventory number	Title	Sheet size (map size) in mm	Scale
Map 1	Cc 168	IL DESERTO LIBICO ... by Dr. John Ball	487 x 337 (390 x 310)	1 : 4,000,000
Map 2	Cc 175	SPEDIZIONE DEL 1925 DI S.A.S. IL PRINCIPE KEMAL EL-DIN HUSSEIN	645 x 685 (602 x 615)	1 : 500,000
Map 3	Cc 176	DESERTO LIBICO – SUD OUEST DELL'OASI DI DAKLA	591 x 768 (512 x 701)	1 : 500,000
Map 4	Cc 177	CARTA GEOGRAFICA MOSTRANTE LA STRADA ADOPERATO DELLA SPEDIZIONE DI S.A.S. IL PRINCIPE KEMAL EL DIN HUSEIN NEL 1925	812 x 715 (785 x 705)	1 : 500,000 (on two sheets, joined)
Map 5	Cc 184	EXPEDITION DE S.A.S. LE PRINCE KEMAL EL DINE HUSSEIN 1925-1926	750 x 668 (639 x 258)	1 : 500,000
Map (I)	Cc 185	<i>Territorio di Cufra – dati forniti dal Cap. Medico Dott. Brezzi</i>	Note: printed map	c. 1 : 200,000
Map 6	Cc 187	CÚFRA (El-Cafra) Itinerari dei viaggiatori attraverso il Deserto Libico	750 x 308 (639 x 258)	1 : 2,000,000
Map 7	Cc 196	ESPLORAZIONE DELL'OVEST DEL GILF KEBIR	385 x 310 (315 x 288)	1 : 1,000,000
Map 8	Cc 197	KUFRA AUENAT GILF EL NEBIR	885 x 551 (471 x 818)	1 : 1,000,000 (two sheets joined)

The maps are monochrome copies, but two of them were coloured by hand, presumably shortly after the copies were reproduced. On Map 6 (Fig. 1) the expedition routes are traced in ink in seven different colours. Only Map 1 includes wash colours: light blue for the sea and a darker shade for the Nile valley, and the quantitative information are represented by different shades of yellow and brown, as well as blue, green and red line symbols.

The paper of the existing documents is brownish-yellowish and the text on the darker parts are hardly legible. The paper is somehow creased, but is in a relatively good condition. Apparently, the maps were used and kept folded for a while as there are minor faults along the folds (some losses of paper on Map 6). As the photographic reproductions were usually wet processes special pre-treated paper of 50-100% rag content was manufactured [Murray, 2009]. The overall good condition of these possibly seventy-year old (!) reproductions is due to the high quality paper. This remarkable fact makes the study of these and similar reproductions even more important from archival point of view, especially because quick reproduction processes usually considered having a much shorter life span. Based on the method of reproduction used we can suppose that only a

limited number of copies, perhaps a few dozen, were originally made. This hypothesis makes each surviving copy very rare.

Another aspect we should consider here is the purpose and readership of these reproductions. The limited number of copies suggests that these maps were not made for the general public but a small group of experts. The maps were most probably considered confidential documents by Italian authorities at the time they were reproduced, although they were actually constructed from public sources and contained no classified information.

Unfortunately, there is no information on the maps revealing their makers or the date when they were compiled. On some maps' verso side I could find handwritten notes in pencil, which originally served to show the subject of the maps when they were kept folded. On two maps – Map 6 and Map (I) – the note "*Proprieta Cap (itano). Tabbri (Fabbri?)*" in the upper left corner are most probably the owner's signature. The name and military rank of the owner supports the suggested connection of the reproductions with the Italian army. There is a single *printed* map (Map (I)) which was included in the group for the inscription regarding its provenance. In the left bottom corner, outside the neat line, an in-



Fig. 1: Detail of Map 6 showing the expedition routes to oasis Kufra in Southern Libya [Author's photo].

scription “*G. Ferrero dis.(egno)*” reveals the name of the draughtsman. His name also appears on other maps which were made in the office of the Italian colonial government of Cirenaica in Benghazi, e.g. on the 1:2 million map sheet, entitled “*Cirenaica, Sirtica e loro Retroterro*”, published by the *Ufficio Studi* of the colonial government in October 1932. The 1929 edition of the same map, drawn by G. FERRERO and R. BONATI is approved by the signature of the chief cartographer-officer, Colonel ENRICO DE AGOSTINI (1878-1973). A comparison of the lettering and the titles of the maps in the group show two different styles, e.g. one maker used simple letters, while the other made use of capital letters with serifs in the titles. It seems as if the manuscript maps had been drawn by different persons, and FERRERO possibly being one of them.

The present order of the material and the inventory numbers of the items in my group may also reflect their original arrangement. This was probably based on a chronological order, following the exploration history of the Kufra region. These manuscript maps are all related to the Kufra oasis, and the surrounding area in southern Libya, Egypt and Sudan. We argue that the collection of the manuscript military maps and sketches is related to the exploration and mapping history of the Libyan Desert. In order to put them into their historical context a short overview of the exploration and mapping of the region is given below.

