Ciba Review 12

Woman spinning. Relievo found at Susa, the capital of Elam. Spinning is shown here as the occupation of a lady of fashion. A servant is seen fanning the spinner. About 1500 B. C. Paris, Louvre.

Weaving and Dyeing in Ancient Egypt and Babylon

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Weaving and Dyeing in Ancient Egypt and Babylon

Contents :

Ancient Babylon and Egypt

By K. F. Schanz

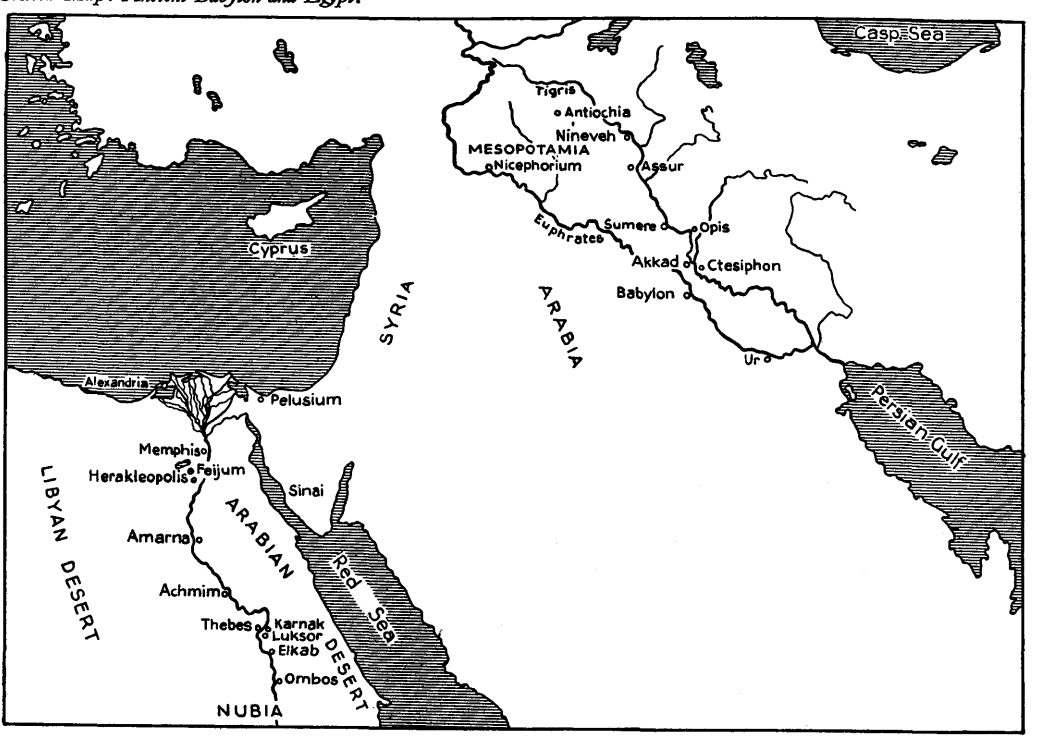
The history and civilization of a country are determined by a number of factors, some working together, some against each other, particularly by racial, climatic, and geographical conditions.

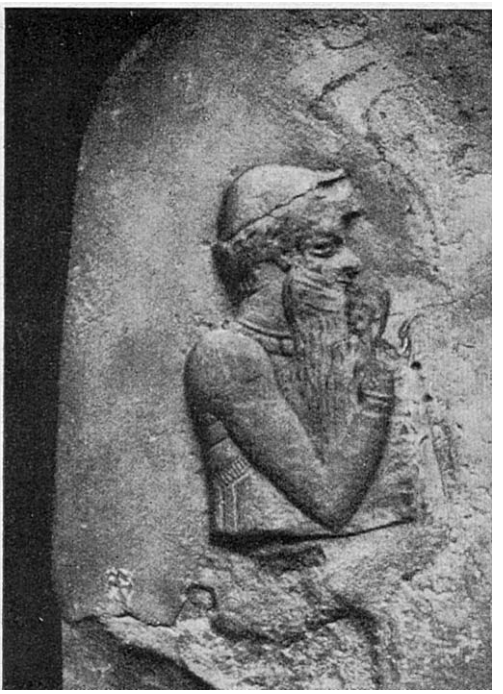
Greece and Rome are countries of the open sea, Babylon and Egypt self-contained valleys of large rivers, almost entirely surrounded by deserts or mountains. The ancient Mesopotamians worshipped Euphrates and Tigris as divine forces, and the Nile was regarded by the Egyptians as the father of their civilization. All that was great in them, they owed to the order and wealth which these rivers gave them. Within their fruitful radius life and well-being flourished, and intellectual superiority developed. This awakened cultural forces which attracted conquering peoples, but which also assimilated and subjected them.

About two thousand years before Christ the Mesopotamian kings assumed the title "King of Sumere and Akkad" to show that their rule extended over the entire area of the two great rivers. The great plain between Euphrates and Tigris was thus composed of two separate parts, as compared with its former unity. But unlike Egypt this unity had always been liable to modification; the political and cultural preponderance of the different states had frequently changed. The history of the country was rich in conflict; again and again alien peoples poured into the fertile plain and struggled for possession, for it was a fertile corn-country, and the date-palm flourished there. But this wealth could only be maintained by human labour, law, and order. Peaceful peasants and cattle-breeders had to live on the land, if it was to yield its wealth, had to regulate the rivers, dig canals, and irrigate fields and gardens; well-protected cities were necessary to ensure the peaceful course of trade.

