

MECHANICAL ENGINEERING IN ANCIENT EGYPT, PART 78: COFFINS AND SARCOPHAGI INSCRIPTION

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ABSTRACT

The objective of this paper is to investigate the development of mechanical engineering in ancient Egypt through the study of writing in ancient Egypt using the surfaces of funerary coffins and sarcophagi during a time span from the Old Kingdom to the Late Periods. This study covers the different types of inscribed coffins and sarcophagi produced during this period and how the ancient Egyptians registered

their personal names and funerary texts on objects manufactured from different materials. The material, period, dimensions, inscription type and present location are all outlined.

KEYWORDS: Mechanical engineering history, ancient Egypt, sarcophagi inscription, coffins inscription, Old Kingdom to Late Periods.

This is the 78th part in a series aiming at investigating the mechanical engineering technology in ancient Egypt. It investigates the inscription of coffins and sarcophagi and how they used their surfaces as media for inscription of scenes, decorations and funereal texts and texts authorizing the owner name and titles.

Devartavan, 2009 in his study of reviving the lost ancient Egypt art of sarcophagus making presented the wood sarcophagus of Khonsu from the 21st Dynasty from Deir el Behari and in display in the Victoria Museum at Uppsala, Sweden.^[1] Magdolen, Sojak, Stolcova and Mihalyiova, 2010 in their investigation of four ancient Egyptian artefacts from private collection in Slovakia presented a coffin for Tashakheper from the 25th-26th Dynasties in the

Archaeological Museum of Bologna, Italy. They demonstrated some of the hieroglyphic inscriptions on the coffin.^[2] Li, 2010 in her Ph. D. Research studied identity, status and mortuary practice of the elite Theban women during the 8th-6th centuries BCE. She presented a number of inscribed coffins from the 25th and 26th Dynasties.^[3] Kawai, 2013 in his research work about some of the funerary equipment from the tomb of Pharaoh Amenhotep III of the 18th Dynasty presented three meter length lid of the Pharaoh sarcophagus with line drawing of its shape and and hieroglyphic inscriptions.^[4] Minias, 2014 in his study of the rishi coffins of the Late Middle Kingdom presented a wooden rishi coffin from the Middle Kingdom.^[5]

Nyord, 2014 in his study of the body and cosmos in the Middle Kingdom coffins considered the wooden coffin of Gemniemhat from the 12th Dynasty as an example.^[6] Dodson, 2015 in his study of the Egyptian coffins within the Medelhavsmuseet collection presented inscribed coffins for Sitkhemetnuf from the Middle Kingdom, coffin of Inva from the 12th Dynasty, coffin of Hatia from the 18th Dynasty, coffin of Pendiamun, coffin of Nesypernub and coffin of Ankhesenmut from the 21st Dynasty and coffin of Osarkon from the 22nd-26th Dynasties.^[7] Hassaan, 2016 in his investigation of wooden coffins and the sarcophagi industry in ancient Egypt presented some inscribed coffins including a coffin from the 6th Dynasty, coffin of Menkabu from the 9th-10th Dynasties, coffin of Nakht-ankh from the 12th Dynasty, coffin of Teti from the 18th Dynasty, coffins of Khonsu and Henutmehyt from the 19th Dynasty, coffin of Pansehsy from the 20th Dynasty and coffin of Thothirdes from the 26th Dynasty.^[8] He presented also some inscribes sarcophagi from the 11th, 18th, 20th, 21st and 26th Dynasties.^[9]

Hassaan, 2017 in his investigation of the manufacturing of alabaster products during the Middle and New Kingdoms presented the inscribed alabaster sarcophagus of Pharaoh Seti I of the 19th Dynasty of ancient Egypt.^[10] Mark, 2018 in his article about the ancient Egyptian literature presented a very clear and neat hieroglyphic funerary text from the sarcophagus of Princess Ankhnesneferibre, daughter of Pharaoh Psamtik II of the 26th Dynasty carved in bounded columns.^[11] Miatello, 2018 studied in details the texts and decorations of the coffin of Peftjauuiaset from the 26th Dynasty. He presented the different scenes, texts and English translation and meaning of the texts.^[12] Wikipedia, 2018 in their article about Priestess Henutmehyt from the 19th Dynasty of ancient Egypt preseed her inscribed gilded coffin in display in the British Museum.^[13]

Old Kingdom Sarcophagus Inscription

The use of funerary human-coffins as an inscription media started as early as the era of the Old Kingdom. The Old Kingdom comprised from the 3rd to the 6th Dynasties over a time span from 2686 to 2181 BC^[14] The idea was just starting during this period. Therefore we have only one example which is a 2.369 m length granite sarcophagus of Mindjedef from the 4th Dynasty (2520-2472 BC) in display in the Metropolitan Museum and shown in Fig.1.^[15] It was inscribed using the hieroglyphic script with a text carved in one un-bounded row near its top.



