

begun. The casing of the second from the west was later built of c.b., but the third from the west was never cased. The fourth from the west (the eastern core) was cased later with inferior white masonry and has the chapel at the north. I would assign the state of the southern row of twin-mastabas, with G 7130+7140 finished and the others still in the core state, to the time when Cheops died. Only the westernmost core was finished as a twin-mastaba, and the other three were finished as two-shaft mastabas.

Twelve original cores completed about years 15–17.

Four northern twin cores completed about years 17–20.

Four twin-mastabas finished about year 20.

Four southern twin cores completed about year 20.

G 7130+7140 completed about year 23. (Quarry mark on casing reads year 23 (*hst sp 12*)).

This would set the introduction of the interior stone chapel about the years 17–20.

All the remaining mastabas of the Eastern Field were plainly constructed around the nucleus cemetery of eight twin cores. By position the first of these is obviously the great mastaba G 7510 (104 × 52 m.) of core-type IV iii (with recess for one chapel). Subsequent to this follow the four mastabas, G 7650, 7530+40, 7540, and 7350. In being used the core of 7650 received an addition on the south which was in reality of filled masonry (a white casing wall backed with white stones and filled with rubbish). In this addition the chapel was constructed.<sup>1</sup> The next core was directly behind G 7650 to the west and was of the same size and construction. Both measured about 36 × 16 m. (the same as the twelve original cores). Neither of these cores had a recess for an interior chapel. But both as completed had an interior chapel in the addition. For G 7530+40 as finished had been shifted southwards to extend beyond G 7650. The northern end of the core was partially demolished and the stones or similar stones used to back the white casing of the southern extension. The core of the southern extension was recessed to take the interior chapel. The original cores of these two mastabas were of the same size (norm of twelve original cores of this cemetery), and were of type IV i (without chapel recess). They were obviously built after G 7510, but not finished for some time. The casing of G 7530+40 is dated by quarry inscriptions to the thirteenth year of a king who could only have been Chephren, the son-in-law of the Queen Hetep-heres II, for whom the casing was built. Thus the original cores must have been some years previous to that date (probably years 1–5 of Chephren).

The next two cores, G 7450 and G 7350, both have a recess in the core for an interior chapel.<sup>2</sup> They continue the lines of the nucleus cemetery of twin-mastabas southwards by one core each. G 7650 has three burial-shafts; G 7530+40, none in mastaba; G 7450, two; and G 7350, three shafts (of which one was never used). These two cores are about the same size as the cased cores G 7650 and G 7530+40, and were probably made after the casing of those two; that is, after Chephren year 13. One other isolated mastaba of about this size and type IV iii was built south of line 6 (G 7690), but never cased.

A sixth mastaba, not counting G 7690, was G 7050 (presumed to be the tomb of Queen Nefert-kauw, 'eldest daughter of Sneferuw'). This mastaba is of type V. The white casing is backed with one row of nummulitic blocks, and the construction is rather like the additions to G 7650 and G 7530+40. This mastaba would thus appear to have been built about year 13 of Chephren. (The lady would have been about 65–70 years old at the time.)

The rest of the princely mastabas in Cem. G 7000 are around the fringes of the cemetery thus

<sup>1</sup> The back of a stone in the north wall of the chapel bears a quarry mark with year 23 (*hst sp 12*). A casing block on the north end of the mastaba is marked in red, year 25 (*hst sp 13*).

<sup>2</sup> The back of a casing stone on the north side of G 7350 was marked in red, year 19 (?) (*hst sp 10*?).

described above. Lines 5 and 6 were continued by one mastaba each (G 7660 and G 7550), while a seventh line of two mastabas (G 7750 and G 7760) was added on the east so sited as to leave the chapels of G 7650 and G 7660 with a free eastern outlook. West of G 7050 two more mastabas were built, G 7060 and G 7070. North of G 7510 two more were added, G 7820 and 7810. These eight mastabas were filled mastabas of type VI a (with sloping grey retaining wall) and two were the tombs of princes, four of 'princes', one of the husband of a princess, and one of the son of a prince. The chapels are of type (3), of nummulitic limestone.