Thus it was possible that at a period almost beyond the dawn of history, trade and civilization flourished here in marked contrast to the surrounding countries of mountain and desert. Small wonder then that the coveted valley with its culture and easy wealth again and again attracted foreign races and tribes.

Sketch Map: Ancient Babylon and Egypt.

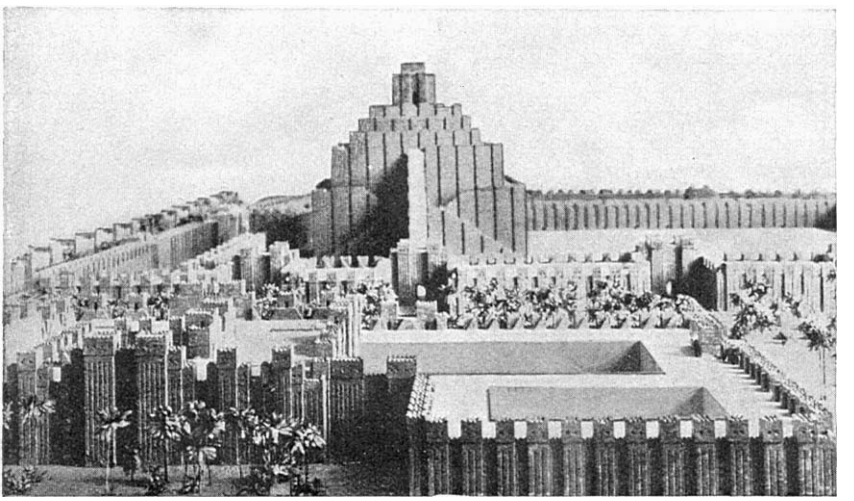




Hammurapi, the greatest of the Babylonian Kings (from 1955 to 1912 B.C.).

A great mingling of race and language was the result, and the division into two groups, Sumerians and Semites, merely indicates two main groups, each with many sub-divisions.

The study of the civilization of Babylon and Assyria takes us back some thousands of years to the period where history merges into myth. The city of Ur, according to the Old Testament the native place of Abraham, and in our own day rediscovered by American scholars, was the nucleus of a state which may be said to be the first of those on Babylonian soil of which we have definite historical proof. From that beginning kingdom after kingdom followed, in a sequence which we can trace almost without a break-down to the time of the Asakides (from 141 B.C.). The real founders of civilization in Mesopotamia were the Sumerians, who regarded themselves as the original inhabitants of the country. They were the inventors of the form of writing known as cuneiform characters, thus sharing with the Egyptians the distinction of being the only possessors of a literary tradition. Their civilization must have been very highly developed when about 3000 B.C. the migration of the Semitic tribes threatened and finally destroyed the unity of the ancient population. The Semites founded a new capital Akkad, and maintained the distinctions between their country and that of the Sumerians. The former had itself been no more than a superficial unity; for the country was divided into a number of municipal kingdoms, each of which strove for preponderance and sought to subject the others. In addition, each of these small states had its own deity, either as a symbol of the river, the stars, or as a god of the Underworld. If the influence of a city grew, its god also acquired additional esteem, or the priests proclaimed its relationship with other powerful deities. The coming of a united state also brought the recognition of one superior deity, with whom the kings gradually identified themselves. Among the common people a primitive religion persisted, in which demon-worship prevailed, a relic of very early times.



Reconstruction of the temple of Etemenanki, Babylon, the so-called "Tower of Babel". State Museum, Berlin.

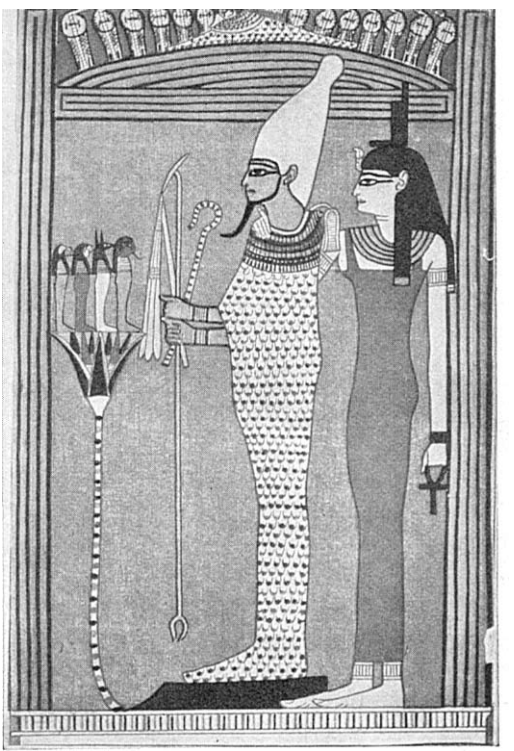
Assyro-Babylonian priests wearing demon-masks at a ceremony of exorcism. Relief from Nineveh, London.

It was the Semites who founded a powerful united state, the real Babylon of history, which maintained itself undisputed as a world-power for almost two centuries. The greatest of its rulers was Hammurapi (1955–1912 B.C.), who ruled over North and South Babylon, gave to the country a world-famous system of legislation embracing every detail of individual and public life, and who raised trade, commerce, arts, and sciences to an unprecedented level. His code of laws is one of the outstanding documents of the Ancient World; only the Romans were able to produce anything comparable to it. It comprises civil and commercial law and in its 282 paragraphs the entire course of life was regulated. At the same time it marks the decisive victory of the Semitic over the older Sumerian element, the language of which latter gradually fell into disuse, living on only as the language of the priests. In other respects the civilization was too firmly grounded to undergo appreciable change.