Fig. 1: Granite sarcophagus of Mindjedef from the 4th Dynasty.^[15]

Middle Kingdom Coffins and Sarcophagi Inscription

Instead of the heavy stone sarcophagi using in the Old Kingdom, the ancient Egyptians of the Middle Kingdom transferred to use lighter decorated coffins made (mainly) from wood, coated by gesso and then painted. The Middle Kingdom of ancient Egypt comprised the 11th to 13th Dynasties over a time span from 2055 to 1650 BC.^[16] This transfer in the funerary practice during the Middle Kingdom is depicted from the following examples:

- The first example is a 1.829 m wooden coffin of Queen Mayet, wife of King Metuhotep I, founder of the 11th Dynasty (2134- ? BC) in display in the Brooklyn Museum at NY and shown in Fig.2.^[17] It was inscribed by a two Wadjet eyes symbols and a hieroglyphic script text written within a bounded row near its top. The inscriptions were in a black painting.



Fig. 2: Coffin of Queen Mayet from the 11th Dynasty.^[17]

- The second example is an 0.991 m length limestone sarcophagus of Harhotep from the 11th Dynasty (2133-1991 BC) in display in the Brooklyn Museum at NY and shown in

Fig.3.^[18] It was inscribed by a pure hieroglyphic script text carved in adjacent bounded columns covering most of the front panel of the sarcophagus.



Fig. 3: Limestone sarcophagus of Harhotep from the 11th Dynasty.^[18]

- The third example is a 2.62 m length limestone sarcophagus of Queen Kawit, wife of King Mentuhotep II of the 11th Dynasty (2061-2010 BC) in display in the Egyptian Museum at Cairo and shown in Fig.4.^[19] The sarcophagus panel was fully inscribed by scenes for the Queen, symbols, offerings and a hieroglyphic script text carved inside a bounded row in the top of the panel.



Fig. 4: Limestone sarcophagus of Queen Kawit from the 11th Dynasty.^[19]

- The fourth example is a limestone sarcophagus of Queen Ashait, low rank wife of King Mentuhotep II of the 11th Dynasty (2061-2010 BC) in display in the Egyptian Museum at Cairo and shown in Fig.5.^[20] The sarcophagus panel was fully inscribed by scenes for the Queen setting on a chair and ventilated by a servant while receiving offerings from her lovers. Hieroglyphic script text was carved above and in front of the Queen.



Fig. 5: Limestone sarcophagus of Queen Ashait from the 11th Dynasty.^[20]

- The fifth example is a 1.95 m length wooden outer coffin of a child Myt from the 11th Dynasty, reign of King Mentuhotep II (2051-2030 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.6.^[21] The coffin was inscribed by a two Wadjet eye symbols and a hieroglyphic script text written inside a bounded row using an aquamarine color paint.



Fig. 6: Wooden coffin of a child Myt from the 11th Dynasty.^[21]

- The sixth example is a 2.06 m length painted wooden coffin of Nakht-ankh from the 11th Dynasty (2025-1700 BC) in display in the World Museum at Liverpool and a painted panel of it is shown in Fig.7.^[22] The whole coffin face was inscribed by extensive colored decoration patterns, scenes and a hieroglyphic script texts written within four bounded columns and a bounded row. The scripts were neatly drawn without violation of the borders.



Fig. 7: Wooden coffin of Nakht-ankh from the 11th Dynasty.^[22]

- The seventh example is the outer wooden coffin of Steward and Chief Physicians Seni from the 12th Dynasty (1991-1783 BC) in display in the British Museum at London and a panel in its inner is shown in Fig.8.^[23] It was inscribed on both faces by a hieroglyphic scrip text for the Pharaoh. The coffin was inscribed by colored decorations and hieroglyphic script texts painted inside bounded rows with very clear colored scripts.



