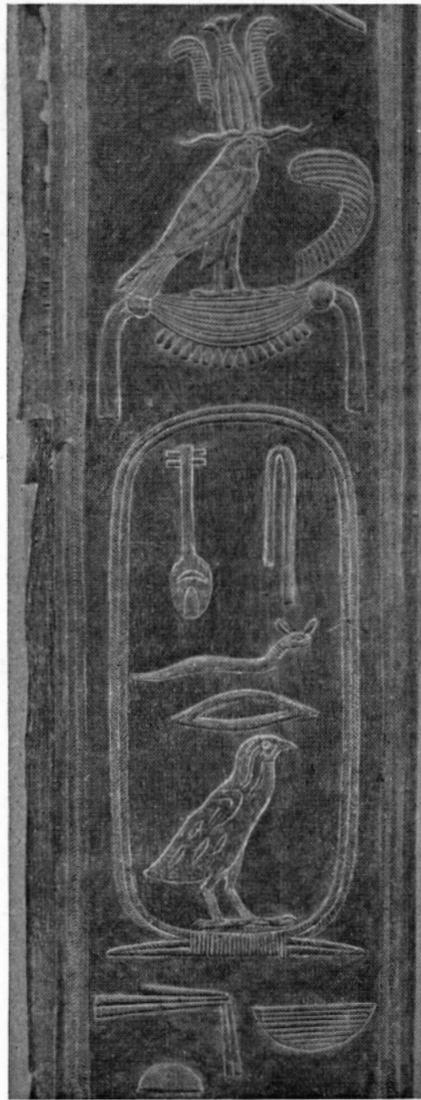


# BULLETIN OF THE MUSEUM OF FINE ARTS

SPECIAL NUMBER, SUPPLEMENT TO VOLUME XXV



DETAIL OF GOLD CASING OF CANOPY  
BEARING THE NAME OF KING SNEFERUW

## THE TOMB OF QUEEN HETEP-HERES

BOSTON, MAY, 1927

PRICE 30 CENTS



Pyramids of the Queens of Cheops, and the mastaba tombs of his family, looking down to S.E. An arrow marks the location of the tomb of Queen Hetep-heres. November 1, 1924.

## Hetep-Heres, Mother of Cheops

### CHAPTER I. The Discovery of the Tomb.

ON March 9, 1925, the Egyptian Government announced the discovery of a large intact tomb of the time of Sneferuw, by the Harvard-Boston Expedition in its excavations at the Giza pyramids. Sneferuw was the first king of Dynasty IV, about 3000 B.C., and was supposed to be the father of Cheops. He himself built the first true pyramid, the northern stone pyramid at Dahshur, while his immediate descendants constructed the great pyramids at Giza and that at Abu Roash. In Dynasty III the great architect Imhotep had constructed the Step Pyramid at Saqqarah with its wonderful temple for King Zoser, and had apparently translated for the first time the highly developed crude-brick architecture of that period into finely dressed small blocks of limestone. In Dynasty IV, a few generations later, the unknown architects of Sneferuw and Cheops had substituted massive blocks of limestone for the small blocks of Imhotep and had also begun the translation of the limestone architecture into granite. It was the architectural use of this obdurate material which gave so archaic an appearance to the temples of the Giza pyramids, in particular to the valley temple of Chephren beside the Great Sphinx, and limited the use of inscriptions and reliefs in those temples. Dynasty IV was, however, not the beginning but rather the culmination of the great creative period of Egyptian arts and crafts, and the great pyramids of three of its kings at Giza mark the place of the activities of the foremost architects and sculptors of the age. Thus the intact Giza tomb presented for the first

time in the history of Egyptian excavations an opportunity of studying the burial of a great personage of this significant period, about fifteen hundred years older than the royal tombs of the New Kingdom, and the discovery aroused immediate interest in the historical material which the tomb might contain.

At the time of the discovery I was in America, where I had gone at the end of January to resume my periodical duties at Harvard University and the Museum of Fine Arts. I had left Mr. Alan Rowe, assisted by Mr. T. D. R. Greenlees, the head-*reis* Said Ahmed Said, and the rest of the regular organization, to finish the work planned for the season. Thus it was my assistants who had the pleasure of the first view of the tomb. Looking into the burial chamber from a small opening at the top of the doorway, the excavators had seen a beautiful alabaster sarcophagus with its lid in place. Partly on the sarcophagus and partly fallen behind it lay about twenty gold poles and beams of a large canopy; on the western edge of the lid were spread several sheets of gold inlaid with faience; on the floor, a confused mass was visible of parts of gold-cased chairs and other objects, — lion-legs, palm-capitals, decorated arms, bars and beams, all showing the yellow glitter of gold; and amongst these lay copper and alabaster vessels, while further back a mound of pottery hid the southern part of the deposit. The sheets of inlaid gold seized on the attention; for, in a moment, the inlays were observed to form an inscription with the royal cartouche of King Sneferuw, and the excavators realized that they had an intact tomb of a royal personage of

the time of Sneferuw or perhaps a little later. The inscriptions on the sheets were partly hidden one by the other and all by a certain amount of dust, and it was three days before the inscriptions were entirely read by Mr. Battiscombe Gunn, using field glasses, and proved to contain the two well known names of Sneferuw, — "Lord-of-the-two-crowns, Sneferuw; the Horus, Nebma'at". This inscription proved only that the owner of the sarcophagus had lived at the time of Sneferuw, and Mr. Rowe, who furnished the information for the official communiqué, did not express the opinion that the tomb was that of Sneferuw. But the name suggested involuntarily that it might be so, while the dazzle of gold in the chamber and the beauty of the alabaster sarcophagus impressed the minds of visitors with the conviction that the tomb was the burial place of royalty. Unfortunately a gentleman connected with a great news agency, who happened to be in Cairo, heard of the discovery in private conversation and passing over the regular correspondents of his agency, telegraphed an incorrect account stating positively that the tomb of Sneferuw had been discovered. I myself issued an immediate contradiction through the courtesy of the *London Times*, but did not succeed in removing the false impression. The fact is that we finally began the examination of the contents of the tomb in January, 1926, and we did not then know the name, the rank, or even the sex of the person buried in the alabaster sarcophagus. At the time of the discovery it was only certain that the burial was that of a great personage who had lived in the time of Sneferuw, and the account of the recording of the tomb is largely the story of the identification of that personage with Queen Hetep-heres, a wife of Sneferuw, and the mother of Cheops, the greatest lady in Egypt in the days of her son.

The interior of the burial chamber was first seen by Mr. Rowe, Mr. Greenlees, and Said Ahmed, on the evening of March 7, 1925, after having been closed for nearly five thousand years. The most frequent inquiry made by laymen has been whether the tomb was found by chance or by the guidance of ancient documents. It was neither one nor the other. To make clear the chain of events which led to the discovery, the narrative must go back to twenty-four years ago, 1902, when the Expedition undertook the excavation of the concession generously granted by the Egyptian Government for the Giza Pyramids. The list of those who took part in the long years of excavations which prepared the way for the events of 1925 includes over fifteen names: A. C. Mace, A. M. Lythgoe, N. deG. Davies, C. M. Firth, A. M. Blackman, Oric Bates, C. S. Fisher, Earle Rowe, H. L. Story, Ashton Sanborn, Raymond Howe, L. C. West, Dows Dunham, W. G. Kemp, Amory Goddard, A. Everett Austin, Jr., Alan Rowe, George Vaillant, Miss Nelly Abel, Miss Davidson, Mrs. M. T. Symonds. For the

first three years, the expedition was supported by Mrs. Phoebe A. Hearst, in the name of the University of California; but since 1905 we have worked for Harvard University and the Boston Museum of Fine Arts with funds provided by the friends and the Trustees of the Museum. Our best friend has been Mr. Augustus Hemenway of Boston.

The concession now includes two-thirds of the great cemetery west of the Cheops pyramid, the area of the pyramid of Mycerinus, and that east of the Cheops pyramid as far south as the Sphinx. West of the Cheops pyramid lie three great fields of mastabas, the tombs of the royal children and courtiers of Cheops, Chephren, and Mycerinus, arranged in rows and columns with streets and cross streets,—a veritable city of the dead. In the streets and spaces between these royal cemeteries, the funerary priests of the pyramids and the officials of the pyramid cities had built their smaller mastabas during Dynasties V and VI. Street by street and area by area we had excavated our share of these fields and had cleared shaft after shaft of sand and rubbish; but the burial chamber of every one of the great royal mastabas had been completely plundered by thieves, either ancient or modern. The smaller mastabas of the priests were in much the same condition; and in the end, the only important intact chamber found was that of Impy, a director of public works under Pepy II. We had also excavated the temples of the pyramids of Mycerinus and his queens and the cemetery of priests associated with them. Thus it was not until 1924 that the Expedition was ready to turn its attention to the field of mastabas east of the Cheops pyramid, which appeared to contain another royal cemetery, presumably of the reign of Cheops. For technical reasons, I selected the northern part of the field for excavation during the season of 1924-1925.

At present (December, 1926) the excavation of this eastern cemetery is still incomplete, owing to the interruption caused by the discovery of the intact tomb, but the general arrangement is now clear. Against the eastern face of the Great Pyramid the foundations are still visible of the funerary temple of Cheops. The road followed by travellers who visit the Sphinx passes over the basalt pavement of the great fore-court, and further east we have laid bare the southern side and the eastern end of the entrance hall. From the eastern doorway a great causeway leads down to the valley temple of the same king which stood on the edge of the cultivation. We have excavated the upper end of that causeway for a certain distance. Adjoining the northern side of the entrance hall and the upper end of the causeway there is a great cutting in the rock in which was once buried one of the three ships of Ra in which Cheops as the sun-god was supposed to traverse the heavens every day. The other two ships were

parallel to the pyramid, one north of the temple and the other south. In the southern angle, between the fore-court and the entrance hall of the pyramid-temple, stands a small pyramid, undoubtedly the tomb of the chief queen of Cheops, as this pyramid also has a stone-cut grave for a ship of the sun, a smaller one, along its southern side. Close to this on the south stands another small pyramid, aligned with the first; and south of that again a third set back a couple of meters, and, as fourth tomb in the row, stands the mastaba which I assigned to Nefertkauw, the eldest daughter of Sneferuw and fourth queen of Cheops. Behind the mastaba of Nefertkauw to the west, stands the mastaba of her son, Prince Neferma'at, and west of that again the mastaba of her grandson, Sneferuw-seneb. The inscriptions of the son and the grandson, who were also the son and grandson of Cheops, lay emphasis on the descent of all from Sneferuw, as if unwilling to acknowledge the royal blood of Cheops; and this is a point to which I shall return in discussing the origin of Hetep-heres. The tombs of these four queens stand along the western side of a great avenue, seventeen meters wide, which we call "Queens Street," in which stood the offering chapels of the queens in question. The eastern side of Queens Street was bounded by a field of mastabas of unusual size even for a royal cemetery, laid out in five rows (north—south) and two columns (east—west), with their long axes running north and south. The northernmost of each row was the earliest of its row, and these have been identified from west to east with the names of the sons and daughters of Cheops as follows:—(1) Prince Ka-wa'ab, the eldest son, (2) Horzedef, (3) Khnum-ba-ef, (4) Princess Meres-ankh, who was married to Chephren; (5) Princess Hetep-heres (namesake of our queen) and her husband, Ankh-ha-ef. South of these in the second column, the names of two more sons of Cheops have been read, (6) Khufuw-kha-ef in the first row, and (7) Min-kha-ef in the fourth row. The burial chambers of all these mastabas, like those in the western cemetery, had been completely plundered, except for three damaged granite coffins. The reason for the plundering of all these tombs lies in the fact that each place of burial was marked by a superstructure, pyramid or mastaba as the case might be, in which the mouth of the shaft was to be found in a fixed position,—in the northern side of the pyramid or in the top of the mastaba. Once the mouth of the shaft was uncovered, the plunderers had only to follow it down in order to reach the burial chamber. The escape of the tomb of Queen Hetep-heres during five thousand years of unceasing plundering was due to the fact that it consisted of a shaft and burial chamber only and had no superstructure to guide the thieves to the mouth of the shaft. This one intact tomb was situated due east of the middle of the Cheops pyramid between the north-

ern end of Queens Street and the great Cheops causeway, with the small pyramid of the chief queen just to the southwest and the mastaba of the eldest son just to the southeast.

It was in this cemetery of the family of Cheops, at that time an unknown quantity, that we began work on November 1, 1924. A light railway line was laid into Queens Street from the north, passing over the still unsuspected tomb of Hetep-heres, and the work began at the southwestern corner of the second small pyramid. The excavated earth was thrown over the northern edge of the pyramid plateau about two hundred meters away. Our excavations at the pyramids usually proceed in two or three stages. The first is the most laborious and consists in removing all the accumulations of sand, earth, decayed crude brick, broken stone, and rubbish which encumber the area in hand. This process results in cutting away all the dead material down to the first floor and to the sound constructions. The second stage is the removal of the first floor encountered with the underlying debris; and if there be more than one floor, each requires another stage in the operations, until the rock is laid bare. In Queens Street, the first floor exposed was that of the Ptolemaic Period, which rested, however, directly on the old floor of Dynasty IV, so that the two formed practically one. After the first clearing of Queens Street with the connecting cross streets, we proceeded to make the first clearing of the four streets which separated the five rows of mastabas and of the area east of the fifth row nearly to the eastern edge of the pyramid plateau,—a total field of about 10,000 square meters. The second clearing was begun at the northern end of Queens Street with a small gang of specially trained men, before the eastern streets were finished. The point to be noted is that nothing escapes observation during the examination of an area excavated to the geological stratum, unless it be something actually covered by the mass of a pyramid or a mastaba; for these ancient structures are of course monuments of the utmost importance and must not be destroyed. The filling of a mastaba, however, must be investigated to determine its structure and the possible existence of shafts and statue-chambers; and the foundations of street floors, whether of earth, gravel, or masons' debris, must be turned over if not actually removed; but walls and pavements of the earliest period must be left as far as possible intact. When a royal site like the Giza pyramids has been selected for excavation, it is certain that its tombs and chapels once contained evidence of the manners and customs, of the arts and crafts, and of the religious practices of the Egyptian court of the period, which was always the center of the national culture. Yet no one can foresee what intact tombs, what works of art, or what historical material may still lie hidden under the masonry, the floors, or the debris of later ages, least of all what objects

may remain cast aside in the rubbish of treasure-seekers. The preservation of all that is significant depends on the varied activities of generations of men and the influence of the weather over a period of thousands of years, and is therefore ruled by accident or chance. But the ultimate discovery of

chamber had been begun and cuttings had been made to take two courses of the nucleus structure which was to carry the sloping passage out to the northern face of the pyramid. These cuttings still bore smears of plaster which proved that the stones had actually been set and afterwards re-



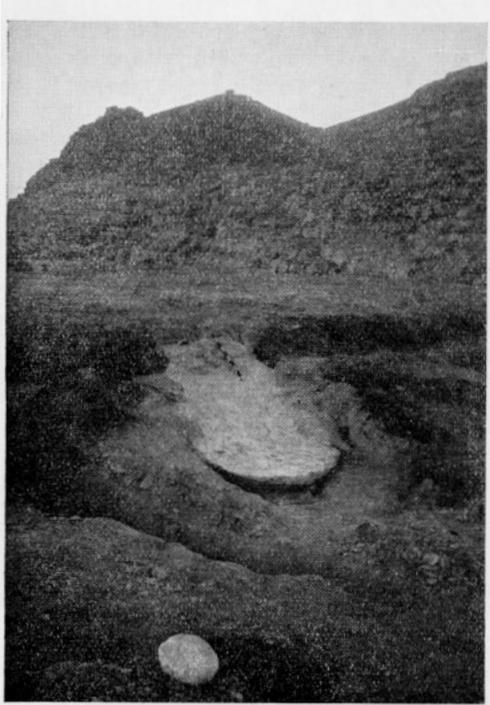
Cemetery of the family of Cheops, east of the Great Pyramid, partly excavated. An arrow marks the location of the tomb of Queen Hetep-heres. Looking down to S.E., January 18, 1925.

the intact tomb is *not* a matter of chance in modern methodical excavations. Sooner or later, in the ordered process of the work, it will be observed and taken in hand.

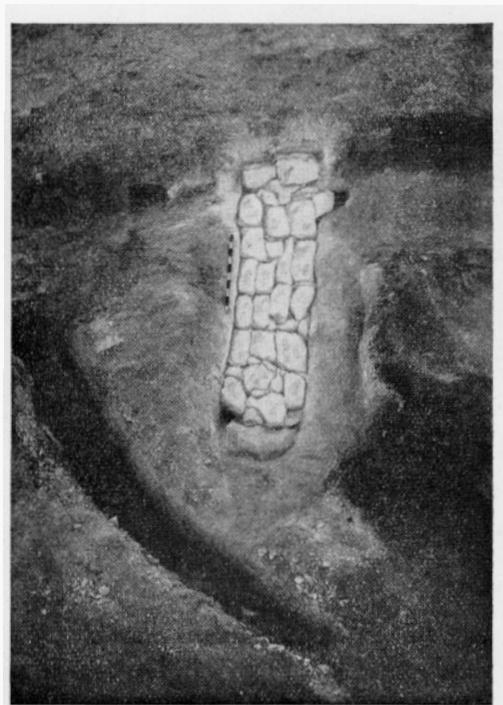
In Queens Street and northwards the deposit under the old floor on which walked the men of Dynasty IV, was only 20 to 80 centimeters deep, and consisted of limestone chips and powder left by the builders of the small pyramids. This masons' debris had been spread out over the inequalities of the rock to form a level foundation for the mud floor. In the Saïte-Ptolemaic Period the floor had been broken through by the foundations of minor structures and at various later times for the purpose of removing ancient blocks of stone for buildings or lime-burning. In clearing out one of these later penetrations, a task which falls in the first stage of excavation, we noted the edge of a rock-cutting which ran under the masons' debris of the street; and the second stage was begun here, to remove the floor over the rest of this cutting. On December 12, 1924, this cutting was fully exposed and found to be the beginning of an unfinished pyramid. The sloping passage in the rock which was to lead to the burial

chamber had been begun in this way with a rock-cut passage and a nucleus of masonry, and the pyramids had then been built over this nucleus. A comparison with the northernmost small pyramid — that of the chief queen — showed that its passage was parallel to the unfinished passage and 28 meters further west, with its western face close to the eastern wall of the great court of the Cheops temple. The conclusion was drawn that the small pyramid had been begun on the site of the unfinished cutting and then shifted to a site 28 meters further west; but the reason for such a change was not clear until we had discovered the intact tomb of Queen Hetep-heres.