Fresh tribes of invaders who conquered the country, were absorbed by its superior culture, but political weakness remained. In the North, the princes of Assur, hitherto vassals of Babylon, proclaimed their independence, thus establishing once more a system of dualism in the country. The Assyrians, though of no particular intellectual powers, were great warriors, and made Babylon their vassal, though the old order still prevailed in the spheres of culture and religion. Under the dynasty of the Sargonides (722–606 B.C.) Assyria reached the height of its power, even conquering Egypt. For the student of the Ancient World Assurbanipal (668–626 B.C.) is the greatest name among the Assyrian kings. Assurbanipal had all the literary treasures of the country collected, copied, and placed in the magnificent library of Nineveh, his new capital. Nothing new was produced, but what had come down from tradition was collected, systematized, and augmented. Up to now more than 100000 cuneiform inscriptions on burnt clay have been found, which give information on all periods of Mesopotamian history.

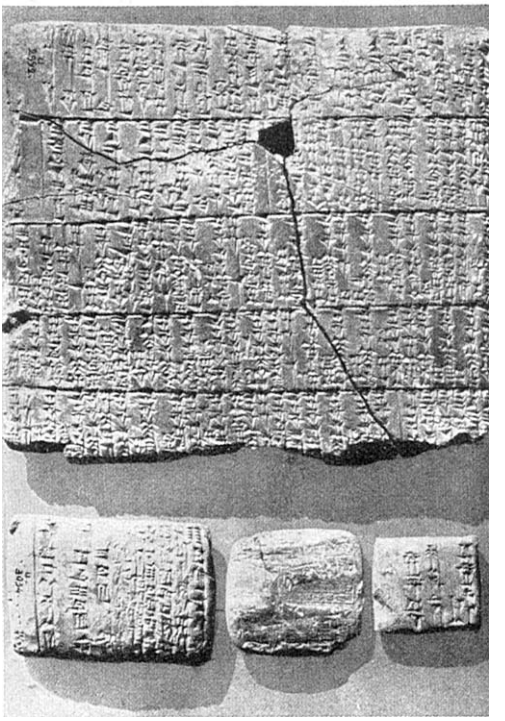
In Assurbanipal's time already a new wave of Indogermanic peoples was pressing against the gates of the fertile country. In 606 B.C. Nineveh was completely destroyed by the oppressed Babylonians with the help of Persia; the Babylonian revival, known as the Chaldaeic Empire, during which Nebuchadnezzar, the conqueror of Jerusalem, extended his rule to Egypt, was not of long duration. The conqueror's successors were unable to

Osiris and Isis. In front of them the "Children of Horus" on a lotus flower.

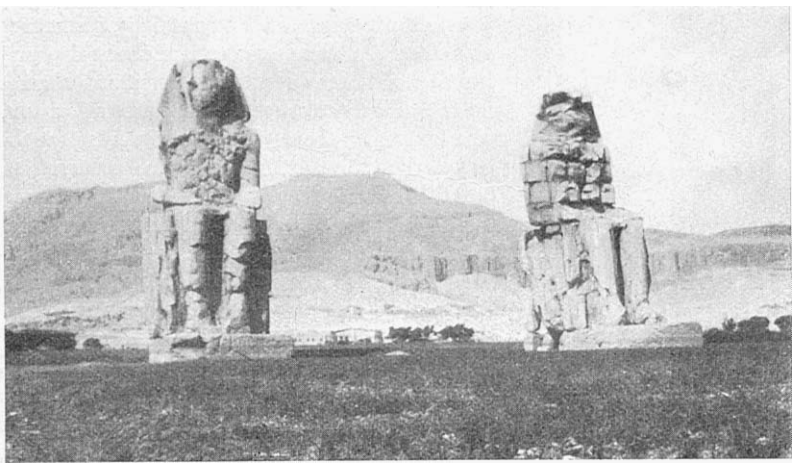


stem the tide of invasion, and Cyrus, King of Persia, seized the throne of Babylon. After that the fate of the country was merely the reflection of the great political events in the rest of Western Asia. The Persians, the Greeks under Alexander the Great, the Parthians, and finally the Mohammedan Arabs ruled in Mesopotamia; like Egypt, it remained no more than a province. Babylonian culture maintained its influence for centuries to come, but it, too, finally became extinct at about the time of the birth of Christ.