Expeditions and Mapping the Libyan Desert

At the beginning of the 19th century the emptiness of the maps of the Libyan Desert was the result of a strange development based on Enlightenment philosophy. The critical method of the eminent French geographer JEAN-BAPTISTE BOURGUIGNON D’ANVILLE (1697-1782), a representative of Enlightenment cartography, resulted in huge blank spaces on his 1747 map of Africa. These empty map spaces were to be filled by route surveys of new expeditions which were practically the only source of geographical information.

However, for their limited range the contemporary expeditions could not survey the deep desert. Moreover there was no practical reason of making detailed maps of the featureless sands. The famous Napoleonic topographical survey of Egypt (dates), which was the best example of the new cartographic mode, extended practically to the Nile Valley but did not cover the vast desert areas, which meant that the very desert remained unmapped during the ensuing century.

In 1873-74 the German GERHARD ROHLFS’s (1831-1896) large and well equipped expedition visited and surveyed the westernmost Egyptian oasis, Dakhla (Fig. 2). A novel method of survey, terrestrial photogrammetry [*Jordan, 1875*], was used here for first time by a scientific expedition. Starting from Cairo, Egypt, ROHLFS

planned to traverse the unknown central part of the Libyan Desert to reach the more or less mysterious Libyan oasis, Kufra. His large caravan was the first to cross the unexplored Great Sand Sea, but he could not accomplish the project [*Rohlfs, 1875*]. At some point on the way towards the target he suddenly headed north, and marched to Siwa. His turning point, ‘*Regenfeld*’ (Rainfield), marked the remotest outpost of scientific exploration in the following decades. Although ROHLFS heard of a lost oasis called ‘*Sersura*’, which was first mentioned by JOHN GARDNER WILKINSON (1797-1875), an English explorer in 1818, he could only reach Kufra by using the caravan road from Tripoli on the Mediterranean coast in 1879.

In the early 20th century, the romantic English explorer, WILLIAM JOSEPH HARDING KING (1869-1933), with the support of the Royal Geographical Society in London, decided to start searching for the legendary oasis. In Dakhla, the westernmost oasis in Egypt, he observed the migrating birds coming from the southwest with freshly eaten olives in their stomachs. Based on his experiments, he calculated the distance of his ‘*olive*’ oasis from Dakhla, and made three attempts to locate the *Zerzura* of the ancient desert tale. In 1911 he reached a point approximately 250 kilometers southwest from the oasis, but his camel caravan had to return because his native guide tampered with his water supplies. Before his turning point he noticed on the horizon something similar to a remote mountain range. KING published his reports in the *Geographical Journal* [*King, 1913*] and, in 1925 his book on the mysterious desert [*King, 1925*]. The map he enclosed was based on native information he had collected, assessed and organized into one coherent picture. Although it included geographical information of highly different reliability it was an achievement and not useless for his followers. In modern terms, it can be considered a mental map, constructed by a talented and experienced explorer.

The book of the English explorer makes the anti-colonial and anti-British atmosphere in the Egyptian oasis almost tangible, an hostility which was strongly influenced by the *Senussia*. This powerful Muslim religious-political order was founded in Mecca in 1837, but its leader later moved from Sudan to Libya in 1843. In 1894 the Senussi sheikh retreated to the remote Kufra oasis in the southwest of the Libyan Desert. From 1911 the *Senussia*, encouraged by the Turks, fought a guerrilla war against the British and Italians in Libya and Egypt.

Motorized Expeditions and Mapping the Deep Desert

The military operations in the desert against the Senussi order included the first motorcar experiments, organized in 1915-16 by the British colonial military in Egypt. The



Fig. 2 : Detail of the route map of ROHLFS's expedition from 1873-74.

Light Car Patrols, using Ford Model T vehicles, became ideal for reconnaissance, intelligence and combat groups. Based on the data supplied by cars' speedometers and compasses, they succeeded in mapping large areas in northern Egypt. The effect of the motorcar on desert exploration and warfare was huge. In the preface to his 1919 military Report on the Western Desert, Captain WILLIAMS stressed that his purpose was to facilitate the use of cars as a military weapon. WILLIAMS acknowledged the contribution by BALL for devising methods of measurements and calculations for use of the motorcar patrols. The geologist Dr. JOHN BALL (1872-1941) was appointed director of the Geological Survey of Egypt in 1897. The 'Little Doctor' joined Light Car Pa-

trols on several surveying trips and wrote the "Military Notes on Western Egypt" in 1916 [Great Britain Army, 1916]. In 1917, south west of Dakhla oasis, they discovered Pottery Hill, an old water depot, in the desert.

In the 1920s Colonel NOWELL BARNARD DE LANCEY FORTH's (1879-1933) more traditional camel expeditions explored the Great Sand Sea south of oasis Siwa, a hard terrain that even today remains practically inaccessible by car. In 1923, after his 1920 visit with the British women writer ROSITA FORBES (1893-1967), the camel caravan of the Egyptian AHMED HASSANEIN (1889-1946), an Oxford graduate and excellent sportsman, was allowed to enter Kufra from the north again.



Fig. 3: Detail of BAGNOLD's expedition map from 1931.

Following the ancient caravan track south-east of the oasis HASSANEIN discovered and mapped two 'lost' oases in the unknown desert, the mountains Arkenu and Uweinat.