Fig. 8: Wooden coffin of Seni from the 12th Dynasty.^[23]

- The eighth example is a wooden coffin of Lady Senbi from Asyut of Egypt from the 12th Dynasty (1991-1802 BC) in display in the Cleveland Museum of Art at Cleveland and a shown in Fig.9.^[24] It was inscribed on by two Wadjet eye symbols and hieroglyphic script text written within four bounded columns and a bounded row using a black paint.



Fig. 9: Wooden coffin of Senbi from the 12th Dynasty.^[24]

- The ninth example is a wooden coffin of Sopi from el-Bersha of Egypt from the 12th Dynasty (1991-1802 BC) in display in the Louvre Museum at Paris and shown in Fig.10.^[25] It was inscribed by colored decorations, scenes and hieroglyphic script texts written in rows of varying width and too many columns in the bottom part of the coffin.



Fig. 10: Wooden coffin of Sopi from the 12th Dynasty.^[25]

- The tenth example is a wooden coffin for Noblewoman called Sattjeni from the 12th Dynasty (1991-1802 BC) discovered in West Aswan by a team from Jaen University of Spain and shown in Fig.11.^[26] The coffin was nicely inscribed by two Wadjet eyes and hieroglyphic script texts written inside a row in the top and bounded columns using a light blue painting.



Fig. 11: Wooden coffin of Sopi from the 12th Dynasty.^[26]

- The eleventh example is a 2.17 m length coffin of Wah from the 12th Dynasty, reign of King Amenemhat I (1991-1962 BC) in display in the Metropolitan Museum of Art and its inscription is shown in Fig.12.^[27] It was inscribed using the hieroglyphic script with text written in black within a single un-bounded row.

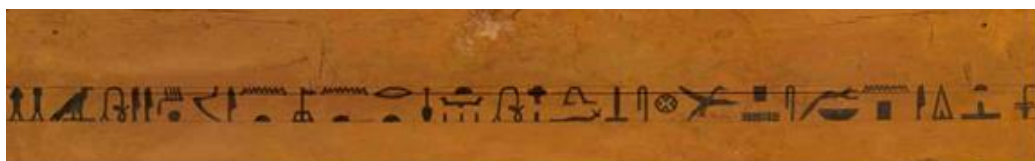


Fig. 12: Wooden coffin of Wah from the 12th Dynasty.^[27]

- The twelfth example is a 2.028 m length outer wooden coffin of Nephthys from the 12th Dynasty (1981-1802 BC) in display in the Metropolitan Museum at NY and shown in Fig.13.^[28] It was inscribed by hieroglyphic script texts painted in green color inside bounded row and columns on an orange background.



Fig. 13: Wooden coffin of Nephthys from the 12th Dynasty.^[28]

- The thirteenth example is a 2.5 m length painted wooden coffin of Irinimenpu from the 12th-13th Dynasties (1938-1640 BC) in display in the Bologna Museum at Italy and shown in Fig.14.^[29] The panel shown in Fig.13 was inscribed by two Wadjet eyes, wonderful colored decoration patterns and a hieroglyphic script text painted in black in a bounded row.



Fig. 14: Wooden coffin of Irinimenpu from the 12th-13th Dynasties.^[29]

- The fourteenth example is painted wooden coffin of Keki, reign of Kings Amenemhat II and Senusret II of the 12th Dynasty (1922-1874 BC) in display in the Liverpool Museum at Liverpool and shown in Fig.15.^[30] The part of the front panel of the coffin was inscribed by colored decorating patterns and hieroglyphic script texts painted in a

bounded row in the top and a number of bounded columns. The row and columns of the text were bounded using a white color.

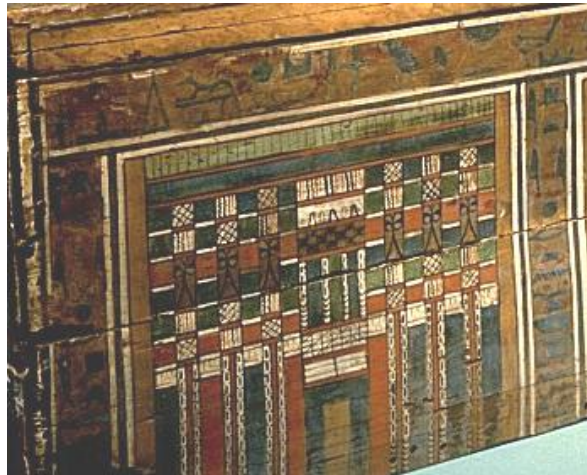


Fig. 15: Wooden coffin of Keki from the 12th Dynasty.^[30]

- The fifteenth example is painted wooden coffin of Keki, reign of Kings Amenemhat II and Senusret II of the 12th Dynasty (1922-1874 BC) in display in the Metropolitan Museum of Art and shown in Fig.16.^[31] The part of the front panel of the coffin was inscribed by a Wadjet eye symbol and hieroglyphic script texts written in black inside a bounded row and a number of columns.

