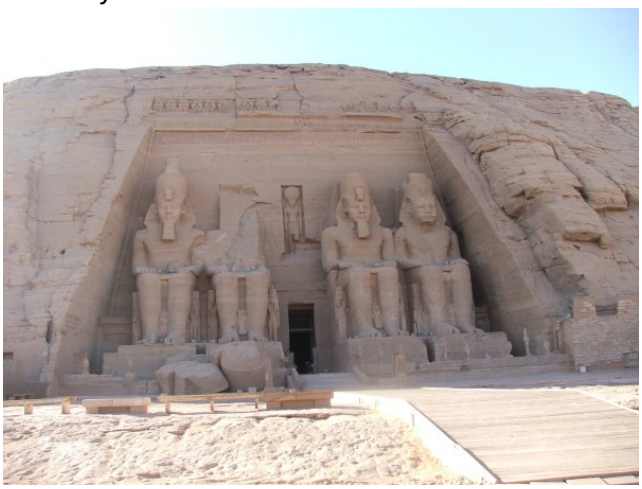
Abu Simbel – Temple of Ramesse II Jubilee

by Antonio Crasto

Temple

It is known that the temple of Abu Simbel, the Egyptian *Meha*, dug into the rock in Nubia sandstone along the western bank of the Nile, has an intriguing astronomical phenomenon. The sun's rays penetrate the temple at dawn two days (February 20 and October 22), coming to illuminate the statues of the gods carved into the Holy of Holies.

The two dates are equidistant ± 60 days from the date of the Winter Solstice (December 22). The temple, however, was moved from its original location, in order to avoid that the waters of Lake Nasser, formed by the new Aswan dam, could erable numdrown forever. The temple was cut into a considber of blocks and rebuilt in the highest position (about 65 meters) and rearward (about 210 meters) compared with the old coast line. Despite the efforts made to keep the "miracle" of the Sun on the same date, the phenomenon is now shifted by one day, as the phenomenon previously appeared February 21 and October 21, at a separation of ± 61 days from the Solstice Winter.



Facade of the temple

Egyptologists and scholars have questioned the choice of the orientation of the temple, assuming a relationship of the two days with significant dates in the life of Ramesses II and / or the Great Royal wife Nefertari.

It has been suggested, for example, that the date of October remind the date of coronation of the king and that of February his date of birth.

It has also sought a particular astronomical alignment.

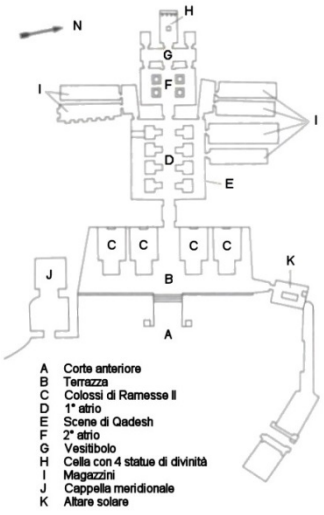
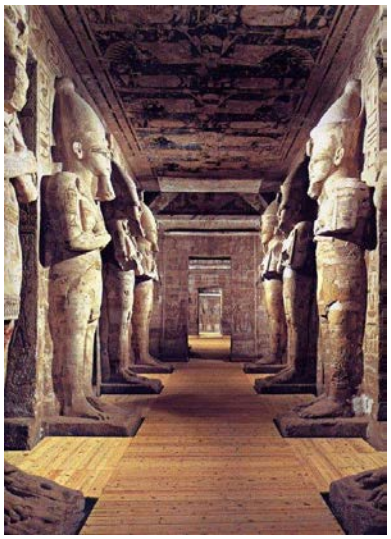


Diagram of the temple



Central corridor of the temple

The demographic assumptions are actually unfounded, because the dates in the Egyptian civil calendar (coronation and / or birthday) moved than the tropic solar year, ahead of 0.2422 days annually.

Regarding a possible alignment with the star Sirius, which would be independent of the Egyptian civil calendar, there is no correlation, because the temple is oriented at about 102°, while the star Sirius rises to about 111°.