Prince HUSSEIN KEMAL EL DIN (1874-1932) declined the throne of Egypt in favour of living his own life. He pioneered the use of special motor vehicles for desert exploration. With his Citroën half-tracks he traversed the vast unknown expanses, first in pursuit of new hunting grounds, but eventually for exploration. His expeditions with Dr. BALL re-discovered ROHLFS's tracks south of Dakhla. In 1924-25 KEMAL EL DIN led an expedition and could reach Uweinat from the east. He explored the southern edge of a huge sandstone plateau named Gilf Kebir, the Great Wall. In 1926, while on his journey to the north of the Uweinat Mountain, he explored the vast plateau and his expedition reports were published in French in internationally – acknowledged publications shortly after the explorations [*Kemal el Din, 1928*].

In 1928 an Italian medical mission was invited to Kufra to attend to members of the Senussi family. The small group led by Dr. GIOVANNI BREZZI (1896-1953) reached Kufra from Jalo. Despite the orders of the Senussi leader, the Italians were imprisoned, but released after payment whereupon they returned by way of Siwa. However, in the mean time Dr. BREZZI succeeded in making some intelligence work and his geographical notes and sketches of the oasis were, apparently, considered as important for the colonial military.

In these years, using specially equipped Fords, the English officer Major RALPH ALGER BAGNOLD (1896-1990), and his companion explored enormous tracts of the Libyan Desert (Fig. 3). Despite special efforts they could not find the lost oasis. On the other hand, these expeditions' routes provided important geographical information and the route surveys became the basis of further cartographic works [*Bagnold, 1931*].

The systematic exploration and mapping of Egypt started with the establishment of the Geological Survey in 1896. The survey of the desert had become important for military reasons and the Egyptian great oases were mapped first. A separate Desert Survey department was founded in 1920. In 1926 a member of the department, PATRICK ANDREW CLAYTON (1896-1962), was sent to the Western Frontier Demarcation Commission to demarcate the international boundary line between Egypt and Tripolitania together with the Italian commission. He used light cars and a radio receiver for fixing the astronomical points. The expedition reached a point some 350 kilometers due south from the coast of the Mediterranean on the 25th meridian which represented the international boundary in the Great Sand Sea. At about at the same time, the southern border between Egypt and Sudan was surveyed by HUGH JOHN LLEWELLYN BEADNELL (1874-1944). The triangulation net-

work in the Nile valley was extended to the desert along the international borders. However, actually only smaller areas were surveyed by topographical methods, so the route surveys still remained the primary reliable sources for the mapping of the remotest desert.

The Zerzura Quest

LÁSZLÓ EDE ALMÁSY (1895-1951, Fig. 4) came from a noble but untitled Hungarian family. His father explored inner Asia during the early twentieth century, collecting birds and wildlife specimens. LÁSZLÓ expressed an early interest in modern technology, especially motorcars and airplanes. He attended a private boarding school in England, where he obtained a pilot's license. As a representative of an Austrian company (*Steyr Automobilwerke, Graz, Styria*), ALMÁSY test-drove a car along the Nile from Alexandria to Sudan in 1926. In 1929 he journeyed across east Africa, the Sudan, and Egypt, using two "Steyr XX" motorcars. This 12.000-kilometer trip was a turning point in his life, because he rediscovered an old caravan path – the Darb el Arbain, or Road of Forty – the ancient trade route connecting Egypt and inner Africa [*Almásy, 1935*]. During the incredible journey a documentary film, "*Durch Afrika im Automobil*" [*Mayer, R., 1929*], was made by the Austrian film maker RUDI MAYER (1903-1962). The forgotten material was discovered, restored and released in Vienna by his son, KURT MAYER (*1951) in 1997.

During this expedition ALMÁSY fell in love with the immense wasteland of the Sahara. Crossing the sands of Libya, he heard old-timers tell legends of lost oasis of

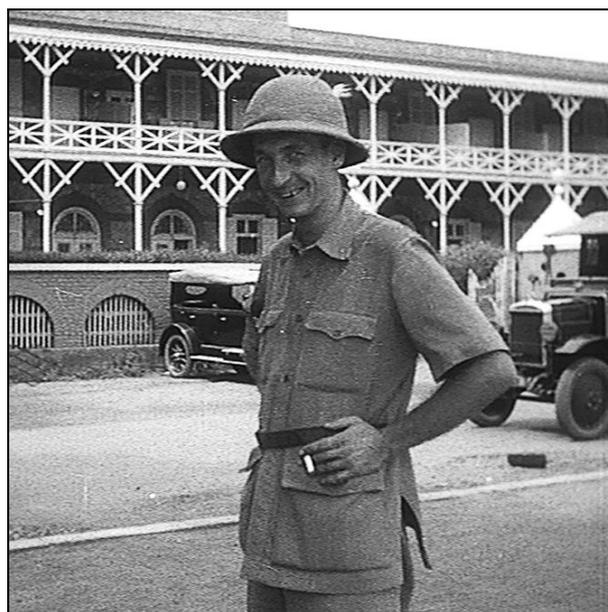


Fig. 4: LÁSZLÓ EDE ALMÁSY in Khartoum, Sudan, in 1929. [Photo from the 1929 documentary film "*Durch Afrika im Automobil*", courtesy of KURT MAYER]

Zerzura, which particularly lured ALMÁSY. "*Kitab al Kanuz*", or "*Book of Hidden Pearls*", a medieval Arabic manuscript written for treasure hunters, explicitly mentions the place. It was said to be situated in the heart of the desert, guarded by a white bird. Only a brave man could enter the secret village, full of gold and treasures. In the palace he would find a sleeping queen, who could be awakened by a kiss.