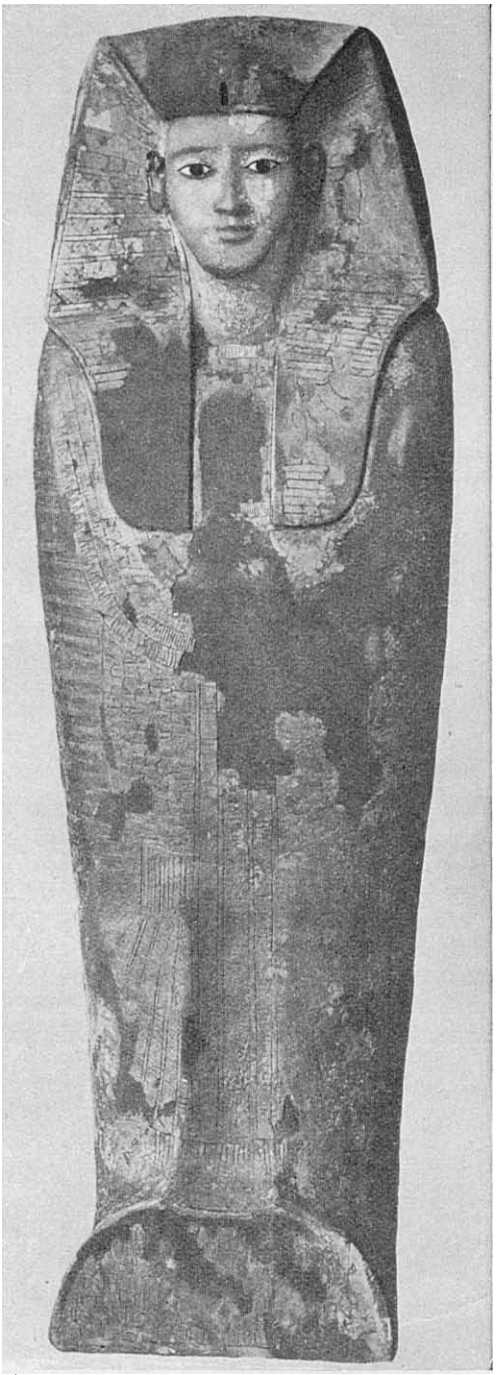
The history of the Babylonian-Assyrian Empire thus proved as varied as the manifold currents in its religious and cultural life. Though the culture first received a uniform Sumerian mould, its aspect was repeatedly changed by the Semites and other peoples after them. The inhabitants of the land between the rivers, though proudly conscious of their own worth, were open to outside influences. They were also realists. Art was subordinate to the needs of daily life in architecture and the crafts; sculpture alone served for religious expression or the glorification of the rulers. The great towns were carefully planned, all life governed by logic. Living and dying were subject to rigid regulations, and it is not surprising that the sciences received greatest attention. Mathematics were highly developed, astronomy was developed to an extent never equalled anywhere among the Ancients. In periods of decline astronomy became astrology, and mathematics degenerated to magic, as the ancient popular superstitions increased their hold on men's minds. Political decline was accompanied by a decay of order, a merging with other civilizations. As a gate to the West the country saw the passage of the Indogermanic peoples, for Babylon's natural protection against invaders was not as strong as that of Egypt, the other great state of the ancient Orient, which was bounded by the desert.



Clay tablets of Ur. 2200 B.C. *These tablets, part of the account-books of the weavers of Ur, contain several entries referring to work being done for the temple-priests. The names of the weavers are given, the amount of thread allotted to each, as well as the measurements of the finished cloth. British Museum, London.*



The Nile valley with the pillars of Memnon, statues of King Amenophis III (18th dynasty), behind which a temple stood.



Mummy-shaped sarcophagus of King Anief (13th dynasty). Wood, covered with gypsum and painted. Thebes. British Museum, London.

Like its modern counterpart, Ancient Egypt consisted of the lower reaches of the long and narrow valley of the Nile; it was surrounded by the uninhabitable wastes of the North African desert. During the six thousand years of Egypt's history the river changed its course but little; and historically, politically, and culturally the country, too, changed but little, the most homogeneous of all states. The river is the origin of all order, the only great link of communication, and the source of all fertility. It was hailed as "the Father of the Gods", "the original god, the food and nourishment of Egypt, the one who feeds all, in whose balance are gems, and on whose fingers food, and whose coming makes men rejoice".

The river it was, which governed all life. Any people and any civilization in Egypt was entirely dependent on the river, with the exception of those of the very early age, where traces of human habitation are found on the desert heights above the Nile in Upper Egypt. This period goes back to the earliest Stone Age, and is beyond the scope of history; Upper Egypt was at that time washed by the sea, and the valley itself consisted of a great lake. The first historical age revealed a people who regarded themselves as the original inhabitants. Whence they came is not known; it is generally assumed that about five thousand years B.C. all North Africa and part of Western Asia were inhabited by peoples united both in race and in language. By degrees the various districts began to develop independently, each creating its own civilization. About 3000 B.C. the type of the original population must have changed, though in the valley of the Nile the change was not so complete, owing to the conservative factors of the geographical situation of Egypt, which remained to a certain extent an entity isolated from outside influence.

After a period characterized by numerous small principalities similar to those in the early history of Mesopotamia, the various centres were gradually absorbed into two kingdoms, one reaching from the upper valley to the delta, the other comprising the delta itself. Thanks to more favourable conditions civilization developed more rapidly in the latter kingdom, and according to the great Egyptologist Edward Meyer the calendar year of 365 days was introduced in the region of what later became the city of Memphis in the year 4241 B.C. After a long period of development came the merging of the two kingdoms into one nation under a common king. This was King Menes (ab. 3400 B.C.), with whose

Hunting the lion. Painting from the Valley of Kings, near Thebes, 19th dynasty, 1200 B.C. *Metropolitan Museum, New York.*

accession the computation of dynasties began. The united government of the country proved the foundation of four centuries of prosperity. It was the most brilliant of Egyptian history, known as the period of the "Old Kingdom". The residence of the king was Memphis, where the first six dynasties reigned without interruption. Arts and crafts attained an almost unsurpassed level, the state increased its dominions and its trade. Increasing size made local governors necessary, who in time began to consider themselves independent princes, and became a danger to the central government. Finally the dynasty of Memphis was dethroned. After a period of confusion Thebes became the capital and with the 11th and 12th dynasties (2160–1788 B.C.) a new period of unity was achieved. This was the classical period of Egyptian culture, the "Middle Age". Literature began to flourish, grammar and orthography were unified, sculpture and architecture flourished, and the products of a highly developed industry (chiefly pottery) were turned out in great quantities, great hydraulic works were constructed, and the ores in the mountains of Sinai were systematically mined.