### c. Cemetery G I S

The Eastern Field is continued westwards along the southern side of the Cheops pyramid by an E-W row of the massive cores of type IV i (?), but of poor stone and poor construction. These are of the two-shaft type in general. They were excavated by Professor Junker, and bear his numbers from west: 1, 1 a, 2, 3, 5, 6, 7, 8, 9, and 10 (not excavated). The easternmost, No. 10, is sited so that the c.b. chapel falls in the space south of G I-c, between the pyramid and the mastaba, G 7070, of Sneferuw-khaf. The c.b. chapel of 10 is large and only the eastern part has been excavated. The front part of it lies between the pyramid G I-c and the retaining wall which holds up the filled platform around the SE corner of the pyramid. I conclude that the cemetery G I S is a continuation of Cem. G 7000 and was begun at the eastern end. Six cores were constructed on a line probably at one operation. G I-c already stood in its place. As this has been assigned to the year 17-18 of Cheops, the new row of mastaba-cores was later than that date. The mastabas G 7070, G 7060, and even G 7050 appear to have been built before the southern row of these six cores of type IV.

Between Nos. 5 and 3 there is a wider space. Wilkinson shows here a rectangular building in the middle line of the pyramid. Professor Junker has found a square mastaba with a burial-shaft here. A short mastaba was built in the southern end of this space. Beyond it No. 3, aligned with the cores 10-5, has a double casing (z and x). Then follows No. 2. This is a core type IV i with y-casing and two shafts, one of which is unfinished. Between Nos. 2 and 1 stands the unfinished or destroyed core 1 a. No. 1 is also of core-type IV i (38 × 18 m.). It seems that the mastabas Nos. 1-3 are not of the same series of cores as Nos. 5-10. Yet the groups appear to lie on the same alinement.

Professor Junker ascribed these cores to Mycerinus on the basis of a deposit of granite powder over the area previous to the construction of the cores. This granite powder he ascribes to the dressing of granite for the Second Pyramid which he assumes to have taken place on the ledge south of the First Pyramid. I regard this explanation of the origin of the granite powder as possible, but by no means assured.

The six cores could have been constructed as far as the type goes in the reign of Cheops, and by the relation to G I-c, at the end of that reign. They might also have been constructed in the early part of the reign of Chephren (as G 7650). We have up to the present no evidence as to the type of core used by Mycerinus. Shepseskaf used massive blocks in his own great mastaba at Dahshur. This type of masonry must have been known in the reign of Mycerinus also. But if these cores were built by Mycerinus, why did he select a place so far from his own tomb?

## 7. THE CHRONOLOGICAL ORDER OF THE NUCLEUS CEMETERIES

As a basis for the chronological order of the finished mastabas the blocks of cores constituting the nucleus cemeteries must be arranged in chronological order, and the number of the growth of each

block worked out. For this purpose the facts given above must be summed up in regard to the following points:

- a. The initial mastabas of each nucleus cemetery and the origin of the unified plan.
- b. The evidence of the types of cores.
- c. The relative positions of the three nucleus cemeteries in the Western Field.
- d. The growth of the nucleus cemeteries of the Western Field.
- e. The remaining three nucleus cemeteries.

#### a. The Initial Mastabas of each Nucleus Cemetery and the Origin of the Unified Plan

The twelve original cores in Cem. G 7000 were obviously laid out *ab origine* on one unified plan, and were built after the middle of the reign of Cheops, probably about year 17. That block was laid out in regular rows with one core directly behind the other. The siting of cores *en échelon* appears first in the Eastern Field in the finishing of the two massive cores, G 7650 and G 7530+40, built in the reign of Chephren, and was continued by the four nummulitic mastabas of type VI a added around these two cores. This principle appears fully developed *ab initio* in the Cem. en Échelon of the Western Field, which was laid out after Cem. G 4000 and Cem. G 2100 had been fully constructed, certainly after the accession of Chephren. On the other hand, the three western cemeteries, G 1200, G 2100, and G 4000, require examination as to the point in their growth at which a unified plan appears fully developed. Each of the three western cemeteries begins with an initial group of five cores as follows:

- (a) Cem. G 4000: with the 4 initial cores at the western end of the 2 northern rows; the large core, G 4000, was laid out to the west of these 4 and lies outside the unified plan. I consider that it was built before the other 4, but practically at the same time; the remaining 37 cores were laid out in prolongation of the rows and lines of the first 4 mentioned above, but were of different core-types.
- (b) Cem. G 2100: the first 5 cores, united as a group by the portcullis groove in the shaft-casing, were laid out in N-S lines but not alined in the E-W direction; the unified plan did not begin until the erection of the 6 additional cores which were on a unified plan alined in an E-W direction with the southern end of the 2 larger mastabas of the second row from the west.
- (c) Cem. G 1200: the 9 cores of normal size all lie in regular lines and rows, and began with the 2 eastern cores in the middle row and the 2 in the southern row; the large core, G 1201, has its northern end alined with the northern end of the southern row; this large core may have been the first in the cemetery, or it may have been constructed after the first four of the unified plan (cf. Cem. G 4000).