By the time ALMÁSY entered the world of Zerzura seekers in the early 1930s, only the innermost section of the Libyan Desert had remained unmapped. Automobiles made it possible to explore those unknown territories, which were earlier out of camel range. In 1929 a group of intrepid desert explorers, mostly British colonial and military officers, founded the "*Zerzura Club*" in a pub in Wadi Halfa, Sudan. This was a very special gentlemen club, the members of which were all hunters for the lost oasis. It is remarkable how much importance was attributed to the question of Zerzura in the "*Geographical Journal*", and to what extent the romantic spirit of exploration influenced expedition and intelligence work in the region.

As an acknowledged and experienced desert explorer ALMÁSY was the only non-British person invited to join the Zerzura seekers. He spoke six languages, including Arabic, and was welcome in the Egyptian court as well, where Prince KEMAL EL DIN acted as his patron. After consulting scientific reports, maps, and historical documents, and conducting interviews with natives, he concluded that the three valleys of the lost oasis should be somewhere in the unexplored Gilf Kebir region.

In 1931 ALMÁSY, accompanied by count NÁNDOR ZICHY (*1907), attempted to use his light aircraft to do reconnaissance, but they crashed on their way by Aleppo in Syria. In 1932 a young English baron, Sir ROBERT ALAN CLAYTON EAST-CLAYTON (1908-1932), joined ALMÁSY's quest with his light plane. Wing-Commander HUBERT WILSON GODFREY JONES PENDEREL (1890-1943) of the *Royal Air Force* and PATRICK CLAYTON (1896-1962) of the *Desert Survey*, were the other British members. On April 27, 1932 ALMÁSY undertook a dangerous trip across unknown territory west of Gilf Kebir to fetch water and petrol from the nearest oasis, Kufra. His arrival surprised the Italians who had captured the oasis and occupied the territory the year before, in 1931. ALMÁSY left Kufra on the following day with his cars loaded with water, petrol, food and some bottles of Italian wine. In the camp he learnt that his companions' April 28 reconnaissance flight was successful in that they saw a huge valley with green vegetation, which meant that they had found "*Zerzura*". On May 1 they also located another wadi, east of this large valley. However, despite ALMÁSY's efforts, they could not find an entrance to the valley. The expedition eventually ran out of petrol and water and had to return to Cairo, where they announced the discovery of the lost oasis.

By 1933 ALMÁSY lost his supporters just as the desert race was heating up. Both Prince KEMAL EL DIN and Sir CLAYTON died in 1932. His rival, PATRICK CLAYTON of the *Desert Survey*, while surveying the Great Sand Sea could make a detour and reached the Gilf Kebir from the north. He found the entrance to the main valley, Wadi Abd el Malik, and explored it. He then proceeded to the Kufra Oasis, where he met Lady DOROTHY CLAYTON (1906-1933), Sir CLAYTON's young widow, who joined his expedition. Meanwhile, ALMÁSY was having difficulty raising money and his international expedition did not set out until March 1933. The members of this expedition were Wing-Commander PENDEREL (*RAF*), the Austrian journalist ARNOLD HOELLRIEGEL (1883-1939 – penname, actually RICHARD BERMANN), HANS CASPARIUS (1900-1985 – a German photographer), and Dr. LÁSZLÓ KÁDÁR (1908-1989 – a Hungarian geographer). BERMANN wrote a fascinating book about this expedition and the legendary "*Zarzura*" became known in German literature in 1938 [*Hoellriegel, 1938*]. ALMÁSY's name became better known (LADISLAUS E. ALMÁSY) in 1939 when the German edition of his book was published by the famous publisher *Brockhaus* in Leipzig [*Almásy, 1939*].

They mapped the southern and eastern sides of the Gilf Kebir and on April 17 ALMÁSY's expedition arrived at Kufra again, just missing the expedition of PATRICK CLAYTON and Lady CLAYTON which had left on the same morning. The CLAYTON expedition left a note reporting that together they explored and surveyed a second valley, Wadi Hamra. ALMÁSY did not give it up and he managed to get information from a native Tebu guide about the third, undiscovered wadi. ALMÁSY led his expedition to the western side of the Gilf, where he discovered Wadi Talh. With the three valleys discovered, ALMÁSY could finally draw Zerzura on the map (The contemporary explorers, especially BAGNOLD, however, did not agree and considered Zerzura a legend). After this success, they visited the Uweinat Mountains, south of the Gilf Kebir, where ALMÁSY discovered prehistoric rock paintings in a small cave above a well, known as Ain Dua. The pictures showed antelopes, giraffes, and even swimmers, which convinced ALMÁSY that the Sahara had not always been a desert. The rock paintings were a scientific sensation and perhaps the most important result of ALMÁSY's work.

Cartographic Intelligence from Public Sources?