North of the unfinished pyramid the rock rose in a low ridge, and 16 meters away lay the east-west edge of a quarry used in cutting stone during the reign of Cheops. The quarry extended from this edge to the causeway, 14 meters further north, and from the eastern end of the entrance hall of the Cheops temple to the eastern edge of the plateau. In the western part, opposite Queens Street and westward, the rotten surface rock had been dressed away and several quarry trenches



Patch of plaster covering the stairway; looking S.S.W., February 13, 1925.



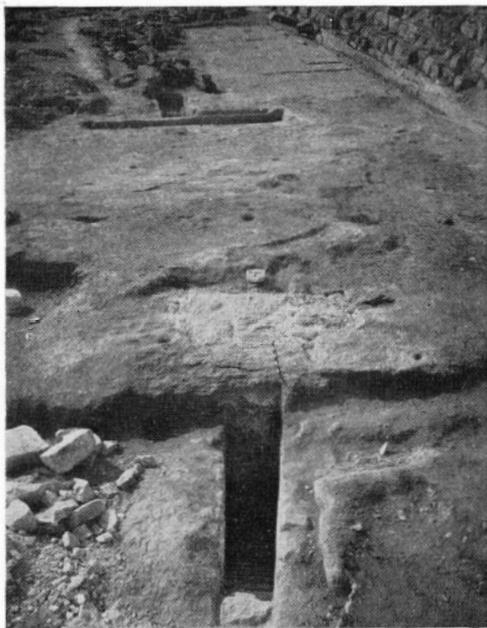
Masonry packing of stairway, after removal of plaster, February 20, 1925.

cut to the depth of 30-50cm. in preparation for the removal of large blocks of stone (as in the princes' mastabas), but the quarrying had stopped at this point. Further east, opposite the mastaba of Ka-wa'ab and eastward, considerable masses of stone had been removed so that the line of the causeway had been cut. Here a part of the quarry had been filled in with massive masonry to carry the corridor of the causeway. The rest of the quarry had been filled in with masons' debris and, in the deeper eastern part, a number of tombs of a later period had been partly excavated and partly constructed. Amongst these were the tombs of Qa'ar and Iduw, officials of the time of Pepy II. During the interval in our other work, the masons' debris over the western part of the quarry had been cleared away from the eastern end of the pyramid temple eastwards, as far as the western side of Queens Street; but the second stage was being postponed till later owing to the press of work in the first clearing.

On February 9, 1925, the photographer was setting up his camera on the masons' debris north of Queens Street when he noticed white plaster on the face of the scarp which formed the southern edge of the quarry. This observation was immediately reported to Said Ahmed and by him to Mr. Rowe; but, owing to other work, the examination of the plaster could not be taken up for ten days. In the meantime Said Ahmed had continued the clearing of the masons' debris from the western side towards the east and on the 13th had exposed a patch of white plaster (sulphate of

lime, according to the analysis by Mr. Lucas<sup>1</sup>), which measured 320cm. long by 90cm. wide, and later found to be 5-7cm. thick. He had it photographed; and on the 19th the patch was measured and mapped. On the 20th it was removed and found to have covered a rectangular cutting in the rock, which seemed to lead to a doorway in the south. The cutting was packed with small dressed blocks of white limestone of Turah, about 52 by 25 by 20cm. in size, set in white plaster. It was at once recognized that the opening of an intact tomb of some sort had been discovered. The top course of the packing, having been recorded both by a scale drawing and a photograph (as was each separate stage in the excavation), was then taken out. A step was seen in the northern end of the cutting. Course by course the recording and the removal of the packing went forward until, on February 23, a stairway of twelve steps had been revealed, which passed at the southern end of the quarry into a short rock-cut tunnel and penetrated the northern wall of a vertical shaft. This shaft was also packed with white limestone set in plaster and was seen to run upwards as well as down. On that day a search was made on the rock above for the mouth of the shaft, and it was found cunningly concealed by a filling of irregular blocks of local nummulitic limestone undressed on the top and fitted together to look like the surrounding natural rock surface. The whole surrounding area was cleared to rock, but there was

<sup>1</sup>The term "white plaster" is used throughout this article to indicate sulphate of lime.



The stairway after clearing, and the masonry packing in the shaft imitating the surrounding rock. Looking S.S.W., February 23, 1925. In the background the unfinished pyramid.

no trace of any superstructure like that of a normal tomb. The main entrance was carefully concealed at the surface of the rock and the whole was hidden under the hard-packed floor of the street. It is for these reasons that the burial place of Queen Hetep-heres is said to be a *secret* tomb.

The stairway opening of the tomb is actually in the old quarry and was cut after the dressing away of the decayed crust of the native bed of stone; but the mouth of the great shaft is in the top of the natural ridge south of the quarry. It seems to me obvious that the cutting of the stone in the western end and perhaps in all other parts of the quarry was stopped as soon as the secret tomb was begun. That is, the quarry was abandoned for the same motive which underlay the shifting of the pyramid of the chief queen 28 meters to the west,— the desire to avoid any risk of exposing the concealed openings of the tomb.

The recording and the removal of the packing of the shaft was at once taken in hand and lasted twelve working days from February 23 to March 7. The work proceeded in a tense atmosphere of excitement. No one was able to foresee the moment when the chamber would be reached. Under the concealing course of local stone, there was a heavy layer of white plaster, and under the white plaster nine well laid courses of Turah limestone set in plaster. The excavation had now passed the mouth of the stairway tunnel in the north wall. The masonry of the packing below this was more carelessly laid; in some places the stones seem to have been thrown in and the plaster poured down on them from the top of the pit.

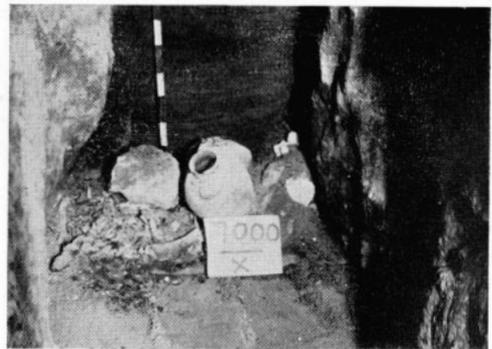
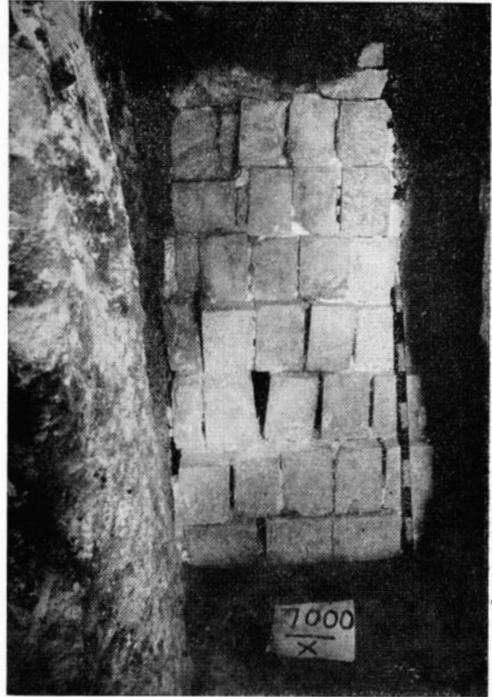
At nine meters down, a block of masonry was observed in the west wall and was thought for a time to fill the doorway of the chamber; but behind it was only a niche containing a sacrifice consisting of the skull and three legs of an ox, wrapped in matting, two beer-jars, some charcoal, and two chips of basalt which manifestly did not belong to the sacrifice but had come in on the floor of the chamber by accident at the time the sacrifice was made. Dr. D. E. Derry was called in to examine the bones. The shaft went on down. At twelve meters, fragments of a red-polished pottery basin were encountered and, just after, one of the stone blocks had a star on one side and a cross on the other drawn in black. The shaft was descending through a bad seam of rock between two fissures and many dangerous places in the walls gave a certain amount of anxiety. At seventeen meters, a number of fragments of copper were recorded, which were from an object or objects of unrecognizable form. Said Ahmed himself and four men were working in the pit. Two were breaking up the masonry, and three were manipulating the two large baskets slung on ropes which passed over two pulleys at the top. As two men pulled the loaded basket, one man drew down the empty basket and filled it. At nineteen meters down, the east wall of the shaft sloped westward to form a shelf and the shaft narrowed to 150 cm. in the east-west direction. At twenty meters the rock was seen to be a sounder stratum and the sides of the shaft were more regularly cut. At twenty-two meters, the fragments of a red polished pottery bowl with spout were found; and from there down to twenty-five meters great quantities of potsherds of different vessels, many of the large tubs of coarse ware, also a dozen fragments of a white limestone slab — perhaps a coffin-lid — five complete and several incomplete blocks of limestone, a flint flake, and lowest of all a mud jar-sealing without any seal impression. Some of the large tubs and basins had been used for mixing or carrying plaster; but we know now that much of this broken pottery, the copper, the flint, and the mud-sealing must have been part of the original deposit, overlooked when the chamber was blocked and thrown down afterwards into the pit. The limestone blocks each bore a single hieroglyph and had a hole in the upper side for taking the round end of a pole.

On the morning of March 7, at twenty-five meters down, a course of well-laid masonry like that at the top was exposed. The two fissures were drawing in towards each other and the shaft was growing narrower in the north-south dimension; the rock was still sound. The lifting of the stones and rubbish by baskets had become day by day and hour by hour more difficult; but in the minds of Said Ahmed and his men, the deeper the shaft, the greater the promise. They were now wild with anticipations of a "great find," so that there was hardly any diminution

in the pace of the excavation. Both Mr. Rowe and Mr. Greenlees were present to record the courses of well-laid masonry which began at twenty-five meters. When the first of these had been taken up, it was noted that the south wall sloped away to the south. Another was removed and the line of the roof of the burial chamber appeared. Mr. Rowe withdrew a single block of stone in the middle of the upper part of the doorway and looked in. It was then late in the afternoon and the sunlight had gone. By the light of a candle he saw only dimly a chamber, a sarcophagus, and a glitter of gold. The block was replaced for the night to keep out the dust, and the next morning the three upper courses opposite the doorway were taken out. The doorway was not blocked as usual with a separate wall, but the packing of the pit went on down to the bottom and thus closed the doorway. Thus it was on March 8 that the closed alabaster sarcophagus was recognized, the canopy, the gold-cased furniture, and other objects. Photographs were taken by reflected light. A beam of sunlight was thrown from a mirror at the top down the shaft to a large nickled disc at the bottom and reflected from the disc into the chamber. The chamber was manifestly unfinished. A cutting in the rock of the east wall had been filled with rectangular blocks of white limestone and rough pieces of local stone. A similar cutting in the west wall was blocked with carefully laid rectangular stones and smeared with white plaster in which the finger-marks of a mason dead for five thousand years were as fresh as if made yesterday. A square hole in the floor in the northwestern corner was filled with rubbish, but seemed to be the mouth of a pit going down. Many hopes were built on the sealed cutting in the west wall and this pit, especially by the workmen, and Said Ahmed had already in imagination found the tomb not only of Sneferuw but of Huni, and several other kings of Dynasty III. In the end all these imaginings were found to be empty.

Eight days later, on March 16, the opening was carefully closed with sacking and boards, and a layer of stones two and a half meters deep was put back in the pit. With the approval of the Egyptian Department of Antiquities, the tomb was closed to await my return from America. During the height of the excitement caused by the discovery, General Sir Richard Haking, in command of the British Army in Egypt, and the British Military authorities had very kindly erected a barbed wire enclosure around the area of the tomb, and Russell Pasha, Commandant of the Cairo City Police, had provided a guard to assist my men in holding the crowd of sight-seers at a convenient distance. The Egyptian Government, and in particular the Department of Antiquities, gave us every assistance both then and later. After the closing of the tomb, we put in planking and props to support the

dangerous parts of the shaft and erected huts for the guards and for working purposes.



Masonry blocking the sacrificial niche in west wall of shaft and sacrifice of ox-skull, ox-legs, and jars in niche in west wall of shaft, February 27, 1925.

## CHAPTER II. The Reopening of the Tomb.

On July 22, 1925, I arrived at the camp, having fulfilled my engagements in America and travelled leisurely back through London and Paris. As a preparation for the reopening, I worked through the records made during my absence, including the very detailed Arabic Diary kept by Said Ahmed Said, and I reexamined the ground around the tomb. As a result I laid down the following observations and conclusions: —

- (1) It was obvious that the tomb was not of any normal Egyptian type with a superstructure and chapel, but was a secret burial-place hidden under the floor of Dynasty IV.

- (2) The fact that the tomb was under the living floor of Dynasty IV proved that it was *earlier* than the completion of the small pyramids on Queens Street, which were undoubtedly built by Cheops for his queens.
- (3) When the northern small pyramid, that of the chief queen, which had been begun at the unfinished cutting in Queens Street, was shifted 28 meters further west, our tomb was already in existence, probably just completed, but possibly of an earlier time.
- (4) The presence in the sacrificial chamber of two small fragments of black basalt, like that used in the pavement of the Cheops temple, indicated that the tomb was made during or after the laying of that pavement.

The limitations imposed by these four observations seemed to fix the date of the tomb to a year within the reign of Cheops himself.

- (5) In complete accord with this conclusion, the position of the stairway suggested that the western end of the quarry had been abandoned because of the tomb (to avoid exposing its openings).
- (6) The inscription of Sneferuw in the chamber proved that the unknown owner of the tomb had lived in the time of that king.

The inscribed object (the canopy) I assumed to have been a present from Sneferuw, who, like some other kings of Dynasties I-VI, had been fond of giving presents inscribed with his name as a mark of favor. Such royal gifts have been widespread in all periods of history, and one of the most interesting modern instances was the gift of the inscribed swords by Ali Dinâr, Sultan of Dâr-fûr, who was killed during the Great War.

- (7) In my own opinion, the deposit did not give the impression of being the burial of a king of Egypt.

But a member of the royal family the owner must have been to have received a secret tomb on so important a scale within the precincts of the family cemetery of Cheops, during the building of his temple. It could not have been done without the royal authority. Around these conclusions the imagination sought to reconstruct the circumstances of the burial, and I quote here the two possibilities which were outlined in the report to Boston before I had seen the deposit myself: —

- “(1) This person, a favored member of the family, perhaps the mother of Cheops, had died during the construction of the temple before any pyramid or suitable mastaba-tomb was ready, and immediately buried in this secret manner as a protection against violation.”
- “(2) This person having died earlier, perhaps in the reign of Sneferuw, had first been buried elsewhere. Possibly filial piety led King Cheops to exhume the body and rebury it with its furniture beside his own tomb. Or, the former tomb may have been opened or threatened by the attacks of plunderers, and the king removed the burial to its present place to protect it from further violation.”

Further preparation for the reopening consisted in collecting all that was known of the royal family of Dynasty IV, in building additional workrooms at the camp, in installing an electric-light plant capable of something over four thousand candle-power, in providing a winch and a comfortable chair for travelling up and down the hundred foot shaft, and so forth. While preparing

to reopen the tomb, we also resumed the excavation of the cemetery. In the meantime, various changes had taken place in the staff. Mr. Alan Rowe had been made Director of the Philadelphia Expedition working in Palestine; Lt. Comm. Wheeler had joined the expedition for special work connected with publication; Mr. Greenlees went to an appointment in India; and Mr. Dows Dunham came back to us from Saqqarah. I had brought Mr. A. B. Hawes out with me as a student and Mr. Joseph Bonello continued to act as draughtsman to the Expedition.

On the morning of January 21, 1926, Mr. Dunham superintended the removal of the temporary blocking put into the bottom of the shaft ten months before. In the afternoon I went down; and in my presence Said Ahmed removed the wooden planking from the doorway. One of the big reflectors with a thousand candle-power lamp was lowered, and my first view of the chamber was in the glow of this powerful light. As the moment had approached I had been seized by a certain amount of anxiety lest the deposit might have suffered damage from the seepage of rain-water or a fall of rock. At the first glance my anxiety was allayed. Then with the photographs taken the year before in my hands, I compared the deposit bit by bit with the record and found nothing changed in the interval.<sup>1</sup> Looking at the deposit as a whole, I immediately perceived that the confusion was due to something more than mere decay. Furthermore, the upper edge of the coffin and the lower edge of the lid were both chipped where a metal chisel had been used to force off the lid. This could only have been done previous to the closing of the shaft, as the tomb was absolutely intact. The coffin must have been lowered into the tomb end down and must have been empty during that proceeding. If the whole deposit had been brought here from another tomb, the coffin would have been opened to take out the body, which could not have been transported in such a heavy box, much less lowered down the shaft in it. The conviction forced itself upon me that the deposit was a reburial transferred for some reason from its original tomb. Thus the first of the two explanations which I have given above of the character of the burial was eliminated. The tomb contained a reburial, probably of the mother of Cheops. At this time I also came to the conclusion that the masonry in the east wall was only put in to close an unfinished cutting. The chamber was clearly in process of excavation when the transfer was made, and was smaller than the original tomb, as the canopy could not be set up but had to be laid disjointed on the coffin.