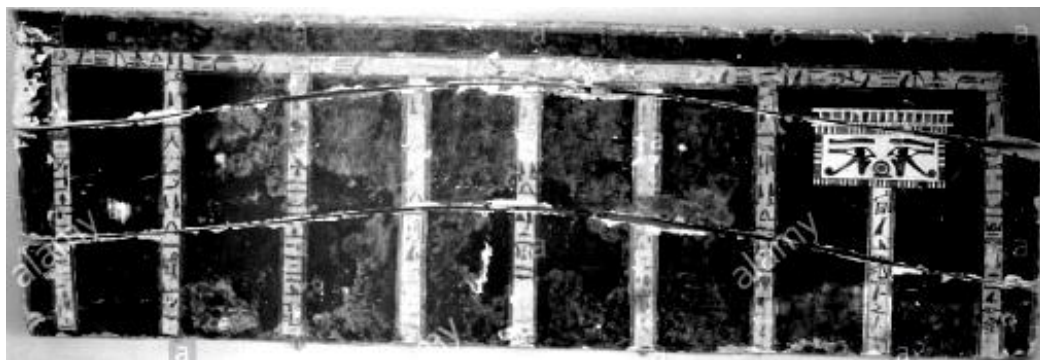


Fig. 16: Wooden coffin of Entemaemsaf from the 13th Dynasty.^[31]

New Kingdom Coffins and Sarcophagi Inscription

The New Kingdom comprised the ancient Egyptian Dynasties from the 18th to the 20th over a time span from 1570 to 1077 BC.^[32] The ancient Egyptians continued to inscribe their coffins and sarcophagi during the New Kingdom as depicted by the following examples:

- The first example is a 2.29 m length painted wooden coffin of Ahmose, who served in the Egyptian Army under the Pharaohs Ahmose I to Thutmose I of the 18th Dynasty (1549-

1493 BC) in display in the Metropolitan Museum of Art and shown in Fig.16.^[33] The part of the coffin shown in Fig.17 was inscribed by scenes of a jackal, human figures and a Wadjet eye besides a hieroglyphic script text identifying each of the human figures.



Fig. 17: Wooden coffin of Ahmose from the 18th Dynasty.^[33]

- The second example is painted wooden coffin of Lady Madja from the 13th Dynasty (1543-1292 BC) in display in the Louvre Museum at Paris and shown in Fig.18.^[34] This coffin was simulating the human mummy and the part of the front panel of the coffin was inscribed by scenes for a jackal and a hieroglyphic script texts painted inside bounded bands in two directions. The text was painted in black over a yellow background.



Fig. 18: Wooden coffin of Lady Madja from the 18th Dynasty.^[34]

The third example is diorite coffin of Royal Scribe Iniouia from the 18th Dynasty (1543-1292 BC) in display in the Louvre Museum and shown in Fig.19.^[35] It was inscribed by a hieroglyphic script text carved in one un-bounded row.



Fig. 19: Diorite coffin of Scribe Iniouia from the 18th Dynasty.^[35]

- The fourth example is a 2.125 m length painted wooden coffin of Singer Harmose during the reign of Pharaohs Hatshepsut and Thutmose III of the 18th Dynasty (1479-1458 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.20.^[36] It was inscribed using hieroglyphic script texts painted inside horizontal and vertical bands using a dark blue color on a yellow background.



Fig. 20: Wooden coffin of Singer Harmose from the 18th Dynasty.^[36]

- The fifth example is a 2.25 m length Quartzite sarcophagus of Pharaoh Thutmose I dedicated to him by his daughter Pharaoh Hatshepsut of the 18th Dynasty (1479-1458 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.21.^[37] It was inscribed using scenes for the Pharaoh, a Deity and hieroglyphic script texts carved in bounded row and columns.



