Babylonia

Lesson	Chapters
Babylonia 001	Chapter 1
Babylonia 002	Chapters 2 and 3
Babylonia 003	**Chapters 4 and 5**
Babylonia 004	Chapters 6 and 7
Babylonia 005	Chapter 8

Chapter 4. The Capital

Babylon, the capital of the Fourth Monarchy, was probably the largest and most magnificent city of the ancient world. A dim tradition current in the East gave, it is true, a greater extent, if not a greater splendor, to the metropolis of Assyria; but this tradition first appears in ages subsequent to the complete destruction of the more northern city; and it is contradicted by the testimony of facts. The walls of Nineveh have been completely traced, and indicate a city three miles in length, by less than a mile and a half in breadth, containing an area of about 1800 English acres. Of this area less than one tenth is occupied by ruins of any pretension. On the admitted site of Babylon striking masses of ruin cover a space considerably larger than that which at Nineveh constitutes the whole area of the town. Beyond this space in every direction, north, east, south and west, are detached mounds indicating the former existence of edifices of some size, while the intermediate ground between these mounds and the main ruins shows distinct traces of its having been built upon in former days.

Of the actual size of the town, modern research gives us no clear and definite notion. One explorer only has come away from the country with an idea that the general position of the detached mounds, by which the plain around Hillah is dotted, enables him to draw the lines of the ancient walls, and mark out the exact position of the city. But the very maps and plans which are put forward in support of this view show that it rests mainly on hypothesis; nor is complete confidence placed in the surveys on which the maps and plans have been constructed. The English surveys, which have been unfortunately lost, are said not to have placed the detached mounds in any such decided lines as M. Oppert believes them to occupy, and the general impression of the British officers who were employed on the service is that "no vestige of the walls of Babylon has been as yet discovered."

For the size and plan of the city we are thus of necessity thrown back upon the reports of ancient authors. It is not pretended that such reports are in this, or in any other case, deserving of implicit credence. The ancient historians, even the more trustworthy of them, are in the habit of exaggerating in their numbers; and on such subjects as measurements they were apt to take on trust the declarations of their native guides, who would be sure to make over-statements. Still in this instance we have so many distinct authorities--eyewitnesses of the facts--and some of them belonging to times when scientific accuracy had begun to be appreciated, that we must be very in

credulous if we do not accept their witness, so far as it is consentient, and not intrinsically very improbable.

According to Herodotus, an eye-witness, and the earliest authority on the subject the _enceinte_ of Babylon was a square, 120 stades (about 14 miles) each way--the entire circuit of the wall being thus 56 miles, and the area enclosed within them falling little short of 200 square miles. Ctesias, also an eyewitness, and the next writer on the subject, reduced the circuit of the walls to 360 stades, or 41 miles, and made the area consequently little more than 100 square miles. These two estimates are respectively the greatest and the least that have come down to us. The historians of Alexander, while conforming nearly to the statements of Ctesias, a little enlarge his dimensions, making the circuit 365, 368, or 385 stades. The differences here are inconsiderable; and it seems to be established, on a weight of testimony which we rarely possess in such a matter, that the walls of this great town were about forty miles in circumference, and enclosed an area as large as that of the Landgraviate of Hesse-Homburg.

It is difficult to suppose that the real city--the streets and squares--can at any time have occupied one half of this enormous area, A clear space, we are told, was left for a considerable distance inside the wall--like the _pomaerium_ of the Romans--upon which no houses were allowed to be built. When houses began, they were far from being continuous; gardens, orchards, even fields, were interspersed among the buildings; and it was supposed that the inhabitants, when besieged, could grow sufficient corn for their own consumption within the walls. Still the whole area was laid out with straight streets, or perhaps one should say with roads (for the houses cannot have been continuous along them), which cut one another everywhere at right angles, like the streets of some German towns. The wall of the town was pierced with a hundred gates, twenty-five (we may suppose) in each face, and the roads led straight to these portals, the whole area being thus cut up into square blocks. The houses were in general lofty, being three or even four stories high. They are said to have had vaulted roofs, which were not protected externally with any tiling, since the climate was so dry as to render such a protection unnecessary. The beams used in the houses were of palm-wood, all other timber being scarce in the country; and such pillars as the houses could boast were of the same material. The construction of these last was very rude. Around posts of palm-wood were twisted wisps of rushes, which were covered with plaster, and then colored according the taste of the owner.

The Euphrates ran through the town, dividing it nearly in half. Its banks were lined throughout with quays of brick laid in bitumen, and were further guarded by two walls of brick, which skirted them along their whole length. In each of these walls were twenty-five gates, corresponding to the number of the streets which gave upon the river; and outside each gate was a sloped landing place, by which you could descend to the water's edge, if you had occasion to cross the river. Boats were kept ready at these landing-places to convey passengers from side to side; while for those who disliked this method of conveyance a bridge was provided of a somewhat peculiar construction. A number of stone piers were erected in the bed of the stream, firmly clamped together with fastenings of iron and lead; wooden drawbridges connected pier with pier during the day, and on these passengers passed over; but at night they were withdrawn, in order that the bridge might not be used during the dark. Diodorus declares that besides this bridge, to which he assigns a length of five stades (about 1000 yards) and a breadth of 30 feet, the two sides of the river were joined together by a tunnel, which was fifteen feet wide and twelve high to the spring of its arched roof.

The most remarkable buildings which the city contained were the two palaces, one on either side of the river, and the great temple of Belus. Herodotus describes the great temple as contained within a square enclosure, two stades (nearly a quarter of a mile) both in length and breadth. Its chief feature was the _ziggurat_ or tower, a huge solid mass of brick-work, built (like all Babylonian temple-towers) in stages, square being emplaced on square, and a sort of rude pyramid being thus formed, at the top of which was the main shrine of the god. The basement platform of the Belus tower was, Herodotus tells us, a stade, or rather more than 200 yards, each way. The number of stages was eight. The ascent to the highest stage, which contained the shrine of the god, was on the outside, and consisted either of steps, or of an inclined plane, carried round the four sides of the building, and in this way conducting to the top. According to Strabo the tower was a stade (606 feet 9 inches) in height; but this estimate, if it is anything more than a conjecture, must represent rather the length of the winding ascent than the real altitude of the building. The great pyramid itself was only 480 feet high; and it is very questionable whether any Babylonian building ever equaled it. About half-way up the ascent was a resting-place with seats, where persons commonly sat a while on their way to the summit. The shrine which crowned the edifice was large and rich. In the time of Herodotus it contained no image; but only a golden table and a large couch, covered with a handsome drapery. This, however, was after the Persian conquest and the plunder of its principal treasures. Previously, if we may believe Diodorus, the shrine was occupied by three colossal images of gold--one of Bel, one of Beltis, and the third of Rhea or Ishtar. Before the image of Beltis were two golden lions, and near them two enormous serpents of silver, each thirty talents in weight. The golden table--forty feet long and fifteen broad--was in front of these statues, and upon it stood two huge drinking-cups, of the same weight as the serpents. The shrine also contained two enormous censers and three golden bowls, one for each of the three deities.

At the base of the tower was a second shrine or chapel, which in the time of Herodotus contained a sitting image of Bel, made of gold, with a golden table in front of it, and a stand for the image, of the same precious metal. Here, too, Persian avarice had been busy; for anciently this shrine had possessed a second statue, which was a human figure twelve cubits high, made of solid gold. The shrine was also rich in private offerings. Outside the building, but within the sacred enclosure, were two altars, a smaller one of gold, on which it was customary to offer sucklings, and a larger one, probably of stone, where the worshippers sacrificed full-grown victims.

The great palace was a building of still larger dimensions than the great temple. According to Diodorus, it was situated within a triple enclosure, the innermost wall being twenty stades, the second forty stades, and the outermost sixty stades (nearly seven miles), in circumference. The outer wall was built entirely of plain baked brick. The middle and inner walls were of the same material, fronted with enameled bricks representing hunting scenes. The figures, according to this author, were larger than the life, and consisted chiefly of a great variety of animal forms. There were not wanting, however, a certain number of human forms to enliven the scene; and among these were two--a man thrusting his spear through a lion, and a woman on horseback aiming at a leopard with her javelin--which the later Greeks believed to represent the mythic Ninus and Semiramis. Of the character of the apartments we hear nothing; but we are told that the palace had three gates, two of which were of bronze, and that these had to be opened and shut by a machine.

But the main glory of the palace was its pleasure-ground--the "Hanging Gardens," which the Greeks regarded as one of the

seven wonders of the world. This extraordinary construction, which owed its erection to the whim of a woman, was a square, each side of which measured 400 Greek feet. It was supported upon several tiers of open arches, built one over the other, like the walls of a classic theatre, and sustaining at each stage, or story, a solid platform, from which the piers of the next tier of arches rose. The building towered into the air to the height of at least seventy-five feet, and was covered at the top with a great mass of earth, in which there grew not merely flowers and shrubs, but tress also of the largest size. Water was supplied from the Euphrates through pipes, and was raised (it is said) by a screw, working on the principal of Archimedes. To prevent the moisture from penetrating into the brick-work and gradually destroying the building, there were interposed between the bricks and the mass of soil, first a layer of reeds mixed with bitumen, then a double layer of burnt brick cemented with gypsum, and thirdly a coating of sheet lead. The ascent to the garden was by steps. On the way up, among the arches which sustained the building, were stately apartments, which, must have been pleasant from their coolness. There was also a chamber within the structure containing the machinery by which the water was raised.

Of the smaller palace, which was opposite to the larger one, on the other side the river, but few details have come down to us. Like the larger palace, it was guarded by a triple enclosure, the entire circuit of which measured (it is said) thirty stades. It contained a number of bronze statues, which the Greeks believed to represent the god Belus, and the sovereigns Ninus and Semiramis, together with their officers. The walls were covered with battle scenes and hunting scenes, vividly represented by means of bricks painted and enameled.