In Cem. G 4000 the evidence is quite clear. The four mastabas at the western end of the fifth and sixth rows are all of one type and were laid out in a regular rectangle. It is uncertain whether they were subsidiary to the large mastaba G 4000 or built before that core was sited.<sup>1</sup> All the rest of the cemetery is based on the line of this original rectangle, and the succeeding cores are differentiated from these four in core-type. The fact is indisputable that these four cores together with that of mastaba G 4000 form the initial group of cores in this cemetery.

In Cem. G 2100 the western group of five mastabas was apparently constructed first as a family

<sup>1</sup> The casing blocks of G 4000 bore quarry marks of the year 15 (*hst sp 8*) and 19 (*hst sp 10*) of a king who must have been Cheops.

group based on G 2100. All five present an unusual common feature, a portcullis groove built in the stone casing of the shaft.<sup>1</sup> These five were in two N-S lines, but not in clearly marked E-W rows. Two of these cores were abnormally large, two abnormally small, and one a little larger than normal size. The unified plan was created by the construction of six later eastern cores. These normal cores were linked with the western group by the alinement of rows 2 and 3 with the two abnormally large mastabas of the western group of five. Thus the cores of the eastern group are certainly later than the two large mastabas, 2120 and 2130, of the western group, and in all probability later than all five of the western cores which I mark as the five initial cores of Cem. G 2100.

Cem. G 1200 presents, like Cem. G 4000, a large mastaba outside the rows and lines of normal mastabas which form the main part of the cemetery. Unlike G 4000, however, this large mastaba (G 1201) has its northern end alined with the northern end of the southern row of normal mastabas. The block of the normal mastabas was built continuously, without the introduction of any other type. Nevertheless, as it was growing westwards and northwards, I assume that the rectangle of four cores which form the eastern ends of the southern and middle row were built first and established the unified plan as happened in Cem. G 4000. Here, however, I feel more confident that the large mastaba (G 1201) was constructed after the initial rectangle, but it was already in existence when the massive core-work was introduced, and it, as well as two of the cores of the initial rectangle, was enlarged with massive core-work.

Thus the examination of the nucleus cemeteries marks out fifteen initial cores, five in Cem. G 4000, five in Cem. G 2100, and five in Cem. G 1200. The position of these initial cores in their respective cemeteries indicates at once that they are the earliest mastabas in the Western Field, and were therefore built by Cheops or in his reign. The one piece of direct evidence recovered, the red inscription on a lining block of the burial-chamber of G 1203, proved that these cores were constructed by the working gangs of Cheops himself.<sup>2</sup> It is also to be noted that at least ten of these fifteen initial cores had received slab-stelae which I take to be evidence of their construction and assignment by Cheops, and at least six of the fifteen persons to whom they were assigned were princes and princesses of the blood royal.

### b. The Evidence of the Types of Cores

The examination of the types of cores yielded the following order of the introduction of these types:

- (a) Types II a and II b, contemporaneous.
- (b) Type III, a combination of type II and type IV.
- (c) Type IV i.

On the basis of the core-types, the first five cores in Cem. G 4000, the first five in Cem. G 2100, and at least the first five in Cem. G 1200 were approximately contemporaneous, all being of type II a or II b. All other cores in these three cemeteries, whatever their type, were later than the cores just mentioned, although immediately succeeding them in time. In Cem. G 1200 and Cem. G 2100 the old type II a was used until the completion of the cemetery. In Cem. G 4000, however, the core-type II b was succeeded by core-type III (two mastabas in direct proximity to the older type) and thereafter by core-type IV i. The introduction of the massive masonry in core-types III and IV in this cemetery is to be noted as an important point. It was introduced immediately after the five initial cores, but two of the massive cores were faced with small-stepped courses to give them the appearance of type II.

<sup>1</sup> A monolithic block in the west wall of G 2120 bore a quarry mark with the year 23 (*hst sp 12*).

<sup>2</sup> A white limestone builder's fragment with a red-painted

inscription gives the year 9 (*hst sp 5*). This was found in the filling of mastaba G 1203 and may have been from the lining of the burial-chamber of that mastaba.

The cores of type IV by their rough finish were obviously intended to be faced as type III or cased in white limestone. With the introduction of the massive core-work, six of the older mastabas of type II were enlarged with massive core-work against which a casing of white limestone was either built or begun. These enlarged cores were situated three in Cem. G 1200, one in Cem. G 2100, and two in Cem. G 4000. The later cores of type II a in Cem. G 1200 and Cem. G 2100 were without doubt contemporary with the massive cores in Cem. G 4000.