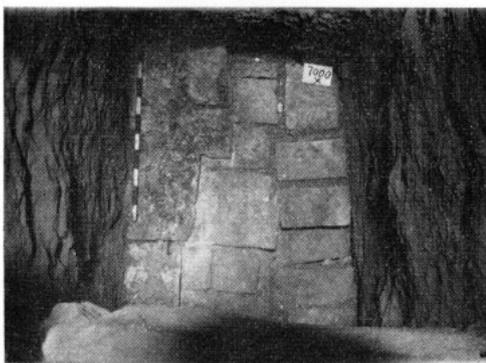
Between January 21 and February 4, 1926, the seven courses of the masonry packing which had

<sup>1</sup>Later during the earthquake of February, Mr. Dunham and I, working in the chamber, were totally unaware of the movement of the earth strata until we read of it in the newspaper, and again after a subsequent earthquake, neither Mr. Wheeler nor I could see any effect on the deposit.

remained in the shaft were recorded and taken out one by one. The bottom of the shaft, thus exposed, was a rough rock surface sloping down to the floor of the burial chamber. A number of photographs were taken of the deposit during these days and a water-color painting was made by Mr. W. A. Stewart.

### CHAPTER III. The Clearing of the Chamber to April 14, 1926.

We were now confronted with a difficult problem. Before us lay the only intact tomb of a royal personage previous to Dynasty XII discovered up to that time. Perhaps no other tomb of this character might ever be discovered of Dynasty IV. It was impossible to know what awaited us in the layers of that deposit. The duty rested on the Expedition of recovering every scrap of archaeological evidence, whatever it might be. We had practically nothing from contemporary tombs to guide us and could not even be sure that further inscriptions would reveal the name of the owner. The greater part of the wood was shrivelled or even disintegrated; much of it had been reduced to a sort of grey ash by fungus (as Mr. Lucas informed us); the cloth, the matting, the basket-work, and all else of an organic nature was probably in a similar condition, preserved only in fragments or traces which could never be moved. The shrinking of the wood before it finally decayed had disjoined the frames of the furniture and laid the gold casings in heaps on the floor. The decay of the wood in the panels and the disturbance caused by the fall of the parts of the furniture had left much of the inlay-work in ruins. The deposit on the floor seemed to vary in depth from five to ten centimeters on the north to nearly a meter on the south, and presented a very uneven surface. It was impossible to step



Masonry packing in shaft just before roof of chamber was reached; looking vertically down, March 7, 1925.

into the chamber without crushing the things visible on the surface of the deposit and destroying unknown material underneath. The lid of the alabaster sarcophagus could not be moved until the inlaid panels and the gold-cased poles and beams

of the canopy had been taken off; and these pieces on the lid could not be taken off until accessible from all sides, — that is, until the floor had been cleared. The only possible procedure was to take an area next to the doorway, not wider than could be reached conveniently with the arm, to record and remove the deposit over this area layer by layer until the floor had been exposed, and then to take next a similar area, and so on until the floor was cleared. It was resolved to spare no pains, never to hurry, and to put resolutely aside all thought of what might be found in the alabaster sarcophagus.

The first area to be taken in hand was necessarily that next to the doorway in the northern end of the chamber over the rubbish-filled pit in the floor. Between the northern end of the sarcophagus and the blocking of the doorway lay two small scraps of gold sheet; and over the southern half of the pit in the floor were a good **many sheets and strips of gold**. This pit, which appears to have been begun to increase the height of the chamber by cutting another meter or so of rock out of the floor, like the other unfinished cuttings in the wall, was stopped at the moment when the burial was imminent, and was filled in with broken local stone and stone-cutters' rubbish. The debris from the work at the moment of stoppage had been hastily raked aside into this north-western corner in and over the pit. It rose in a slope about two meters long from south to north and about a meter and a half wide from east to west and covered nearly a square meter of the rock floor south of the pit. It had been highest in the very corner where it still rose to a point about 50cm. above the level of the floor of the chamber. The furniture over the area in question had been set up on this debris. In the course of time the debris in the pit itself had settled about 15cm., enough to expose the southern side of the pit for about half its length from the east; and this settlement had brought about the collapse towards the north of a chair which stood partly over the southern part of the pit. This was the area on which we were forced to begin. Mr. Dunham and I undertook the work with Said Ahmed to assist us, and Mohammedāni Ibrahim to do the photography.

On February 4 photographs of the area were prepared and Mr. Dunham made a drawing to scale of the area with the top layer of objects. The gold was drawn in red, the wood and other objects in purple, and the stones and walls in black. On February 5 the removal of the objects began, with no idea that ten months of unremitting labor were to elapse before we would be ready to open the sarcophagus. In the beginning the work was comparatively simple. A fragment of gold sheet, or a potsherd, or other object would be selected and given a number (beginning with 1) which was marked on the plan and on the photograph. It was then removed without

disturbing anything else, laid on a board, and after examination entered on the register under its number, with a brief description, a sketch, and the chief measurements. The register consisted of strong sheets of paper of foolscap size, numbered serially from 1 up (to over 1600). Each sheet bore the caption "G 7000 X" (our official number which marked the place of the tomb on our map of the cemetery), the date, and the page number. On these sheets day by day in chronological order we set down every act carried out in

whole area of the pit in the floor had been cleared, but the amount of the material was small compared with the pace of the later work. The reason for this was that we had not yet fallen into our routine of doing things as a matter of habit. The relation of every piece to its surroundings had to be studied carefully before moving it. There was a certain amount of wood charcoal and other unrecognizable fibre, and the methods of handling these also had to be worked out. For the latter purpose, Mr. Lucas very readily offered his serv-



The tomb chamber as it appeared when first seen on March 8, 1925. From a painting by Joseph Lindon Smith.

the tomb, every observation, every reconstruction or theory, every object removed in order, and every photograph as it was taken, with a note of its purpose. When the object had been registered, it was laid in a receptacle of some sort with its number written on the receptacle or on a slip of paper, or when possible on the object itself. A little later when the work had been complicated by the occurrence of inlays, a number of trays of various sizes were prepared, small wooden boards covered with cotton cloth and enclosed with a low rim; and thereafter all objects except the vessels of pottery, stone, and copper, were placed on these trays. The trays (or other receptacles) were placed on a layer of cotton wool in small wooden boxes with lids and carried by hand up the shaft (in the lift) and thence to the storage magazine at the camp. The trays proved extremely useful in reconstructing groups of inlays in their original patterns as they were lifted one at a time, for the cloth prevented the inlays from slipping out of place.

By February 12 we had removed 84 numbered pieces and had recognized that some of them fitted together to form the right side of a chair, but the greater part were not identifiable. The

ices and with his advice we adopted a 2 per cent. solution of celluloid dissolved in amyl acetate for the treatment of wood and fibre.

On the 12th we found that the broken pieces of limestone and rubbish over the pit went on down, and we cleared out enough of this to see that the pit was an unfinished cutting. Thereupon we put a wooden floor over the filling about 5 cm. below the level of the rock floor of the chamber in order to serve as a platform for the clearing of the next area, that just south of the pit. I was convinced at this time "that there is nothing in the tomb except the main deposit" (from Diary of February 14) then visible.

In the night of February 9 Said Ahmed Said had been taken seriously ill and removed to the C.M.S. Hospital in Old Cairo. The illness proved to be acute pneumonia, and in spite of every effort of Dr. Coleman, my own physician, Dr. Phillips, and the nurses, Said died Monday morning, February 15. The body was embalmed and sent to his home in Quft, accompanied by his brother, sons, and nephew, and ten other of the older men. Said Ahmed had come to the Expedition as a small boy in 1899, to carry my camera and note-books. He learned photography from me and in 1905 he took

over all the photographic work of the Expedition and taught several other boys to assist him. He had also worked with the excavating gangs, and in 1909 was made head-*reis*. Wherever there was a difficult and delicate operation in the excavations, it was his custom to do it with his own hands. His knowledge of the men and the fitness of each for any particular kind of work was a constant source of satisfaction. He was unremitting in the execution of all our rules for economizing labor, such as the proportion of basket-carriers to diggers, the length of the basket-carry, the height of the lift in the carry, the organization of the railway so that an empty car was always ready for the basket-carriers, and a dozen others. His management of men, both the regular force and the casual locals taken on as basket-carriers, was extraordinarily effective in maintaining a spirit of contentment and industry. To his teaching we owe the devotion of our men and much of their training and skill. The greatest proof of the character and the teaching of this man is the fact that when he passed away there were others trained by him able to carry on the work. But my feeling of personal loss still remains. For twenty-seven years he had been like a son to me.

Said's brother, Mahmud Ahmed Said, took his place as head-*reis*. Mohammed Tammam, who like Said himself had come to me as a boy in 1899, took over the work of assisting us in the tomb. There were one or two other minor changes, and after a few days the work went on as usual.

By the end of February we had cleared a space about 80 cm. wide between the coffin and the west wall, and had taken out two arm-chairs and a box of alabaster toilet jars. The first arm-chair, which had stood on the east beside the coffin facing west, had four legs in the form of lion's legs facing towards the front of the chair. The horizontal part of the arm was a half-round rilled bar with the flat side down; the front post of the arm bore a mat-pattern on the faces; under the arm, on each side, was a bundle of three papyrus flowers of which the stems of the side flowers were curved outwards to fill the space between the arm and the chair. This papyrus flower decoration was the first definite indication that the owner of the tomb was not a king, for the chair of a king should have borne the flower of Upper Egypt entwined with the papyrus of Lower Egypt about the hieroglyphic sign for union. The whole of this chair was cased in moderately stiff gold-sheet which had covered the joints of the wooden frame and showed therefore the holes of the tenons and mortices with which the frame was set together. The left side of the chair, the seat-frame, and the back lay on the floor with the parts in their correct relative positions and from the evidence yielded by these parts most of the scattered fragments over the pit were set together to form the complete right side of the chair. The back of the chair had contained a panel, probably one of the inlaid panels

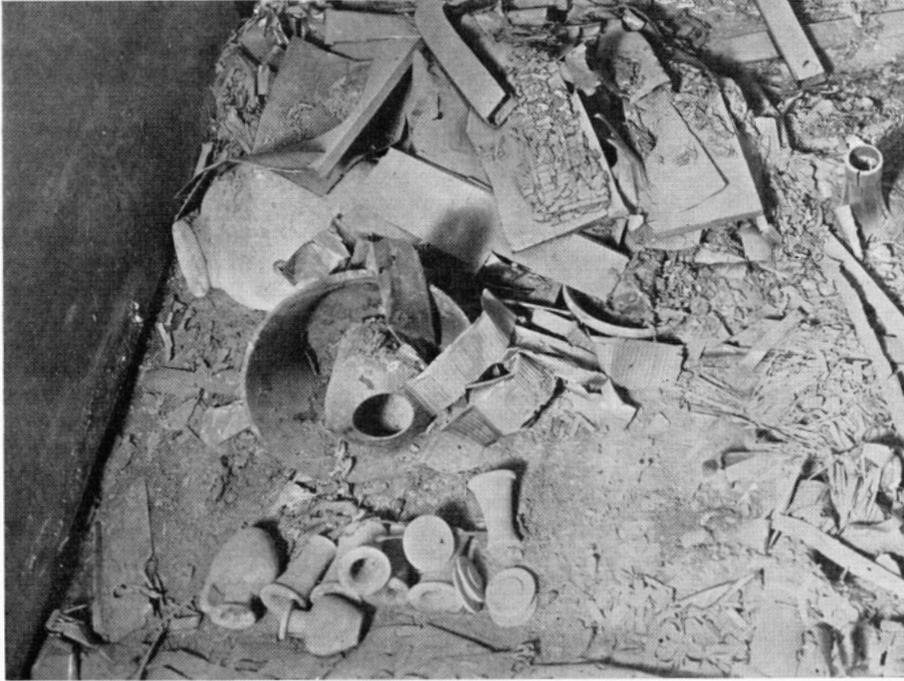
recovered later, but the exact board has not yet been identified. The second chair was probably also an arm-chair, as pieces of two arms lay just south of it; but this had no papyrus flowers under the arms.

The toilet vessels were of fine alabaster and were eight in number, corresponding to the seven traditional perfumed oils of the Egyptians and one cosmetic. The jars had been contained in a wooden box with a false bottom and had stood in holes in the upper bottom, with a long slender copper dipper (small bowl) lying beside the jars, and also six bits of copper ore (probably in a small bag). The box had stood right side up on a copper ewer and basin now lying on their sides next to the jars on the south. The copper ewer and basin and the box had been resting against the left side of the arm-chair, and when the chair collapsed towards the north these three objects fell also to the north dropping the box on its side. This occurred before the decay of the wood, and the box opened out so that we were able to obtain its approximate measurements, 26-27 cm. long by 12-13 cm. high, and about 14 cm. wide. The width was the difficult point as it was determined from the lid which had fallen to the north and was badly shrivelled. As the vessels lay, there were four on the ground nearly in their original positions showing that the jars had stood in two rows in the box, four in each row. By studying the position of the other four it was possible to deduce their original places in the second row, and we put the eight jars in a box in what I have no doubt was their original order. Two of the jars, all of which were small, were of the form of *hnm*-jug with flat bottom, round-shoulders, neck, rim, and single loop handle. Five disc-lids, also of alabaster, were found within the box but fallen to one side. The handled jug was well known from inscriptions and reliefs of Dynasties IV-VI, and our records show a number of dummy models of Dynasties IV and V, but the two examples here noted were the first practical examples of this type to be found. They measured as follows: — No. 136. H., 7.5 cm., diam., 5.7 cm.; *hnm*-ointment, or oil. No. 137. H., 9.5 cm.; diam., 6.7 cm.; *tw*-ointment, or oil. The other six jars, Nos. 138-143, were of the ordinary cylindrical form with rim, concave sides, and splayed base, which is so common in Dynasties IV-VI. They measured from 7.5 to 7.7 cm. in height, and from 5.1 to 5.6 cm. in the diameter of the rim. The five lids were inscribed each with the name of the perfumed oil or cosmetic contained in the jar to which it belonged; and each of the eight jars was marked on the rim with one hieroglyph as a key to the correct placing of the lid. Jar No. 137 had, however, two hieroglyphs. The eight jars contained the eight traditional oils or cosmetics as follows:

- (1) Handled jug, lid missing; on top of rim *tw*; (two signs); No. 137.
- (2) Handled jug, lid missing; on top of rim the single hieroglyph *hnm*; No. 136.

- (3) Cylindrical jar, No. 138; single sign, *sty* (perfume); lid, No. 132, inscribed *h;tt-thnnw* (prime Libyan oil).
- (4) Cylindrical jar, No. 143; single sign, *t*; lid, No. 133, inscribed *sft* (an oil).
- (5) Cylindrical jar, No. 139; single sign, an arm; lid, No. 135, inscribed *h;tt-cs* (prime cedar oil).
- (6) Cylindrical jar, No. 140; single sign, *k*; lid, No. 134, inscribed *hknuw* (an oil).
- (7) Cylindrical jar, No. 141; single sign, *w;d* (green eye-paint); lid missing.
- (8) Cylindrical jar, No. 142; single sign, *s*; lid, No. 131, inscribed *sty-hb* (festival perfume).

of gold held up by the copper ewer and basin, and could not be reached from the north. We turned therefore to the clearing of the western half where we could take a small area at a time, working very comfortably from the cleared space on the north. The recording and removal of these inlays was the most difficult and arduous part of the whole work and lasted until June 18, nearly four months. In places there were eight layers of inlays. Layer by layer they were drawn to scale (1:1), photographed, and removed. The displaced pieces were



Alabaster perfume-jars, bronze ewer and basin, inlays, pottery, and gold casing from furniture lying on the floor west of the sarcophagus; looking south, February 15, 1926.

Another lid was found later inscribed *šmdt* (i. e., *mšdmt*, black eye-paint), and suggests that there may have been another set of inscribed jars in the tomb. This lid does not fit jar No. 141, which bore the key-sign *w;d* (green eye-paint); nor does it fit No. 142. The order in which the jars stood in the box at the time of the deposition in our tomb is not the traditional order of the jars in the list. Perhaps the jars had been hastily rearranged at the time of the reburial.

At this point, February 28, we had reached an area covered with inlays, some in coherent groups, some in their relative positions, but disconnected, and some entirely displaced. Among these, in the western half of the space between the sarcophagus and the wall, partly over and partly under the inlays, were parts of the gold cases of the second chair, a carrying-chair, a bed, and other objects. In the eastern half, inlays in weakly coherent groups lay precariously on a heap of rilled sheets

laid in numerical order on the trays; the groups which were connected were placed on trays in their relative positions, assembled in their original order when, as often happened, this order was observable. When a layer had been removed there was almost always a layer of decayed wood or plaster to be carefully brushed away with camel's-hair brushes before the next pattern of inlay could be seen. Piece by piece the individual inlays and pieces of gold frame had to be lifted with fine pincers without disturbing the rest of the deposit — a task very similar to that of a player in the game of spillikins. With time the different patterns became known to us, so that we found less and less difficulty in the reconstruction, and we were usually able to assign even displaced pieces to their proper panels. Gradually the evidence accumulated that a number of wooden panels inlaid on both sides had been detached from the objects which they adorned, and deposited

here at the foot of the bed. Some of them had stood upright and fallen in several pieces.