Such was the general character of the town and its chief edifices, if we may believe the descriptions of eye-witnesses. The walls which enclosed and guarded the whole--or which, perhaps one should rather say, guarded the district within which Babylon was placed--have been already mentioned as remarkable for their great extent, but cannot be dismissed without a more special and minute description. Like the "Hanging Gardens," they were included among the "world's seven wonders," and, according to every account given of them, their magnitude and construction were remarkable.

It has been already noticed that, according to the lowest of the ancient estimates, the entire length of the walls was 360 stades, or more than forty-one miles. With respect to the width we have two very different statements, one by Herodotus and the other by Clitarchus and Strabo. Herodotus makes the width 50 royal cubits, or about 85 English feet, Strabo and Q. Curtius reduced the estimate to 32 feet. There is still greater discrepancy with respect to the height of the walls. Herodotus says that the height was 200 royal cubits, or 300 royal feet (about 335 English feet); Ctesias made it 50 fathoms, or 300 ordinary Greek feet; Pliny and Solinus, substituting feet for the royal cubits of Herodotus, made the altitude 235 feet; Philostratus and Q. Curtius, following perhaps some one of Alexander's historians, gave for the height 150 feet; finally Clitarchus, as reported by Diodorus Siculus, and Strabo, who probably followed him, have left us the very moderate estimate of 75 feet. It is impossible to reconcile these numbers. The supposition that some of them belong properly to the outer, and others to the inner wall, will not explain the discrepancies--for the measurements cannot by any ingenuity be reduced to two sets of dimensions. The only conclusion which it seems possible to draw from the conflicting testimony is that the numbers were either rough guesses made by very unskillful travelers, or else were (in most cases) intentional exaggerations palmed upon them by the native ciceroni. Still the broad facts remain--first, that the walls enclosed an enormous space, which was very partially occupied by buildings; secondly, that they

were of great and unusual thickness; and thirdly, that they were of a vast height--seventy or eighty feet at least in the time of Alexander, after the wear and tear of centuries and the violence of at least three conquerors.

The general character of the construction is open to but little doubt. The wall was made of bricks, either baked in kilns, or (more probably) dried in the sun, and laid in a cement of bitumen, with occasional layers of reeds between the courses. Externally it was protected by a wide and deep moat. On the summit were low towers, rising above the wall to the height of some ten or fifteen feet, and probably serving as guardrooms for the defenders. These towers are said to have been 250 in number; they were least numerous on the western face of the city, where the wall ran along the marshes. They were probably angular, not round; and instead of extending through the whole thickness of the wall, they were placed along its outer and inner edge, tower facing tower, with a wide space between them--"enough," Herodotus says, "for a four-horse chariot to turn in." The wall did not depend on them for its strength, but on its own height and thickness, which were such as to render scaling and mining equally hopeless.

Such was Babylon, according to the descriptions of the ancients--a great city, built on a very regular plan, surrounded by populous suburbs interspersed among fields and gardens, the whole being included within a large square strongly fortified enceinte. When we turn from this picture of the past to contemplate the present condition of the localities, we are at first struck with astonishment at the small traces which remain of so vast and wonderful a metropolis. "The broad walls of Babylon" are "utterly broken" down, and her "high gates burned with fire." "The golden city hath ceased." God has "swept it with the bosom of destruction." "The glory of the kingdoms, the beauty of the Chaldees' excellency," is become "as when God overthrew Sodom and Gomorrah." The traveler who passes through the land is at first inclined to say that there are no ruins, no remains, of the mighty city which once lorded it over the earth. By and by, however, he begins to see that though ruins, in the common acceptation of the term, scarcely exist--though there are no arches, no pillars, but one or two appearances of masonry even yet the whole country is covered with traces of exactly that kind which it was prophesied Babylon should leave. Vast "heaps" or mounds, shapeless and unsightly, are scattered at intervals over the entire region where it is certain that Babylon anciently stood, and between the "heaps" the soil is in many places composed of fragments of pottery and bricks, and deeply impregnated with niter, infallible indications of its having once been covered with buildings. As the traveler descends southward from Baghdad he finds these indications increase, until, on nearing the Euphrates, a few miles beyond Mohawil, he notes that they have become continuous, and finds himself in a region of mounds, some of which are of enormous size.

These mounds begin about five miles above Hillah, and extend for a distance of about three miles from north to south along the course of the river, lying principally on its left or eastern bank. The ruins on this side consist chiefly of three great masses of building. The most northern, to which the Arabs of the present day apply the name of BABIL--the true native appellation of the ancient cities--is a vast pile of brick-work of an irregular quadrilateral shape, with precipitous sides furrowed by ravines, and with a flat top. Of the four faces of the ruin the southern seems to be the most perfect. It extends a distance of about 200 yards, or almost exactly a stade, and runs nearly in a straight line from west to east. At its eastern extremity it forms a right angle with the east face, which runs nearly due north for about 180 yards, also almost in a straight line. The western and northern faces are apparently much worn away. Here are the chief ravines, and here is the greatest

seeming deviation from the original lines of the building. The greatest height of the Babil mound is 130 or 140 feet. It is mainly composed of sun-dried brick, but shows signs of having been faced with fire-burnt brick, carefully cemented with an excellent white mortar. The bricks of this outer facing bear the name and titles of Nebuchadnezzar. A very small portion of the original structure has been laid bare enough however to show that the lines of the building did not slope like those of a pyramid, but were perpendicular, and that the side walls had, at intervals, the support of buttresses.

This vast building, whatever it was, stood within a square enclosure, two sides of which, the northern and eastern, are still very distinctly marked. A long low line of rampart runs for 400 yards parallel to the east face of the building, at a distance of 120 or 130 yards, and a similar but somewhat longer line of mound runs parallel to the north face at rather a greater distance from it. On the west a third line could be traced in the early part of the present century; but it appears to be now obliterated. Here and on the south are the remains of an ancient canal, the construction of which may have caused the disappearance of the southern, and of the lower part of the western line.

Below the Babil mound, which stands isolated from the rest of the ruins, are two principal masses--the more northern known to the Arabs as EL KASR, "the Palace," and the more southern as "the mound of Amran," from the tomb of a reputed prophet Amran-ibn-Ali, which crowns its summit. The Kasr mound is an oblong square, about 700 yards long by 600 broad, with the sides facing the cardinal points. Its height above the plain is 70 feet. Its longer direction is from north to south. As far as it has been penetrated, it consists mainly of rubbish-loose bricks, tiles, and fragments of stone. In a few places only are there undisturbed remains of building. One such relic is a subterranean passage, seven feet in height, floored and walled with baked brick, and covered in at the top with great blocks of sandstone, which may either have been a secret exit or more probably an enormous drain. Another is the Kasr, or "palace" proper, whence the mound has its name. This is a fragment of excellent brick masonry in a wonderful state of preservation, consisting of walls, piers, and buttresses, and in places ornamented with pilasters, but of too fragmentary a character to furnish the modern inquirer with any clue to the original plan of the building. The bricks are of a pale yellow color and of the best possible quality, nearly resembling our fire-bricks. They are stamped, one and all, with the name and titles of Nebuchadnezzar. The mortar in which they are laid is a fine lime cement, which adheres so closely to the bricks that it is difficult to obtain a specimen entire. In the dust at the foot of the walls are numerous fragments of brick, painted, and covered with a thick enamel or glaze. Here, too, have been found a few fragments of sculptured stone, and slabs containing an account of the erection of a palatial edifice by Nebuchadnezzar. Near the northern edge of the mound, and about midway in its breadth, is a colossal figure of a lion, rudely carved in black basalt, standing over the prostrate figure of a man with arms outstretched. A single tree grows on the huge ruin, which the Arabs declare to be of a species not known elsewhere, and regard as a remnant of the hanging garden of Bokht-i-nazar. It is a tamarisk of no rare kind, but of very great ago, in consequence of which, and of its exposed position, the growth and foliage are somewhat peculiar.

South of the Kasr mound, at the distance of about 800 yards, is the remaining great mass of ruins, the mound of Jumjuma, or of Amran. The general shape of this mound is triangular,107 but it is very irregular and ill-defined, so as scarcely to admit of accurate description. Its three sides face respectively a little east of north, a little south of east, and a little south of west. The south-western side, which runs nearly parallel with the Euphrates, and seems to have been once

washed by the river, is longer than either of the others, extending a distance of above a thousand yards, while the south-eastern may be 800 yards, and the north-eastern 700. Innumerable ravines traverse the mound on every side, penetrating it nearly to its centre. The surface is a series of undulations. Neither masonry nor sculpture is anywhere apparent.

All that meets the eye is a mass of debris; and the researches hitherto made have failed to bring to light any distinct traces of building. Occasionally bricks are found, generally of poor material, and bearing the names and titles of some of the earlier Babylonian monarchs; but the trenches opened in the pile have in no case laid bare even the smallest fragment of a wall.

Besides the remains which have been already described, the most remarkable are certain long lines of rampart on both sides of the river, which lie outside of the other ruins, enclosing them all, except the mound of Babil. On the left bank of the stream there is to be traced, in the first place, a double line of wall or rampart, having a direction nearly due north and south, which lies east of the Kasr and Amran mounds, at the distance from them of about 1000 yards. Beyond this is a single line of rampart to the north-east, traceable for about two miles, the direction of which is nearly from north-west to south-east, and a double line of rampart to the south-east, traceable for a mile and a half, with a direction from northeast to south-west. The two lines in this last case are from 600 to 700 yards apart, and diverge from one another as they run out to the north-east. The inner of the two meets the north-eastern rampart nearly at a right angle, and is clearly a part of the same work. It is questioned, however, whether this line of fortification is ancient, and not rather a construction belonging to Parthian times.