The introduction of the massive core is of special importance for the dating of the great isolated mastaba G 2000. All the early cores of this masonry, including the twelve original cores in the Eastern Field, were built without recess for an interior chapel. G 2000 is of type III, massive core with small-stepped facing, but recessed for an interior chapel. The only other mastaba of this type is G 7410+20, in which the chapel recess was reconstructed in a core of type IV i, about the year 20 of Cheops. The mastaba G 2000, as prepared for the white casing, cannot be dated previous to this same year.

### c. The Relative Positions of the three Early Nucleus Cemeteries in the Western Field

Remembering the tendency of the Egyptians to associate members of the same family in all their cemeteries, I take the position of the three early nucleus cemeteries in the Western Field as characteristic of three family cemeteries each representing a different group in the family of Cheops. Cheops is known to have had four recognized queens and may also have had concubines, some of whom may, by reason of the favour they enjoyed, have had a standing with the king practically equal to that of a queen. It must be assumed that each of these ladies was the potential mother of a group of royal children, and the centre of a party of adherents animated by blood relationship and ambition. Some of these parties may have coalesced for political and other reasons, so that the number of associated groups in the royal family may not have corresponded exactly to the number of mothers in the king's harem. Nevertheless, each of the groups must have represented in its origin a subdivision in the royal family. In a great field like that west of the Cheops pyramid each of such subdivisions would naturally have selected different sites for the building of the tombs of the members of the group, even though the actual construction was carried out by the public works department of the king. I therefore designate the three cemeteries G 4000, G 2100, and G 1200 as family cemeteries each representing a different associated group in the family of Cheops.

Taking as the point of departure that the fifteen initial mastaba-cores were constructed by Cheops in the early part of his reign, probably in the first five years, the question arises which of the three groups of mastabas was begun first. The initial mastabas of Cem. G 4000 occupy the primary site both by position and by the character of the rock. The cores of this group are uniformly of the more expensive type used in the early cores (type II b), and founded the largest of the three nucleus cemeteries. It includes the largest mastaba (G 4000) in the three cemeteries, which is exceeded only by the isolated mastaba G 2000. The family group represented by the five initial cores of Cem. G 4000 was obviously more important in the favour of Cheops than the other two family groups. It may be, therefore, that this group received the most favoured site about the same time that the other two sites were assigned to or selected by the other two family groups.

The site occupied by the five initial cores of Cem. G 2100 is secondary in desirability to Cem. G 4000. These five cores, united as a group by the presence of the portcullis groove in the cased part of the shaft, include two mastabas of abnormally large size, G 2120 and G 2130, two of abnormally

small size (G 2100 and G 2110), and one a little larger than normal size (G 2210). One of the large cores, G 2130, is of the more expensive type II b, and all the rest are of type II a. The remaining six mastabas of this cemetery, all of type II a with plain 2-m. shafts, were built later on a unified plan linked by alinement with the initial group of five. With one possible exception, G 2135, these six were used after the reign of Cheops, and two or three were used after the end of Dyn. IV. Thus the family represented was smaller and less powerful than that of Cem. G 4000, and less enduring than that of Cem. G 1200.

The site of Cem. G 1200, far away to the west, is apparently the least advantageous of the three, but is situated on good, sound rock. The cores are all of the less expensive type II a, but eight of the ten have slab-stelae and the largest core is next in size to the chief core in Cem. G 4000. Moreover, three of the six cores which were enlarged with core-work of type IV iii were in this cemetery. These three cores belonged to royal children and the family appears to have increased in importance after the beginning of the cemetery. The ten cores were all used for burials. It is possible that the siting of the cemetery may even have taken place previous to the siting of the other two, owing to the quarrying and building operations taking place around the First Pyramid.

To sum up the evidence, the order in time in the selection of the three sites is not determinable. In order of importance, the family group represented by the five initial mastabas of Cem. G 4000 undoubtedly comes first and contained a greater number of royal children and highly placed adherents. The other two families seem in the beginning to have been of about equal standing, but that of Cem. G 1200 appears to have increased in importance about the time of the introduction of core-type IV iii, that is, towards the end of the reign of Cheops. Finally, the fifteen initial cores of the three cemeteries were all built within a few years which I estimate to have terminated about year 5 of Cheops.

#### d. The Growth of the Nucleus Cemeteries in the Western Field

After the construction of the fifteen initial cores of the three nucleus cemeteries, each of these cemeteries was increased by the construction of additional cores following lines established by the initial cores. Cem. G 1200 received five more cores following the rows and lines established by the original block of four cores and of the same type of core-work (type II a). Cem. G 2100 was enlarged by the addition of six cores of the same type, alined in the E-W direction with the two larger cores of the second line from the west. In both these cemeteries the additions clearly followed in immediate succession to the construction of the initial cores, and their construction would have required not much more than from three to ten years. It may be assumed that the cores of both cemeteries were completed by the end of the reign of Cheops and that their growth was definitely stopped by that event.