To facilitate the removal of the inlays, we brought down a thick cotton mattress and spread it close to the edge of the area, partly on the rock floor and partly on the wooden platform in the pit, so that the operator could lie full length on his stomach. Later we found that certain layers of inlay ran out of arm's length to the south and to reach these outlying parts we had a sort of cantilever made of planks so that the free end projected about 40 cm. over the deposit. Lying on this, the operator was brought within easy distance of the outlying parts. On February 23 we had put in a stiff frame standing on the northern edge of the pit-cover and wedged against the roof, in order to carry one of the big 1000 c.p. lamps near the roof. On March 19, having cleared a sufficient space, we put in along the roof a beam three and a half meters in length, supported by two inclined struts resting on the southern edge of the board floor, with the butt attached to the upright wooden frame previously used; and we hung a lamp from the projecting part of this beam. The lamp could be slipped back and forth along the beam so as to keep the light directly on any area in hand. As soon as we reached the inlays, which required large scale photographs, we had a three legged stool made for the tilting table of the camera in order to take vertical pictures of nearly equal scale (about 1:2). During this period the usual procedure was as follows:— Mr. Dunham lay on the mattress with brush, pincers, and ruler and other apparatus and carried out the operations decided upon, while I sat on a low stool with a small drawing-board and the sheets of the register, and, watching the operations, made the written record. When difficulties arose, some time might pass, even hours, during which we were studying the lay of the objects before we could decide on the meaning of the evidence and determine the best way to proceed. Later, as will be seen, on Mr. Dunham's departure for America, Lt. Comm. Wheeler took over the place on the floor.

The curious and beautiful patterns, some of them entirely new, which were found on the inlaid boards, will be described later. It is impossible to give here the details of the reconstruction, or to reproduce the continual flush of satisfaction which came as we discovered one panel after the other and perceived the design which covered it. The growing sense of contentment may be imagined with which we saw our hours of careful recording bringing the results for which they had been devised. The labor involved was really great, but in the absorption of the moment the time passed so rapidly that we were hardly aware of weariness except after the day was done.

In February we had observed a horizontal row of gold hieroglyphs, which rested face up on a bar of decayed wood, over some gold casings among

the mass of inlays. On March 10 we reached these hieroglyphs, recorded them, and removed them to a tray. Read as they lay, they gave us the titles of a "mother of the King of Upper and Lower Egypt, follower of Horus, guide of the ruler". The person buried in the alabaster sarcophagus was without any doubt a queen, the mother of Cheops or possibly his grandmother. Thus she was either a wife of Sneferuw or his mother, probably his wife. But the rest of the inscription had sunk down in the mass to the west and the name was not visible. By the 16th we had noted three other lines of similar hieroglyphs giving the same inscription. These were vertical inscriptions running at about right angles to the first and the signs lay face down with wood on the backs. All three ran southward and again the ends with the name were hidden under the mass. In the same relative position as the four inscriptions lay the parts of a carrying-chair, and it was then obvious to us that all four inscriptions had been inlaid in the exposed wood of the back of this chair. The work of recording and moving went on according to plan, and it was not until April 14 that Mr. Dunham, brushing away a layer of wood-dust, suddenly uncovered the end of the horizontal line of solid gold hieroglyphs as before. I read "Hetep-heres," and at last we knew the name of our queen, the mother of Cheops. Hetep-heres was also the name of the princess, the eldest daughter of Cheops, who was buried in the greatest of the Giza mastabas about a hundred yards east of the secret tomb of her grandmother; and the name was borne by other royal ladies of the Old Kingdom. By the time the name was discovered we had the complete inscription which was to be confirmed later by the recovery of the other three. The last gold hieroglyph was not taken up, however, until August 23, for each group was dealt with as it appeared in the ordered progress of the work.

The complete inscription reads:—"Mother of the King of Upper and Lower Egypt, follower of Horus, guide of the ruler, favorite lady whose every word is done for her, daughter of the god of his body, Hetep-heres". The position of "king's mother" was the most influential that a woman could hold in the Pyramid Age. The words "follower of Horus" and "guide of the ruler", usually mark a royal spouse; and the name of Sneferuw on the canopy leaves little doubt that Hetep-heres was the wife of that king. The designation "favorite whose every word is done for her", was held by many queens and some princesses, and although interesting signifies little for the family relationship of the lady. The title "daughter of the god of his body" is, I believe, otherwise unknown, and the interpretation must remain doubtful. It is possible that this noble phrase covered an obscure origin. It may be recalled that in the story of Cheops and the magicians, which gives an account of the origin of the royal family of Dynasty V, the first three kings of that Dynasty are said to have

been born as triplets of the wife of a priest of Ra, but they were begotten by the sun-god himself, in order that they might supersede the descendants of Cheops and become kings of Egypt. Being interpreted, this seems to mean that after the family of Dynasty V had obtained the throne, their claim to royal blood was fictitiously established by ascribing to them descent from the great god Ra, the fount of all royalty in Egypt. And again in the New Kingdom, the claims of Queen Hatshepsut, the daughter of Thothmes I, to the actual rulership was strengthened by the story that she

known at present of that king and his family. The contemporary inscriptions are as follows:

- (1) Two of the king himself near the quarries of Wady Maghara in Sinai; see Gardiner and Peet, *Inscriptions of Sinai*, Nos. 5 and 6.
- (2) Seal impression on a clay jar-stopper found at Hierakonpolis; see Quibell and Green, *Hierakonpolis*, Pl. LXX, No. 2; an official of Sneferuw.
- (3) Twelve inscriptions on stone vessels (ten of diorite) giving simply one or the other name of Sneferuw; from private tombs, from the temple of Mycerinus, and from that of Sahura.



Gold casing of anklet-box showing inscription on lid.

had been begotten by the god Amon-Ra, who visited her mother, Queen Ahmes, in the bodily form of her husband, Thothmes I. Yet, as I mentioned above, the king of Egypt was a god, and in their inscriptions in Sinai, both Sneferuw and Cheops bear the title "great god". The kings of Dynasties V and VI were called "good god" as well as "great god", and throughout the succeeding ages "good god, lord of the two lands" was a constantly recurring title of the king. Thus the title "daughter of the god of his body" may indicate that Hetepheres was in fact a princess, the daughter of a predecessor of Sneferuw on the throne of Egypt, and probably his immediate predecessor, who is commonly thought to be Huni, last king of Dynasty III.

#### CHAPTER IV. Sneferuw and his Family.

Whether she was of royal blood or merely a beautiful woman with a fictitious pedigree, Hetepheres was certainly a member of the harem of Sneferuw, and it is of interest to examine what is

This is a very meagre result, but a number of inscriptions are known in the tombs of persons who lived or who were born in the reign of Sneferuw, of others who were descendants, and of still others who were priests of his funerary monuments. One of the greatest difficulties in dealing with the families of the Old Kingdom is that the tomb inscriptions of the members of the royal family seldom give the name of the king to whom the owner is related. A queen is "king's wife", or in the earlier tombs simply "beholder of Horus and Set", "follower of the Horus", "guide of the ruler", often without the words "king's wife". In some of the earliest inscriptions she is "mother of the king's children". A prince is a "king's son" or "a king's son of his body", and the same man is sometimes given both these titles in his tomb; similarly a princess is a "king's daughter". The grandchildren of the king during the Fourth Dynasty were generally called "members of the king's tribe" (?). But in one or two cases, the grandson, being the son of a "king's son of his body", is also called "king's son", as the titles were inherited. At the

time when these people lived, "king's son" was a sufficient designation, as everyone knew the king his father; and of course, in the tomb, it was the rank, not the parentage, which was of importance for the offering rites. The result, however, is that we are obliged to rely on chance references and on archaeological evidence for the relationships of most of the queens and royal children. For example, if a royal cemetery can be identified as belonging to a certain king, the persons in it will probably belong to that reign. And yet it is not inconceivable that the son of one king might have received a tomb in the cemetery of a later king. One of the great questions to which the patient work of excavating has been directed during the last twenty-five years, has been the relationships of the royal personages of Dynasty IV. I call it a great question because it is intimately connected with the prime question of the chronological order of our whole body of historical material. On that order depends a long series of questions concerning the development of Egyptian culture.

According to the inscriptions found in the private tombs of Dynasty IV, Sneferuw had two pyramids each called "Kha-Sneferuw" (Sneferuw has appeared), one of which was sometimes mentioned as "the southern pyramid, Kha-Sneferuw". These two pyramids have been identified with the pyramid at Meydûm and the northern stone pyramid at Dahshûr. The identification of the Meydûm pyramid with the name of Sneferuw depends chiefly on five hieratic graffiti found by Professor Petrie in the pyramid temple. These record the visits of Egyptians of the Middle and New Kingdoms and prove that the scribes of later ages believed the pyramid to have been that of Sneferuw. The name of Sneferuw occurs once in the name of an estate mentioned in an inscription in the adjacent cemetery; and a statuette is reported to have been found at Meydûm which bore the title "overseer of the two pyramids Kha-Sneferuw". Thus the evidence in regard to the Meydûm pyramid is weak. On the other hand, the northern stone pyramid at Dahshûr has been proved conclusively by Professor Borchardt to have been the actual tomb of Sneferuw through the discovery of a pyramid-city of Sneferuw at the end of the causeway and a decree of Pepy I renewing certain rights of the inhabitants of that city. This conclusion is borne out by the proximity of the tombs of the royal princes, one of them stated to be the eldest son of Sneferuw, and of the priests of the pyramid, all of the Old Kingdom. Therefore, although it is not impossible that Sneferuw built two pyramids, it may well be that the Meydûm pyramid was really the tomb of the predecessor of Sneferuw, King Huni, and the princes whose tombs are beside it, although made in Dynasty IV, may be the sons of Huni and not of Sneferuw.

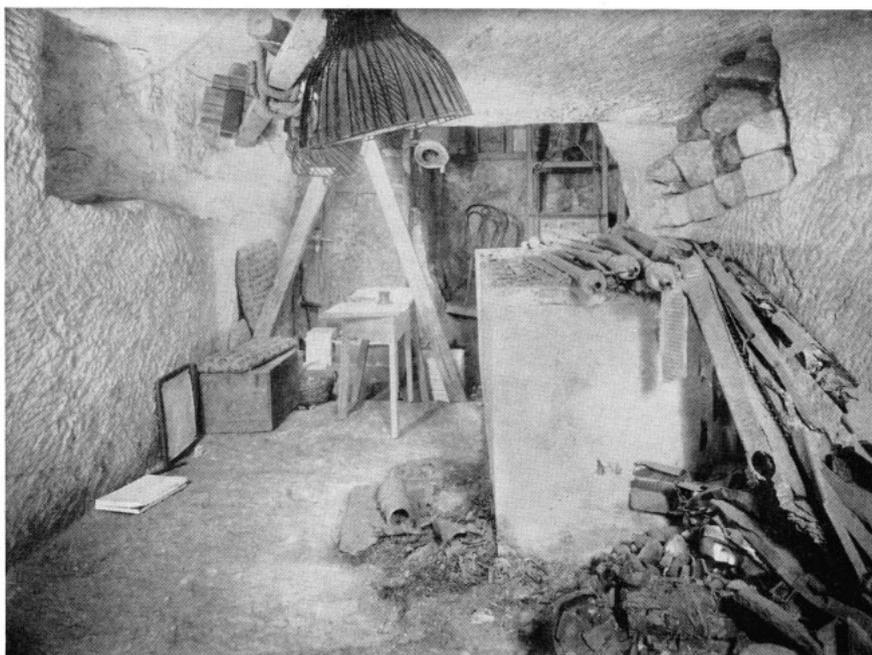
The eldest son of Sneferuw was Prince Ka-nofer of Dahshûr, and his eldest daughter was Princess Nefert-kauw buried at Giza in the royal cemetery

of her husband, Cheops. Leaving out of account the princes of Meydûm, who may be the sons of Huni, we have the names of one king (Cheops), five princes, and three princesses who may be identified with great probability as children of Sneferuw. Of course there are others as yet unknown. Previous to the discovery of Queen Hetepheres, two names have been found of wives of Sneferuw. One of these was a Queen Meres-ankh, whose name is given by one of the New Kingdom graffiti at Meydûm; but we have no other evidence of her existence. The name is one well-known in the royal family of Dynasties IV and V; and I suspect an error on the part of the scribe who wrote the graffiti. The other, Queen Meryt-yetes, is attested by an inscription from a tomb at Giza which gave her the following titles,— "King's wife, follower of Horus, consort of the lord-of-the-two-diadems, great favorite of Sneferuw, great favorite of Cheops, honored before Chephren, Meryt-yetes". This inscription was prepared in the reign of Chephren, or later, long after the death of Sneferuw. I think of her as a very beautiful woman of common origin who came as a young girl into the hareem of Sneferuw near the close of his reign, and passed still young and beautiful into the hareem of Cheops. In the household of Chephren she spent a vigorous old age with such respect and honor as is to be won by the shrewdness which comes from long years at court and perhaps by a quick tongue. I do not believe that she had ever been an important factor in the court either in the time of Sneferuw or Cheops.

Meryt-yetes and the problematical Meres-ankh were the two known names of women of Sneferuw when, through the identification of the person buried in the intact tomb at Giza, Queen Hetepheres emerges from nearly five thousand years of oblivion. As we see her now, she was the great woman in the house of Sneferuw, she whose son succeeded to the throne. As often happens in Egypt, Cheops was not the eldest son of Sneferuw; and, although undoubtedly a forceful personality, was probably assisted to the throne through hareem intrigues. If his mother was of blood royal, that would have helped him; but he married Nefert-kauw, his sister or half-sister, the eldest daughter of Sneferuw, and that would have strengthened his position still more if she were of the blood royal. There was manifestly a rift in the family after Cheops came to the throne. Both the eldest children of Sneferuw, Prince Ka-nofer of Dahshûr and the Princess Nefert-kauw, received relatively poor tombs and appear to have been neglected by Cheops. The son and the grandson of Nefert-kauw, in their tombs in the Cheops cemetery, emphasize in very unusual phraseology their descent from Nefert-kauw the "eldest daughter of the king of Upper and Lower Egypt, Sneferuw" as if they refused to recognize their father's claim to royal blood. Cheops himself in selecting

the place for his tomb turned from the broad plateau at Dahshûr to the higher rock at Giza ten miles away; and that change may have been partly due to family differences. We may never know the story of this quarrel, but as our facts stand Queen Hetep-heres is seen as the dominating personality in the palace of Sneferuw and beside her the child Meryt-yetes, perhaps her protégée, hardly her rival. When Hetep-heres,

king. In the Middle Kingdom and thereafter the years were simply numbered, and lists of kings with the number of years in each reign were all that was required for administrative and similar purposes. Fortunately near the end of the Old Kingdom a summary was compiled of the lists of year-names as far as then preserved, apparently with reference especially to the celebration of periodical religious festivals and the establish-



General view of chamber from south end looking north into the shaft, October 1, 1926.

through the accession of Cheops, became the "mother of the King of Upper and Lower Egypt", the first lady in the kingdom of her son, Meryt-yetes passed into the household of the young king.

The greater part of our knowledge of the reign of Sneferuw is derived from documents of later date. The most reliable of these are the "annals" of the Old Kingdom. In Egypt as in Babylonia, in the early dynasties, each year was named from one or more important events and referred to by that name. Consequently it became necessary in both countries to keep lists of the year-names of each reign for administrative and legal purposes, and lists of the succession of reigns. The subsequent development of this system varied in each of the two lands. In Egypt, biennial tax-census came to play a great part in the year-lists; and when in Dynasty VI the biennial census became annual<sup>1</sup>, the year-names were in practice numbered according to the years of the reign of the

ment of temple endowments. This summary was inscribed on stone in a number of examples and set up probably in temples. The information they contained would have served the modern historian as a complete chronological skeleton of the first six Egyptian Dynasties, and for that reason they are designated "annals". No complete example has been recovered, but fortunately a few fragments have survived, and on these are references to ten different years of the reign of Sneferuw. The entries for the thirteenth, fourteenth, and fifteenth years of Sneferuw will give an idea of the character of our knowledge of his reign. They read:—

- Year: Construction of x (a number) 100-ell ships (*duwa-tauwy* ships) of *mer*-wood and 60 royal sixteener-boats.  
 Devastation of the land of the negroes; bringing of 7000 captives, male and female, and 200,000 cattle, large and small.  
 Building of the walls (?) of the southland and northland (called) Palaces of Sneferuw.  
 Bringing of 40 ships loaded with cedar-wood.  
 Height of the Nile, — 2 ells, 2 fingers.

<sup>1</sup>See SETHE, *Untersuchungen*, III, p. 99.

- Year: Making of 35 quarries (?), . . . 122 bullocks.  
Construction of one 100-ell ship (*duwa-tauwy* ship) of cedar-wood and two 100-ell ships of *mer*-wood.  
Seventh census.  
Height of the Nile, — 5 ells, 1 hand, 1 finger.
- Year: Setting up (the building (?) called) "High is the Upper Egyptian crown of Sneferuw over the southern administration (?)" and "High is the Lower Egyptian crown of Sneferuw over the northern administraton (?)".  
Making the doors of the royal palace of cedar-wood.  
Eighth census.  
Height of the Nile, — 2 ells, 2 hands, 2¾ fingers.