A low line of mounds is traceable between the western face of the Amran and Kasr hills, and the present eastern bank of the river, bounding a sort of narrow valley, in which either the main stream of the Euphrates, or at any rate a branch from it, seems anciently to have flowed.

On the right bank of the stream the chief remains are of the same kind. West of the river, a rampart, twenty feet high, runs for nearly a mile parallel with the general line of the Amran mound, at the distance of about 1000 yards from the old course of the stream. At either extremity the line of the rampart turns at a right angle, running down towards the river, and being traceable towards the north for 400 yards and towards the south for fifty or sixty. It is evident that there was once, before the stream flowed in its present channel, a rectangular enclosure, a mile long and 1000 yards broad, opposite to the Amran mound; and there are indications that within this _enceinte_ was at least one important building, which was situated near the south-east angle of the enclosure, on the banks of the old course of the river. The bricks found at this point bear the name of Neriglissar.

There are also, besides the ramparts and the great masses of ruin above described, a vast number of scattered and irregular heaps of hillocks on both sides of the river, chiefly, however, upon the eastern bank. Of these one only seems to deserve distinct mention. This is the mound called El Homeira, "the Red," which lies due east of the Kasr, distant from it about 800 yards--a mound said to be 300 yards long by 100 wide, and to attain an elevation of 60 or 70 feet. It is composed of baked brick of a bright red color, and must have been a building of a very considerable height resting upon a somewhat confined base. Its bricks are inscribed along their edges, not (as is the usual practice) on their lower face.

The only other ancient work of any importance of which some remains are still to be traced is a brick embankment on the left bank of the stream between the Kasr and the Babil mounds, extending for a distance of a thousand yards in a line which has a slight curve and a general direction of S.S.W. The

bricks of this embankment are of a bright red color, and of great hardness. They are laid wholly in bitumen. The legend which they bear shows that the quay was constructed by Nabonidus.

Such then are the ruins of Babylon--the whole that can now with certainty be assigned to the "beauty of the Chaldees' excellency"--the "great Babylon" of Nebuchadnezzar. Within a space little more than three miles long and a mile and three quarters broad are contained all the undoubted remains of the greatest city of the old world. These remains, however, do not serve in any way to define the ancient limits of the place. They are surrounded on every side by nitrous soil, and by low heaps which it has not been thought worth while to excavate, but which the best judges assign to the same era as the great mounds, and believe to mark the sites of the lesser temples and the other public buildings of the ancient city. Masses of this kind are most frequent to the north and east. Sometimes they are almost continuous for miles; and if we take the Kasr mound as a centre, and mark about it an area extending five miles in each direction (which would give a city of the size described by Ctesias and the historians of Alexander), we shall scarcely find a single square mile of the hundred without some indications of ancient buildings upon its surface. The case is not like that of Nineveh, where outside the walls the country is for a considerable distance singularly bare of ruins. The mass of Babylonian remains extending from Babil to Amran does not correspond to the whole _enceinte_ of Nineveh, but to the mound of Koyunjik. It has every appearance of being, not the city, but "the heart of the city"--the "Royal quarter" outside of which were the streets and squares, and still further off, the vanished walls. It may seem strange that the southern capital should have so greatly exceeded the dimensions of the northern one. But, if we follow the indications presented by the respective sites, we are obliged to conclude that there was really this remarkable difference.

It has to be considered in conclusion how far we can identify the various ruins above described with the known buildings of the ancient capital, and to what extent it is possible to reconstruct upon the existing remains the true plan of the city. Fancy, if it discards the guidance of fact, may of course with the greatest ease compose plans of a charming completeness. A rigid adherence to existing data will produce, it is to be feared, a somewhat meager and fragmentary result; but most persons will feel that this is one of the cases where the maxim of Hesiod applies--"the half is preferable to the whole."

The one identification which may be made upon certain and indeed indisputable evidence is that of the Kasr mound with the palace built by Nebuchadnezzar. The tradition which has attached the name of Kasr or "Palace" to this heap is confirmed by inscriptions upon slabs found on the spot, wherein Nebuchadnezzar declares the building to be his "Grand Palace." The bricks of that part of the ruin which remains uncovered bear, one and all, the name of this king; and it is thus clear that here stood in ancient times the great work of which Berosus speaks as remarkable for its height and splendor. If a confirmation of the fact were needed after evidence of so decisive a character, it would be found in the correspondence between the remains found on the mound and the description left us of the "greater palace" by Diodorus. Diodorus relates that the walls of this edifice were adorned with colored representations of hunting scenes; and modern explorers find that the whole soil of the mound, and especially the part on which the fragment of ruin stands, is full of broken pieces of enameled brick, varied in hue, and evidently containing portions of human and animal forms.

But if the Kasr represents the palace built by Nebuchadnezzar, as is generally allowed by those who have devoted their attention to the subject, it seems to follow almost as a

certainty that the Amran mound is the site of that old palatial edifice to which the erection of Nebuchadnezzar was an addition. Berosus expressly states that Nebuchadnezzar's building "adjoined upon" the former palace, a description which is fairly applicable to the Amran mound by means of a certain latitude of interpretation, but which is wholly inapplicable to any of the other ruins. This argument would be conclusive, even if it stood alone. It has, however, received an important corroboration in the course of recent researches. From the Amran mound, and from this part of Babylon only, have monuments been recovered of an earlier date than Nebuchadnezzar. Here and here alone did the early kings leave memorials of their presence in Babylon; and here consequently, we may presume, stood the ancient royal residence.

If, then, all the principal ruins on the east bank of the river, with the exception of the Babil mound and the long lines marking walls or embankments, be accepted as representing the "great palace" or "citadel" of the classical writers we must recognize in the remains west of the ancient course of the river-the oblong square enclosure and the important building at its south-east angle--the second or "smaller palace" of Ctesias, which was joined to the larger one, according to that writer, by a bridge and a tunnel. This edifice, built or at any rate repaired by Neriglissar, lay directly opposite the more ancient part of the eastern palace, being separated from it by the river, which anciently flowed along the western face of the Kasr and Amran mounds. The exact position of the bridge cannot be fixed. With regard to the tunnel, it is extremely unlikely that any such construction was ever made. The "Father of History" is wholly silent on the subject, while he carefully describes the bridge, a work far less extraordinary. The tunnel rests on the authority of two writers only--Diodorus and Philostratus--who both wrote after Babylon was completely ruined. It was probably one of the imaginations of the inventive Ctesias, from whom Diodorus evidently derived all the main points of his description.

Thus far there is no great difficulty in identifying the existing remains with buildings mentioned by ancient authors; but, at the point to which we are now come, the subject grows exceedingly obscure, and it is impossible to offer more than reasonable conjectures upon the true character of the remaining ruins. The descriptions of ancient writers would lead us to expect that we should find among the ruins unmistakable traces of the great temple of Belus, and at least some indication of the position occupied by the Hanging Gardens. These two famous constructions can scarcely, one would think, have wholly perished. More especially, the Belus temple, which was a stade square, and (according to some) a stade in height, must almost of necessity have a representative among the existing remains. This, indeed, is admitted on all hands; and the controversy is thereby narrowed to the question, which of two great ruins--the only two entitled by their size and situation to attention--has the better right to be regarded as the great and celebrated sanctuary of the ancient Babylon.

That the mound of Babil is the _ziggurat_ or tower of a Babylonian temple scarcely admits of a doubt. Its square shape, its solid construction, its isolated grandeur, its careful emplacement with the sides facing the cardinal points, and its close resemblance to other known Babylonian temple-towers, sufficiently mark it for a building of this character, or at any rate raise a presumption which it would require very strong reasons indeed to overcome. Its size moreover corresponds well with the accounts which have come down to us of the dimensions of the Belus temple, and its name and proximity to the other main ruins show that it belonged certainly to the ancient capital. Against its claim to be regarded as the remains of the temple of Bolus two objections only can be argued: these are the absence of any appearance of stages, or even of a pyramidical

shape, from the present ruin, and its position on the same side of the Euphrates with the palace. Herodotus expressly declares that the temple of Belus and the royal palace were upon opposite sides of the river, and states, moreover, that the temple was built in stages, which rose one above the other to the number of eight. Now these two circumstances, which do not belong at present to the Babil mound, attach to a ruin distant from it about eleven or twelve miles--a ruin which is certainly one of the most remarkable in the whole country, and which, if Babylon had really been of the size asserted by Herodotus, might possibly have been included within the walls. The Birs-i-Nimrud had certainly seven, probably eight stages, and it is the only ruin on the present western bank of the Euphrates which is at once sufficiently grand to answer to the descriptions of the Belus temple, and sufficiently near to the other ruin to make its original inclusion within the walls not absolutely impossible. Hence, ever since the attention of scholars was first directed to the subject of Babylonian topography, opinion has been divided on the question before us, and there have not been wanting persons to maintain that the Birs-i-Nimrud is the true temple of Belus, if not also the actual tower of Babel, whose erection led to the confusion of tongues and general dispersion of the sons of Adam.