Cem. G 4000 shows the addition of thirty-seven cores which introduced two new types of core-work. The history of the construction of these thirty-seven cores offers a much more difficult problem. All of them were originally of type IV i. The two E-W rows established by the original blocks of four cores of type II b were continued eastward by the addition of four cores in row 6 (the northern row) and four in row 5 (the second from the north). Then row 4 was begun south of the western line of the original block and carried eastwards to line 7, and north of G 4740 were then added G 4750 and G 4760. All these rough massive cores were obviously intended to be cased in some manner. Two of them, the third in row 5 and the first in row 4, were faced with small-stepped masonry, thus creating the new type III, resembling in outer appearance the old type II. The evidence of this growth of Cem. G 4000 is in the first place the position of these cores with reference to the initial four, and secondly the occurrence of the slab-stelae. The slab-stelae were fixed in emplacements in the core-

work of type IV and in the facing of cores of type III. The mastabas bearing this mark of assignment by Cheops were four or five of type IV in row 6, one of type III and one of type IV in row 5, and one of type III in row 4. The use of the slab-stela clearly marks the cores which by position must be reckoned as in immediate succession to the initial rectangle. For the construction of these eight additional cores probably not more than five years is to be reckoned, which would bring us to about the year 10 of Cheops.

The completion to line 7 of the three rows of cores thus established in Cem. G 4000 involved the construction of nine cores, all of type IV i. This was obviously done in immediate succession to the cores with slab-stelae, and as the assignment of the stelae may have been interrupted after the addition of the seventeen cores involved, the nine cores in question may also have been constructed by year 10 or a little afterwards. Certainly the construction of all the cores now dealt with (twenty-two cores) might easily have been completed by the year 15.

It is from this point that the chronology of the growth of Cem. G 4000 becomes obscure. Three more rows were added on the south, but the first two lines on the west were discontinued, probably owing to the presence of the Schiaparelli quarry. The three southern rows were constructed as far as line 7 in the order: row 3, row 2, row 1. Row 3 has one burial dated to the reign of Chephren, and this row was already in place at that time and may have been constructed in the reign of Cheops in immediate succession to the row 4. The cores in rows 2 and 1 were all used after the reign of Cheops and for the greater part in Dyn. V. The cores were all originally of type IV i with one 2-m. shaft, and there is no evidence to prove that they were constructed at any long interval after the twenty-two cores mentioned above. If the twenty-two cores were constructed, as I believe, by the fifteenth year of Cheops, there would have remained eight years of that reign in which to construct rows 3-1, and this was a period in which the public works department of Cheops was at the height of its efficiency, in particular in regard to speed of construction.

There remains line 8 of this cemetery, consisting of four mastabas of type IV, extending rows 2-5, and one mastaba of type II a with two shafts, one intrusive, extending row 6. The last core on the north ending row 6 by reason of the reversion to type II a was probably built as the last core in Cem. G 4000. The first core on the south was never built, and it is probable that the line 8 from row 2 to row 5 was built after row 3 and perhaps after row 2 of the rest of the cemetery. Curiously enough, two of the mastabas in this row had slab-stelae, G 4840 and G 4860. G 4860 ends the sixth row, of which five, G 4160-4560, had slab-stelae; the absence of slab-stelae in G 4660 and G 4760 isolates the slab-stela of G 4860. It is necessary to conclude that the two stelae G 4840 and G 4860 were not assigned in immediate succession to the stelae in the mastabas in the western part of the cemetery. The facts do not exclude the construction of the cores of line 8 by Cheops, but they indicate an interruption in the assignment of cores by the presentation of slab-stelae. Thus the presentation of these two stelae, or at any rate the fixing of the two stelae on the cores concerned, was probably later than the reign of Cheops. There are at least three explanations of the presence of the two isolated slab-stelae in line 8:

- (a) The stelae may have been made in the workshops of a later king, Chephren or Mycerinus, although later kings seem not to have practised the presentation of slab-stelae.
- (b) The slab-stelae may have been presented by Cheops and kept in storage until a few years after the other stelae were used.
- (c) The two stelae were made by the owners of the two mastabas and affixed by them to cores assigned to them by a king later than Cheops.

In fact, one explanation may apply to one of the two stelae and another to the second.

The evidence is not decisive. I would interpret the facts stated above, taken in conjunction with the fact that a majority of these later cores were unused until after the death of Cheops, as indicating that the whole of Cem. G 4000 was built in the reign of Cheops and by his order. Thus I conclude that all the cores of three nucleus cemeteries in the Western Field, making a total of sixty-three cores, were built in the reign of Cheops for three different groups of associated persons, each based on a subdivision of the family of Cheops. The construction of these cores is to be reckoned as beginning before year 5 of that king and continuing until the end of his reign.