It therefore seems very likely that the choice of orientation has been made on the basis of a geometric speech. If you want to create a underground temple, which would allow the lighting of the statues in the sanctuary, it was necessary that its board had a direction between the azimuths corresponding to the sunrise at the summer solstice (north-east) and the Winter Solstice (south-east). The lighting of the statues and in detail of the statue of Ramses II deified have symbolized the divine "rebirth" of the sovereign and his annual confirmation.
So it was decided to choose a direction of orientation between 90° (Autumn Equinox) and about 116° (Winter Solstice).
An orientation between these two values would have allowed the "miracle" of the Sun two days a year, with the movement of the rising of the sun to east or south.
The date of February 21 and that of October 21, should therefore be related to the particular hill chosen and the orientation of its wall facing east. On this side of the hill would have been realized a pylon with in front the four colossal statues of the king and the underground temple was excavated perpendicular to the facade.
The effect of illumination there was for the sunrise at about 102° and the illuminated area would be bounded by the size of the front door and those of 2nd entrance, the vestibule and the sanctuary.

Phtah, Amun, Ramses II and Ra-Horakhty
(lit with lamps)

The Sun would thus mainly illuminated the two central statues, that of Amon (left) and that of Ramesses II (right). The rhyming two statues, that of Phtah (1st from left) and Ra-Horakhty (1st from right) would have remained in the shadows, being touched by the rays of the sun only on the sides facing the center of the sanctuary.

1st phase (lit Amun and Ramses II)
photo of Franco Brussino

2nd phase (light - Amun and + Ra-Horakhty)
photo of Franco Brussino

As the sun was rising, it would also be shifted slightly to the south, moving toward the left edge of the entrance of the temple. In this way, the statue of Phtah would enter the dark and little by little you would be illuminated statue of Ra-Horakhty. This lighting effect would made Rameses II a solar deity, like Amun (sun god of the Age of Aries) and Ra-Horakhty (solar deity of the Age of Taurus).
Made this "miracle" of the Sun in the planning stage or perhaps on the basis of a similar phenomenon in a previous temple, he proceeded to the construction of the temple, in view of a deification of the king on the occasion of a probable jubilee 30th year.
The temple may have been completed around the 25th year. There isn't, however, a document

of start and / or end of the work, but an estimate can be made based on the sculpted figures: the mother Thuja, the wife Nefertari and his children, all living at the time of the creation of their images.

Jubilee Temple

It therefore seems possible that Ramesses II had celebrated the various *Heb Sed* festivals, the jubilees of 30°, 33°, 36°, 39°, 42°, 45°, 48°, 51°, 54°, 57°, 60°, 63° and 66° year, on the occasion of the "miracle" of the Sun, perhaps inside the temple of Abu Simbel.
This hypothesis should therefore be checked to see if the date of the event, in the Julian or Gregorian calendar, corresponding to the dates of Jubilees in the Egyptian civil calendar.
This test, of course, depends by various assumptions: the year considered and the cycle of Sirius. We know that the New Year of the Egyptian civil calendar occurred on coinciding with the heliacal rising of Sirius (July 20, Julian calendar) in 139 AD, so we can determine the shift from July 20th Julian on the 1st day of the 1st month of the 1st season (Akhet).
To verify it is considered a cycle of Sirius variable between 1460 and 1455 years Giuliani, corresponding to 1461 and 1456 years civil Egyptians. These values lead to consider the beginning of a new cycle of Sirius between the -1322 and -1317, corresponding to 1323 and 1318 BC.
For the coronation of Ramses II were considered some of the dates between those proposed by various scholars: 1310, 1304, 1290 and 1279 BC, the first of which is part of my chronology (3rd proposal) [1], while the other three, proposed by various scholars, are based on the reporting of the 52nd lunar year of Ramesses II and the choice to postpone by 20 or mistakenly 40 years the beginning of the eighteenth dynasty.
It is known that Sethy I died the 27th day of the 3rd month of the 3rd season (Shemu), so it is speculated that this date may also be considered as the date of the coronation of his successor.
Thus we can calculate the dates in the Julian and Gregorian calendars, corresponding coronation.