With this latter identification we are not in the present place concerned. With respect to the view that the Birs is the sanctuary of Belus, it may be observed in the first place that the size of the building is very much smaller than that ascribed to the Belus temple; secondly, that it was dedicated to Kebo, who cannot be identified with Bel; and thirdly, that it is not really any part of the remains of the ancient capital, but belongs to an entirely distinct town. The cylinders found in the ruin by Sir Henry Rawlinson declare the building to have been "the wonder of Borsippa;" and Borsippa, according to all the ancient authorities, was a town by itself--an entirely distinct place from Babylon. To include Borsippa within the outer wall of Babylon is to run counter to all the authorities on the subject, the inscriptions, the native writer, Berosus, and the classical geographers generally. Nor is the position thus assigned to the Belus temple in harmony with the statement of Herodotus, which alone causes explorers to seek for the temple on the west side of the river. For, though the expression which this writer uses does not necessarily mean that the temple was in the exact centre of one of the two divisions of the town, it certainly implies that it lay towards the middle of one division--well within it--and not upon its outskirts. It is indeed inconceivable that the main sanctuary of the place, where the kings constantly offered their worship, should have been nine or ten miles from the palace! The distance between the Amran mound and Babil, which is about two miles, is quite as great as probability will allow us to believe existed between the old residence of the kings and the sacred shrine to which they were in the constant habit of resorting.

Still there remain as objections to the identification of the great temple with the Babil mound the two arguments already noticed. The Babil mound has no appearance of stages such as the Birs presents, nor has it even a pyramidical shape. It is a huge platform with a nearly level top, and sinks, rather than rises, in the centre. What has become, it is asked, of the seven upper stages of the great Belus tower, if this ruin represents it? Whither have they vanished? How is it that in crumbling down they have not left something like a heap towards the middle? To this it may be replied that the destruction of the Belus tower has not been the mere work of the elements--it was violently broken down either by Xerxes, or by some later king, who may have completely removed all the upper stages. Again, it has served as a quarry to the hunters after bricks for more than twenty centuries; so that it is only surprising that it still retains so much of

its original shape. Further, when Alexander entered Babylon more than 2000 years ago 10,000 men were employed for several weeks in clearing away the rubbish and laying bare the foundations of the building. It is quite possible that a conical mass of crumbled brick may have been removed from the top of the mound at this time.

The difficulty remains that the Babil mound is on the same side of the Euphrates with the ruins of the Great Palace, whereas Herodotus makes the two buildings balance each other, one on the right and the other on the left bank of the stream. Now here it is in the first place to be observed that Herodotus is the only writer who does this. No other ancient author tells us anything of the relative situation of the two buildings. We have thus nothing to explain but the bald statement of a single writer--a writer no doubt of great authority, but still one not wholly infallible. We might say, then, that Herodotus probably made a mistake--that his memory failed him in this instance, or that he mistook his notes on the subject. Or we may explain his error by supposing that he confounded a canal from the Euphrates, which seems to have anciently passed between the Babil mound and the Kasr (called Shebil by Nebuchadnezzar) with the main stream. Or, finally, we may conceive that at the time of his visit the old palace lay in ruins, and that the palace of Nerig-lissar on the west bank of the stream was that of which he spoke. It is at any rate remarkable, considering how his authority is quoted as fixing the site of the Belus tower to the west bank, that, in the only place where he gives us any intimation of the side of the river on which he would have placed the tower, it is the east and not the west bank to which his words point. He makes those who saw the treachery of Zopyrus at the Belian and Kissian gates, which must have been to the east of the city, at once take refuge in the famous sanctuary, which he implies was in the vicinity.

On the whole, therefore, it seems best to regard the Babil mound as the ziggurat of the great temple of Bel (called by some "the tomb of Belus") which the Persians destroyed and which Alexander intended to restore. With regard to the "hanging gardens," as they were an erection of less than half the size of the tower, it is not so necessary to suppose that distinct traces must remain of them. Their debris may be confused with those of the Kasr mound, on which one writer places them. Or they may have stood between the Kasr and Amran ruins, where are now some mounds of no great height. Or, possibly, their true site is in the modern El Homeira, the remarkable red mound which lies east of the Kasr at the distance of about 800 yards, and attains an elevation of sixty-five feet. Though this building is not situated upon the banks of the Euphrates, where Strabo and Diodorus place the gardens, it abuts upon a long low valley into which the Euphrates water seems formerly to have been introduced, and which may therefore have been given the name of the river. This identification is, however, it must be allowed, very doubtful.

The two lines of mounds which enclose the long low valley above mentioned are probably the remains of an embankment which here confined the waters of a great reservoir. Nebuchadnezzar relates that he constructed a large reservoir, which he calls the Yapur-Shapu, in Babylon, and led water into it by means of an "eastern canal"--the Shebil. The Shebil canal, it is probable, left the Euphrates at some point between Babil and the Kasr, and ran across with a course nearly from west to east to the top of the Yapur-Shapu. This reservoir seems to have been a long and somewhat narrow parallelogram, running nearly from north to south, which shut in the great palace on the east and protected it like a huge moat. Most likely it communicated with the Euphrates towards the south by a second canal, the exact line of which cannot be determined. Thus the palatial residence of the Babylonian kings looked in both directions upon broad sheets

of water, an agreeable prospect in so hot a climate; while, at the same time, by the assignment of a double channel to the Euphrates, its floods were the more readily controlled, and the city was preserved from those terrible inundations which in modern times have often threatened the existence of Baghdad.

The other lines of mound upon the east side of the river may either be Parthian works, or (possibly) they may be the remains of some of those lofty walls whereby, according to Diodorus, the greater palace was surrounded and defended. The fragments of them which remain are so placed that if the lines were produced they would include all the principal ruins on the left bank except the Babil tower. They may therefore be the old defenses of the Eastern palace; though, if so, it is strange that they run in lines which are neither straight nor parallel to those of the buildings enclosed by them. The irregularity of these ramparts is certainly a very strong argument in favor of their having been the work of a people considerably more barbarous and ignorant than the Babylonians.

Chapter 5. Arts and Sciences

That the Babylonians were among the most ingenious of all the nations of antiquity, and had made considerable progress in the arts and sciences before their conquest by the Persians, is generally admitted. The classical writers commonly parallel them with the Egyptians; and though, from their habit of confusing Babylon with Assyria, it is not always quite certain that the inhabitants of the more southern country--the real Babylonians--are meant, still there is sufficient reason to believe that, in the estimation of the Greeks and Romans, the people of the lower Euphrates were regarded as at least equally advanced in civilization with those of the Nile valley and the Delta. The branches of knowledge wherein by general consent the Babylonians principally excelled were architecture and astronomy. Of their architectural works two at least were reckoned among the "Seven Wonders," while others, not elevated to this exalted rank, were yet considered to be among the most curious and admirable of Oriental constructions. In astronomical science they were thought to have far excelled all other nations, and the first Greeks who made much progress in the subject confessed themselves the humble disciples of Babylonian teachers.

In the account, which it is proposed to give, in this place, of Babylonian art and science, so far as they are respectively known to us, the priority will be assigned to art, which is an earlier product of the human mind than science; and among the arts the first place will be given to architecture, as at once the most fundamental of all the fine arts, and the one in which the Babylonians attained their greatest excellence. It is as builders that the primitive Chaldean people, the progenitors of the Babylonians, first appear before us in history; and it was on his buildings that the great king of the later Empire, Nebuchadnezzar, specially prided himself. When Herodotus visited Babylon he was struck chiefly by its extraordinary edifices; and it is the account which the Greek writers gave of these erections that has, more than anything else, procured for the Babylonians the fame that they possess and the position that they hold among the six or seven leading nations of the old world.

The architecture of the Babylonians seems to have culminated in the Temple. While their palaces, their bridges, their walls, even their private houses were remarkable, their grandest works, their most elaborate efforts, were dedicated to the honor and service, not of man, but of God. The Temple takes in Babylonia the same sort of rank which it has in Egypt and in Greece. It is not, as in Assyria, a mere adjunct of the palace. It stands by itself, in proud independence, as the great building of a city, or a part of a city; it is, if not absolutely larger, at any rate loftier and more conspicuous than any other edifice: it often boasts a magnificent adornment: the value of

the offerings which are deposited in it is enormous: in every respect it rivals the palace, while in some it has a decided preeminence. It draws all eyes by its superior height and sometimes by its costly ornamentation; it inspires awe by the religious associations which belong to it; finally, it is a stronghold as well as a place of worship, and may furnish a refuge to thousands in the time of danger.

A Babylonian temple seems to have stood commonly within a walled enclosure. In the case of the great temple of Belus at Babylon, the enclosure is said to have been a square of two stades each way, or, in other words, to have contained an area of thirty acres. The temple itself ordinarily consisted of two parts. Its most essential feature was a _ziggurat_, or tower, which was either square, or at any rate rectangular, and built in stages, the smallest number of such stages being two, and the largest known number seven. At the summit of the tower was probably in every case a shrine, or chapel, of greater or less size, containing altars and images. The ascent to this was on the outside of the towers, which were entirely solid; and it generally wound round the different faces of the towers, ascending them either by means of steps or by an inclined plane. Special care was taken with regard to the emplacement of the tower, either its sides or its angles being made exactly to confront the cardinal points. It is said that the temple-towers were used not merely for religious purposes but also as observatories, a use with a view to which this arrangement of their position would have been serviceable.

Besides the shrine at the summit of the temple-tower or ziggurat, there was commonly at the base of the tower, or at any rate somewhere within the enclosure, a second shrine or chapel, in which the ordinary worshipper, who wished to spare himself the long ascent, made his offerings. Here again the ornamentation was most costly, lavish use being made of the precious metals for images and other furniture. Altars of different sizes were placed in the open air in the vicinity of this lower shrine, on which were sacrificed different classes of victims, gold being used occasionally as the material of the altar.