#### e. The Three Remaining Nucleus Cemeteries and the Isolated Mastaba G 2000

After setting up the above chronology for the three earliest cemeteries on a unified plan, the sixty-three cores built in the Western Field in the reign of Cheops, there remain three other nucleus cemeteries on a unified plan to be discussed, Cem. G 7000, the Cem. en Échelon, and Cem. G I S.

##### (1) *The Nucleus Cores of Cemetery G 7000*

As explained in a preceding section, Cem. G 7000 was originally begun by twelve cores of type IV i laid out in three E-W rows and four N-S lines. I have estimated that these twelve original cores were built about years 15-17 of the reign of Cheops. They appear never to have received slab-stelae, and in conformity with this and with the time-plan laid out for Cem. G 4000, they were constructed after the first twenty-two cores of that cemetery and contemporaneous with some of its later cores.

These twelve original cores introduce a new normal size, double the normal size of the western cores. The position, to the east of the Great Pyramid and the first two pyramids of the queens, combined with the increased size, proves that these cores were intended for the most important members of Cheops' family living at that time. It is possible that cores in the Western Field may have been designed for the burial of these same persons or some of them. The laying out of so large a cemetery, for twelve persons, on a unified plan after the middle of the reign clearly marks a change in the plans the king had made for the burial of his family and adherents. From this time the Eastern Field became the desirable place of burial, and the sites in it were assigned only to important persons of the blood royal. In the Western Field, while the initial mastabas had been the tombs of princes and princesses (seven known persons out of fifteen), persons of lower rank had received cores alongside the royal children and the number of these increased with the growth of the nucleus cemeteries. After the construction of the twelve eastern cores of larger size, that is, after the construction of the first twenty-two cores in Cem. G 4000, only one princess, Weneshet, is known to have been buried in the Western Field, and at least twenty-three cores (eighteen in G 4000 and five in G 2100) remained unused at the death of Cheops. I have assumed above that the construction of cores in Cem. G 4000 continued after the foundation of Cem. G 7000, and I believe it plausible that the public works department, having continued for so long the execution of the plan of this cemetery entrusted to them by royal order, continued the work automatically. Probably Cheops had some idea of continuing the Western Cemetery for the burials of members of the family and the court not of the high rank of those for whom the eastern cores were reserved.

Cheops altered the plan of his own tomb at least twice, each time increasing the size and splendour of that monument. In accordance with this increase in the magnificence of his ideas I would place first of all the original conception of the Eastern Cemetery. The twelve original cores were obviously intended to be cased with fine white limestone with exterior stone chapels of the same material. The idea, if it had been carried out, would have produced a beautiful white cemetery of twelve tombs, but



the splendour of the conception was improved by transforming the twelve cores into eight larger twin-mastabas, each designed for a son of Cheops and his wife, who was often his sister. The two northern rows of cores were joined up in pairs by connecting massive core-work, and the old cores designed for exterior chapels were reconstructed to take interior chapels. The design appears also to have included subsidiary exterior rooms also of white limestone. The four original cores of the southern row were each increased by a large addition of massive core-work of type IV iii to form a southern row of four twin-mastabas. This alteration of the plan to provide eight very large twin-mastabas I estimate to have been carried out about the year 20 of Cheops.

The growth of this cemetery by the addition of five massive cores around the SE corner can be positively assigned to the reign of Chephren, probably years 1-15. All the other mastabas built on lines laid down by the nucleus cemetery can be proved to have been built after the fifteenth year of Chephren.

### (2) *Mastaba G 2000 in the Western Field*

The great isolated core G 2000 is situated on the lower northern slope of the western terrace, with G 4000 on the south, Cem. G 2100 on the east, and Cem. G 1200 on the west. It is not alined with any of these three nucleus cemeteries and is separated from them by spaces of from 50 to 75 m. The name of the owner is unknown, and the only evidence of its date lies in the type of shaft (type 2) and in that of the core, type III ii. This core is built of massive masonry with two recesses for offering-places, and is completely faced, including the two recesses, with small-stepped masonry. By an alteration in the plan the smaller northern recess was filled up with masonry and faced with small-stepped courses like the rest of the facing. There are only four examples of type III in the whole Giza Necropolis. Two of these, G 4350 and G 4140, are of type III i with exterior chapels and are probably to be dated to the years 5-10 of Cheops. The conversion of cores of type IV i into type III i was probably abandoned as useless when the practice was introduced of casing these cores in fine white masonry. The only example of type III ii (with chapel recess) other than G 2000 is G 7410+20. I estimate this core to have been completed about the year 20 of Cheops, and it is plausible to assume that G 2000 was constructed not far from this date. By this conclusion the core G 2000 was finished long after the construction of the fifteen initial cores of the western cemeteries, after the construction of the twenty-two cores in Cem. G 4000 and after the twelve original cores of the Eastern Field.