These are characteristic of the activities of the king, and together with the material recorded in the other fragments shadow for us the dim outlines of a smoothly working organization with departments for war, for the treasury, for agriculture, for the celebration of the festivals, for the accumulation of raw materials, and for the erection of buildings and monuments. It was this last named department which exploited the malachite mines of Sinai for Sneferuw and left there the two inscriptions which I have mentioned before. They also brought the forty ship-loads of cedar-wood in the year 13 to be used in the years 14 and 15 for shipbuilding and the making of doors for the palace, and exploited the native quarries for stone. The great northern pyramid at Dahshûr was certainly the work of the construction gangs of this department, and marks the advance made by the masons of Sneferuw over those of Zoser. The related art of sculpture in relief was maintained and that of sculpture in the round in limestone was brought to a very great excellence.

As for the relations of the Egypt of Sneferuw to foreign lands, the annals tell of a raiding or punitive expedition southwards to the land of the negroes and another southwestwards to the land of the Tehennuw-Libyans. Both of these were made to keep open and safe the roads to the markets of Ethiopia. There is also a mention of the punishment of a city in Egypt itself, and all three of these operations were probably part of the policy by which Sneferuw maintained public order. As always, the tribes which had disturbed the peace had been made to pay with their accumulated property for the cost of the punitive expedition. The object of the king was not conquest, but the maintenance of the supplies of raw material which Egypt drew from Ethiopia and Central Africa. The relations with Sinai and Syria were certainly of a similar character, for Egypt in the time of Sneferuw was drawing malachite and cedar-wood from these regions as in later centuries; and I have no doubt that similar punitive expeditions were sent to both these lands on occasion, certainly to Sinai against the Bedaween of the surrounding desert.

The expenses of the court were borne by a tax on property levied every second year, the costs of the army, of the administration, and of all the great works executed were borne by a tax on

property levied every second year after a national census. It is of considerable interest to note that tax was levied in both the 14th and 15th years of Sneferuw without the usual interval of a year. Unfortunately the record for the rest of the reign is lost, so that we are left uncertain whether this was a temporary measure to relieve a pressing necessity or a permanent change in the taxation during the rest of his reign.

The length of the reign of Sneferuw is still uncertain. In the Turin Papyrus, one of the later lists of kings and dynasties, Sneferuw is given 24 years under the accepted arrangement of the fragments.<sup>1</sup> In the version of Manetho's list preserved by Africanus, he receives 29 years. M. Daressy estimates that the space assignable to Sneferuw in the Annals (Palermo Stone) would represent 24 years,<sup>2</sup> while Sethe estimates it at 30-32 years or less.<sup>3</sup> The 15th year of Sneferuw is the highest preserved in the Annals, and the calculated space in the same document allows not more than 32 years. Thus the evidence indicates a reign of about 24-30 years, slightly longer than the general average.

The following persons are known who were contemporaries of Sneferuw or were alive during his reign:

1. Queen Hetep-heres; tomb at Giza, G 7000 X.
2. Queen Meryt-yetes; tomb at Giza, not identified.
3. Prince Neferma'at of Meydûm; mastaba No. 16 at Meydûm; eldest son of Huni or Sneferuw; in tomb, mention of an estate called Menat-Sneferuw. His wives, Yetet and Nub, both "members of the king's clan".  
Twelve sons and three daughters, whose names are known, except that of one daughter.
4. Prince Ra-hotep; mastaba No. 6 at Meydûm; probably brother of Prince Neferma'at; statues of Ra-hotep and his wife, in Cairo.  
Wife, Nefert, "member of the king's clan".  
Three sons and three daughters, all called "members of the king's clan".
5. Prince Ka-nofer; mastaba No. 28 at Dahshûr North;<sup>4</sup> eldest son of Sneferuw, overseer and funerary priest of his father's wife, Khuwnesuw, "member of king's clan, king's favorite".  
Children, two sons and a daughter, each called "member of the king's clan".
6. Prince Qed-Shepses; mastaba No. 27 at Dahshûr North;<sup>4</sup> son of Sneferuw, brother of Ka-nofer.  
Children, two sons, each called "member of the king's clan".
7. Prince Sneferuw-nefer-her; mastaba No. 11 at Dahshûr North;<sup>4</sup> possibly a son of Sneferuw.
8. Prince Ka-aha-ef; mastaba north of the causeway at Dahshûr North;<sup>5</sup> probably a son of Sneferuw.
9. Prince Iy-nefer-ef; mastaba at Dahshûr South;<sup>6</sup> probably a son of Sneferuw.

<sup>1</sup>MEYER, *Chronologie*, p. 145 ff.

<sup>2</sup>DARESSY, *Bulletin de l'Institut Français d'Archéologie Orientale*, XII, p. 199.

<sup>3</sup>SETHE, *Untersuchungen*, III, p. 51.

<sup>4</sup>See DE MORGAN, *Dahchour*, II, pp. 1-27.

<sup>5</sup>See DE MORGAN, *Dahchour*, I, p. 12.

<sup>6</sup>See BARSANTI, *Annales* III, p. 198, pls. I and II.

10. Princess Nefert-kauw; mastaba at Giza (G 7050), identified from the inscriptions of her son and grandson (G 7060 and 7070); eldest daughter of Sneferuw; queen of Cheops (fourth in line of tombs of his queens). Her son, Prince Neferma' at of Giza, son of Cheops. Her grandson, Sneferuw-kha-ef, son of Prince Neferma' at of Giza.
11. Princess Sedit; mentioned in the mastaba of her son Prince Mer-ib, at Giza (mastaba G 2110); probably daughter of Sneferuw and wife of Cheops; the mastaba is of Dynasty IV.
12. Princess (?) Nefert-nesuwt; mentioned in the mastaba of her son at Dahshûr South,<sup>1</sup> but the reference is obscure and she was probably a "member of the king's clan".

known since he was a baby and whose father had died in the service of the Expedition.

During May and June the recording of the inlays and parts of the gold cases went forward steadily, day after day and week after week. This brought us to the northern or head-end of the bed, where there lay the gold cases of two tall lion's-legs, with a large circular button projecting forwards above each leg, of two palm-capitals, one on each side above the ends of the side-bars, and of the northern end-bar (two sheets). The bed had been deposited upside down, and all the parts



King Sneferuw seated on his throne. Gold sheet with inlaid faience decoration from north end of box on coffin-lid.

There was, of course, Cheops himself who afterwards became king, and perhaps some of his children were born during the reign of Sneferuw. The names of some persons have escaped us although their mastabas, like No. 17 at Meydûm, have been excavated.

#### CHAPTER V. The Clearing of the Tomb of Hetep-heres from April to December, 1926.

At the end of April Mr. Dunham departed for Boston to take up his duties at the Museum of Fine Arts. Lt. Comm. Wheeler was then transferred from his special work to take Mr. Dunham's place in the tomb. Mohammed Tammam became ill and was replaced by Mursi Hasan, whom I had

had fallen into positions corresponding to this fact. The bars had fallen top down and the sheets covering them had then opened out. The larger eastern sheet of the head-bar (No. 521) ran eastwards under a collapsed pile of gold cases and inlays and could not be moved until August 20. Over the eastern end of No. 521 there also lay a number of gold cases from wooden discs (about 15 cm. in diameter) and from rilled wooden staves. One of the discs had been cased in an impure gold which was found heavily covered with a black patina (silver?), and on this, in relief, stood the name and titles of Hetep-heres as given in the four inscriptions in gold hieroglyphics. East of these and the palm-capital lay a mass of inlays fallen from the edge of the inlaid panels in the eastern half of the area in hand. The upper layer of these inlays was removed and found to give again the name and

<sup>1</sup>See BARSANTI, *Annales III*, p. 198, pls. I and II.

titles of Hetep-heres, which had been set in plaster on the lower edge of a panel.

Beyond the end-bar of the bed, to the south, extended an area of about a square meter and a half which was covered with shrivelled fragments and shreds of decayed wood, obviously of no great depth. Over this wood were scattered parts of the gold-cased carrying-chair and along the sides the cases of the side-bars of the bed. On the south was a high pile of pottery and stone vessels, on which lay the southern end of the bed, but with some of the parts fallen down behind to the south. Draped over the gold case of the eastern bar of the bed lay a wooden board which had fallen in curves fitting the gold, having no doubt assumed this position by the gentle pressure of its own weight acting through centuries of time but seeming once to have been as flexible as a wet cloth.

As early as June 4 we had begun the study and the treatment of the wood of this area under the bed. On June 18 we removed the parts of the gold carrying-chair (Nos. 559, 560, 561, and 562) which lay over the wood, and put in a wooden bridge over the end-bar of the bed (No. 521), in order to give access to the area to the south. Thus we were working southwards along the western wall of the room, leaving untouched the copper ewer and basin, the western palm-capital, and the heap of gold sheets covered with inlays between the palm-capital and the sarcophagus. The study of this area lasted fourteen days, until July 2. The greater part of the wood came from a platform which had rested on the upper side of the bed, supported by the frame of the bed and two slats running lengthwise. Neither platform nor slats had been cased in gold. The bed with the platform in place had been put in upside down with the southern end resting on a large box which had once contained the high pile of pottery and stone vessels on the south. The box containing the pottery, the wood of the bed and that of the platform, had all decayed; but apparently the bed was still in its original position when the weight of the pottery, potsherds, and stone vessels in the box caused a settlement which brought down the wood of all three objects. The side of the box fell on the floor with some of the contents of the box on the top of it slithering northwards. The platform of the bed collapsed partly on these and partly on the floor to the north, while the higher southern end of the platform sliding down was telescoped by the fall. The bed-frame itself, held together a little longer by the gold casing, collapsed last; and the gold sheets of the casing opening out deposited the wooden core on top along the edges of the mass of wood. The southern end-bar of the bed and the two palm-capitals slid off to the south, but by accident the southeastern leg (the left back leg) of the bed came to rest still upright (upside down as before) on the pottery and leaning against the west wall.

Under the wood of the bed, the box, and the

platform, over the uneven rock floor of the room, there was spread a layer of limestone powder from the stone-cutters' work in the tomb. This limestone powder covered in fact the whole floor of the chamber, filling the inequalities and producing a fairly level surface. We called it always floor-dust. Under the bed on this floor-dust were a number of objects, some of which had fallen down from the collapsed box on the south, but others had been on the floor from the day of burial. Along the west wall lay an alabaster bowl and a heavy copper punch in perfect condition; near the middle of the bed, a massive copper implement, perhaps a crusher, of a form which I had never seen, equally well preserved as the punch; and just west of the crusher, a copper knife-blade with a rivetted wooden handle. Both the knife-blade and the handle were in a very bad condition, but recognizable. The crusher and the punch were heavy, practical, stone-cutting implements, and both had been used by striking the butt end with a wooden mallet. Such implements are inexplicable as part of the funerary equipment of a queen. Further along the west wall we uncovered a large group of little clay models of two kinds of wine- or beer-jars, and two small bone implements; but these had apparently fallen out of the collapsed box on the south. Over the deposit of decayed wood from the bed lay several other pieces of decayed wood and also two copper staples like those we afterwards found in the beams of the canopy.

On July 1 we began recording and clearing away the great pile of pottery and stone vessels which lay under the southern end of the bed. On July 5 we slung another beam along the under side of that on which the lamps were hung, so as to reach the southern wall of the room, and attached to this another lamp. There were now three 1000 c.p. lamps hanging from the roof in a line between the pit in the floor and the south wall, and a fourth lamp was used unattached. The switch-board was mounted on the side of one of the wooden struts. These projecting beams enabled us to illuminate the deposit from the south and improved considerably the lighting in the photographs. On July 15 the work was begun on the inlays and gold sheets lying between the north-eastern palm-capital and the sarcophagus; and thereafter we carried on work at two places so that while the photographic prints were being prepared for one field of operations, the work went on in the other. We now had more room on the floor and brought in a small three-legged table of special construction for the recording. The work went on rapidly.

The chief point of interest during July was the heap of gold sheets under the inlays beside the sarcophagus. As early as April, from the north we had seen through a rift in the sheets a bit of a rounded object of silver inlaid with colored stones. During June, seen from the west, again through

the rift, this object was clearly a large ring inlaid with dragon-flies, and several were visible in a very bad state of chemical disintegration. When the decayed inlaid panel over the sheets had been successfully removed, on lifting a fragment of gold sheet, on July 17, a large rilled sheet of gold with an ivory button in the middle was exposed and found to bear an inscription as follows: to the

two sets had lain side by side in the box, but the western one had been disturbed by the collapse of the box, for there was a pottery bowl under the western side of the box over which the western set broke as it settled. The eastern set of anklets was not taken up until October 2, and the sight of them was a constant source of pleasure during August and September. Each anklet was inlaid with



Anklet-box after removal of lid, showing remains of western set of ten anklets.

right of the button, "Mother of the king of Upper and Lower Egypt, Hetep-heres"; to the left of the button, "Box containing *deben*-rings". It was at once clear that the sheets of gold represented the casing of a jewel-box which had contained the inlaid silver rings beneath, and that the Egyptian word for these rings was *deben*. The word *deben* was already known to designate some kind of ring, but the word was now defined by actual examples, which we later decided were anklets. The removal of the sides of the box progressed slowly, complicated by the recording of inlays fallen down from the panel above, and on July 25, on taking up one of the sheets of the sides of the box, we exposed a row of ten more inlaid silver rings, nine of which were fairly well preserved and stuck together by the patina. It was then seen that the box had contained two sets of ten anklets, each graduated to fit the swelling of the leg from the ankle to the lower part of the calf. Each set had been placed on a wooden bar with gold-cased discs to cover the ends of the set. The

four dragon-flies in light green malachite, with the cross-bars of dark blue lapis lazuli, and the tail-joint of red cornelian, and the four dragon-flies were separated by four discs of red cornelian, one between each two dragon-flies. Even the antennae were inlaid in stone. The insect was manifestly a dragon-fly such as was then fluttering every evening about the lights of our dinner table which stood in the open air; but it was a conventionalized dragon-fly with eight wings to cover a greater space, instead of the natural four, and with all the color heightened to obtain a greater decorative effect. Perhaps the word "glorified" would be a more exact description than "conventionalized".

On July 24 we were able at last to move the copper ewer and basin which had supported the sheets on which rested the inlaid panel. Both were in fine condition. The spout of the ewer was welded on the shoulder with a collar, not rivetted, and the cover of the spout was a separate piece also welded in place. The ewer was inside the basin as usual and stuck to its bottom was a

small copper plate, rectangular, flat on one side, raised in a panel on the other, and with sharpened edges. This implement was to be found in other examples later, in copper, in gold, and in flint, but for the moment we could only wonder and pass it through the records.

While working on the deposit of sheets, anklets, and inlays, we had been examining the layer of

layers of wood, then another layer of cloth and finally on the floor a fourth layer of wood. It was clear that this organic deposit represented two wooden boxes containing cloth or clothing which had decayed in place and settled down from a height of perhaps 80 cm. to a thickness of only 15 cm. We were also able to identify the remains of the wood of the sides and ends, which had of



Area of anklet-box; the eastern row of ten inlaid silver anklets; looking down to east, July 28, 1926.

organic material south of the pile of vessels under the end of the bed. The area involved was about 75 by 80 cm. in the southwestern corner of the room. By July 21 the pottery and stone vessels north of this area had been cleared away and also the parts of the bed which had fallen down over it. A surface was exposed, only about 15 cm. above the floor, covered with the remains of a wooden boarding which had shrunk and shrivelled in place. Under it was visible a deposit of what we called "grey muck". This material was light in weight, usually granular, and manifestly of organic origin. But in utter ignorance of what the deposit might be or might contain, the examination went very slowly forward. We first saw that in the mass of "grey muck" there were small fragments of fine cloth, probably linen, and then that these fragments of linen passed into thin layers of typical "grey muck". In other words, all this "grey muck" consisted, in fact, of masses of cloth, probably folded sheets, in various stages of decay. Under the first layer of cloth were two

course sunk down in ridges along the two walls and on the other two sides; and when the floor was reached we were able to trace the outline of the bottom of the lower box on the floor-dust. The box measured about 59 by 47 cm. and was probably not over 40 cm. high. This work lasted all through August and it was September 2 when we finally had the whole western side of the chamber cleared to the south wall.

At the beginning of the work we had put in an electric fan at the top of the chamber to drive the air heated by the great lamps out into the shaft. In August this proved ineffective and the air in the chamber became warm and moist. We therefore put in a tin pipe, 16 cm. in diameter, leading from the roof of the chamber up the shaft to the outer air behind the hut which was over the shaft. In the widened mouth of the pipe at the bottom we fixed the fan so as to drive the air up the pipe. It was inadvisable to draw it down lest the draft disturb the lighter part of the deposit. The expelled air was replaced by the cool

air from the shaft, very slowly but very effectively. The making of the pipe and its erection in the shaft required five days, August 15-19, and thereafter the chamber became quite comfortable again. In fact, the air had never been bad; during the whole summer it was cooler than the upper air. The greatest annoyance was in the spring caused by various insects, — most of all by fleas, small ants, common flies, and some other insects. The flies came down on the lift, and the fleas, which are very abundant in Egypt in the spring, probably hopped down, but the small ants appeared to have wandered down the sides of the shaft and to have formed a colony near the bottom. All these insects were kept down and finally exterminated by the use of insect powder. Fleas and flies in any case nearly disappear in Egypt in the summer time, at any rate in the desert.