How the group of Italian military sketches and maps relates to this historical overview? As it was mentioned above, the current inventory numbers may reflect the original arrangement of the sheets. As we will see in this part of the paper this arrangement may have followed the chronology of the exploration of the Kufra

region. It is suggested here that the whole material was made in a relatively short period when the exploration and mapping of the southern Libya became an important task. As Kufra was occupied in 1931 it is not surprising that the following exploration of the area was not yet completed when the topographical survey of the colony was also extended to the new Italian territories. For the importance of topographical maps was high and the request was urgent any possible source was considered by map editors, and for a short period the material they used also served the military and colonial authorities. Exactly this *transitional period* can be better understood by the study of the material in Budapest.

The first item in the list, the hand coloured map (Map 1 – Fig. 5) in the group illustrates Dr. JOHN BALL theory, based on his observations and measurements of artesian water levels. It was published his influential paper, “*Problems of the Libyan Desert*”, in the June 1927 issue of “*The Geographical Journal*” [Ball, 1927]. For the next decade BALL would inspire explorers with the quest for the legendary “*Zarzura*” oasis. According to this theory an oasis could exist only in those unknown parts of the desert, where the water level is close to the surface. After analyzing the possibilities, he proposed the Selima Sand Sheet, west of Bir Terfauwi as the most possible location for the lost oasis. His ground water theory was confirmed in 1927-1928 by LLEWELLYN BEADNELL, from the *Desert Survey*, who triangulated and mapped large tracts west of Kharga Oasis in southern Egypt. In 1928 BEADNELL dug the new well of Bir Missaha (the Surveyors’ Well) and found the depth of the water level according to BALL’s theory.

On 22 April 1933 the intelligence officer sent a most confidential report from Kufra to the Italian Head Quarters. The expedition maps became primary sources for military and cartographic intelligence. There are paragraphs in the secret report which explicitly mention ALMÁSY’s maps and demonstrate his rather odd attitude regarding intelligence. From the document it is clear that ALMÁSY gave his map, showing the route of the 1932 Almásy-Clayton expedition, to the Italians. Another note on cartography reads: “*Almasy promised to give me, before he left, a map of the waters (oases) of Egypt: of those of Cyrenaica and other reserved maps.*” [Török, 2009]. This map could quite probably be Dr. BALL’s map on the Egyptian subsurface water reserves, work of which a version appears on Map 1 in our group. As it is clear from its full title Map 1 is a reproduction of a manuscript copy of BALL’s published map, which was coloured by hand.

The next four maps in the list make a subset as they are closely related and came from the same source. Prince KEMAL EL DIN’s account on his expeditions (1925-28) in the French journal “*La Géographie*” included detailed maps showing the expeditions’ routes in the unknown areas [Kemal el Din, 1928]. The maps in

our group (Map 2, Map 3, Map 4 and Map 5) are all 1:500,000 route maps, constructed on the basis of the coordinates of expedition camps and other important features en route. These geographical coordinates were calculated from the results of astronomical observations by JOHN BALL (Fig. 6).

The almost empty map sheets with the plotted tracks look almost like sea charts as desert navigation and mapping in those days were quite similar to oceanic voyages and maritime exploration. It is highly likely that the map sheets in the group were copied from French originals. While the notes were translated into Italian, on some sheets French inscription (e.g. “*Echelles*”) remained. On Map 4 the inset map showing the arrangement of the original sheets suggests that they were all reproduced by Italian copyists. However, not all of them survived in the collection. As the maps are all undated, it is difficult to tell when these copies were made but, based on additional map content, one can make an estimated guess. On Map 3 we find “*Bir Messaha*”, an artificial well that did not exist before 1928. Given the related content and the uniform style of the maps mentioned above, it is highly probable that all these copies were made later than that date. In the title of Map 3 (“*DESERTO LIBICO ...*”) there is no direct reference to KEMAL EL DIN’s expeditions, moreover, this map includes all notes and geographical names are in Italian (e.g. “*Pozzo di Messaha*”), while the information included reflects the accounts of British expeditions south of the Gilf Kebir [Bagnold, 1931], so this single work may be made a little later (c. 1931).

In the group of manuscript maps, a small offset sheet (Map (I)) is the only printed work. Considering that the track of the BREZZI expedition is indicated on Map 6, the manuscript was made after the mission’s return from Kufra in 1928 or shortly after that date. The same map was enclosed as Table II (“*Tav. II*”) to the detailed reports on the explorations in the Kufra region in “*Bollettino Geografico*” No. 12, published by *Governo della Cirenaica, Ufficio del Personale e degli Affari Generali, Servizio Studi* in September 1931. It is clear from the context that by this time BREZZI’s sketch became outdated and was considered from historical point of view.

Map 6 can be also considered in the same context as it represents the routes of previous expeditions, from ROHLFS’ 1879 track to the 1928 route of the Brezzi mission. It is apparent that this map was made to show the exploration of the Kufra region, and this purpose is what its title (“*Cúfra*”) proves. Research in the map collection of the *Istituto Geografico Militare (IGM)* in Florence uncovered a slightly different printed map [IGM, *Cartoteca, No 4818*], which could be a version of the reproduction we have in Budapest. The printed map was published in October 1926 by the *Governo della Cirenaica, Ufficio Studi*. It shows the desert traverses of the expeditions by different line symbols in red, but the last