Fig. 21: Quartzite sarcophagus of Pharaoh Thutmose I from the 18th Dynasty.^[37]

- The sixth example is the gilded inner coffin of Tjuyu, wife of Yuya, a powerful Courtier during the 18th Dynasty (1390 BC) in display (probably!!) in the Egyptian Museum at Cairo and shown in Fig.22.^[38] It was inscribed by a hieroglyphic funerary text carved inside two bounded rows and a scene for Nekhbet spreading its wings.

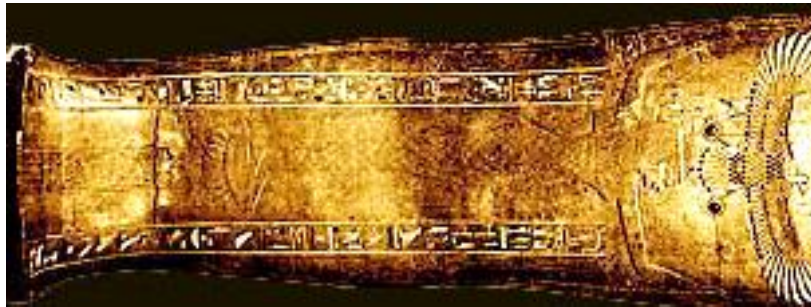


Fig. 22: Gilded inner coffin of Tjuyu from the 18th Dynasty.^[38]

- The seventh example is the gilded coffin of Pharaoh Akhenaten from the 18th Dynasty (1351-1334 BC) in display in the Egyptian Museum at Cairo and shown in Fig.23.^[39] It was inscribed by a hieroglyphic script text carved inside a bounded row in the middle of the coffin.



Fig. 23: Gilded coffin of Akhenaten from the 18th Dynasty.^[39]

- The eighth example is a coffin of the Servant of Great Place from the 18th Dynasty (1339-1308 BC) in display in the Brooklyn Museum at NY and shown in Fig.24.^[40] It was inscribed using Wadjet eye symbol, human and Deities scenes and hieroglyphic script text written within bounded rows and columns simulating the mummy bands.



Fig. 24: Coffin of the Servant of the Great Place from the 18th Dynasty.^[40]

- The ninth example is a one of the coffins of Pharaoh Tutankhamun of the 18th Dynasty (1332-1323 BC) shown in Fig.25.^[41] It was inscribed by a hieroglyphic script text written within a wide bounded row surrounded by extensive decorations of elaborated design.



Fig. 25: Coffin of Tutankhamun from the 18th Dynasty.^[41]

- The tenth example is a pottery coffin for a child from the 19th Dynasties (1295-1186 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.26.^[42] It was inscribed in black paint by two Wadjet eyes, Nekhbet, two jackals and hieroglyphic script texts written bounded bands in two directions.



Fig. 26: Pottery coffin of a child from the 18th Dynasty.^[42]

- The eleventh example is a stone sarcophagus of Amenhotep from the 19th Dynasty (1292-1187 BC) shown in Fig.27.^[43] Too many data are missing for this artifact including the material, dimensions and present location. It was inscribed by scenes for Thoth and Horus Deities of the ancient Egyptians and hieroglyphic scrip texts carved inside bounded row and columns.



Fig. 27: Stone sarcophagus of Amenhotep from the 19th Dynasty.^[43]

- The twelfth example is a 2.844 m alabaster sarcophagus of Pharaoh Seti I from the 19th Dynasty (1290-1279 BC) in display in Sir John Soane Museum at London and shown in Fig.28.^[44] It was inscribed on its whole surface by a funerary scenes and hieroglyphic script texts arranged in un-bounded rows and carved and painted using black color.



Fig. 28: Alabaster sarcophagus of Seti I from the 19th Dynasty.^[44]

- The thirteenth example is a 2.0 m painted wooden outer coffin of Khonsu from the 19th Dynasty, reign of Pharaoh Ramses II (1279-1213 BC) in display in the Metropolitan Museum of Art at NY and shown in Fig.29.^[45] It was inscribed on its whole surface by scenes of two Wadjet eyes, two jackals, Nekhbet, human figures and hieroglyphic script text painted inside bounded bands in two directions.



Fig. 29: Wooden coffin of Khonsu from the 19th Dynasty.^[45]

- The fourteenth example is a painted wooden coffin of Lady Tamutnefret from the 19th Dynasty, reign of Pharaoh Ramses II (1279-1213 BC) in display in the Louvre Museum at Paris and shown in Fig.30.^[46] It was inscribed on its front surface with hieroglyphic script text written inside bounded bands in two directions.