The general appearance of a Babylonian temple, or at any rate of its chief feature, the tower or _ziggurat_, will be best gathered from a more particular description of a single building of the kind; and the building which it will be most convenient to take for that purpose is that remarkable edifice which strikes moderns with more admiration than any other now existing in the country, and which has also been more completely and more carefully examined than any other Babylonian ruins--the Birs-i-Nimrud, or ancient temple of Nebo at Borsippa. The plan of this tower has been almost completely made out from data still existing on the spot; and a restoration of the original building may be given with a near approach to certainty.

Upon a platform of crude brick, raised a few feet above the level of the alluvial plain, was built the first or basement stage of the great edifice, an exact square, 272 feet each way, and probably twenty-six feet in perpendicular height. On this was erected a second stage of exactly the same height, but a square of only 230 feet; which however was not placed exactly in the middle of the first, but further from its northeastern than its south-western edge, twelve feet only from the one and thirty feet from the other. The third stage, which was imposed in the same way upon the second, was also twenty-six feet high, and was a square of 188 feet. Thus far the plan had been uniform and without any variety; but at this point an alteration took place. The height of the fourth stage, instead of being twenty-six, was only fifteen feet. In other respects however the old numbers were maintained; the fourth stage was diminished equally with the others, and was consequently a square of 146 feet. It was emplaced upon the stage below it exactly as

the former stages had been. The remaining stages probably followed the same rule of diminution--the fifth being a square of 104, the sixth one of 24, and the seventh one of 20 feet. Each of these stages had a height of fifteen feet. Upon the seventh or final stage was erected the shrine or tabernacle, which was probably also fifteen feet high, and about the same length and breadth. Thus the entire height of the building, allowing three feet for the crude brick platform, was 150 feet.

The ornamentation of the edifice was chiefly by means of color. The seven stages represented the Seven Spheres, in which moved (according to ancient Chaldean astronomy) the seven planets. To each planet fancy, partly grounding itself upon fact, had from of old assigned a peculiar tint or hue. The Sun was golden, the Moon silver; the distant Saturn, almost beyond the region of light, was black; Jupiter was orange the fiery Mars was red; Venus was a pale Naples yellow; Mercury a deep blue. The seven stages of the tower, like the seven walls of Ecbatana, gave a visible embodiment to these fancies. The basement stage, assigned to Saturn, was blackened by means of a coating of bitumen spread over the face of the masonry; the second stage, assigned to Jupiter, obtained the appropriate orange color by means of a facing of burnt bricks of that hue; the third stage, that of Mars, was made blood-red by the use of half-burnt bricks formed of a bright red clay; the fourth stage, assigned to the Sun, appears to have been actually covered with thin plates of gold; the fifth, the stage of Venus, received a pale yellow tint from the employment of bricks of that hue; the sixth, the sphere of Mercury, was given an azure tint by vitrification, the whole stage having been subjected to an intense heat after it was erected, whereby the bricks composing it were converted into a mass of blue slag; the seventh stage, that of the Moon, was probably, like the fourth, coated with actual plates of metal. Thus the building rose up in stripes of varied color, arranged almost as nature's cunning arranges hues in the rainbow, tones of red coming first, succeeded by a broad stripe of yellow, the yellow being followed by blue. Above this the glowing silvery summit melted into the bright sheen of the sky.

The faces of the various stages were, as a general rule, flat and unbroken, unless it were by a stair or ascent, of which however there has been found no trace. But there were two exceptions to this general plainness. The basement stage was indented with a number of shallow squared recesses, which seem to have been intended for a decoration. The face of the third stage was weak on account of its material, which was brick but half-burnt. Here then the builders, not for ornament's sake, but to strengthen their work, gave to the wall the support of a number of shallow buttresses. They also departed from their usual practice, by substituting for the rigid perpendicular of the other faces a slight slope outwards for some distance from the base. These arrangements, which are apparently part of the original work, and not remedies applied subsequently, imply considerable knowledge of architectural principles on the part of the builders, and no little ingenuity in turning architectural resources to account.

With respect to the shrine which was emplaced upon the topmost, or silver stage, little is definitely known. It appears to have been of brick; and we may perhaps conclude from the analogy of the old Chaldean shrines at the summits of towers, as well as from that of the Belus shrine at Babylon, that it was richly ornamented both within and without; but it is impossible to state anything as to the exact character of the ornamentation.

The tower is to be regarded as fronting to the north-east, the coolest side and that least exposed to the sun's rays from the time that they become oppressive in Babylonia. On this side was the ascent, which consisted probably of abroad staircase extending along the whole front of the building. The side platforms (those towards the south-east and north-west)--at any rate of the first and second

stages, probably of all--were occupied by a series of chambers abutting upon the perpendicular wall, as the priests' chambers of Solomon's temple abutted upon the side walls of that building. In these were doubtless lodged the priests and other attendants upon the temple service. The side chambers seem sometimes to have communicated with vaulted apartments within the solid mass of the structure, like those of which we hear in the structure supporting the "hanging gardens." It is possible that there may have been internal stair-cases, connecting the vaulted apartments of one stage with those of another; but the ruin has not yet been sufficiently explored for us to determine whether or not there was such communication.

The great Tower is thought to have been approached through a vestibule of considerable size. Towards the north-east the existing ruin is prolonged in an irregular manner and it is imagined that this prolongation marks the site of a vestibule or propylaeum, originally distinct from the tower, but now, through the crumbling down of both buildings, confused with its ruins. As no scientific examination has been made of this part of the mound, the above supposition can only be regarded as a conjecture. Possibly the excrescence does not so much mark a vestibule as a second shrine, like that which is said to have existed at the foot of the Belus Tower at Babylon. Till, however, additional researches have been made, it is in vain to think of restoring the plan or elevation of this part of the temple.

From the temples of the Babylonians we may now pass to their palaces--constructions inferior in height and grandeur, but covering a greater space, involving a larger amount of labor, and admitting of more architectural variety. Unfortunately the palaces have suffered from the ravages of time even more than the temples, and in considering their plan and character we obtain little help from the existing remains. Still, something may be learnt of them from this source, and where it fails we may perhaps be allowed to eke out the scantiness of our materials by drawing from the elaborate descriptions of Diodorus such points as have probability in their favor.

The Babylonian palace, like the Assyrian, and the Susianian, stood upon a lofty mound or platform. This arrangement provided at once for safety, for enjoyment, and for health. It secured a pure air, freedom from the molestation of insects, and a position only assailable at a few points. The ordinary shape of the palace mound appears to have been square; its elevation was probably not less than fifty or sixty feet. It was composed mainly of sun-dried bricks, which however were almost certainly enclosed externally by a facing of burnt brick, and may have been further strengthened within by walls of the same material, which perhaps traversed the whole mound. The entire mass seems to have been carefully drained, and the collected waters were conveyed through subterranean channels to the level of the plain at the mound's base. The summit of the platform was no doubt paved, either with stone or burnt brick--mainly, it is probable, with the latter; since the former material was scarce, and though a certain number of stone pavement slabs have been found, they are too rare and scattered to imply anything like the general use of stone paving. Upon the platform, most likely towards the centre, rose the actual palace, not built (like the Assyrian palaces) of crude brick faced with a better material, but constructed wholly of the finest and hardest burnt brick laid in a mortar of extreme tenacity, with walls of enormous thickness, parallel to the sides of the mound, and meeting each other at right angles. Neither the ground-plan nor the elevation of a Babylonian palace can be given; nor can even a conjectural restoration of such a building be made, since the small fragment of Nebuchadnezzar's palace which remains has defied all attempts to reduce it to system. We can only say that the lines of the building were straight; that the walls rose, at any rate

to a considerable height, without windows; and that the flatness of the straight line was broken by numerous buttresses and pilasters. We have also evidence that occasionally there was an ornamentation of the building, either within or without, by means of sculptured stone slabs, on which were represented figures of a small size, carefully wrought. The general ornamentation, however, external as well as internal, we may well believe to have been such as Diodorus states, colored representations on brick of war-scenes, and hunting-scenes, the counterparts in a certain sense of those magnificent bas-reliefs which everywhere clothed the walls of palaces in Assyria. It has been already noticed that abundant remains of such representations have been found upon the Kasr mound. They seem to have alternated with cuneiform inscriptions, in white on a blue ground, or else with a patterning of rosettes in the same colors.

Of the general arrangement of the royal palaces, of their height, their number of stories, their roofing, and their lighting, we know absolutely nothing. The statement made by Herodotus, that many of the private houses in the town had three or four stories, would naturally lead us to suppose that the palaces were built similarly; but no ancient author tells us that this was so. The fact that the walls which exist, though of considerable height, show no traces of windows, would seem to imply that the lighting, as in Assyria, was from the top of the apartment, either from the ceiling, or from apertures in the part of the walls adjoining the ceiling. Altogether, such evidence as exists favors the notion that the Babylonian palace, in its character and general arrangements, resembled the Assyrian, with only the two differences, that Babylonian was wholly constructed of burnt brick, while in the Assyrian the sun-dried material was employed to a large extent; and, further, that in Babylonia the decoration of the walls was made, not by slabs of alabaster, which did not exist in the country, but mainly--almost entirely--by colored representations upon the brickwork.

Among the adjuncts of the principal palace at Babylon was the remarkable construction known to the Greeks and Romans as "the Hanging Garden." The accounts which, Diodorus, Strabo, and Q. Curtius give of this structure are not perhaps altogether trustworthy; still, it is probable that they are in the main at least founded on fact. We may safely believe that a lofty structure was raised at Babylon on several tiers of arches, which supported at the top a mass of earth, wherein grew, not merely flowers and shrubs, but trees of a considerable size. The Assyrians had been in the habit of erecting structures of a somewhat similar kind, artificial elevations to support a growth of trees and shrubs; but they were content to place their garden at the summit of a single row of pillars or arches, and thus to give it a very moderate height. At Babylon the object was to produce an artificial imitation of a mountain. For this purpose several tiers of arches were necessary; and these appear to have been constructed in the manner of a Roman amphitheatre, one directly over another so that the outer wall formed from summit to base a single perpendicular line. Of the height of the structure various accounts are given, while no writer reports the number of the tiers of arches. Hence there are no sufficient data for a reconstruction of the edifice.