Again there followed a period of great confusion, filled with the struggles of rival princes, a period of oppression under the "Hyksos", an Asiatic dynasty, until the Egyptians, through all these struggles grown into warriors, set up a military state of their own. The successive Pharaohs of the 18th dynasty (1580–1335 B.C.) became conquering heroes of war, world-power was their aim. In splendour and wealth hitherto undreamt of, they welded the country together to form the "New Kingdom". Thebes, the capital, with its hundred gates, grew to be a great metropolis, trade connections extended to the East and West. This period of prosperity lasted for 230 years, but the decadence of the ruling classes, the struggle between temporal and spiritual power, between king and priesthood, the rise of an all-powerful bureaucracy, and the discontent of the people, who were ground down by an intolerable burden of taxation, led to a collapse. After a temporary revival under Rameses II, the state fell into disintegration, in the 6th century B.C. it was conquered by the Persians, under the successors of Alexander it continued a provincial existence, and for the Romans the country was no more than a granary. Cleopatra's attempts to win Caesar and his successors for the cause of Egyptian independence were unsuccessful. As a part of the Roman Empire Egypt later fell to the Byzantine emperors, and later, like Mesopotamia, it was conquered by the Arabs.

Alabaster bust of King Echnaton (18th dynasty). Lid of an intestinal jar from his tomb. Museum, Cairo.

Analogous to this political development was that of art in Egypt. Just as the state and the entire civilization formed a rigid entity, with the Pharaoh as divinity incarnate at its head, so also were its works of art static and massive in character, squat and almost lifeless. Nevertheless, it would be wrong to regard this as stagnation, there is a perceptible transformation, a living growth from archaic beginnings to the final permeation by the Greek spirit. Art followed in the wake of the power which formed it: religion. For religion was the centre of Egyptian life, and the belief in an existence beyond the grave was the keystone of Egyptian thought, which found its most striking expressions in the pyramids. The embalming of the dead, the burial with a retinue of slaves, with horses' chariots, and manifold implements finds its explanation in this belief, as does the building of such gigantic and massive tombs. Only once in the history of Egypt, at the end of the New Kingdom, was a reform attempted, when Amenhotep or Amenophis IV, who called himself Echnaton, replaced the ancient religious system with its animal cult and deification of the king by the belief in a spirit of "Reason", symbolized by the sun. This reform remained confined to the ruling class; the people, who were practically serfs, clung to their own primitive religion with its many gods, its demons, and its magic. This was the natural expression of the enormous differences between the classes, which ran through every phase of Egyptian life. As a result of the peculiar structure of society the class-barriers remained practically unshaken. The exploitation of the people by their rulers was so radical that it is difficult to find a parallel anywhere, save perhaps in the Aztec and Inca states of America.

What constituted the character of Egyptian civilization was the communion of religion with a peculiarly concrete turn of mind. The realities of life were predominant in every consideration. The Egyptian never lost himself in abstract systems. Life in all its colourful forms absorbed him entirely. The continuation of this life after death, with sowing and reaping, eating and drinking, appeared so natural that the dead were furnished with all the articles necessary to life. A strongly conservative strain ran throughout this desert-bound world.

Ancient Egypt, the Land of Linen

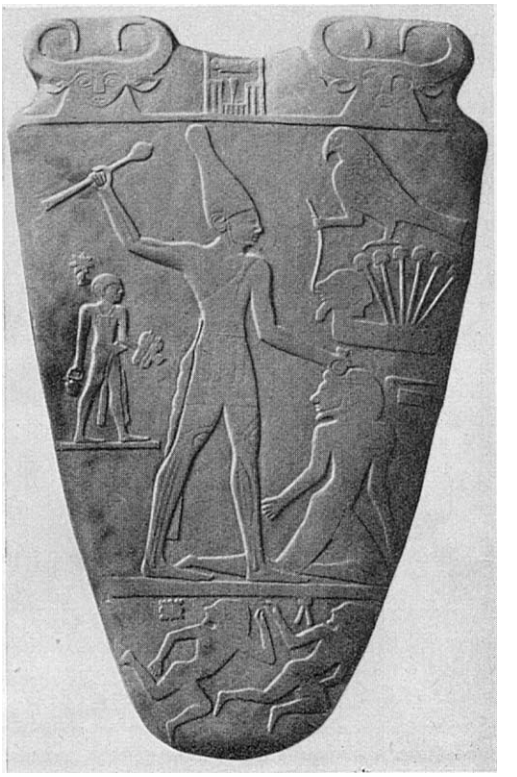
By Alfred Leix

The dress of men at work is in tropical districts to this day the simple loincloth, which leaves the greater part of the body uncovered, and does not hinder the passage of perspiration. In primitive days, when social differences were less marked, it was the general garb for men. In prehistoric Egypt, and even in the Old Kingdom, i.e. in the 4th and 3rd thousand years B.C., even the king wore no other dress. A lion's tail hanging down behind was the only badge of his rank. The conservative spirit of Egypt is demonstrated by the fact that throughout its history this simple apron remained the official dress of the king. Even when Alexander the Great and the Roman emperors are portrayed in Egyptian temples, they are clad only in this ancient apparel, the rest of the body remaining naked.