This core is the largest in the Western Field and equalled only by the great mastaba (G 7510) of Prince Ankh-haf in the Eastern Field. The owner whose name has escaped us was clearly a man with great resources at his disposal. Of the four cores in the Western Field larger than the normal size, three and probably four belong to princes of the blood royal, and it is very plausible to ascribe the great resources of the owner of G 2000 to his blood relationship to the king. I would suggest that the owner of G 2000 may have been, like Prince Ankh-haf, a blood brother of Cheops himself, a son of Sneferuw.

### (3) *The Cemetery en Échelon in the Western Field*

The Cem. en Échelon was, as has already been explained, built after the completion of the two cemeteries of cores G 4000 and G 2100, which lie immediately west of it. It consists of twenty-five mastabas arranged in three N-S lines, with nine cores in each of the first and second rows and seven in the eastern row. The first two cores of the eastern row were either never constructed or were destroyed when G 5110 was built, probably in the reign of Mycerinus. The cores are all of the same type, type II a, of a poor quality of stone, and the cemetery was clearly laid out on a unified plan, the

peculiar feature of which was that each core left the chapel end of the core behind it exposed to view from the east.

The facts which have a bearing on the date of the construction of this block of cores are as follows:

- (a) The earliest dated burial in the cemetery was in the reign of Mycerinus, and another is dated to Shepseskaf. This proves that the cores were certainly constructed before the end of the reign of Mycerinus.
- (b) The *échelon* principle, a peculiar and characteristic arrangement, does not occur in any of the Cheops cemeteries which can be identified. In the Eastern Field it appears to have been introduced as an afterthought when the mastaba G 7530+40 was reconstructed for Queen Hetepheres behind the mastaba of Princess Merytyetes. This was about the year 13 of Chephren, and the arrangement was carried out when the four nummulitic mastabas of the sons of Hetepheres were added to this group. This fact suggests, but does not prove, that the Western Cem. en Échelon was constructed after year 13 of the reign of Chephren.
- (c) The siting of the mastaba G 5110 indicates, I think, that the Cem. en Échelon was already built when that mastaba was constructed. This mastaba I ascribe to the reign of Mycerinus, probably about the middle of the reign. By this fact the Cem. en Échelon was built either early in the reign of Mycerinus or before his accession.
- (d) Most of the cores in the Cem. en Échelon were constructed *ab origine* as two-shaft mastabas (2-m. shafts). The earliest dated two-shaft mastaba at Giza is G 7650, constructed in the first half of the reign of Chephren, and this example was followed by all the succeeding mastabas datable to that reign. This fact indicates that the Cem. en Échelon was built after the middle of the reign of Chephren.
- (e) The Cem. en Échelon is traversed by a rubble ramp for the transportation of the stone, which coming from the space between Cem. G 4000 and the great southern boundary wall passes diagonally across the unoccupied site of G 4810, along the back of G 4920, between that core and 4930, eastward between G 4920 and 4930, over the northern addition to G 5020, under the later mastaba G 5131 (built against the southern end of G 5130), and so to the back of the large mastaba G 5230; this ramp was later in date than the Échelon Cemetery, and previous to the construction of the later mastabas G 4811, G 5131, and G 5230; the destination of the transported stone is obscure.

The facts prove that the cemetery was built previous to the middle of the reign of Mycerinus and after the middle of the reign of Chephren. The relation of this cemetery to Cem. G 4000 and Cem. G 2100 indicates that the cores were built soon after the completion of these two blocks of cores, which I assign to the end of the reign of Cheops. Thus I form the opinion that the Cem. en Échelon was probably built in the reign of Chephren and by his public works department.