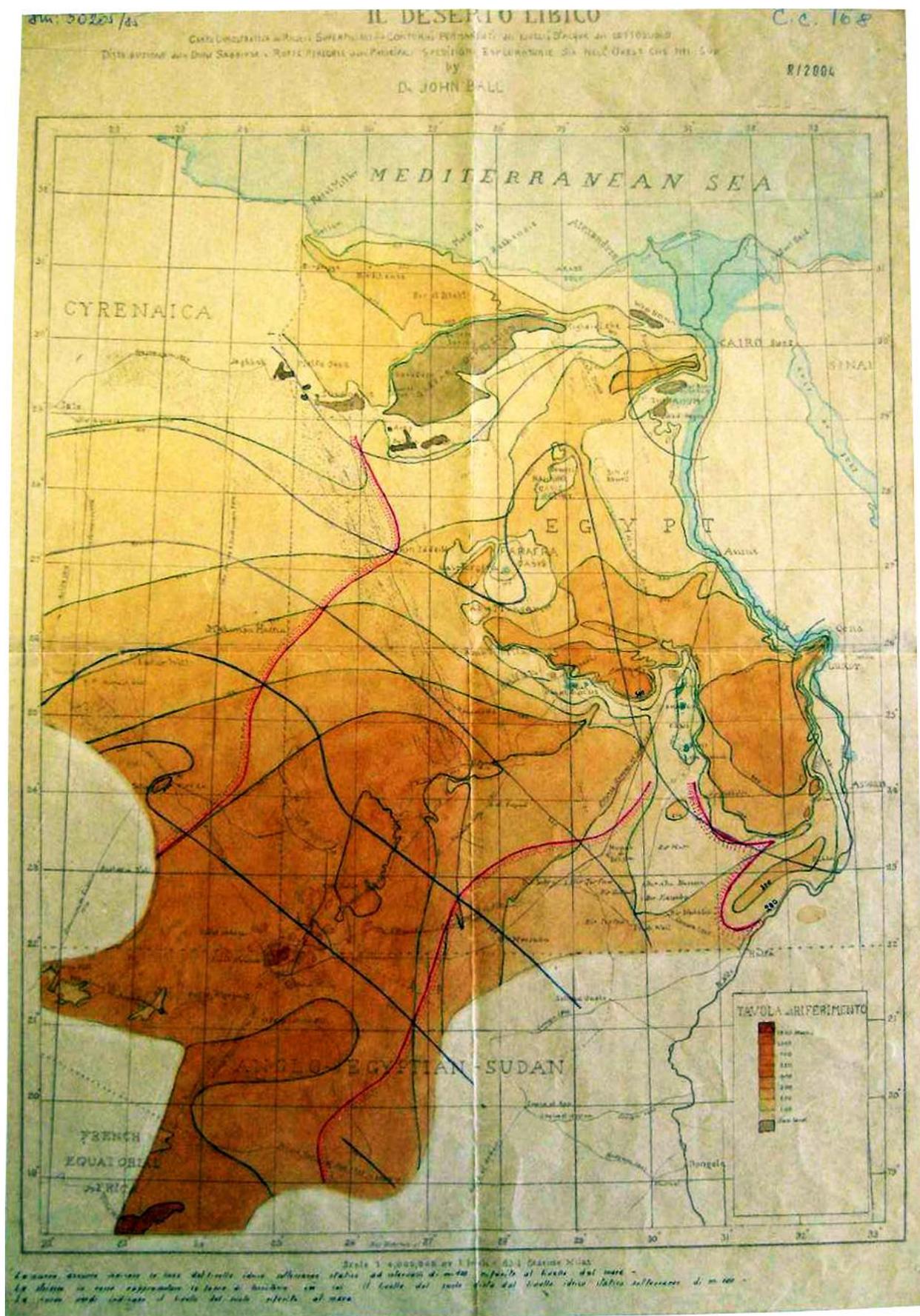


Fig. 5: Reproduction of the Italian manuscript copy of BALL's map of the artesian water (Map 1). Hand coloured photographic reproduction [Author's photo].