Fig. 30: Wooden coffin of Tamutnefret from the 19th Dynasty.^[46]

- The fifteenth example is a 2.06 m length gilded wooden outer coffin of Priestess Henutmehyt from the 19th Dynasty, reign of Pharaoh Ramses II (1279-1213 BC) in display in the British Museum at London and shown in Fig.31.^[47] It was inscribed on its front surface with scenes for Wadjet eye, Nekhbet some ancient Egyptian Deities beside hieroglyphic script texts painted inside bounded coves and columns in a perfect symmetric distribution about the central band.



Fig. 31: Wooden coffin of Henutmehyt from the 19th Dynasty.^[47]

- The sixteenth example is a 3.05 m length granite sarcophagus of Pharaoh Ramses III from the 20th Dynasty (1186-1155 BC) in display in the Louvre Museum at Paris and shown in Fig.32.^[48] The sarcophagus was fully inscribed on its outer surface by scenes, Cartouches and hieroglyphic script text carved inside a bounded row near the top end of the sarcophagus.
- The seventeenth example is an outer wooden coffin of Priest and Scribe Nesyamun, died in the reign of Pharaoh Ramses XI of the 20th Dynasty (1113-1085 BC) in display in the Leeds Museum at Leeds, UK and shown in Fig.33.^[49] The coffin was extensively and wonderfully inscribed on the whole surface by funerary scenes and hieroglyphic script text from the book of dead painted inside bounded bands simulating the decease mummy.

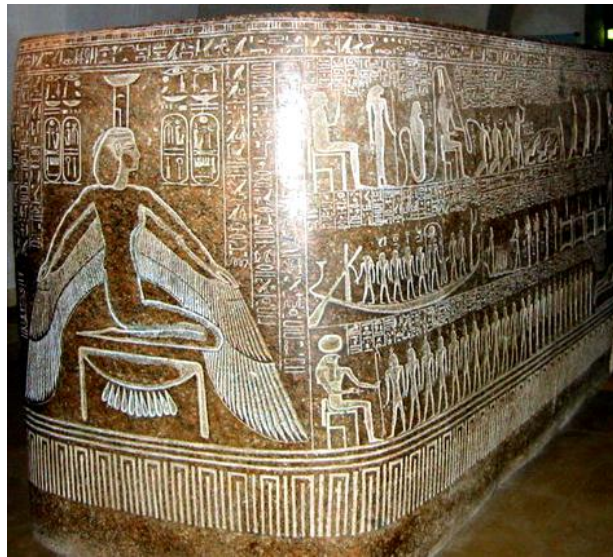


Fig. 32: Sarcophagus of Ramses III from the 20th Dynasty.^[48]



Fig. 33: Outer coffin of Nesyamun from the 20th Dynasty.^[49]

Late Period Coffins and Sarcophagi Inscription

The Late Period of ancient Egypt comprised the ancient Dynasties from the 26th to the 31st over a time span from 664 to 332 BC.^[50] The ancient Egyptians continued to inscribe their coffins and sarcophagi during the Late Period with less extent than during the New Kingdom as depicted by the following examples:

- The first example is a painted wooden coffin of Iret-Heru-ru from the 26th Dynasty (664-525 BC) in display in the Museum of Old and New Art at Hobart, Tasmania and shown in Fig.34.^[51] It was inscribed by a scene for an ancient Egyptian Deity in the top and hieroglyphic script funerary text painted in adjacent bounded rows without lateral bands as before (for example the designs in Figs.19, 23, 25, 28, 29 and 30).
- The second example is a 2.4 m length painted wooden coffin of Peftjauneith from the 26th Dynasty (664-525 BC) in display in the Rijksmuseum at Leiden and shown in Fig.35.^[52] The design of this coffin is similar to that shown in Fig.35 however it is a good condition and the hieroglyphic text was professionally painted in colored pigments while the rows borders were drawn in black.



Fig. 34: Wooden coffin of Iret-Heru-ru from the 26th Dynasty.^[51]



Fig. 35: Wooden coffin of Peftjauneith from the 26th Dynasty.^[52]

- The third example is a 2.2 m length painted wooden coffin of Itineb from the 26th Dynasty (664-525 BC) in display in the British Museum at London and shown in Fig.36.^[53] This coffin was inscribed by a unique inscription design consisting of funerary scenes in the to, bottom and between the hieroglyphic script text bands. The lateral text bands had thicker borders than the longitudinal ones.