Possible coronation 27th III Shemu (Julian and Gregorian calendars)					
Sirius cycle Start cycle	calendar	1310 BC	1304 BC	1290 BC	1279 BC
1460	gregorian	18 Jun	16 Jun	13 Jun	10 Jun
1323 BC	julian	08 Jun	06 Jun	03 Jun	31 May
1459	gregorian	18 Jun	16 Jun	13 Jun	10 Jun
1322 BC	julian	08 Jun	06 Jun	03 Jun	31 May
1458	gregorian	18 Jun	17 Jun	13 Jun	10 Jun
1321 BC	julian	08 Jun	07 Jun	03 Jun	31 May
1459	gregorian	18 Jun	17 Jun	13 Jun	11 Jun
1320 BC	julian	08 Jun	07 Jun	03 Jun	01 Jun
1458	gregorian	19 Jun	17 Jun	14 Jun	11 Jun
1319 BC	julian	09 Jun	07 Jun	04 Jun	01 Jun
1455	gregorian	19 Jun	17 Jun	14 Jun	11 Jun
1318 BC	julian	09 Jun	07 Jun	04 Jun	01 Jun

Many Egyptologists have opted for the date of 1279 BC, but this choice is related to an error in the definition of the chronology of the eighteenth dynasty, [2, 3].
The dates of June tell us that the solar event at Abu Simbel can not in any case be a commemoration of the coronation of the sovereign.
It is conceivable instead that Ramesses II, after he had buried his father in the Valley of the Kings (70 days after death) has participated in the festival of *Opet*, which was held in *Waset* / Luxor, which lasted 27 days and started on the 15th day of the 2 first month of the 1st season Akhet, 83 days after the coronation and a few days after the burial of his father.
After the feast the 11th day of the 3rd month of Akhet (September Julian), Ramesses II may have started the excavation of his tomb in the Valley of the Kings and the construction of its two great temples: that funerary at *Waset* west (Ramesseum) and that for the Jubilee at Abu Simbel.
On this occasion could have observed the Sun's rays strike at dawn the eastern wall of the hill

where he built the temple, the hill may already exploited by local people to celebrate the god Horus of *Meha*, almost certainly a Nubian version of the male sun god Ra-Horakhty.
Knowing that the introduction of the Gregorian calendar in October of 1582 had moved the date of the lighting event, with the cancellation of 10 days, from October 11 to 21, we can derive the dates of the lighting event in the Julian and Egyptian civil calendar for the various proposed years of coronation and different values of Sirius cycle.

Solar event during the coronation (Julian and Egyptian calendar dates)					
Sirius cycle	Strart cycle	1310 BC	1304 BC	1290 BC	1279 BC
1460	1323 BC	3 Nov	3 Nov	2 Nov	2 Nov
		20 IV Akhet	22 IV Akhet	24 IV Akhet	27 IV Akhet
1459	1322 BC	3 Nov	3 Nov	2 Nov	2 Nov
		20 IV Akhet	22 IV Akhet	24 IV Akhet	27 IV Akhet
1458	1321 BC	3 Nov	3 Nov	2 Nov	2 Nov
		20 IV Akhet	21 IV Akhet	24 IV Akhet	27 IV Akhet
1457	1320 BC	3 Nov	3 Nov	2 Nov	2 Nov
		20 IV Akhet	21 IV Akhet	24 IV Akhet	26 IV Akhet
1456	1319 BC	3 Nov	3 Nov	2 Nov	2 Nov
		19 IV Akhet	21 IV Akhet	23 IV Akhet	26 IV Akhet
1455	1318 BC	3 Nov	3 Nov	2 Nov	2 Nov
		19 IV Akhet	21 IV Akhet	23 IV Akhet	26 IV Akhet

Nefertari temple

Just south of the temple, Ramesses II built a second underground temple dedicated to the Great Royal wife Nefertari, deified and regarded as the great heavenly mother Hathor. It is also this time likely that the hill had already been exploited by local people to celebrate the goddess Hathor of *Ibshek* almost certainly a Nubian version of the female sun goddess, Hathor.
The two sovereigns are therefore considered to be two solar deities, in syncretism with Ra-Horakhty and Hathor.