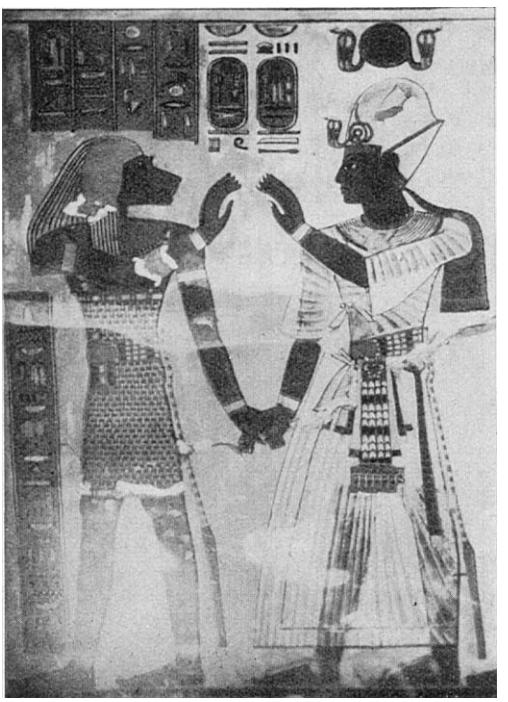
In other respects, Egyptian dress, like that of all other peoples, was subject to changes of fashion, though in accordance with the character of the people, these changes were very gradual.

It is surprising how many changes in cut and trimming, length and width even the simple loincloth permitted. For a time it was even customary to fold the waist-cloth in a peculiar manner which with the help of starch made it stand out from the body. Old men wore a longer garment which reached from the waist to the feet, leaving only the upper part of the body uncovered. Light cloaks and capes are occasionally seen on grave-reliefs, but were not frequent. Women wore a long loose garment reaching almost to the ankles, and held by two shoulder-straps.

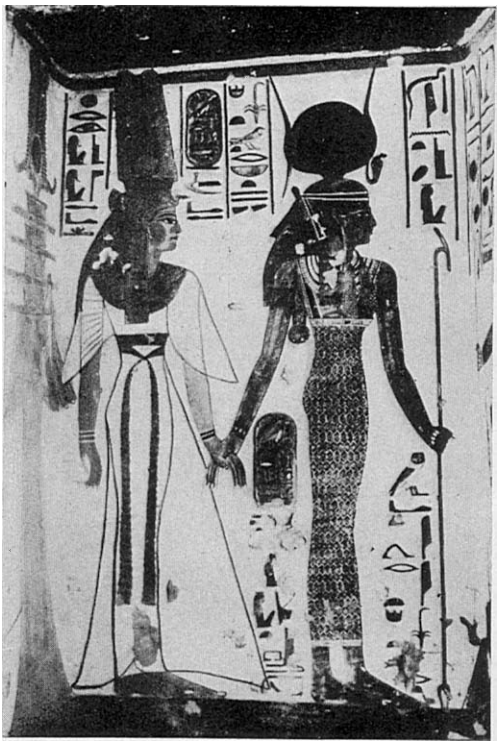
The dress-material was exclusively linen, which in ancient times was highly esteemed. According to a tradition of Egyptian mythology flax was the first thing the gods created for themselves before appearing on earth. At the court of the Old Kingdom the linen was kept in the "silver-houses", the royal treasury. It was a mark of particular favour when linen was supplied from there to shroud the bodies



King Narmer wearing waist-cloth with animal's tail attached. On his palette. About 3500 B.C.



Royal dress of the New Kingdom. King Rameses III. Mural in the tomb of his son. About 1200 B.C.



Ancient Egyptian women's dress. The goddess Isis wearing the archaic garment held by two shoulder-straps, leading the Queen of Rameses II, who is dressed in the costume of her time. Mural in the queen's tomb at Thebes. About 1200 B.C.

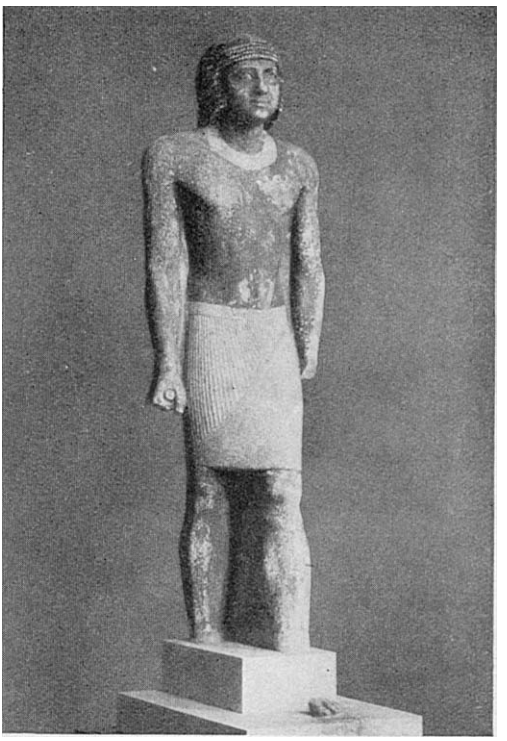
of men of merit, for after death the corpse was embalmed, and wound limb for limb in linen bands.