Of the walls and bridge of Babylon, and of the ordinary houses of the people, little more is known than has been already reported in the general description of the capital. It does not appear that they possessed any very great architectural merit. Some skill was shown in constructing the piers of the bridge, which presented an angle to the current and then a curved line, along which the water slid gently. The loftiness of the houses, which were of three or four stories, is certainly surprising, since Oriental houses have very rarely more than two stories. Their construction, however, seems to have been rude; and the

pillars especially--posts of palm, surrounded with wisps of rushes, and then plastered and painted--indicate a low condition of taste and a poor and coarse style of domestic architecture.

The material used by the Babylonians in their constructions seems to have been almost entirely brick. Like the early Chaldeans, they employed bricks of two kinds, both the ruder sun-dried sort, and the very superior kiln-baked article. The former, however, was only applied to platforms, and to the interior of palace mounds and of very thick walls, and was never made by the later people the sole material of a building. In every case there was at least a revetment of kiln-dried brick, while the grander buildings were wholly constructed of it. The baked bricks used were of several different qualities, and (within rather narrow limits) of different sizes. The finest quality of brick was yellow, approaching to our Stourbridge or fire-brick; another very hard kind was blue, approaching to black; the commoner and coarser sorts were pink or red, and these were sometimes, though rarely, but half-baked, in which case they were weak and friable. The shape was always square; and the dimensions varied between twelve and fourteen inches for the length and breadth, and between three and four inches for the thickness. At the corners of buildings, half-bricks were used in the alternate rows, since otherwise the joining must have been all one exactly over another. The bricks were always made with a mold, and were commonly stamped on one face with an inscription. They were, of course, ordinarily laid horizontally. Sometimes, however, there was a departure from this practice. Rows of bricks were placed vertically, separated from one another by single horizontal layers. This arrangement seems to have been regarded as conducing to strength, since it occurs only where there is an evident intention of supporting a weak construction by the use of special architectural expedients.

The Babylonian builders made use of three different kinds of cement. The most indifferent was crude clay, or mud, which was mixed with chopped straw, to give it greater tenacity, and was applied in layers of extraordinary thickness. This was (it is probable) employed only where it was requisite that the face of the building should have a certain color. A cement superior to clay, but not of any very high value, unless as a preventive against damp, was bitumen, which was very generally used in basements and in other structures exposed to the action of water. Mortar, however, or lime cement was far more commonly employed than either of the others, and was of very excellent quality, equal indeed to the best Roman material.

There can be no doubt that the general effect of the more ambitious efforts of the Babylonian architects was grand and imposing. Even now, in their desolation and ruin, their great size renders them impressive; and there are times and states of atmosphere under which they fill the beholder with a sort of admiring awe, akin to the feeling which is called forth by the contemplation of the great works of nature. Rude and inartificial in their idea and general construction, without architectural embellishment, without variety, without any beauty of form, they yet affect men by their mere mass, producing a direct impression of sublimity, and at the same time arousing a sentiment of wonder at the indomitable perseverance which from materials so unpromising could produce such gigantic results. In their original condition, when they were adorned with color, with a lavish display of the precious metals, with pictured representations of human life, and perhaps with statuary of a rough kind, they must have added to the impression produced by size a sense of richness and barbaric magnificence. The African spirit, which loves gaudy hues and costly ornament, was still strong among the Babylonians, even after they had been Semitized; and by the side of Assyria, her

colder and more correct northern sister, Babylonia showed herself a true child of the south--rich, glowing, careless of the laws of taste, bent on provoking admiration by the dazzling brilliancy of her appearance.

It is difficult to form a decided opinion as to the character of Babylonian mimetic art. The specimens discovered are so few, so fragmentary, and in some instances so worn by time and exposure, that we have scarcely the means of doing justice to the people in respect of this portion of their civilization. Setting aside the intaglios on seals and gems, which have such a general character of quaintness and grotesqueness, or at any rate of formality, that we can scarcely look upon many of them as the serious efforts of artists doing their best, we possess not half a dozen specimens of the mimetic art of the people in question. We have one sculpture in the round, one or two modeled clay figures, a few bas-reliefs, one figure of a king engraved on stone, and a few animal forms represented the same material. Nothing more has reached us but fragments of pictorial representations too small for criticism to pronounce upon, and descriptions of ancient writers too incomplete to be of any great value.

The single Babylonian sculpture in the round which has come down to our times is the colossal lion standing over the prostrate figure of a man, which is still to be seen on the Kasr mound, as has been already mentioned. The accounts of travelers uniformly state that it is a work of no merit--either barbarously executed, or left unfinished by the sculptor--and probably much worn by exposure to the weather. A sketch made by a recent visitor and kindly communicated to the author, seems to show that, while the general form of the animal was tolerably well hit off, the proportions were in some respects misconceived, and the details not only rudely but incorrectly rendered. The extreme shortness of the legs and the extreme thickness of the tail are the most prominent errors; there is also great awkwardness in the whole representation of the beast's shoulder. The head is so mutilated that it is impossible to do more than conjecture its contour. Still the whole figure is not without a certain air of grandeur and majesty.

The human appears to be inferior to the animal form. The prostrate man is altogether shapeless, and can never, it would seem, have been very much better than it is at the present time.

Modeled figures in clay are of rare occurrence. The best is one figured by Ker Porter, which represents a mother with a child in her arms. The mother is seated in a natural and not ungraceful attitude on a rough square pedestal. She is naked except for a hood, or mantilla, which covers the head, shoulders, and back, and a narrow apron which hangs down in front. She wears earrings and a bracelet. The child, which sleeps on her left shoulder, wears a shirt open in front, and a short but full tunic, which is gathered into plaits. Both figures are in simple and natural taste, but the limbs of the infant are somewhat too thin and delicate. The statuette is about three inches and a half high, and shows signs of having been covered with a tinted glaze.

The single figure of a king which we possess is clumsy and ungraceful. It is chiefly remarkable for the elaborate ornamentation of the head-dress and the robes, which have a finish equal to that of the best Assyrian specimens. The general proportions are not bad; but the form is stiff, and the drawing of the right hand is peculiarly faulty, since it would be scarcely possible to hold arrows in the manner represented.

The engraved animal forms have a certain amount of merit. The figure of a dog sitting, which is common on the "black stones," is drawn with spirit; and a bird, sometimes regarded as a cock, but more resembling a bustard, is touched with a delicate hand, and may be pronounced superior to any Assyrian representation of the feathered tribe. The hound on a bas-relief, given in the first

volume of this work, is also good; and the cylinders exhibit figures of goats, cows, deer, and even monkeys, which are truthful and meritorious.

It has been observed that the main characteristic of the engravings on gems and cylinders, considered as works of mimetic art, is their quaintness and grotesqueness. A few specimens, taken almost at random from the admirable collection of M. Felix Lajard, will sufficiently illustrate this feature. In one the central position is occupied by a human figure whose left arm has two elbow-joints, while towards the right two sitting figures threaten one another with their fists, in the upper quarter, and in the lower two nondescript animals do the same with their jaws. The entire drawing of this design seems to be intentionally rude. The faces of the main figures are evidently intended to be ridiculous; and the heads of the two animals are extravagantly grotesque. On another cylinder three nondescript animals play the principal part. One of them is on the point of taking into his mouth the head of a man who vainly tries to escape by flight. Another, with the head of a pike, tries to devour the third, which has the head of a bird and the body of a goat. This kind intention seems to be disputed by a naked man with a long beard, who seizes the fish-headed monster with his right hand, and at the same time administers from behind a severe kick with his right foot. The heads of the three main monsters, the tail and trousers of the principal one, and the whole of the small figure in front of the flying man, are exceedingly quaint, and remind one of the pencil of Fuseli. The third of the designs approaches nearly to the modern caricature. It is a drawing in two portions. The upper line of figures represents a procession of worshippers who bear in solemn state their offerings to a god. In the lower line this occupation is turned to a jest. Nondescript animals bring with a serio-comic air offerings which consist chiefly of game, while a man in a mask seeks to steal away the sacred tree from the temple wherein the scene is enacted.

It is probable that the most elaborate and most artistic of the Babylonian works of art were of a kind which has almost wholly perished. What bas-relief was to the Assyrian, what painting is to moderns, that enameling upon brick appears to have been to the people of Babylon. The mimetic power, which delights in representing to itself the forms and actions of men, found a vent in this curious byway of the graphic art; and the images of the Chaldeans, portrayed upon the wall, with vermilion, and other hues, formed the favorite adornment of palaces and public buildings, at once employing the artist, gratifying the taste of the native connoisseur, and attracting the admiration of the foreigner.

The artistic merit of these works can only be conjectured. The admiration of the Jews, or even that of Diodorus, who must be viewed here as the echo of Ctesias, is no sure test; for the Jews were a people very devoid of true artistic appreciation; and Ctesias was bent on exaggerating the wonders of foreign countries to the Greeks. The fact of the excellence of Assyrian art at a somewhat earlier date lends however support to the view that the wall-painting of the Babylonians had some real artistic excellence. We can scarcely suppose that there was any very material difference, in respect of taste and aesthetic power, between the two cognate nations, or that the Babylonians under Nebuchadnezzar fell very greatly short of the Assyrians under Asshur-bani-pal. It is evident that the same subjects--war scenes and hunting scenes--approved themselves to both people; and it is likely that their treatment was not very different. Even in the matter of color, the contrast was not sharp nor strong; for the Assyrians partially colored their bas-reliefs.