Facade of the temple of Hathor / Nefertari


Central corridor of the temple

This temple was oriented in a direction more southern, perhaps seeking an alignment with the heliacal rising of the star Sirius (about 111°), given that the star was considered the transfiguration of the goddess Hathor.
The temple, however, seems geared towards an azimuth more southern, so it can be assumed that it was oriented to the point of the sunrise on the Winter Solstice.
In the latter case, the Sun's rays would enter, at dawn on the Winter Solstice, the temple of Hathor and they lit up and revitalized the statues of the solar goddess mother and Nefertari.
For the calculation of the date of the solar event, for the 1st, 5th and 6th jubilee, has adopted the same procedure used for the coronation year, considering the four proposed dates for the coronation and various values of the cycle of Sirius and of year of the beginning of the cycle of Sirius.

Solar event during the 30th year (1st jubilee) (Julian and Egyptian calendar)					
Sirius cycle	Start cycle	1281 BC	1275 BC	1261 BC	1250 BC
1460	1323 BC	2 Nov	2 Nov	2 Nov	2 Nov
		27 IV Akhet	28 IV Akhet	02 I Peret	04 I Peret
1459	1322 BC	2 Nov	2 Nov	2 Nov	2 Nov
		26 IV Akhet	28 IV Akhet	01 I Peret	04 I Peret
1458	1321 BC	2 Nov	2 Nov	2 Nov	2 Nov
		26 IV Akhet	28 IV Akhet	01 I Peret	04 I Peret
1457	1320 BC	2 Nov	2 Nov	2 Nov	2 Nov
		26 IV Akhet	27 IV Akhet	01 I Peret	04 I Peret
1456	1319 BC	2 Nov	2 Nov	2 Nov	2 Nov
		26 IV Akhet	27 IV Akhet	01 I Peret	03 I Peret
1455	1318 BC	2 Nov	2 Nov	2 Nov	2 Nov
		25 IV Akhet	27 IV Akhet	30 IV Akhet	03 I Peret

Solar event during the 42th year (5st jubilee) (Julian and Egyptian calendar)					
Sirius cycle	Start cycle	1269 BC	**1263** BC	1249 BC	1238 BC
1460	1323 BC	2 Nov	2 Nov	2 Nov	2 Nov
		30 IV Akhet	01 I Peret	05 I Peret	07 I Peret
1459	1322 BC	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	01 I Peret	04 I Peret	07 I Peret
1458	**1321 BC**	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	01 I Peret	04 I Peret	07 I Peret
1457	1320 BC	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	30 IV Akhet	04 I Peret	07 I Peret
1456	1319 BC	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	30 IV Akhet	04 I Peret	06 I Peret
1455	1318 BC	2 Nov	2 Nov	2 Nov	2 Nov
		28 IV Akhet	30 IV Akhet	03 I Peret	06 I Peret

Solar event during the 45th year (6st jubilee) (Julian and Egyptian calendar)					
Sirius cycle	Start cycle	1266 BC	**1260** BC	1246 BC	1235 BC
1460	1323 BC	2 Nov	2 Nov	2 Nov	2 Nov
		30 IV Akhet	02 I Peret	05 I Peret	08 I Peret
1459	1322 BC	2 Nov	2 Nov	2 Nov	2 Nov
		30 IV Akhet	02 I Peret	05 I Peret	08 I Peret
1458	**1321 BC**	2 Nov	2 Nov	2 Nov	2 Nov
		30 IV Akhet	01 I Peret	05 I Peret	08 I Peret
1457	1320 BC	2 Nov	2 Nov	2 Nov	2 Nov
		30 IV Akhet	01 I Peret	05 I Peret	07 I Peret
1456	1319 BC	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	01 I Peret	04 I Peret	07 I Peret
1455	1318 BC	2 Nov	2 Nov	2 Nov	2 Nov
		29 IV Akhet	01 I Peret	04 I Peret	07 I Peret

We know from the archaeological record that the 5 th (42 th year) and 6th (45th year) jubilee took place on the 1st day of the 1st month of the 2nd season (Peret) [4, 5], so we can assume that the date of coronation more likely is the 1304 BC, for which there is coincidence of the 01 I Peret for the 5th and 6th jubilee (5th and 6th jubilee in 1263 and 1260 BC).
It can be seen that this only coincidence for the two jubilees is at a sothiaco cycle of Sirius of 1458 years and, correspondingly, the beginning of the new cycle of Sirius in 1321 BC, so it is believe to be able to consider these parameters as absolute fixed points for the determination of the Egyptian Chronology.
With regard to the various historical and astronomical events can be interesting a summary of the dates in the Julian and Egyptian civil calendar for four successive events: coronation, Autumn Equinox, solar lighting event and Winter Solstice.
In order not to complicate the discussion, is presented below the table for the several years proposed for coronation, as the situation on the dates of the three jubilees studied does not differ much from that of the coronation (highlighted in green the values of the date of coronation most likely, the 1304 BC).

