Royal Substructures in the Old Kingdom

Simple pits changed to complex tunneling before the traditional substructure

FIRST PART: FROM AHA TO KHUFU(MENES TO CHEOPS)
SUBSTRUCTURES OF THE FIRST DYNASTY, AHA AND DEN BURRIAL CHAMBERS
BOAT PITS FROM AHA TO KHASEKHEMWY

AFTER KHASEKHEMWY NO BOAT PITS HAVE BEEN DISCOVERED UNTIL KHUFU, ONLY AN OAR (OF A MODEL BOAT) AT SEILA
MANY EXPLORERS; BEFORE AND; AFTER

W. M. F. PETRIE
W. KAISER
G. DREYER
W. B. EMERY
SUBSTRUCTURES OF THE SECOND DYNASTY; HETEPSEKHEMWY, CROPPED BY THE DRY MOAT
SUBSTRUCTURES OF THE SECOND DYNASTY; NYNETJER

SELIM HASSAN

CLAUDIA LACHER
SUBSTRUCTURES OF THE SECOND DYNASTY; DATING TO NYNETJER AND KHASEKHEMWY

J. E. QUIBELL

ILONA REGULSKI
TUNNELS OF IMHOTEP

C. M. FIRTH  J. E. QUIBELL  J. PH. LAUER
SECTION AND PLAN OF THE STEP PYRAMID
2 ENTRANCES AND CHAMBERS OF THE STEP PYRAMID
SUBSTRUCTURES WITHIN THE TEMENOS WALL
MODERN EXPRESSIONS

BRUNO DESLANDES

FRANK MONNIER
THE SOTH TOMB OF THE COMPLEX OF NETJERYKHET
SCHOLARS WHO BROUGHT THE DRY MOAT TO OUR KNOWLEDGE

SELIM HASSAN

AHMED MOUSSA

ZAKI SAAD

KAROL MYOELIWIEC

ZAKI ISKANDER

TOMASZ HERBICH
THE OUTER, INNER, WEST, AND SE CORNER OF THE DRY MOAT
COMPARTMENTS OF THE INNER SOUTH CHANNEL OF THE DRY MOAT
SECTION AND PLAN OF THE INNER SOUTH CHANNEL OF THE DRY MOAT
BET KHALLAF

J Garstang (1876 – 1956)

ILARIA INCORDINO

KI

K2
MASTABA K1 AT BET KHALLAF

TUMULUS

TUMULUS
MASTABA K2 AT BET KHALLAF
SEKHEMKHET

ZAKARIYA GONEIM
PLAN AND SECTION OF THE PYRAMID OF SEKHEMKHET
TUNNELLING BELOW SEKHEMKHET
THE SOUTH TOMB OF SEKHEMKHET
THE LAYER PYRAMID OF KHABA? AT ZAWYET EL ARYAN SOUTH
THE BRICK PYRAMID LEPSIUS 1 NEFERKA? OR HUNI?
PLAN AND SECTION OF THE BRICK PYRAMID AT ABU RAWASH
WHERE ROOFS COLLAPSED

NETJERYKHEHT

SEKHÉMKHET

LAYER PYRAMID

BRICK PYRAMID
THE UNFINISHED PYRAMID OF NEBKARA?
AT ZAWYET EL ARYAN NORTH
PLAN AND SECTION OF THE UNFINISHED PYRAMID OF NEBKARA?
DIFFERENCES BETWEEN THE GREAT PITS OF NEBKARA? AND DJEDEFRA

RAMP, PLATFORM, STAIRWAY, AND SHAFT FILLED THIRD DYNASTY STYLE GRANITE AND PRIMITIVE SARCOPHAGUS

ARCHITECTURAL CORRIDORS AND CHAMBERS OF LIMESTONE AND MOST PROBABLY A TRADITIONAL SARCOPHAGUS
FILLING SHAFTS
DESCENDING STAIRWAYS TO SUBTERRANEAN HYPOGIA

STEP PYRAMID NORTH

SOUTH TOMB

K1 EAST SIDE

SEKHEMKHET
FILLING DESCENDING STAIRWAYS

SOUTH TOMB

K1
A SACRED HILLSIDE BUILDING AT NORTH WEST SAQQARA

NOZOMU KAWAI

SAKUJI YOSHIMURA

ELEVATION

PLAN
INDEPENDENT SUBSTRUCTURES
ROYAL SARCOPHAGI HAD NOT REACHED THE CONVENTIONAL SHAPE DURING: NETJERYKHET, SEKHEMKHET AND NEBKARA

NO SARCOPAGI WERE FOUND BETWEEN NEBKARA AND KHUFU
PUZZELING ARE 2 SARCOPHAGI AT THE CORRIDOR OF SHAFT # 5
THEY ARE SIMILAR TO ONE FOUND AT DAHSHUR
THE NICHES OF ZAKI SAAD OVER WEST COMPARTMENT

ZAKI SAAD

WOODEN BEAMS AND NICHES AT THE SOUTHERN TOMB
WALLS BUILT ALONG CORRIDORS

SHAFT OF THE SOUTH TOMB

WEST AREA OF THE DRY MOAT

SEKHEMKHET
UNIDENTIFIED SUBSTRUCTURE OF A DEMOLISHED TOMB:
THE SUBSTRUCTURE CUT THROUGH BY THE DRY MOAT
THE SUPERSTRUCTURE REMOVED FOR THE PYRAMID OF UNAS

WEST COMPARTMENT BREAKS INTO A CORRIDOR

PIT FILLED FOR PYRAMID FOUNDATION
ROYAL TOMBS OF THE SECOND DYNASTY
WITHOUT SUBSTRUCTURES:
GISR EL MODIR AND THE MINOR STEP PYRAMIDS
NEFERMAAT CORBELLED ROOFS
THE PYRAMID OF MEIDUM
CORRIDORS AND CHAMBERS AT MEIDUM
ASSENDING CORRIDORS AT THE BENT SUBSIDIARY AND KHUFU
THE RED PYRAMID
FLAT ROOFS APPEAR WITH CORBELLED AND GABLE ROOFS
HEMIUNU THE CONTRACTOR OF THE GABLE ROOF
THE GREAT PYRAMID
WHERE TUNNELLING, ARCHITECTURES, CORBELLED, FLAT AND GABLE MEET
G1d

Prepared for a corbelled roof chamber?
EAST OF KHUFU
BOAT PITS REAPPEAR WITH KHUFU

AHMED YOUSSEF
EPITOME
ANCIENT ACHIEVEMENTS

PITS
Were dug, lined with bricks and roofed with wood, matting and rubble.

TUNNELS
1. Were a success, with horizontal corridors; and vertical shafts?
2. Roofs collapsed over descending ramps and stairways.
3. Substructures began simple, expanded, shrank and partly disused at the end.

CONSTRUCTIONS
1. Stone blocks roofed narrow width areas.
2. Columns broadened stone roofs areas at the superstructures.
3. Corbel, flat and gable methods roofed broader areas without columns.

RESEARCH RESULTS
1. The greater part beneath the Temenos Area (5 km) was not investigated.
2. Geophysical identification of more tunnels was not verified.
3. The Dry Moat is 3.5 km; only 0.300 km was partly investigated.

FACTS REVILED
1. Ancient contractors of the Dry Moat crushed through, two, earlier hypogeum.
2. The beginning of a descending stairway, a narrowing wall and niches for hitching platform beams at two levels.

EGYPTIANS LEARNT THAT AMBITION GAVE INTO WHAT COULD BE POSSIBLE