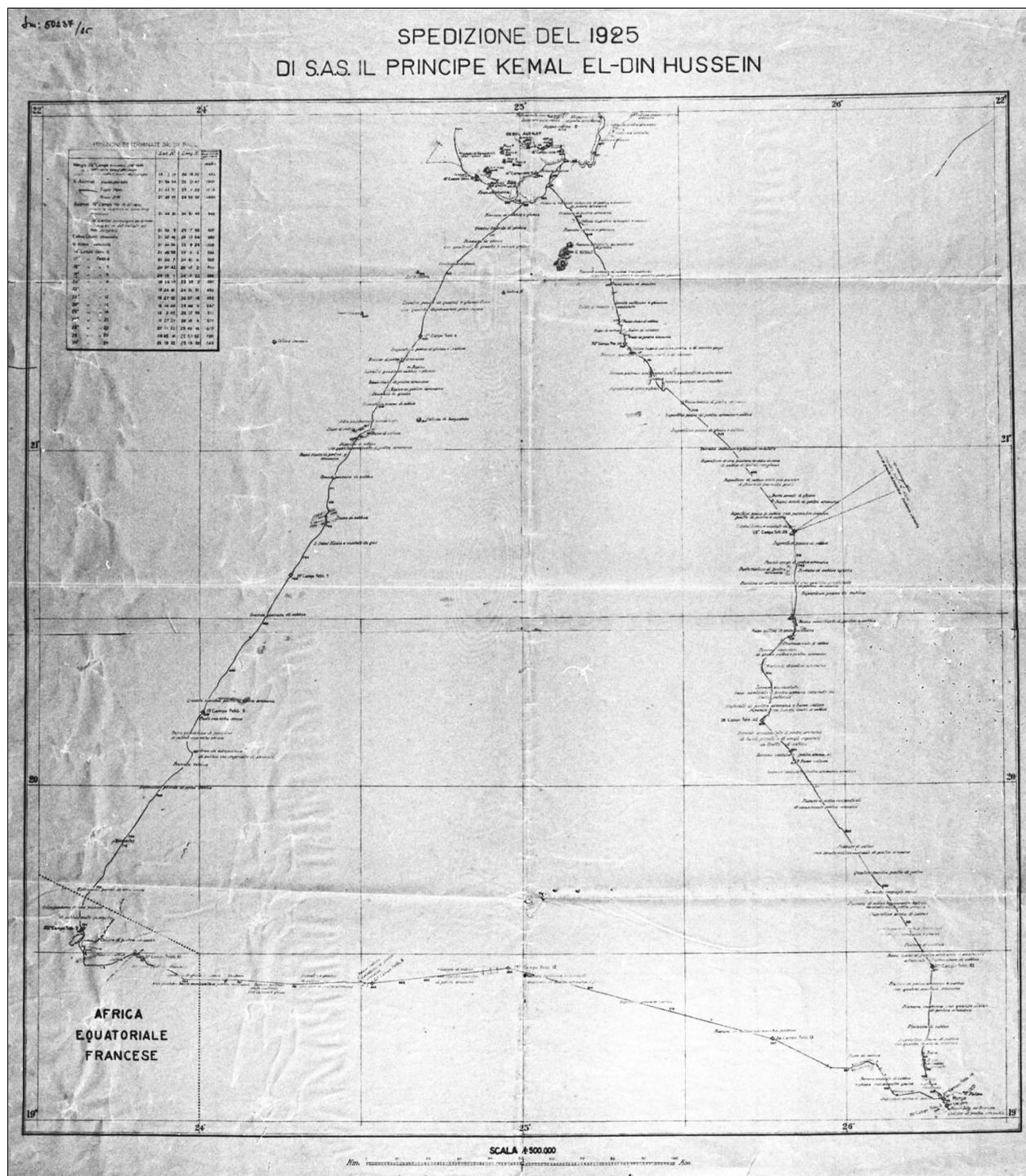


Fig. 6: The route of KEMAL EL DIN's 1925 expedition.

track represented there is the military mission of Capitano MASSIMO ADOLFO VITALE (1885-1968) in 1927 and not BREZZI's route from the following year. The base map and the scale are the same, so we can consider our *Map 6* as a slightly later, modified version of the printed one, which was made certainly after BREZZI's return and shortly before or after Kufra's Italian occupation in 1931.

Route Surveys

As the title of *Map 7* ("ESPLORAZIONE DELL' OVEST DEL GILF KEBIR") suggests it is a typical expedition map. At the scale of 1:1 million the outlines of the Gilf Kebir plateau are well represented, and the successive routes of the expeditions (1926 KEMAL EL DIN, 1931 CLAYTON and 1932 ALMÁSY/CLAYTON) are prominently shown. The significance of ALMÁSY's work is

apparent here: his name appears five times (!) on different tracks, including the one leading to Kufra. The explorers' tracks run close, and sometimes cross the 25th meridian, the border between Egypt, under British protectorate, and Cyrenaica, an Italian colony. The georeferenced image in *Google Earth* (see Fig. 7) demonstrate the overall reliability of the sketch based on the Almásy-Clayton expedition's route survey.

Map 7 is an Italian copy of the 1932 expedition map, but there are no secrets or espionage behind this map. It is actually a reproduction of a copy of the expedition map of the Almásy-Clayton expedition, published in *"The Geographical Journal"* in 1933 [Clayton, 1933]. The geographical name "Kufra" on the map is most telling evidence for the procedure: Kufra is the geographical name used in English (or in German) publications, while the Italians called it "Cufra".

Towards 'topographic' maps

The expedition map above was an important source material for making the last, and most remarkable map in the group. This large sheet, titled "KUFRA, AUENAT, GILF EL NEBIR" (Map 8) is actually a compilation. The actual procedure was reconstructed and described earlier [Török, 2009]. The map is on two sheets, which

were pasted together. The upper and the lower parts do not match perfectly, as if they were put together from two different parts. This is indeed the case as the map we have is actually a copy of BAGNOLD's expedition map published in *"The Geographical Journal"* in 1931 [Bagnold, 1931].

While the original, drawn at the *Royal Geographical Society* in London, was published in two sections, these were rearranged here and put together to form a 1:1 million scale map sheet. The original work included a smaller scale general map, which showed expedition routes and proper coverage of the sections. The inset map placed in the left bottom corner proves that BAGNOLD's map was used as basis for this work. The compilation of the map was done by a skilled cartographer who used additional sources as well; one of them was certainly the map of the Gilf Kebir (Map 7). The representation of the plateau is directly taken from the map of the 1932 Almásy-Clayton expedition. This addition extended the coverage of the base map; consequently the compilation could include not only the oasis Kufra, but also the Italian territory south of the oasis. The importance of the Uweinat is emphasized by the Egyptian-Libyan international border dividing the mountain.