Coronation year (Julian and Egyptian calendar)					
1321 a.C.	1310 a.C.	**1304** a.C.	1290 a.C.	1279 a.C.	
Coronation		08 Giu	**07 Giu**	03 Giu	31 Mag
		27° III Shemu	**27° III Shemu**	27° III Shemu	27° III Shemu
Autumn Equinox		4 Ott	**4 Ott**	3 Ott	3 Ott
		20 III Akhet	**21 III Akhet**	24 III Akhet	27 III Akhet
Solar event		3 Nov	**3 Nov**	2 Nov	2 Nov
		20 IV Akhet	**21 IV Akhet**	24 IV Akhet	27 IV Akhet
Winter Solstice		4 Gen	**4 Gen**	3 Gen	3 Gen
		22° II Peret	**23° II Peret**	26° II Peret	29° II Peret

Lunar report of the 52nd year of the reign

A confirmation of the goodness of the date of the coronation in 1304 BC you have by checking the dates of the event of the New Moon of the 52th year of reign.

New Moon of 52th year 27° II Peret (Julian calendar)					
Sirius cycle Start cycle		1259 BC	**1253** BC	1239 BC	1228 BC
1460	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1323 BC	egyp. record	27 Dec	25 Dec	22 Dec	19 Dec
1459	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1322 BC	egyp. record	27 Dec	26 Dec	22 Dec	19 Dec
1458	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1321 BC	egyp. record	27 Dec	26 Dec	22 Dec	20 Dec
1459	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1320 BC	egyp. record	28 Dec	26 Dec	23 Dec	20 Dec
1458	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1319 BC	egyp. record	28 Dec	26 Dec	23 Dec	20 Dec
1455	astronomy	03 Dec	26 Dec	03 Dec	20 Dec
1318 BC	egyp. record	28 Dec	27 Dec	23 Dec	20 Dec

You can see how, by virtue of the shift of 1 day every four years, the dates of the Julian calendar, corresponding to the report in the Egyptian civil calendar, keep it for four years.
Thus we have that coincidence with the date of the 27th day of the 2nd month of the 2nd season (Peret) with the effective date of the New Moon of the month of December in the Julian calendar, for the many years of coronation considered and derived from astronomical programs, occurring for four consecutive values of cycle of Sirius.
This coincidence occurs both for 1253 and for 1228 BC, given that the event of New Moon has a cycle of 25 years.
The solution found for the date of the 5th and 6th jubilee (coronation year 1304 BC and cycle of Sirius of 1458 years) is therefore a good confirmation of the goodness of our resolution of the problem.

New proposal for the chronology of the 18th and 19th dynasty

On the basis of the results, a change in the history of the eighteenth and nineteenth dynasty. It predates the beginning of the chronology of the eighteenth dynasty of two years as it considers sothiaco a cycle of 1458 years , while the second and third proposal had been drafted considering sothiaco a cycle of 1456 years . Wanting to keep fixed the date of the Exodus in 1385 BC retrieving two years of increasing growth two years in solitary reign Amenhotep II and for removing them from six years of coregency expected in the fourth proposal.
The postponement of six years to the date of the coronation of Ramses II (1310-1304 BC) implies an increase of the preceding reigns . The only possibility of change seems to be limited to an increase of the reign of Horemheb or Sethy I, or both. It was decided not to change the duration of the reign of Horemheb (37 years), as it is already quite long and in line with the reporting of Africa. It is preferred , therefore , to add six years to the reign of Sethy I (highlighted in green data modified since the 3rd proposal).