Though tints chiefly employed by the Babylonians in their colored representations were white, blue, yellow, brown, and black. The blue was of different shades, sometimes bright and deep, sometimes exceedingly pale. The yellow was somewhat dull, resembling

our yellow ochre. The brown was this same hue darkened. In comparatively rare instances the Babylonians made use of a red, which they probably obtained with some difficulty. Objects were colored, as nearly as possible, according to their natural tints--water a light blue, ground yellow, the shafts of spears black, lions a tawny brown, etc. No attempt was made to shade the figures or the landscape, much less to produce any general effect by means of _chiaroscuro_; but the artist trusted for his effect to a careful delineation of forms, and a judicious arrangement of simple hues.

Considerable metallurgic knowledge and skill were shown in the composition of the pigments, and the preparation and application of the glaze wherewith they are covered. The red used was a sub-oxide of copper; the yellow was sometimes oxide of iron, sometimes antimonite of lead--the Naples yellow of modern artists; the blue was either cobalt or oxide of copper; the white was oxide of tin. Oxide of load was added in some cases, not as a coloring matter, but as a flux, to facilitate the fusion of the glaze. In other cases the pigment used was covered with a vitreous coat of an alkaline silicate of alumina.

The pigments were not applied to an entirely flat surface. Prior to the reception of the coloring matter and the glaze, each brick was modeled by the hand, the figures being carefully traced out, and a slight elevation given to the more important objects. A very low bas-relief was thus produced, to which the colors were subsequently applied, and the brick was then baked in the furnace.

It is conjectured that the bricks were not modeled singly and separately. A large mass of clay was (it is thought) taken, sufficient to contain a whole subject, or at any rate a considerable portion of a subject. On this the modeler made out his design in low relief. The mass of clay was then cut up into bricks, and each brick was taken and painted separately with the proper colors, after which they were all placed in the furnace and baked. When baked, they were restored to their original places in the design, a thin layer of the finest mortar serving to keep them in place.

From the mimetic art of the Babylonians, and the branches of knowledge connected with it, we may now pass to the purely mechanical arts--as the art by which hard stones were cut, and those of agriculture, metallurgy, pottery, weaving, carpet-making, embroidery, and the like.

The stones shaped, bored, and engraved by Babylonian artisans were not merely the softer and more easily worked kinds, as alabaster, serpentine, and lapis-lazuli, but also the harder sorts-cornelian, agate, quartz, jasper, sienite, loadstone, and green feldspar or amazon-stone. These can certainly not have been cut without emery, and scarcely without such devices as rapidly revolving points, or discs, of the kind used by modern lapidaries. Though the devices are in general rude, the work is sometimes exceedingly delicate, and implies a complete mastery over tools and materials, as well as a good deal of artistic power. As far as the mechanical part of the art goes, the Babylonians may challenge comparison with the most advanced of the nations of antiquity; they decidedly excel the Egyptians, and fall little, if at all, short of the Greeks and Romans.

The extreme minuteness of the work in some of the Babylonian seals and gems raises a suspicion that they must have been engraved by the help of a powerful magnifying-glass. A lens has been found in Assyria; and there is much reason to believe that the convenience was at least as well known in the lower country. Glass was certainly in use, and was cut into such shapes as were required. It is at any rate exceedingly likely that magnifying-glasses, which were undoubtedly known to the Greeks in the time of Aristophanes, were employed by the artisans of Babylon during the most flourishing period of the Empire.

Of Babylonian metal-work we have scarcely any direct means of judging. The accounts of ancient authors imply that the Babylonians dealt freely with the material, using gold and silver for statues, furniture, and utensils, bronze for gates and images, and iron sometimes for the latter. We may assume that they likewise employed bronze and iron for tools and weapons, since those metals were certainly so used by the Assyrians. Lead was made of service in building; where iron was also employed, if great strength was needed. The golden images are said to have been sometimes solid, in which case we must suppose them to have been cast in a mold; but undoubtedly in most cases the gold was a mere external covering, and was applied in plates, which were hammered into shape upon some cheaper substance below. Silver was no doubt used also in plates, more especially when applied externally to walls, or internally to the woodwork of palaces; but the silver images, ornamental figures, and utensils of which we hear, were most probably solid. The bronze works must have been remarkable. We are told that both the town and the palace gates were of this material, and it is implied that the latter were too heavy to be opened in the ordinary manner. Castings on an enormous scale would be requisite for such purposes; and the Babylonians must thus have possessed the art of running into a single mold vast masses of metal. Probably the gates here mentioned were solid; but occasionally, it would seem, the Babylonians had gates of a different kind, composed of a number of perpendicular bars, united by horizontal ones above and below . They had also, it would appear, metal gateways of a similar character.

The metal-work of personal ornaments, such as bracelets and armlets, and again that of dagger handles, seems to have resembled the work of the Assyrians.

Small figures in bronze were occasionally cast by the Babylonians, which were sometimes probably used as amulets, while perhaps more generally they wore mere ornaments of houses, furniture, and the like. Among these may be noticed figures of dogs in a sitting posture, much resembling the dog represented among the constellations, figures of men, grotesque in character, and figures of monsters. An interesting specimen, which combines a man and a monster, was found by Sir R. Ker Porter at Babylon.

The pottery of the Babylonians was of excellent quality, and is scarcely to be distinguished from the Assyrian, which it resembles alike in form and in material. The bricks of the best period were on the whole better than any used in the sister country, and may compare for hardness and fineness with the best Roman. The earthenware is of a fine terra-cotta, generally of a light red color, and slightly baked, but occasionally of a yellow hue, with a tinge of green. It consists of cups, jars, vases, and other vessels. They appear to have been made upon the wheel, and are in general unornamented. From representations upon the cylinders, it appears that the shapes were often elegant. Long and narrow vases with thin necks seem to have been used for water vessels; these had rounded or pointed bases, and required therefore the support of a stand. Thin jugs were also in use, with slight elegant handles. It is conjectured that sometimes modeled figures may have been introduced at the sides as handles to the vases; but neither the cylinders nor the extant remains confirm this supposition. The only ornamentation hitherto observed consists in a double band which seems to have been carried round some of the vases in an incomplete spiral. The vases sometimes have two handles; but they are plain and small, adding nothing to the beauty of the vessels. Occasionally the whole vessel is glazed with a rich blue color.

The Babylonians certainly employed glass for vessels for a small size. They appear not to have been very skilful blowers, since their bottles are not infrequently misshapen. They generally stained their glass with, some

coloring matter, and occasionally ornamented it with a ribbing. Whether they were able to form masses of glass of any considerable size, whether they used it, like the Egyptians, for beads and bugles, or for mosaics, is uncertain. If we suppose a foundation in fact for Pliny's story of the great emerald (?) presented by a king of Babylon to an Egyptian Pharaoh, we must conclude that very considerable masses of glass were produced by the Babylonians, at least occasionally; for the said emerald, which can scarcely have been of any other material, was four cubits (or six feet) long and three cubits (or four and a half feet) broad.

Of all the productions of the Babylonians none obtained such, high repute in ancient times as their textile fabrics. Their carpets especially were of great celebrity, and were largely exported to foreign countries. They were dyed of various colors, and represented objects similar to those found on the gems, as griffins and such like monsters. Their position in the ancient world may be compared to that which is now borne by the fabrics of Turkey and Persia, which are deservedly preferred to those of all other countries.

Next to their carpets, the highest, character was borne by their muslins. Formed of the finest cotton, and dyed of the most brilliant colors, they seemed to the Oriental the very best possible material for dress. The Persian kings preferred them for their own wear; and they had an early fame in foreign countries at a considerable distance from Babylonia. It is probable that they were sometimes embroidered with delicate patterns, such as those which may be seen on the garments of the early Babylonian kings.

Besides woolen and cotton fabrics, the Babylonians also manufactured a good deal of linen cloth, the principal seat of the manufacture being Borsippa. This material was produced, it is probable, chiefly for home consumption, long linen robes being generally worn by the people.

From the arts of the Babylonians we may now pass to their science--an obscure subject, but one which possesses more than common interest. If the classical writers were correct in their belief that Chaldea was the birthplace of Astronomy, and that their own astronomical science was derived mainly from this quarter, it must be well worth inquiry what the amount of knowledge was which the Babylonians attained on the subject, and what were the means whereby they made their discoveries.

On the broad flat plains of Chaldea, where the entire celestial hemisphere is continually visible to every eye, and the clear transparent atmosphere shows night after night the heavens gemmed with countless stars, each shining with a brilliancy unknown in our moist northern climes, the attention of man was naturally turned earlier than elsewhere to these luminous bodies, and attempts were made to grasp, and reduce to scientific form, the array of facts which nature presented to the eye in a confused and tangled mass. It required no very long course of observation to acquaint men with a truth, which at first sight none would have suspected--namely, that the luminous points whereof the sky was full were of two kinds, some always maintaining the same position relatively to one another, while others were constantly changing their places, and as it were wandering about the sky. It is certain that the Babylonians at a very early date distinguished from the fixed stars those remarkable five, which, from their wandering propensities, the Greeks called the "planets," and which are the only erratic stars that the naked eye, or that even the telescope, except at a very high power, can discern. With these five they were soon led to class the Moon, which was easily observed to be a wandering luminary, changing her place among the fixed stars with remarkable rapidity. Ultimately, it came to be perceived that the Sun too rose and set at different parts of the year in the neighborhood of different constellations, and that consequently the great luminary was itself also a wanderer, having a path in the

sky which it was possible, by means of careful observation, to mark out.