During August the clearing of the heap of gold sheets, inlays, and other objects under and about the box of anklets was our chief occupation. Among the gold cases were the disjointed parts of a pillow or head-rest with fluted stem of a type very common in the Old Kingdom but with a new variation, a round-topped basis. Over this whole area we found groups of colored ring-beads of faience and some of gold. The colors were blue, yellow, and black; and the pattern, which was of lozenge type, was reconstructed by a comparison of the various groups. But the object which they composed, perhaps a bead garment, could not be identified owing to wide scattering of the parts. All the groups from the eight alabaster toilet-jars to the southwestern corner of the coffin, including the copper ewer and basin, the box of anklets, the gold-cased discs and staves, and the inlaid panel of this area, had been contained in a large wooden box; and the bead object, whatever it was, had also been in the box laid over the whole, but the parts, by the early decay of the threads, had slipped down the sides of the pile.

During September we devoted ourselves to clearing along the south wall of the room and removing the pottery and stone vessels along the western side of the main deposit south of the coffin. Along the south wall we recorded a row of three more boxes which had been filled with linen, and realized that among the folds of linen there were potsherds, and other small fragments, indicating that the linen had been gathered up from the original tomb and placed in boxes for transport. Later we saw that all the objects and fragments, everything except the two arm-chairs, the carrying-chair, the bed, and the canopy, had been carried over from the other tomb in wooden boxes and so set down in our tomb still in the boxes of transport. On September 2, in one of the linen boxes, we found a flake of alabaster which fitted one of the chipped places in the alabaster sarcophagus. This came as a shock. We already knew that the contents of the box had been gathered up from the original tomb, and that the original

tomb had been broken into by thieves. The only plausible explanation of the presence of this chip of alabaster was that the thieves had opened the coffin, for it was in the rubbish left by the thieves. The chipping of the upper edge of the coffin and the lower edge of the lid had been noted when the tomb was first opened and understood as proving that the coffin had been closed and opened again before deposition in the secret tomb. When I reached the conclusion that the deposit was a reburial brought here from another tomb, I assumed that the coffin had been opened by the officials in charge of the transfer; for it was necessary to take out the body and carry it separately to save it from damage during the transport of the alabaster sarcophagus, especially as the sarcophagus had to be let down end on into the new shaft. I had also recognized that the relative positions of the objects in our chamber represented approximately a reversal of the positions in the original tomb. That is, those things which had been nearest the doorway of the original tomb had been taken out first and placed first in the Giza tomb. Thus, the coffin which was in the southwestern quarter of the old tomb came to stand in the northeastern quarter of the Giza tomb, and was therefore the last thing to be moved from the old tomb. Later we found more of these chips of alabaster from the coffin and the lid, and they were all in the boxes in the *southern* part of our chamber, some with the linen, some with the potsherds and other rubbish. It seems probable, therefore, that they were in the rubbish left by the thieves as a result of attempts to open the coffin. If they had resulted from the official opening, these chips would probably have been found in the box or boxes near the doorway of our tomb. We cannot be certain, but it seems to me that the preponderance of the evidence indicates that the plunderers attempted at least to open the sarcophagus and probably succeeded. Until the coffin is actually opened and the contents ascertained, it is impossible to say what happened at the time of the plundering of the older tomb. It is needless to say that the observation of this evidence of the opening of the coffin by the thieves had a very depressing effect. On September 6, again in one of the boxes of linen, we found a mud-sealing which had been used to seal a box of some sort, and bore the impressions of a cylinder seal. We had already found fragments of both box- and jar-sealings, but none of them had borne impressions. And later we found many other fragments, some with impressions but most of them without. The impression of the sealing found on September 6 did not give the complete seal on account of the rounded surface of sealing and the rolling of one impression over another, however there was clearly legible the name of Cheops, "Horus Mezeduw" and "King of Upper and Lower Egypt, Khufuw", and the word *wa'bet*, — that is, the funerary storehouse.

This (as well as the later sealings) was in the thieves' rubbish of the original tomb and was therefore a sealing used at the original burial, not during the transfer to Giza. The interpretation of this fact was obvious: — the equipment of the original tomb had been carried out by the funerary storehouse of King Cheops; Hetep-heres had died and been buried in the reign of her son, in a tomb beside the pyramid of her husband, Sneferuw. Sneferuw, it may be remembered, was buried in the northern stone pyramid at Dahshûr. The environs of that pyramid have not yet been systematically excavated, and we are therefore unable to identify the original tomb of Hetep-heres or to indicate any pyramid or mastaba at Dahshûr which might be her tomb.

The stone vessels were without exception of alabaster. The two types of small ointment jars have already been mentioned in connection with the toilet-box, the *hnm*-jug and the splay-foot cylindrical jar. One other example of the jug and several of the small cylindrical jars were found among the pottery and potsherds. The larger alabaster vessels consisted of small and large bowls, of cylindrical jars, one medium sized shoulder-jar with neck, and one very large jar of similar form, one jar with moulded collar and ring-stand all in one piece, and a jar with spout and ring-stand also of one piece. The forms of all these vessels fit in between the known forms of Dynasty III and those of Dynasty IV, and all are known in stone and pottery models of Dynasties V and VI. The collar-jar with ring-stand is a new form, but is manifestly the hitherto unknown prototype of a large group of stone and pottery models of Dynasties V and VI. The pottery vessels were as usual of two classes, sound practical vessels and impractical vessels or models made for the burial. The impractical vessels and models are of the kind which I have labeled "ceremonial traditional". That is, they were forms which had once been in practical use but, having been replaced in daily life by other forms or vessels in other materials, continued to be regarded by tradition as necessary and so made especially in order to be deposited in graves. Naturally such forms came to be manufactured carelessly and cheaply, both as to material and technique, and show a general tendency to degeneration and to replacement by small models. The body of pottery forms of Dynasty III is not yet very well known, and that of the early part of Dynasty IV is best represented by the scanty examples, more or less fragmentary, recovered by us from the plundered mastabas at Giza. The pottery of the end of Dynasty IV was represented fairly completely by the vessels in the valley temple of Mycerinus, and that of Dynasties V and VI had been recovered from the mastabas and tombs of Giza, Saqqarah, and Upper Egypt. Archaeologically, therefore, the clearing of the pottery vessels from the tomb of Hetep-heres, definitely

dated to the reign of Cheops, was of absorbing interest. Many of the vessels had been smashed owing to the action of the thieves in the Dahshûr tomb. In transporting them to Giza the whole vessels were placed in stacks in the boxes and sometimes masses of potsherds were piled in on top of them. A certain amount of breakage took place during this operation. Some of the larger vessels appear to have been used by the masons who built the packing of the tomb shaft for mixing and carrying plaster. After reaching the chamber of our tomb many of the bowls stacked in the boxes were broken in place by the weight of potsherds above them. In those cases in which the pottery was in the upper part of a box, complete vessels were also broken by rolling down when the wood of the box decayed. So also the larger potsherds were often broken by pressure and by the settling due to the decay of the boxes. We found, therefore, a certain number of perfect vessels, a certain number complete but broken in their places, and a mass of potsherds from vessels broken before the deposit left the Dahshûr tomb. For example, parts of one large vessel were found in three different boxes. The exact record kept of each of the potsherds not only enabled us to assemble those that had been broken in the Giza tomb, but to distinguish between those broken there and those broken in the Dahshûr tomb. As each vessel was recovered perfect, or complete, or put together from fragments, we found that we were assembling a new group of pottery, a new member of a long series of archaeological groups which now cover in more or less detail the whole course of Egyptian history. Our satisfaction may be measured by the fact that it is on this chronological series of archaeological groups, which runs parallel to the lists of dynasties and kings, that archaeologists depend for the dating of the greater part of all tombs throughout Egypt. Very few tombs can be dated by inscriptions. There were vessels identical in form, material, and technique with known vessels in Dynasty III or of the reign of Mycerinus, some practical and some traditional, but others were entirely new and surprising. The most notable of these were the large basins of red ware with two ledge handles and an open spout and the covers of the same also with ledge handles. There were also other large lids with a loop handle for removing from a pot on the fire by means of a wooden stick; small lids pierced by holes (for letting out the steam?) and also provided with a loop handle on top. There were large bowls with incurving mouths and sharply cut internal rims, manifest copies of earlier stone forms, and the examples of one series of these were mounted on tall stands, the whole made in one piece. The flaring cups and bowls of polished red ware were well known in Dynasties V and VI, but their history was here carried back to the beginning of Dynasty IV. On the whole it was clear that the

deposit represented (1) the vessels actually used in the household of the queen, and (2) those which were by tradition considered a necessary part of the tomb equipment in her day and had descended from earlier practical vessels. The number of models was enormous, and some of the forms occurred in all sizes from large, heavy, practical vessels in fine pebble-smoothed ware to small roughly made copies in coarse red pottery. These models led straight from the models of Dynasty V to the earliest prototype.

On September 18, as the work progressed eastward in the chamber, it was found necessary again to change the lighting. The second or lower beam, put in on July 5 to carry a lamp southward, was unshifted and mounted with a rope so that it swivelled on a rope on the end of the first beam still supported on its two struts. A lamp hung from the far end of this swivelling beam could thus be shifted as far east as the eastern wall of the chamber and so illuminate the pottery and other objects which we were now recording. A second three-legged table was also made and brought down to use in recording the pottery and the stone vessels.

From the reopening of the tomb, a mass of bright green powder nearly in the middle of the space south of the coffin and on top of the mass of pottery had drawn our attention. It gave a distinctive color note to all that part of the deposit, and invariably held the eyes of the visitors to the tomb. We had assumed that it was carbonate of copper resulting from the decay of copper implements. In due course, on September 19, we came to the examination of this deposit. Mr. Lucas was fortunately in Cairo and was able to assist us. He pointed out that carbonate of copper is chemically the same as malachite, that beautiful green stone of Sinai so loved by the Egyptians for making amulets and ornaments,— the same stone used for the green in the inlaid dragon-flies of the anklets. In the form of malachite, the copper carbonate has, however, been compressed and altered by geological conditions. The deposit in the tomb was found to lie partly in layers and partly in granular masses and to occupy a relatively considerable space (about 3000 cubic centimeters). Fragments of the carbonate had rolled down among the potsherds and we afterwards found that the copper stain had affected the deposit

nearly to the floor. The main deposit lay in two adjoining masses. In the western mass we found the sound core of a copper punch similar in form to that found on the floor under the bed, but about twice the weight. In the eastern mass we found the sound core of a third punch still of great size, twice as heavy as the second one, and another example of the crusher which was found on the floor under the bed. This second crusher was, however, considerably corroded and had lost a good deal of its sound metal. Mr. Lucas informed us that copper in passing into the carbonate expands to over four times its original bulk. Thus the great mass of green powder had resulted from the partial decay of these three implements, and the mechanical separation of the layers of carbonate as they were loosened from the corroding surfaces. A careful examination of the mass of copper on all sides showed that it had originally lain on top of one of the boxes of pottery, and that the implements had been placed or thrown there without having been in any container either of cloth or of wood. Thus there were five of these heavy copper tools which, as I said before, were not clearly part of the deposit and seemed out of place in the funerary equipment of a queen. They were, I think, either left in the unfinished chamber of our tomb by the stone-cutters, or in the Dahshûr tomb by the plunderers.

On September 25 we were removing a group of alabaster vessels which lay high up in the middle of the main pile of vessels when we discovered wedged between them a perfect gold cup with recurved rim and long open spout. It was not decorated in any way but was beautiful by the grace of its form and the polished surface of the gold. Although bearing the weight of an alabaster jar the surface was not scratched or dented. The form was well known in later copper examples and in the early reliefs. There were other small objects scattered through the boxes of vessels and potsherds, the most common of which were worked flint flakes of two types. Both these types consisted of a flake with one flat side and one side raised in a sort of panel. One type was longer (9-12 cm.) and had rounded ends finely worked by delicate chipping. The other was rectangular and rather short (6-7.5 cm.) with squared ends also finely worked. The side edges of both were sharp and unworked and seemed to be practical

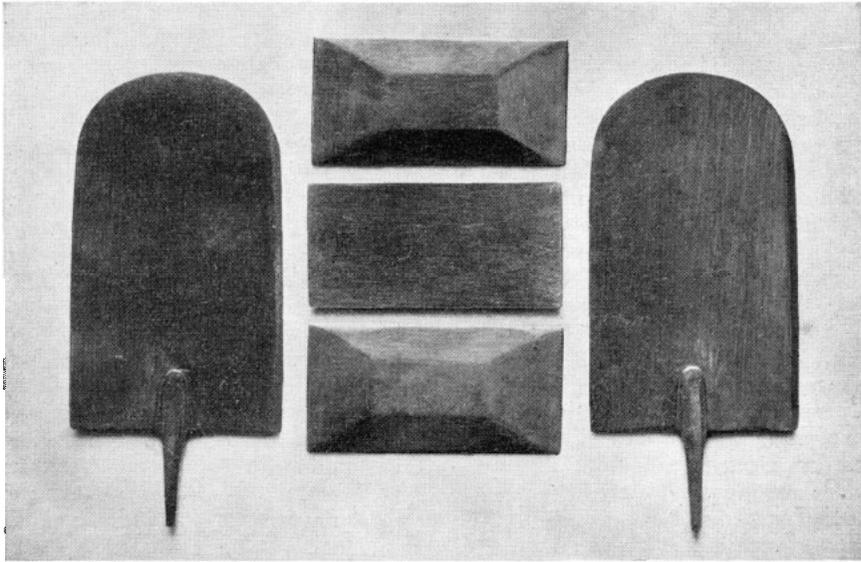


Gold drinking cup and two gold dishes.

cutting edges. The rectangular type was recognized at once as the prototype of the rectangular copper implement of the same form but with four sharpened edges.

In the later part of September we were working on the masses of potsherds, many of them mere scraps and many disintegrated or disintegrating. Mr. Lucas informed us that this action was probably due to the gradual slaking of the lime which

before, in a large wooden box in which it had been transported from Dahshûr. In this box in the southeastern corner, on the floor, we uncovered a number of implements of gold and copper, and two small gold saucers. One was a spatula-shaped object of gold with one rounded and one flat side, one round end and one pointed end. Another implement was represented by seven examples, two of gold and five of copper. This was



Gold razors and rectangular knives.

had been formed (during the burning of the pottery) from carbonate of lime which had been mixed with the clay, apparently to give it a finer consistency, and not to salt. Work had been nearly stationary on the deposit which had been in the same box with the gold jewel-case, because we wished to approach that deposit from the southwest. On October 2 we turned again to this area. The first proceeding was to lift the eastern set of inlaid silver anklets, of which seven were still in place, held together by silver oxide. We ran a tapering stick cut to fit the curvature through the holes inside the anklets, fastened to this the gold case of the bottom of the box with threads, and lifted the whole in one piece on to a specially prepared padded tray. The tray was laid in a covered box and at once brought safely to the camp under my personal supervision. The work went forward on the deposit under the box and east of it. Our greatest task at this point was the study of the decayed wood on the floor and the interpretation of its origin in terms of boxes. The details have been carefully recorded in the register and will be given in another place. The whole deposit between the northern end of the bed and the sarcophagus was contained, as I said

a long plate with the upper end semicircular and the lower end cut off square. To the middle of the square end, a tang of the same metal, gold or copper, as the case might be, was welded. The tang was inserted in a small wooden handle which in several examples we found preserved, but shrunk to about half its original length. One edge of the blade, both the gold and the copper, was whetted to a sharp cutting edge. The nearest approach to this in form is an implement of Dynasty VI represented by copper models found in the intact tomb of Impy during our excavations in the western cemetery at Giza. Impy was director of public works under Pepy II and has left an inscription on Sinai on the occasion of an expedition to that place in the interests of his king. The Impy model is undoubtedly a razor, as was shown in my chapter on razors in *Excavations at Kerma* (Part IV, page 180), and there can be no doubt that the seven implements of Queen Hetepheres are the prototypes of that implement. Another smaller implement with cutting edges was the small rectangular panelled blade already described in connection with the copper ewer and basin. There were altogether seven of these also, — three of gold and four of copper. All four edges

were sharpened. This implement is also represented by copper models in the tomb of Impy, but beyond that I am unable to trace it. It came as a great surprise to find this same rectangular implement made also of flint (see above) and occurring in all three materials, flint, copper, and gold, in the tomb of Hetep-heres. The larger rounded flint may have been the prototype of the razor, and thus also represented in flint, gold, and copper in the tomb. Both these flints can be traced back to Dynasty I in examples which have been found in the tombs of men, and in one case (Mer-neit) in the tomb of a queen. Whatever their employment by men may have been, it is obvious that they were used by women for purposes which go back to the Predynastic Period. In the same deposit with these small implements and the two gold saucers, there was a copper needle with pierced eye, an ivory bracelet, and a boat-shaped silver object not yet identified.

At the southern end of the sarcophagus on top of all other debris were the broken fragments of an inlaid gold case from a wooden panel, which had fallen down from the lid of the coffin. This gave the two names of Sneferuw and proved later to be the end of a box which had stood on the coffin.

During October work was held up by the examination of a mass of organic material which lay nearly in the middle of the southern part of the room. This was finally recognized as a large basket with a cover, which had been used for carrying white plaster, and left in the middle of the room. Otherwise the work went forward recording the great pile of potsherds and the wooden boxes which contained them.