dynasty	Crasto								Kitchen [8]	
	1° proposal [6]		2° proposal [7]		3° proposal [1]		4° proposal			
18th	years	date	years	date	years	date	years	date	years	date
Ahmose	25	1561	25	1577	25	1577	25	1579	25	1550
Amenhotep I	21	1536	21	1552	21	1552	21	1554	21	1525
Thutmose I	13	1515	13	1531	13	1531	13	1533	12	1504
Thutmose II	2	1502	3	1518	3	1518	3	1520	13	1492
Hatshepsut	22	1500	22	1515	22	1515	22	1517	22	1479
Thutmose III	(22)+26	1478	(22)+33	1493	(22)+33	1493	(22)+33	1495	(22)+32	1457
Amenhotep II	(10)+13	1452	(6)+17	1460	(6)+17	1460	(4)+19	1462	(2)+24	1425
Thutmose IV	9	1439	10	1443	10	1443	10	1443	10	1401
Amenhotep III	27+(12)	1430	30+(9)	1433	30+(9)	1433	30+(9)	1433	38	1391
Amenhotep IV Akhenaton	12+5	1403	9+8	1403	9+8	1403	9+8	1403	17	1353
Nefernefruaton Nefertiti	(3)		(3)		(3)		(3)			
Smenkhkara	1	1386	1	1386	1	1386	1	1386	2	1336
Merytaton o Ay	3	1385	3	1385	3	1385	3	1385		
Tutankhamon	(3)+9	1382	(3)+9	1382	(3)+9	1382	(3)+9	1382	9	1334
Ay - It neter	5	1373	5	1373	5	1373	5	1373	4	1325
Horemheb	47	1368	51	1368	37	1368	37	1368	29	1321
Total	240		260		246		248		258	
19th										
Ramesse I	1	1321	1	1317	1	1331	1	1331	2	1292
Sethy I	20	1320	20	1316	20	1330	26	1330	11	1290
Inizio ciclo Sirio						1317		1321		
Ramesse II	66	1300	66	1296	66	1310	66	1304	66	1279
Merenptah	10	1234	10	1230	10	1244	10	1238	10	1213
Amenenmes	5	1224	5	1220	5	1234	5	1228	4	1203
Sethy II	6	1219	6	1215	6	1229	6	1223	6	1199
Ramesse Siptah	6	1213	6	1209	6	1223	6	1217	6	1193
Tausert	7	1207	7	1203	7	1217	7	1211	2	1187
Total	121	1200	121	1196	121	1210	127	1204	107	1185
Total 18th-19th	361		381		366		375		365	

Conclusions

We can therefore conclude that the two temples of Abu Simbel were built to celebrate the jubilees of Ramesses II and worshiping the Sun male and female, in the version of Horus of *Meha* and Hathor of *Ibshek*, as had already been done in other places: Nekhen and Nekheb, Luxor and Karnak, Dendera and Edfu, Kom Ombo, where respectively were venerated the solar deities male: Horus, Amun, Horus of *Behedet* and Sobek-Ra and solar deities female: Nekhbet, Mut, Hathor of *Ta neteret* / Dendera and Horus the ancient.
The rising Sun at the Winter Solstice would have kissed the statue of Hathor, as well as kissing the statue of Horus the ancient in the day of the Winter Solstice at Kom Ombo and the statue of Hathor the first day of the New Year at Dendera, Edfu, Phylae, etc.
Ramses II wanted to point out, however, as he and his Great Royal wife could aspire to be the living image of the two solar gods, thus establishing their deification, almost certainly planned on the occasion of the 1st jubilee.
This step of the gods would be blessed by the rays of the sun at the dawn of a particular day of autumn and the light of the star of Hathor, Sirius, at the dawn of its heliacal rising. With the construction of the two temples of Abu Simbel, Ramses II confirmed, therefore, be an expert in astronomy and he wanted to look for its temples important and symbolic stellar alignments: with Vega, the star associated with the heavenly mother Nekhbet, in the temple of Luxor and with the heavenly father, Sun Ra, on particular days of the year in his mortuary temple (Ramesseum) and in the temples of jubilee (Abu Simbel) [9].

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Antonio Crasto, author of essays on ancient Egypt:

HASSALEH – L'OCCHIO DI HORUS. Manetone aveva ragione!

DENDERA – La sacra terra della dea

I MITANNI alla corte dei faraoni