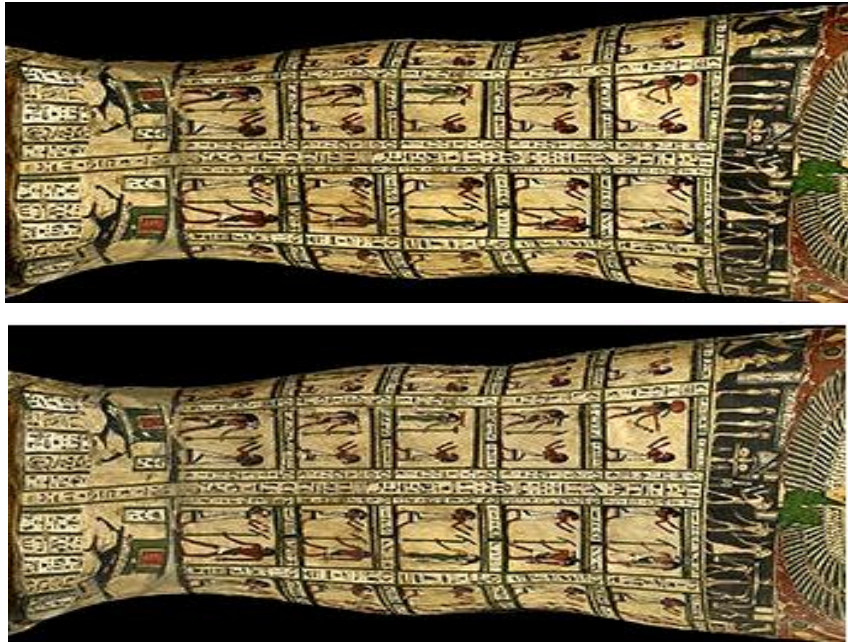


Fig. 36: Wooden coffin of Itineb from the 26th Dynasty.^[53]

- The fourth example is a painted wooden (?) sarcophagus of Priest Hor from the Late Period (664-332 BC) in display in the British Museum at London and shown in Fig.37.^[54] It was inscribed on the whole surface of the body and cover by funerary scenes, decorations and hieroglyphic script funerary text painted inside bounded columns and a row near its top.



Fig. 37: Wooden sarcophagus of Hor from the Late Period.^[54]

- The fifth example is an alabaster sarcophagus lid of Queen Khedebneithirbinet from the 26th Dynasty (610-595 BC) in display in the Kunsthistorisches Museum at Vienna and shown in Fig.38.^[55] It was inscribed by a hieroglyphic script funerary text carved inside five bounded rows without any other scenes or decorations.



Fig. 38: Alabaster sarcophagus lid of Khedebneithirbinet from the 26th Dynasty.^[54]

- The sixth example is a 2.26 m length greywacke sarcophagus lid of General Kheperra from the 26th Dynasty (670-526 BC) in display in the Museum of Fine Arts at Boston and shown in Fig.39.^[55] It was inscribed by a hieroglyphic script funerary text carved inside seven bounded rows.



Fig. 39: Greywacke sarcophagus lid of Kheperra from the 26th Dynasty.^[55]

CONCLUSION

- This paper investigated the evolution of mechanical engineering in ancient Egypt through the inscription of coffins and sarcophagi.
- The study covered a time span from the Old Kingdom to the Late Period.

- The ancient Egyptians started scribing their sarcophagi starting from the Old Kingdom.
- They inscribed a granite sarcophagus during the 4th Dynasty.
- They could inscribe coffins and sarcophagi manufactured from wood, pottery, granite, alabaster greywacke, limestone, diorite and quartzite.
- They inscribed coffins and sarcophagi having length in the range from 0.991 m to 3.05 m.
- Inscribed wooden coffins appeared in the ancient Egyptian society starting from the 11th Dynasty.
- They inscribed stone vessels during the 4th, 11th, 18th, 19th 20th and 26th Dynasties.
- They inscribed anthropoid coffins using scenes, decorations and texts arranged in a wonderful designs.
- They had the ability and experience to inscribe hard stones such as granite, diorite, quartzite and greywacke.
- They inscribed the coffins and sarcophagi using the hieroglyphic script.

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