But to do this, to mark out with accuracy the courses of the Sun and Moon among the fixed stars, it was necessary, or at least convenient, to arrange the stars themselves into groups. Thus, too, and thus only, was it possible to give form and order to the chaotic confusion in which the stars seem at first sight to lie, owing to the irregularity of their intervals, the difference in their magnitude, and their apparent countlessness. The most uneducated eye, when raised to the starry heavens on a clear night, fixes here and there upon groups of stars: in the north, Cassiopeia, the Great Bear, the Pleiades--below the Equator, the Southern Cross--must at all times have impressed those who beheld them with a certain sense of unity. Thus the idea of a "constellation" is formed; and this once done, the mind naturally progresses in the same direction, and little by little the whole sky is mapped out into certain portions or districts to which names are given--names taken from some resemblance, real or fancied, between the shapes of the several groups and objects familiar to the early observers. This branch of practical astronomy is termed "uranography" by moderns; its utility is very considerable; thus and thus only can we particularize the individual stars of which we wish to speak; thus and thus only can we retain in our memory the general arrangement of the stars and their positions relatively to each other. There is reason to believe that in the early Babylonian astronomy the subject of uranography occupied a prominent place. The Chaldean astronomers not only seized on and named those natural groups which force themselves upon the eye, but artificially arranged the whole heavens into a certain number of constellations or asterisms. The very system of uranography which maintains itself to the present day on our celestial globes and maps, and which is still acknowledged--albeit under protest--in the nomenclature of scientific astronomers, came in all probability from this source, reaching us from the Arabians, who took it from the Greeks who derived it from the Babylonians. The Zodiacal constellations at any rate, or those through which the sun's course lies would seem to have had this origin; and many of them may be distinctly recognized on Babylonian monuments which are plainly of a stellar character. The accompanying representation, taken from a conical black stone in the British Museum , and belonging to the twelfth century before our era, is not perhaps, strictly speaking, a zodiac, but it is almost certainly an arrangement of constellations according to the forms assigned them in Babylonian uranography. The Ram, the Bull, the Scorpion, the Serpent, the Dog, the Arrow, the Eagle or Vulture may all be detected on the stone in question, as may similar forms variously arranged on other similar monuments.

The Babylonians called the Zodiacal constellations the "Houses of the Sun," and distinguished from them another set of asterisms, which they denominated the "Houses of the Moon." As the Sun and Moon both move through the sky in nearly the same plane, the path of the Moon merely crossing and recrossing that of the Sun, but never diverging from it further than a few degrees, it would seem that these "Houses of the Moon," or lunar asterisms, must have been a division of the Zodiacal stars different from that employed with respect to the sun, either in the number of the "Houses," or in the point of separation between "House" and "House."

The Babylonians observed and calculated eclipses; but their power of calculation does not seem to have been based on scientific knowledge, nor to have necessarily implied sound views as to the nature of eclipses or as to the size, distance, and real motions of the heavenly bodies. The knowledge which they possessed was empirical. Their habits of observation led them to discover the period of 223 lunations or 18 years 10 days, after which eclipses--especially those of the moon--recur again in the same order. Their

acquaintance with this cycle would enable them to predict lunar eclipses with accuracy for many ages, and solar eclipses without much inaccuracy for the next cycle or two.

That the Babylonians carefully noted and recorded eclipses is witnessed by Ptolemy, who had access to a continuous series of such observations reaching back from his own time to B.C. 747. Five of these--all eclipses of the moon--were described by Hipparchus from Babylonian sources, and are found to answer all the requirements of modern science. They belong to the years B.C. 721, 720, 621, and 523. One of them, that of B.C. 721, was total at Babylon. The others were partial, the portion of the moon obscured varying from one digit to seven.

There is no reason to think that the observation of eclipses by the Babylonians commenced with Nabonassar. Ptolemy indeed implies that the series extant in his day went no higher; but this is to be accounted for by the fact, which Berosus mentioned, that Nabonassar destroyed, as far as he was able, the previously existing observations, in order that exact chronology might commence with his own reign.

Other astronomical achievements of the Babylonians were the following. They accomplished a catalogue of the fixed stars, of which the Greeks made use in compiling their stellar tables. They observed and recorded their observations upon occultations of the planets by the sun and moon. They invented the _gnomon_ and the _polos_, two kinds of sundial, by means of which they were able to measure time during the day, and to fix the true length of the solar day, with sufficient accuracy. They determined correctly within a small fraction the length of the synodic revolution of the moon. They knew that the true length of the solar year was 365 days and a quarter, nearly. They noticed comets, which they believed to be permanent bodies, revolving in orbits like those of the planets, only greater. They ascribed eclipses of the sun to the interposition of the moon between the sun and the earth. They had notions not far from the truth with respect to the relative distance from the earth of the sun, moon, and planets. Adopting, as was natural, a geocentric system, they decided that the Moon occupied the position nearest to the earth; that beyond the Moon was Mercury, beyond Mercury Venus, beyond Venus Mars, beyond Mars Jupiter, and beyond Jupiter, in the remotest position of all, Saturn. This arrangement was probably based upon a knowledge, more or less exact, of the periodic times which the several bodies occupy in their (real or apparent) revolutions. From the difference in the times the Babylonians assumed a corresponding difference in the size of the orbits, and consequently a greater or less distance from the common centre.

Thus far the astronomical achievements of the Babylonians rest upon the express testimony of ancient writers--a testimony confirmed in many respects by the monuments already deciphered. It is suspected that, when the astronomical tablets which exist by hundreds in the British Museum come to be thoroughly understood, it will be found that the acquaintance of the Chaldean sages with astronomical phenomena, if not also with astronomical laws, went considerably beyond the point at which we should place it upon the testimony of the Greek and Roman writers. There is said to be distinct evidence that they observed the four satellites of Jupiter, and strong reason to believe that they were acquainted likewise with the seven satellites of Saturn. Moreover, the general laws of the movements of the heavenly bodies seem to have been so far known to them that they could state by anticipation the position of the various planets throughout the year.

In order to attain the astronomical knowledge which they seem to have possessed, the Babylonians must undoubtedly have employed a certain number of instruments. The invention of sun-dials, as already observed, is distinctly assigned to them.

Besides these contrivances for measuring time during the day, it is almost certain that they must have possessed means of measuring time during the night. The clepsydra, or water-clock, which was in common use among the Greeks as early as the fifth century before our era, was probably introduced into Greece from the East, and is likely to have been a Babylonian invention. The astrolabe, an instrument for measuring the altitude of stars above the horizon, which was known to Ptolemy, may also reasonably be assigned to them. It has generally been assumed that they were wholly ignorant of the telescope. But if the satellites of Saturn are really mentioned, as it is thought that they are, upon some of the tablets, it will follow--strange as it may seem to us--that the Babylonians possessed optical instruments of the nature of telescopes, since it is impossible, even in the clear and vapor-loss sky of Chaldea, to discern the faint moons of that distant planet without lenses. A lens, it must be remembered, with a fair magnifying power, has been discovered among the Mesopotamian ruins. A people ingenious enough to discover the magnifying-glass would be naturally led on to the invention of its opposite. When once lenses of the two contrary kinds existed, the elements of a telescope were in being. We could not assume from these data that the discovery was made; but if it shall ultimately be substantiated that bodies invisible to the naked eye were observed by the Babylonians, we need feel no difficulty in ascribing to them the possession of some telescopic instrument.

The astronomical zeal of the Babylonians was in general, it must be confessed, no simple and pure love of an abstract science. A school of pure astronomers existed among them; but the bulk of those who engaged in the study undoubtedly pursued it in the belief that the heavenly bodies had a mysterious influence, not only upon the seasons, but upon the lives and actions of men--an influence which it was possible to discover and to foretell by prolonged and careful observation. The ancient writers, Biblical and other, state this fact in the strongest way; and the extant astronomical remains distinctly confirm it. The great majority of the tablets are of an astrological character, recording the supposed influence of the heavenly bodies, singly, in conjunction, or in opposition, upon all sublunary affairs, from the fate of empires to the washing of hands or the paring of nails. The modern prophetical almanac is the legitimate descendant and the sufficient representative of the ancient Chaldee Ephemeris, which was just as silly, just as pretentious, and just as worthless.

The Chaldee astrology primarily inquired under what aspect of the heavens persons were born, or conceived, and, from the position of the celestial bodies at one or other of these moments, it professed to deduce the whole life and fortunes of the individual. According to Diodorus, it was believed that a particular star or constellation presided over the birth of each person, and thenceforward exercised over his life a special malign or benignant influence. But his lot depended, not on this star alone, but on the entire aspect of the heavens at a certain moment. To cast the horoscope was to reproduce this aspect, and then to read by means of it the individual's future.

The Chaldeans professed to predict from the stars such things as the changes of the weather, high winds and storms, great heats, the appearance of comets, eclipses, earthquakes, and the like. They published lists of luck and unlucky days, and tables showing what aspect of the heavens portended good or evil to particular countries. Curiously enough, it appears that they regarded their art as locally limited to the regions inhabited by themselves and their kinsmen, so that while they could boldly predict storm, tempest, failing or abundant crops, war, famine, and the like, for Syria, Babylonia, and Susiana, they could venture on no prophecies with respect to other neighboring lands, as Persia, Media, Armenia.

A certain amount of real meteorological knowledge was probably mixed up with the Chaldean astrology. Their calendars, like modern almanacs, boldly predicted the weather for fixed days in the year. They must also have been mathematicians to no inconsiderable extent, since their methods appear to have been geometrical. It is said that the Greek mathematicians often quoted with approval the works of their Chaldean predecessors, Ciden, Naburianus, and Sudinus. Of the nature and extent of their mathematical acquirements, no account, however, can be given, since the writers who mention them enter into no details on the subject.