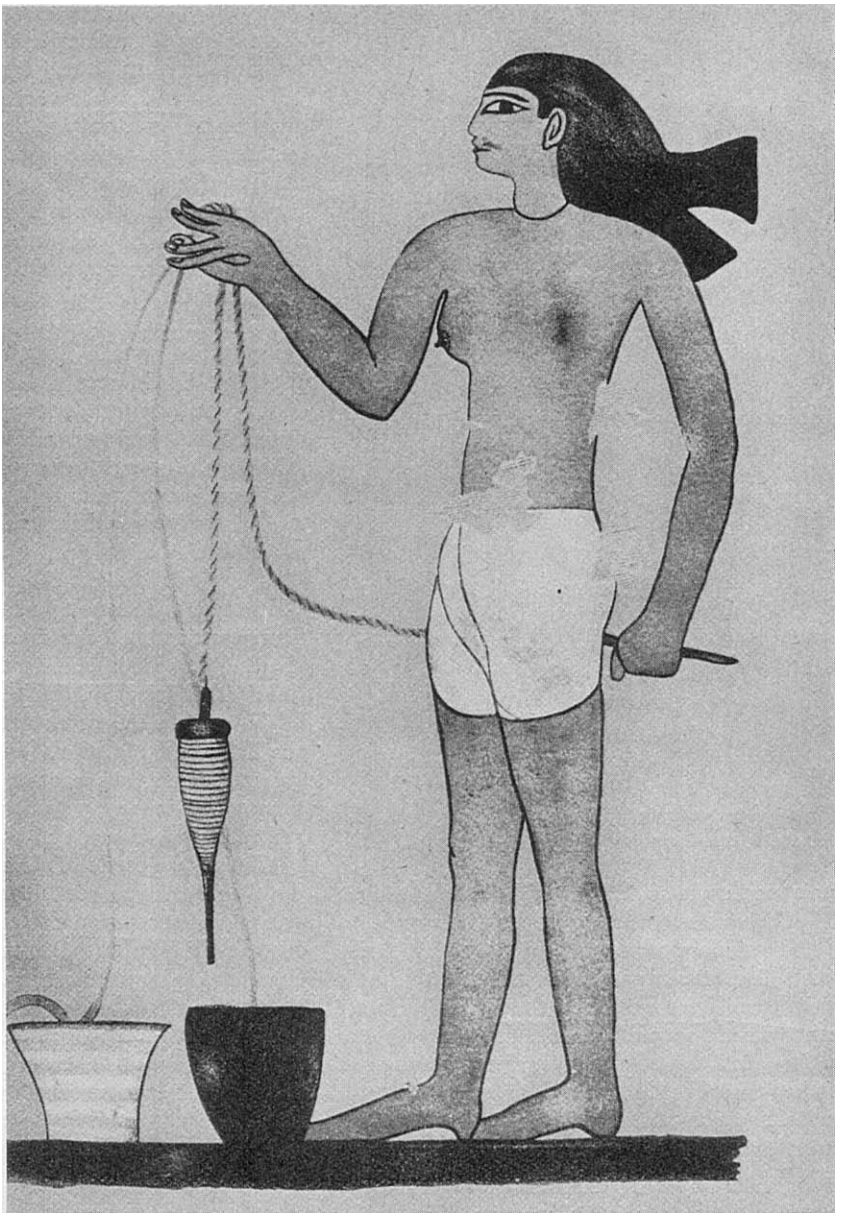
It is therefore not surprising that the cultivation of flax required a large proportion of the arable land of Egypt. The best flax grew in the Pelusian district. In many Egyptian tombs of all periods there are scenes of ploughing and sowing, of harvesting and cleaning the flax; there are even scenes showing the departed performing such labours in the Elysian fields. The workmen seize the flax-stalks near the top with their hands, pull them out and sort them according to size. After the seeds had been removed with a comb-like instrument, the bundles were soaked in square water-holes until the threads of fibre could be separated easily. The next stage of the process was to dry the flax, and to beat it with a species of cudgel. Then the fibre was again combed out, and wound on reels by female slaves.

Throughout the third thousand years B.C. weaving was evidently done on horizontal looms. These were nothing more than rectangular frames attached to four posts driven into the ground. A number of Egyptian looms have been preserved in tombs, where they were placed in order that the dead might be able to provide themselves with clothing in the next world. By means of such finds it has been possible to ascertain exact technical details. The paintings on the walls of graves are misleading, as all looms appear to be vertical. The peculiar habit of Egyptian painters of projecting horizontal objects vertically on to the wall, is to be blamed for such errors. Vertical looms were not known in Egypt until after 2000 B.C., but they were not able to supersede the older type. We do not even know whether the Egyptian loom of the earlier period was fitted with an appliance for rolling up the finished portion of the cloth. At any rate, the size of the pieces preserved as swathings for the mummies is comparatively small, 3 by 4 yds. being among the larger ones.

The weavers of Ancient Egypt worked under most unfavourable social conditions. A model of a workshop (see ill. p. 401) shows in

Egyptian of the Old Kingdom wearing waist-cloth. 2800 B.C. *Statue of Ankheftka. British Museum, London.*





Egyptian woman spinning. 1900 B.C. *She is in the act of twisting two already spun threads, each of which issues from a jar on the floor, into yarn. This is done with the aid of the spindle, which the spinner allows to rotate in mid-air. Mural in a tomb near Beni-Hassan. 12th dynasty.*

how confined a space ten slave-girls had to perform a task in itself sufficiently unhealthy by reason of flying dust and fibre. Male slaves were employed equally often as weavers, and their position was just as bad. In the somewhat biased Papyrus Anastasi, which was intended to encourage pupils to enter the bureaucracy and therefore minimises all trades, we read: "The indoor (male) weaver is in a worse position than any woman. His knees are drawn up to his heart (signifying the cramped position in which he works). He never tastes fresh air. If he does not produce enough as the result of a day's work, he is beaten like the lotus in the pond. He gives bread to the door-keepers that he may see the light of day (he must bribe them to let him out of doors)."