As we demonstrated earlier [see Török, 2011] this map is already related to another period of the surveying

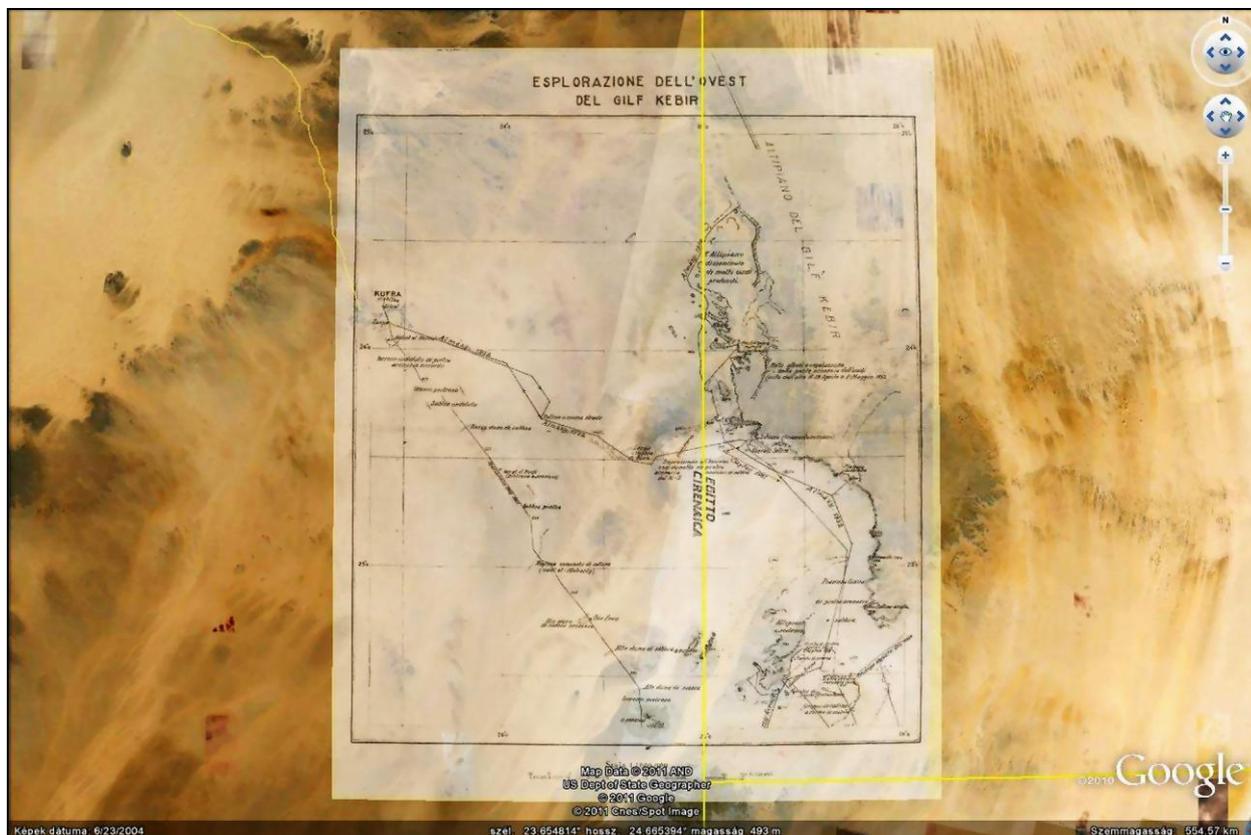


Fig. 7: Explorations and route surveys between the Gilf Kebir, Egypt and oasis Kufra, Lybia on Map 7. To demonstrate its reliability the georeferenced map image was visualized in Google Earth.

and mapping of the Kufra region, which was dominated by Italian military cartography. This started with the occupation of the oasis in 1931 and was followed with the expansion of the Italian military region into the southern desert region and, eventually, this led to the Italian-British international border conflict in the Uweinat mountain in 1933.

Conclusions

Instead of describing and analyzing each map in the group separately, I include all of them in a narrative and provide an historical overview of the exploration and mapping of the region. I would like to explain how different stages of the same history are documented on individual maps, and how the related collection of material, the group itself, documents a crucial historical period during the 1930s. In the concluding part of my paper I show some of the consequences of the cartographic work the group of maps represents, namely the compilation of Italian topographic maps in the 1930s.

The Libyan Desert became a huge battlefield in World War II, but the war in the inner desert was perhaps the scene of the most unusual operations, executed by special military forces. The activities of these forces highly depended on desert experts and the reliability of maps. The Hungarian ALMÁSY served as a desert adviser to General ERWIN ROMMEL (1891-1944) in North Africa. Among other missions he led the covered German military “*Operation Salaam*”³ in 1942. At the same time his former British companions worked for the special unit Long Range Desert Group in the Allied Forces. The military operations in the desert demonstrated the importance of reliable topographic maps. Even the most excellent expedition cartography could not provide more than “*linear topography*” [Eckert, 1921, p. 241-249], and the remaining blank spots on the topographic maps offered plenty of spaces for the unexpected on both sides of the frontier.

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³ http://en.wikipedia.org/wiki/Operation_Salaam
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