Towards the end of October we found that the rest of the pottery could not be taken up until the poles and beams of the canopy resting on the pile had been removed at least partially. On October 22-24 we recorded and removed a number of copper fittings from the canopy and some large fragments of gold sheet which lay detached on the pottery. On October 25 we lifted without any difficulty the westernmost of the ten gold canopy poles which lay on the coffin. We found all these poles could be lifted by hand although the wood inside was always utterly decayed. On this day we brought in and set up a table 300 cm. long by 110 cm. wide which I had had prepared. The height was sufficient to clear the inlaid panels still on the coffin. By placing this table so that it covered the inlays, and lying on top of it we were able to reach all the poles and beams which were on the coffin. The poles were not lying regularly side by side, but some were slanting and some straight, some on top and some underneath, and the beams which were generally at the back were partly over the poles. We had to take them out as they became accessible, nor does the order of their removal have much significance. The poles were lifted out by hand. Each pole consisted of

a gold cylinder with the peculiar inverted bulb-like top of the Egyptian tent-pole, with a copper sheath over the base where it was set in a floor beam and a copper sheathed tenon at the upper end which fitted into a roofing beam. The gold case of each pole was of two pieces joined together with small gold tacks at the bottom of the inverted bulb. The long cylindrical case of the stem was a single sheet which had been wrapped around the wooden core until the edges barely overlapped and was fastened to the wood with carbonate of lime (gesso). Before moving we tied up the bulb-end with a cloth to retain the gold tacks in place and then lifted each pole with two hands on to a cloth-covered board and then on to the great table. After being registered each was packed in a box with cotton so that it could not move and taken up the pit in an upright position. The poles were of about the same length as the coffin lid on which they rested and did not extend more than 20 cm. beyond the end, but most of the beams were longer, and some of them had been shoved far south so that the ends had rested on the boxes filled with pottery and rubbish. When the wood of the boxes decayed and the weight of their contents caused the main pile of pottery to settle and collapse, the ends of these beams sunk down so that some were bent or broken and others fell off behind the coffin. Each of these beams, as it became freed for removal, was lifted gently so that the cloth-covered board could be inserted under it, and thus it was lifted with the copper fittings still attached to it on to the great table for registration and packing. Each beam or part of a beam was packed with cotton on its board, with cotton held in place by cotton bandages so that nothing could move. For these beams, like the poles, had to be carried up the shaft in the lift in an upright position.

When we had removed the poles and beams which were on the coffin, we cleared away as much of the pottery as was exposed by this removal. It was now possible to take out the dry masonry in the unfinished cutting in the eastern wall, and in fact necessary to do so, in order to reach the beams between the coffin and the west wall. The lower course of the packing and two stones in the second course were of dressed rectangular blocks of limestone, while the rest of the packing above and behind was of rough pieces of local stone evidently broken from the rock of the tomb itself alongside a fissure. By bringing the table up so as nearly to cover the coffin these stones were removed without accident and sent up the shaft. This was on November 8, and we were still unable to reach the beams behind the coffin in a satisfactory manner. We had some time previously wedged an upright wooden post in the southeastern corner of the room, with a bracket for carrying a lamp. To this bracket we now nailed a long board set on edge, which reached out northwards nearly to the southern end of the coffin. The southern ends of

the remaining beams were lifted on to a cloth-covered board; and the board was slung by strings to the long arm above so as to clear the pottery left along the wall. This device enabled us to clear away all but a small heap of pottery under the beams. All over this area along the east wall and

us a sloping passage about a meter wide with a vaulted roof which had been closed on the outside by a wall of masonry of squared blocks like those in our tomb. It may be taken as proved that the original tomb of our queen had an entrance of this type which is in general that of the entrance



Beams of canopy between coffin and east wall looking down to south, February 4, 1926.

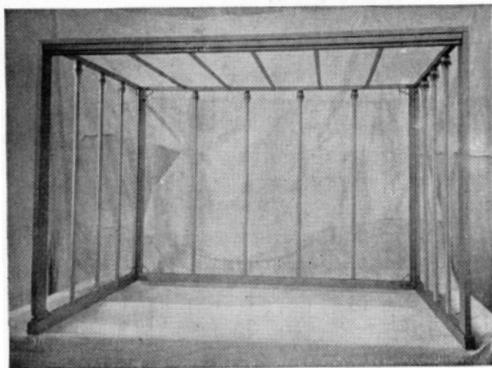
south of the sarcophagus, we recovered the outlines of the wooden boxes which had contained pottery, potsherds, and rubbish swept from the floor of the Dahshûr tomb. In all the boxes in the southern part of the room we had been finding fragments of plaster, sulphate of lime, which we recorded without being able to understand their origin. In one of the boxes along the east wall there were a very large number of these fragments of plaster and some of them were of considerable size. It was now clear that the rubbish in the boxes was from the original tomb and not from our tomb. With the fresh material we realized that this plaster was from a masonry blocking similar to that in the western cutting of our tomb, and we began reconstructing this masonry from the impressions of the joints still retained by the plaster. The result of this reconstruction gave

to the stairway tombs of Dynasty III. That tomb is to be sought without doubt in the neighborhood of the northern stone pyramid at Dahshûr, which is as yet unexcavated.

In order to assist in the final clearing and especially in the reconstruction of the furniture and the inlaid panels, the Trustees of the Boston Museum of Fine Arts resolved to send Mr. Dunham back to the Expedition for the winter. He arrived on November 11 and resumed work in the tomb on the next day.

On November 15 we were able to get close to the southern end of the coffin. Placing the great table so that it covered the greater part of the coffin, Mr. Wheeler, who has very long arms, lying on the table was able to reach the beams behind. I took my place at the southern end while Mr. Dunham took his at the northern end.

Mursi Hasan and the photographer, Mustapha Abu-'l-Hamd, stood by to hand boards and to assist. Among the beams were some gold-cased poles, more slender than the poles with bulb-tops, and these were seen to be the roofing poles. The poles we were able generally to lift by hand. The beams were moved on to boards as usual in order to be lifted. The rest of the procedure, the registration on the big table and the packing, was carried out as with the poles and beams on the coffin. This work went rapidly, and on the 17th we had exposed the upper surface of a great gold-cased beam wider than anything we had yet seen. It was found to be face down and the underside was inscribed. The next afternoon we had succeeded in getting this beam out on the table and saw that it was a royal piece of splendid quality, the greatest piece yet found in the tomb. Under it was visible another just like it, but face up. The inscription was in relief with very carefully executed details. It was in a cartouche



Reconstructed model of gold-cased wooden canopy looking in through open front. The name and titles of Sneferuw were on the outer face of the wide jambs.

which covered the whole beam, which measured 209 x 17 x 4 centimeters. The inscription was as follows:—

- (1) Above was a flying hawk holding a seal in its claws; "the Horus (with an *atef*-crown) Neb-ma'at, great god, endowed with life, endurance (twice) and prosperity (twice)".
- (2) The sign for heaven dividing the above from the next title.
- (3) A flying hawk with seal as above; "the King of Upper and Lower Egypt, the Lord-of-the-Two-Crowns, Neb-ma'at; the Horus lord of Nubt, Sneferuw (in a cartouche), lord of *hepet*". (Cf. illustration on cover.)
- (4) The sign for heaven dividing the above from the next title.
- (5) A flying hawk with seal as in Nos. 1 and 3; "the Horus lord of Nubt, Khenty-isuwt-neter; forever".

The second beam was taken up the next day, the 19th, and by the 27th the whole floor was swept

clean to the rock (except under the coffin) and we were ready to remove the inlaid boards on the coffin. We had also sealed the alabaster sarcophagus with five seals set in place before it was possible to lift the lid.

While Mr. Wheeler was preparing the scale drawings of the inlays on the coffin, Mr. Dunham and I proceeded to make the restoration of the canopy on paper. The frame-work consisted of seven beams and four upright posts. Three of the beams formed the bottom frame, which measured 315.5 cm. in length by 257 cm. in width. The bottom of all three beams was cased in copper sheet, and the top and sides cased in gold. Both the wood and the gold covering it were modelled in a mat-pattern. The long back beam was jointed to the other two by copper-sheathed mortices and tenons and the bearing surfaces of the joints were also sheathed in copper. The two joints were further strengthened by heavy copper staples, one in each end of the adjacent beams, which were probably tied with cord or thong. Along the outside, just above the copper bottoms, a number of small copper staples had been inserted apparently to fasten a curtain. The four upright posts at the corners were of two kinds. The two magnificent inscribed beams with the names of Sneferuw stood one on each side of the open front, one of the long sides with the inscription on the inside and the hieroglyphics facing outwards to the front. The posts of the back corners consisted each of two beams completely cased in gold and held together tightly by three heavy slot-ties of copper. This slot-tie was a single plate of copper, 12 cm. long by 2.5 cm. wide and 0.7 cm. thick with a slot cut out lengthwise. The inner end of the plate, that is the end which was exposed on the side towards the front of the canopy, was decorated by a long scarab of peculiar form which had been covered with gold sheet. Through this inner beam close to the scarab end was a small copper bar which fastened the plate to that beam. On the back of the outer beam the end of the slot-tie projected like a staple and through this projection a tapering half round copper bar was driven fast forcing the two beams into close contact. The gold cases of these two beams were decorated like the floor-beams with a mat-pattern. The roofing frame consisted of four beams of which three corresponded to the three floor-beams with copper sheaths and tenons and copper staples for fastening to each other and to the upright posts; but the beams themselves were thinner and had a less elaborate variation of the mat-pattern on the top. The front beam was more complicated with two members, one horizontal (top) and one vertical (back); in the angle between the two was a long round beam (representing the usual lintel drum of the mastaba doorway). This beam rested on top of the two inscribed posts (door-jambs) which were cut out and sheathed to take the ends of the lintel. The

ten poles with inverted bulb-like tops rested in copper sheathed mortices in the floor-beams with the tenons in smaller copper mortices in the roofing beams. There were four poles in the back wall, and three in each of the side walls, but none in the front which was, as I have said, an open doorway. Across the roof from front to back were the five smaller poles. Both ends of these roofing poles were alike with copper sheathed dove-tail tenons. On the inner upper edge of the long back roofing beam there were five copper mortices to take the back ends of the five poles; and on the inner upper edge of the lintel-beam there were five similar mortices to take the front ends. Opposite each copper mortice (touching its outer rim) was a small copper staple parallel to the beam; and opposite each staple on the ends of the roofing poles was a small copper hook with the point turned away from the staple. It seems obvious that the poles were tied to the beam by a cord or thong which passed around the staple and slipped over the hook. Along the *inside* of all four roofing beams ran a series of small copper hooks with the points *up* which were certainly intended for fastening curtains. Along the *outside* of the floor-beams against the copper bottoms, ran a series of small copper staples which seemed to be for the same purpose. The upper edges of the curtains were fastened to the hooks inside; and the lower edges to the small staples outside. No traces of any tie was found, and it can only be concluded that these were of string or thong which were lost in the transfer from Dahshûr or have utterly decayed without leaving any trace. In any case, the tie probably passed under the floor-beams to reach the small staples on the outside. The curtain was probably cubical to fit the interior of the canopy, with a roof-cloth as well as sides. There may also have been a door-curtain which hung loose at the bottom, for there is no threshold beam to the canopy. The cloth curtain probably had eyelets of some sort which slipped over the hooks and strings at the bottom which were drawn through the staples and tied fast. Thus in this cubical tent of cloth the alabaster sarcophagus stood invisible from the outside. In the original tomb the doorway faced the east. The beholder from without saw only the golden frame with its inscribed door-jambs.

There remained only the inlaid panels lying on the lid of the sarcophagus, those which bore the name of Sneferuw and were amongst the first objects in the chamber to seize our attention on March 8, 1925. On December 6, 1926, twenty-one months later, we began the removal of these panels. The experience we had gained in taking out the inlay work on the floor had taught us that such objects could only be removed piecemeal and set together on boards in their original order. We very soon saw that there were three long pieces, which had formed the top and two sides of a

wooden box, and one short piece which had formed one end. The small panel found in confusion on the debris south of the coffin had formed the other end. The box measured 157 cm. long by 22.5 cm. wide and 19 cm. high. In the middle of the top was a circular wooden button (gold sheet covering, missing). The box, which was empty, had been set a little way in from the western edge of the coffin-lid; the western edge had fallen face down so that the inlaid border extended beyond the edge and finally fell to the floor. The lid dropped down face up partly over the western side-panel and partly over the northern end which folded so that the lower part was face up and the upper part face down. At the same time the southern end fell off on the floor. The eastern side panel fell to the west, face up, partly over the top. The gold canopy poles had been stacked against the eastern side of the box and when the box collapsed the western poles rolled on the box. The canopy and the box bore the names of Sneferuw and formed part of a gift to the queen from her husband. I imagine that the box had been used for storing the curtains of the canopy; and had been placed empty in our tomb. Perhaps some of the disintegrated linen of the wooden boxes along the south wall of the room may have been the curtains from this box.

On December 16 our long task was finished. The room was empty except for the sarcophagus. The beautiful alabaster box with its lid sealed stood alone within the bare limestone walls of the chamber marked with the chisels of the workmen of Cheops. The clearing had taken three hundred and twenty-six days from February 4 to December 16. We were now able at any time to open the sarcophagus; but there was still an immense labor to be performed in reconstructing the recorded material. During the long summer we had been intent on getting the material recorded and out of the chamber where it was always liable to damage of some sort, and we had therefore not been able to carry the reconstruction work to completion as we went. It was for the moment sufficient to identify the pieces which belonged together and register our observations that they might not be lost.

#### CHAPTER VI. The Archaeological Significance of the Tomb of Hetep-heres.

When we had cleared out the deposit in the chamber, although the coffin still remained to be opened, the accumulated evidence permitted us to draw certain definite conclusions, many of which have been outlined in the preceding chapters. The intact tomb at Giza, which bears on our map the number G 7000 X, was a secret tomb made during the building of the pyramid of Cheops, and by its position could only be the tomb of a favored member of the family of that king. The deposit in the tomb was a reburial brought from another

tomb. The great golden canopy, a magnificent example of the metal working of Dynasty IV, and the accompanying inlaid box, bore the name of Sneferuw, the predecessor and father of Cheops. Four other objects, the carrying-chair, the jewel box containing the inlaid silver anklets, an inlaid panel, and a gold disc, bore the names and titles of the Queen Hetep-heres, a mother of a king of Upper and Lower Egypt. The rest of the objects

of the queens at Giza had only just been begun, and no mastaba had been built east of the pyramid which Cheops was constructing for himself. The time was probably not far from the middle of the reign of the son of Hetep-heres. The anger of the king can be imagined and the penalties meted out to every one who came under the suspicion of guilt or negligence. Resolved to place the burial of his mother beyond the reach



Copper ewer and basin after cleaning.

bore no name. A number of clay sealings, used to seal boxes and jars, bore impressions of a cylinder-seal belonging to an official of the funerary store-house of Cheops. The queen was buried by Cheops in her original tomb, for the broken seals of his store-house were in the rubbish gathered up from the floor of that tomb. Therefore, in all reasonable human probability, Hetep-heres was the mother of Cheops and a wife of Sneferuw.

In accordance with Egyptian custom the original tomb of Hetep-heres was at Dahshûr beside the pyramid of her husband Sneferuw and had probably been constructed by Sneferuw's department of public works. We know from inscriptions of the Pyramid Age that the Egyptian nobles of that time prepared while they were alive on earth their own tombs in which the *ka* might live after death; and I have no doubt that Queen Hetep-heres inspected her tomb repeatedly during its construction and after completion. She outlived her husband and was buried by her son Cheops in the tomb prepared by Sneferuw. It is probable that Sneferuw had already provided the canopy and the sarcophagus; but the rest of the equipment was given by Cheops. We have no definite evidence of just when the queen-mother died, probably in the first half of the reign of Cheops. Nor have we any proof of how long a time elapsed before the royal police discovered that the tomb had been broken open by thieves, but it was certainly no great number of years after the burial. At that time the first of the pyra-

of further desecration, Cheops ordered her body with the alabaster sarcophagus and all that remained of the equipment, to be transferred to a secret grave in the precincts of his own royal cemetery at Giza. One wonders whether the "annals of the Old Kingdom" ever showed any record of this event. Of course the name of Hetep-heres stood as usual above the line of year-names devoted to the reign of Cheops.

The king himself probably designated the place for the secret tomb, but the selection of the exact spot would have been left to the director of works and the stone-cutters. I think that the stairway of the tomb was cut first with some idea of making a tomb similar to that at Dahshûr which, from the form of the entrance (as described in the preceding chapter), was apparently of the stairway type of Dynasty III. In any case, the vertical shaft was begun along the face of an east-west fissure in the rock in a seam between that fissure and another which at the surface was about three meters north of the first fissure. Further down, the second or northern fissure sloped southwards and so came to form the northern side of the shaft which from there on descended to the bottom through the crumbling rock between these two fissures. The workmen had probably been set a time limit, and descended rapidly through the easily broken seam of bad rock. The sides of the shaft were never well dressed, for all effort seems to have been devoted to getting down to a sound stratum suitable for the chamber. The rock was generally bad and in places in a dangerous

condition, especially in the south wall of the pit through which the chamber was to be cut in accordance with the custom of the time. A plain indication of the haste and pressure of time is the bend westward about two-thirds down and the decrease in size of the horizontal section of the shaft. The pit was taking longer than planned. At last about 25 meters down the masons struck a good stratum of rock on the south and cut through to excavate a chamber. As was the practice they cut in along the proposed roof line and cut down in layers about a meter deep. The chamber, according to similar tombs, should have been about five by eight meters (15 by 24 feet) and at least three meters (9 feet) high. When it had reached about three by six meters (10 by 18 feet) and less than two meters (less than six feet) high, the workmen were called out to admit the burial. In the west wall and in the floor they had begun the cuttings which were to bring the chamber to its full size; but again fortune was against them. In the west wall they broke into a north-south fissure and bad rock so that they had to wall up this cutting with masonry and begin again in the east wall. But this enlargement was never completed nor were the walls of the chamber ever dressed flat. Probably there had been an intention of lining the walls with fine white masonry like other great tombs of the period. It had never been intended that the shaft should reach so great a depth (100 feet). That was an accident due to the character of the rock; and so many days had been taken up by cutting the shaft that the time left for completing the chamber was too short. Of course no one dared to tell the king that the chamber was unfinished. The director of works probably laid emphasis on the depth attained.