#### (4) *The Cores in Cemetery G I S*

The date of the construction of the ten massive cores, probably originally of type IV i, also presents a difficulty. By position this cemetery appears to be the last of the cemeteries presenting a unified plan constructed at Giza. The single row of cores is divided into two groups. The eastern group of six cores (Nos. 5-10) was constructed in order from east to west and was begun after the construction of G I-c towards the end of the reign of Cheops. The cores were generally of the two-shaft type, and one of them (No. 6) was cased early in the reign of Mycerinus. North of the space between Nos. 6 and

7 is an unfinished cutting which appears to have been intended to be finished as a small pyramid, and was probably sited here before the construction of the three pyramids on the east. The cutting had obviously been abandoned before this line of six cores was laid out. Between this eastern group and the western group is a wide, empty space now occupied by a later mastaba with another, still later, south of it. This space could not have been left by Cheops for the construction of a small pyramid, and this fact confirms the dating of the row to a period later than Cheops. The western group consists of four cores alined with the eastern group and similarly spaced. One of them, No. 1 a, was either never finished or subsequently nearly destroyed for its stone. While the eastern group seems to be attached to Cem. G 7000, the western group would appear rather to have a relation to the Western Field and in particular to the massive core G 5110 built in the reign of Mycerinus.

The eastern group of six cores was certainly built after the reign of Cheops and before the casing of No. 6 in the years 2-4 of Mycerinus. The western group of four cores was apparently a separate operation undertaken after the completion of the eastern group.

The core-type in all ten was massive type IV i, but five of them have been reconstructed with interior chapels (Nos. 2, 3, 6, 8, and 10). The interior chapel recess had come into use in the Eastern Field about the year 20 of Cheops. The additions to the southern row of original cores in that cemetery were constructed with chapel recess (type IV iii). Four of the massive cores built in the reign of Chephren had chapel recesses, and the interior chapel was practically universal after the accession of Chephren. It seems, therefore, curious that the cores of Cem. G I S constructed after the accession of Chephren were not built *ab initio* with chapel recesses. But the same is true of the Cem. en Échelon, also built after the accession of Chephren. The explanation probably lies in the fact that the custom had been established of building cores in regular blocks during the construction of the three western and the original eastern cemeteries, and that this custom was followed in the Échelon Cemetery and in G I S, leaving the construction of the chapel to a later operation.

The fact that the cores of Cem. G I S were of massive masonry, while those of the Cem. en Échelon were of the small-stepped type, points to the two cemeteries having been carried out by different bodies of workmen, and probably at different times. It is to be noted that the Cem. en Échelon followed quite naturally the normal size used in the preceding cemeteries of the Western Field. The cores of the Cem. G I S, on the other hand, followed the larger norm of the Eastern Field. I have come to the conclusion that Cem. G I S was later than the Cem. en Échelon, and would assign it to the end of the reign of Chephren or the beginning of the reign of Mycerinus. This is in accord with Professor Junker's dating based on the fact that the cores had been built in foundation trenches dug through a layer of powdered granite which he ascribes to the reign of Chephren.

#### f. The Chronological Order of the Blocks of Cores

In order to give an oversight of the conclusions to which I have come as to the date of the construction of the cores in the six nucleus cemeteries, I have compiled the following table:

(a) Cores completed by the year 5 of Cheops:

Cem. G 4000: G 4000, 4150, 4250, 4160, 4260.

Cem. G 2100: G 2100, 2130, 2120, 2110, 2210.

Cem. G 1200: G 1223, 1225, 1203, 1205, 1201.

(b) Cores completed by the year 15 of Cheops:

Cem. G 4000: G 4360-4760, G 4350-4750, G 4140-4740: 17 cores, or, with the addition of the 5 initial cores, 22 cores.

Cem. G 2100: G 2135, 2140, 2150, 2155, 2160, 2170: total 6 mastabas, or, with the initial 5, 11 cores.

Cem. G 1200: G 1207, 1209, 1227, 1233, 1235: 5 cores, or, with the 5 initial cores, a total of 10 cores.

(c) Cores completed after year 15 of Cheops:

Cem. G 4000: the 15 cores in rows 1-3, and the 5 cores in line 8.

(d) Cores completed about the year 17 of Cheops:

Cem. G 7000: the 12 original cores of the larger norm.

(e) Cores completed by year 20 of Cheops:

Cem. G 7000: the cores of the 8 twin-mastabas which incorporated the original 12 cores.

(f) Cores completed in the first half of the reign of Chephren:

Cem. G 7000: G 7150, 7650, 7530+40, 7450, and probably G 7350: the mastaba G 7050.

(g) Cores completed about the middle of the reign of Chephren:

Cem. en Échelon in the Western Field: 25 cores.

(h) Cores completed in the latter part of the reign of Chephren or in the first two years of Mycerinus:

Cem. G I S: Nos. 5-10.

(i) Cores completed in the reign of Mycerinus:

Cem. G I S: Nos. 1, 1 a, 2, and 3: G 5110.

The details of this time plan are only approximately calculated and are, of course, subject to revision. But the general lines of the chronology of the construction of these cores, especially for the reign of Cheops, seemed to me fairly reliable, and it is on the basis of this chronology that I approach the chronology of the finished mastabas.