The workmen hastily piled the stones at hand into the unfinished cut in the east wall and into the pit in the floor. They raked the rest of the rubbish into the northwestern corner of the pit and sprinkled the floor with limestone powder as usual. The five stone-cutters' tools found in the chamber I believe to be another indication of the haste with which the workmen left the chamber. The deposit as it arrived from Dahshûr was placed over the floor-dust and over the slope of the rubbish pile in the corner.

The Dahshûr tomb of Queen Hetep-heres after the plundering was left in great confusion. If there is one thing with which the Egyptian field archaeologist is familiar it is the state in which thieves leave an ancient tomb. Originally the floor of the Dahshûr tomb was completely covered by the burial equipment. The alabaster sarcophagus stood in the southwestern quarter of the room under the cloth-lined gold canopy presented by Sneferuw. In the southern part of the room, in front of the canopy, the gold-cased furniture was set, together with the gold-cased boxes which contained the more valuable objects, the

toilet-boxes, and the copper ewer and basin. Next to these the stone vessels were probably grouped and then the pottery around the doorway. The linen, at any rate some of it, may have been placed in boxes between the canopy and the north wall. The doorway was blocked with rectangular blocks of fine white limestone set in plaster. The thieves forced a way through this masonry block, no doubt near the top, so that a part of the plaster and stone fell within the chamber. These men were probably of the cemetery workmen or guards and knew exactly where the valuables in a grave were to be found. In this case, they seem to have paid little attention to the deposit on the floor but made for the sarcophagus itself. They trampled over the pottery and the furniture to the canopy which they must have upset to the east or taken down to afford room for getting at the coffin lid. They were unable to lift the lid by the four short projections, two at each end, which served as handles, for they attempted to force the lid by driving wedges, probably of metal, between the box and the lid. The edges are chipped on all four sides by these efforts, and one corner of the lid is broken off. Whether the thieves succeeded before they were discovered we shall not know until we open the coffin. If they got the lid off, it was shoved back against the west wall or thrown between the coffin and the west wall. That, we know by many painful disappointments, was the usual procedure of tomb robbers of the Old Kingdom. The first plunderers seem always to have attacked a tomb soon after the burial, to have been in deadly fear of discovery, and to have worked in frantic haste. I suspect they had usually only one night to carry out the actual theft and get away. If the thieves at the Dahshûr tomb of Hetep-heres succeeded in opening the coffin, they would have swiftly stripped the visible golden jewelry from the body and climbed out. If not, then they may have contented themselves with snatching up such objects as the golden cups which we found and the implements of solid gold. By this time they would have made such confusion in the chamber that a thorough search of the deposit on the floor would have been impossible. When the plundering took place in later ages, as was the case in the royal pyramids of Ethiopia which we excavated at Napata, the plunderers worked at leisure in the day-time. They hauled the mummy of the king to the outer door to be broken up and searched, and they even carried some objects to the top to be examined in the sunlight. But they, like the more ancient thieves, left the chamber in indescribable confusion and often dropped many valuable pieces of jewelry on the floor.

The deposit was in this state when the official charged by Cheops with the transfer undertook the removal. We have seen plainly from the position of the objects in the Giza tomb that those things which were near the doorway of the

Dahshûr tomb and all the pottery and stone vessels were gathered up with the rubbish on the floor and placed in wooden boxes for transport. For example, the fragments of plaster which fell into the chamber below the doorway when the thieves entered were in the boxes along the south wall of the Giza tomb. The last box contained the jewel-case of the inlaid anklets, the gold head-rest, the gold and copper toilet implements, the box of alabaster ointment jars, and the remnants of other gold-covered cases, — in fact most of the valuable objects which must have been near the middle of the Dahshûr chamber. At this point, or just previously, the canopy lying upset to the east was dismantled and carried out, and then the furniture, the three chairs and the bed, were removed before the coffin itself could be taken in hand. We do not yet know the state in which the thieves left the mummy of the queen, but probably at this point the mummy of the queen was taken out and placed on a bier or in some temporary receptacle for transport. Finally the lid and then the sarcophagus would have been manoeuvred out one at a time and taken up the sloping entrance corridor.

The arrangements of the transport to Giza must remain obscure. We may be sure that outwardly the deposit did not present a very shocking appearance. The mummy of the queen was of course decently covered with linen. The gold-cased furniture was still whole except that the inlaid panels had become detached and were carried separately. All the broken and scattered stuff was out of sight in the wooden boxes. I imagine that the king himself inspected the whole at some point during the transfer, though I do not believe that he ever saw either the plundered chamber at Dahshûr or the unfinished chamber a hundred feet down in the rock at Giza. At present we have no evidence that Cheops did anything to make good the loss or damage caused by the plunderers. Everyone about the court would have combined to soothe him by minimizing the damage. Probably he never knew the truth about the condition of his mother's mummy or her tomb equipment, and was greatly lauded for his filial piety in preparing a new tomb safe from the desecration of thieves.

The heavy coffin was loaded on a wooden sledge. That was the method used in transporting heavy blocks of stone in the Pyramid Age. It was probably dragged by large gangs of men from Dahshûr to Giza, but whether by the desert or some valley road is uncertain. The sledge with its load might even have been carried part of the way by water. The time required would be measured by weeks, not months. We have no hint of the details of the procedure, and seek in vain for an answer to several questions: — Were the boxes, the pieces of furniture, and the body of the queen carried along stage by stage with the coffin? Or were they taken to some mortuary

store-house at Giza to await the arrival of the sarcophagus? In any case, the different parts of the deposit came into the chamber of the Giza tomb in the inverse of the order in which they had stood in the Dahshûr tomb, so that the alabaster sarcophagus came to stand in the northeastern quarter instead of the southwestern.

The boxes from Dahshur were stacked along the southern wall of the Giza tomb in two rows. The bed was put in upside down with the southern end (the foot of the bed) resting on top of the second row of boxes. A third row of boxes was put in between the bed and the east wall, or may have already been in place. The final box, that with the more valuable objects, was placed between the northern end of the bed (head end) and the place where the coffin was to stand. The carrying-chair was thrown in partly on top of the bed and partly on the boxes to the east of it. A number of inlaid wooden panels which had become separated from the various pieces of furniture were leaned against the end of the bed; and then the two arm-chairs were set upright, one facing east and the other south. The coffin was lowered end on down the shaft, slung on ropes which passed over a great horizontal beam set in grooves in the rock across the mouth of the shaft. The mummy was then lowered down and placed in the alabaster box. The lid of the sarcophagus was lowered in the same manner as the box and set in place. During these last operations the sarcophagus stood with its end in the bottom of the shaft; and when the lid was in place, the whole sarcophagus was shoved forward probably on wooden beams until the end came against or nearly against the wooden boxes stacked in the chamber. Finally the canopy and the curtain-box, both with the name of Sneferuw, were lowered and shoved in on top of the sarcophagus with the southern ends of the longer beams resting on the boxes beyond.

In the meantime, a large number of rectangular blocks of white limestone of Turah had been assembled, together with a quantity of sulphate of lime (plaster-of-Paris), and the work of packing the shaft began. The masons could have entered the chamber at any time during the laying of the first seven or eight courses which actually blocked the doorway; but there was nothing of intrinsic value visible or within reach which they could have taken. They could have been watched from above as well and were certainly searched if not executed when they came out. It is therefore highly improbable that they even attempted any looting during this stage of the work. When the packing had reached a height of about a meter above the roof of the chamber, it appears to have been discovered that one box of potsherds and other rubbish had been forgotten and the contents were thrown down the shaft with the stones and the plaster of the packing. From

there upwards the packing was very carelessly carried out for a considerable distance. Then, within ten meters of the top, a niche was cut in the west wall of the shaft and a sacrifice was made consisting of three legs and the skull of an ox and two jars of beer. Such a sacrifice placed in the burial shaft is otherwise unknown to me in the Giza mastabas, although common in the

seems always to have troubled the minds of the Egyptians, and I have no doubt stirred at times in the thoughts of Queen Hetep-heres. But she could have no premonition that as the result of such a violation of her own tomb she was to lie for five thousand years forgotten and undisturbed in a secret shaft beside the funerary temple of her son at Giza, the only one of all her kindred



Gold casing of front and back legs of bed.

pyramids of the kings of Ethiopia. The ox must have been slaughtered at the time of the reburial; and I assume that this was a special sacrifice made by Cheops for the *ka* of his mother. The entrance to the niche was blocked with masonry and the packing of the shaft was carried up past the niche nearly to the mouth of the shaft, and also out through the stairway to the surface. A heavy layer of white plaster was laid over the packing of the stairway and another over that of the shaft. Then came the final course of masonry which closed the mouth of the shaft; and this was of irregular blocks of local limestone set very craftily to look like the surrounding surface of the rock.

The possibility of the violation of their tombs

whose burial was to escape destruction until our day.

After the shaft of the Giza tomb had been closed with masonry, it was probably covered over immediately with limestone rubbish. The pyramid intended for the chief queen of Cheops which had been begun south of the shaft was abandoned and another built 28 meters further west. The work in the quarry, or at least in its western part, was stopped and this area was also filled in with masons' rubbish. The pyramid and the temple of Cheops were finished; the other pyramids of the queens and the mastabas of the princes and the princesses were built; the streets of the royal cemetery were laid with limestone rubbish and a surface of mud; and there was

nothing to indicate the burial place of the king's mother. It must be remembered that her tomb at Dahshûr was provided with an offering chapel and a funerary priest, and in all probability the necessary offerings to her spirit were maintained at the Dahshûr tomb. The funerary priest had received an endowment on condition that these offerings be maintained, and there can be no doubt that he would insist on carrying out the conditions required to fulfill his claim to the endowment. Much the same question arose when Prince Hepzefa of Assiut died at Kerma as Governor of the Sudan. He had prepared his tomb in the cliff at his native place and had already secured the services of a funerary priest by a series of contracts with various officials. When Hepzefa was buried at Kerma, the Assiut tomb was left unoccupied; but the funerary priest insisted on maintaining the services specified in the contracts. In the case of Queen Hetep-heres, it is possible that an offering-place of some sort may have been provided in the temple of her son, or she may have been supposed to partake of the offerings which he provided for himself. The tomb was in so public a place under the floor of a street that was used daily by the priests of the pyramids and mastabas and was otherwise so well guarded that further plundering was impossible during the generations that might have remembered its location. It may be also that those who plundered tombs in the time of Cheops knew that, wonderful as the contents of the tomb appear now, there was not enough in weight of the precious metals to repay the labor and the danger of cutting through a hundred feet of rock or masonry. In later times when the thieves worked more openly, there was no superstructure over the tomb to guide treasure-seekers to the mouth of the shaft.

The effect of the passage of the centuries on the funerary deposit of Queen Hetep-heres has been clearly read from the condition in which it was found when, after five thousand years, the confused mass was taken apart and recorded. The most important factor was the action of time on wood shut up in a chamber a hundred feet down in the solid rock. The perfectly preserved bars of wood which we recovered had shrunk to about two-thirds of their original length and to nearly one-half of their original width and thickness. The total size was only about one sixth of the original volume. At all times in Egypt wood shrinks considerably. Almost all the wooden statues, doors, and other objects show a certain amount of distortion due to splitting and shrinkage; but never has any shrinkage equal to this in the tomb of Hetep-heres been observed. Such shrinkage acted in two ways, — (1) in the case of furniture jointed with tenon and mortice, the joints were pulled apart; and (2) in the case of the boxes where the joints were held fast either by the construction or by contents, the wooden

sides split along the grain into shrivelled sticks and these in turn often broke into fragments across the grain. It is to be assumed that the first effect of time on the wood was splitting and a certain amount of shrinkage, — not the full amount as we found it but sufficient to pull apart the joints of the furniture and probably to break across the grain the wood in the poles and beams which were fastened at the ends to the copper fittings. With this shrinkage and splitting, a continual loss in weight was taking place, which weakened the strength of the wood. The chairs and the bed were necessarily pulled apart so that the gold cases loosened from their cores fell down on the deposit below them. The heavy pottery, the potsherds, and stone vessels settled down, breaking apart the weakened boxes, and slithered in all directions until the mass reached a position of equilibrium. The collapse of the furniture and the box of valuable objects beside the coffin knocked down the inlaid wooden panels.

While the wood shrunk, the gold, the faience inlays, and the carbonate of lime with which the wood was covered to take the gold sheets, and the inlays, did not shrink. For example, in the case of a fragment of wood from the inside of a rilled staff covered with gold, a knot-hole had been filled with plaster; and this plaster retained the original diameter of the inside of the gold case while the wood itself had shrunk as usual. Again a fragment of board which had been covered on one side with a heavy layer of plaster was drawn nearly into a cylinder by the shrinkage of the wood and the unshrinkability of the plaster. The inlaid panels, most of which had stood leaning against the foot of the bed, consisted of thin wooden boards covered with a thick layer of carbonate of lime in which the inlays were set with the gold framework laid on the intervening surfaces of the plaster. When the wood shrunk it loosened itself in part from the inlaid plaster; but the whole was in the main still cohering. When the collapse of the furniture and especially the bed brought the whole lot of inlaid boards down, some fell nearly intact, others were broken in two and fell in separate directions, but each piece still retained the relative positions of its parts. Some pieces of course fell in ruins, and parts of most of them were disintegrated. It is clear that the collapse did not take place all at one time but perhaps centuries intervened between the fall of one object or part of one object and the next fall. Instances were observed in which the light fragments of gold sheet had been blown half a meter by the wind of some subsequent collapse. Possible earth movements at some time may have caused some of the ruin. In the two earthquakes which affected Egypt during the clearing of the tomb, no movement was perceptible in the chamber, but that may have been because of the fact that the whole had already reached a position of stability.

It is impossible to say at what point the decaying wood was attacked by fungus, or why some pieces were attacked and others were not. It was noted, however, that the parts of poles and beams which were in direct contact with copper sheathing were generally spared, probably because slightly impregnated on the surface by copper salts which are well known fungicides. Furthermore, the best whole pieces of wood were found inside the heavy gold cases of the carrying-chair, and inside the palm capitals and legs of the bed. But even in the heavy cases of gold, the wood was not always saved from the action of fungus. The wood which was open to the air, on the other hand, was not always attacked. One of the narrow wooden panels from the carrying chair was left after the general settlement lying over the gold case of the eastern side of the bed, and with the lapse of time it sunk down in curves to fit its support, almost as if it had at some time been limp like a wet cloth, and yet this piece of wood was never attacked by fungus. Fungus generally flourishes in a moist atmosphere, and there are stains of copper and wood on the coffin which prove that at some time rainwater had worked its way down from the surface, probably through the natural fissures of the rock and in particular through that fissure which formed the southern wall of the shaft. This water had spread southwards along the roof of the chamber and had dripped slowly in three or four places on the coffin and perhaps in other places in the room. The amount was certainly small judging by the evidence; and the penetration of the chamber by water may have been confined to a few instances, perhaps to only one occasion. It is to the entrance of these few drops of water that I ascribe the increase in the moisture of the air in the chamber and the growth of the fungi. From the fact that the falling drops carried with them copper compounds in solution, the entrance of the water must have occurred after the patina had formed on the copper fittings.

The poles and beams of the canopy had been piled on the coffin, supported on the western side by the empty box which had once held the curtains of the canopy. When the box collapsed, the pile of canopy poles rolled over to the west and shifted their relative positions. When the general settlement of the boxes on the south of the sarcophagus took place, the ends of the long beams which rested on these boxes sunk down. Some of the beams on the edge were pulled over into the space between the coffin and the east wall; and some bent or broke near the end of the coffin. The gold cases and the copper fittings became loose or were detached, and the loose pieces were scattered over the area south of the coffin. Except for a few of the side-poles of the canopy, none of the parts were found in perfect condition.

In a closed chamber of this character the air originally contains a certain limited quantity of

dust. When this had settled on the deposit it produced a barely visible layer on the objects. Besides this there was a very slow but steady dropping of minute particles of limestone from the roof and walls. Along the walls this was sufficient to form a perfectly plain ridge of white powder. The decay of the wood, when it reached a certain extreme limit, reduced the fibres to a soft and very fine brown powder which in certain low-lying areas had spread out in a layer a centimeter deep. In other places the wood had been separated into masses of long fibres, and occasionally wooden parts were represented by a sort of grey ash, the final effect of the fungi. But there was little of the ordinary air-borne dust in the chamber when it was opened.

Such was the condition of the funeral deposit of Queen Hetep-heres, when we began the detailed examination in February, 1925. It was from this confused mass that by patient dissection we have now recovered the history of her burial. There remains only the contents of the sarcophagus to be examined. When that is finished, we shall know all that is ever likely to be known about the mother of Cheops.

## CHAPTER VII. The Objects Found in the Tomb.

1. Gold-cased wooden furniture:
  - a. Canopy.
  - b. Bed.
  - c. Carrying-chair
  - d. Arm-chair. i.
  - e. Arm-chair. ii.
2. Smaller gold-cased objects.
  - a. Head-rest.
  - b. Rilled staves.
  - c. Discs.
3. Boxes.
  - a. Curtain-box of Sneferuw canopy; gold and inlay-work.
  - b. Jewel-box with anklets, gold cased.
  - c. Fragments of other boxes.
4. Inlaid panels.
  - a. Carrying-chair.
  - b. Arm-chair.
  - c. Bed.
  - d. Box.
5. Toilet implements.
  - a. Razors.
  - b. Rectangular knives.
  - c. Needle.
  - d. Toilet-box.