Very similar was the lot of the dyers. The same papyrus states: "The hands of the dyer reek like rotting fish, and his eyes are overcome by weariness." The unpleasant smell

Egyptian peasant spinning. The method is similar to that common in ancient times.

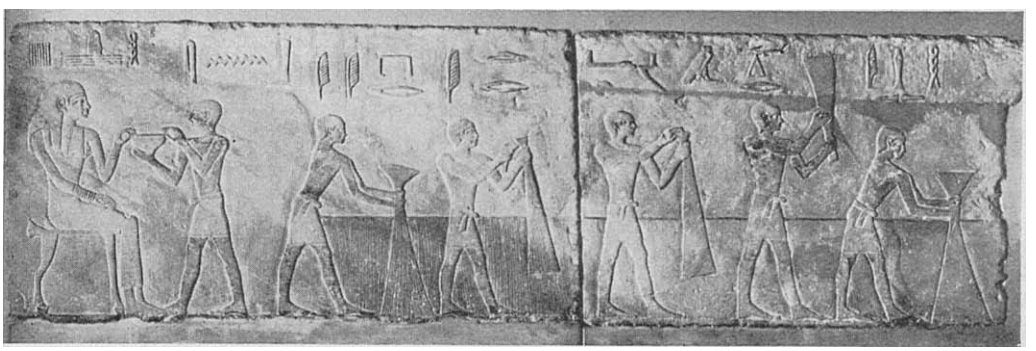
was common to all dyers of the Ancient World, as they used urine in their trade.

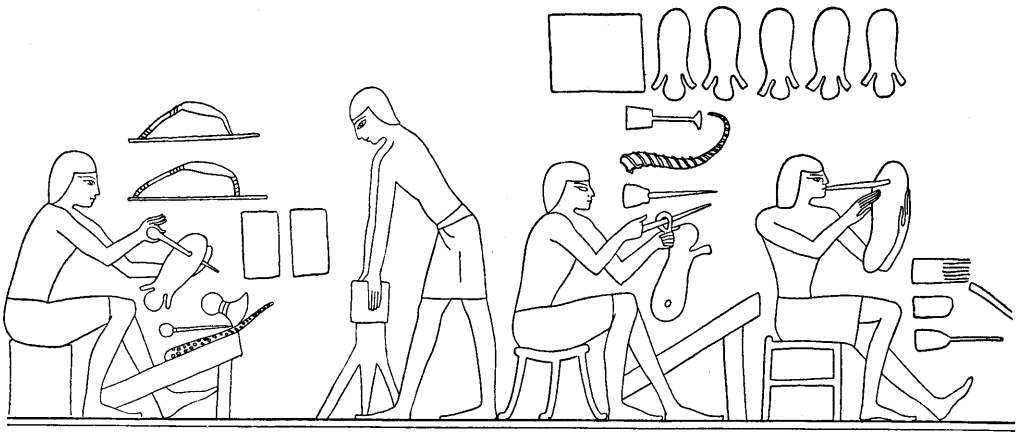
Vegetable dyes were of course exclusively used. The use of carthamus tinctorius (dyer's thistle, safflor) from 2000 B.C. on has been established beyond doubt. Its colours are yellow and red, of which the former was used particularly for the outer wrappings of mummies. In spite of all that has been said to the contrary, the Egyptians certainly did not use indigo, which did not become known until Roman times, and even then only as a dye and not as a plant. Blue dye was probably derived from woad which was grown in Egypt, though this can only be proved for the later period. The Egyptian dyer had at least four shades of blue, one of which is described as lapislazuli, the other as turquoise. How these dyes were made, we do not know. The names of the dye-plants are mentioned in the papyri, i.e. the W'n plant for light-blue, and the Drnkn plant for lapislazuli, but these are only names, which botanists are unable to identify. Green was probably produced by mixing the colours of the dyer's thistle and woad. That red was produced from madder is mere hypothesis. It is, however, supported by the fact that this requires a mordant, and the use of mordants is described by Herodotus as a peculiarity of Egypt.

It is probable that this variety of colours did not come into use until the so-called New Kingdom, from about 1500 B.C. on, and that the Old Kingdom preferred plain white. The link with Western Asia, a result of the wars of Thutmosis III, had a decisive influence on the hitherto isolated cultural development of Egypt, which thus became acquainted with a luxury previously unknown. New and costly materials, perfumes, and oils were imported.

The textile crafts of Asia were much more developed than those of Egypt, and for that reason Syrian weavers were brought to Egypt. Finally the words "Syrian" and "weaver" became synonymous. This contact with the Semitic peoples, who always clothed their bodies completely, brought about a decisive change in Egyptian dress. It became customary to clothe the upper part of the body in a short-sleeved, loose-fitting blouse. The waistcloth is now doubled, a long outer one being

Flax harvest in Ancient Egypt. From the tomb of Hetepet. 2700 B.C. State Museums, Berlin.

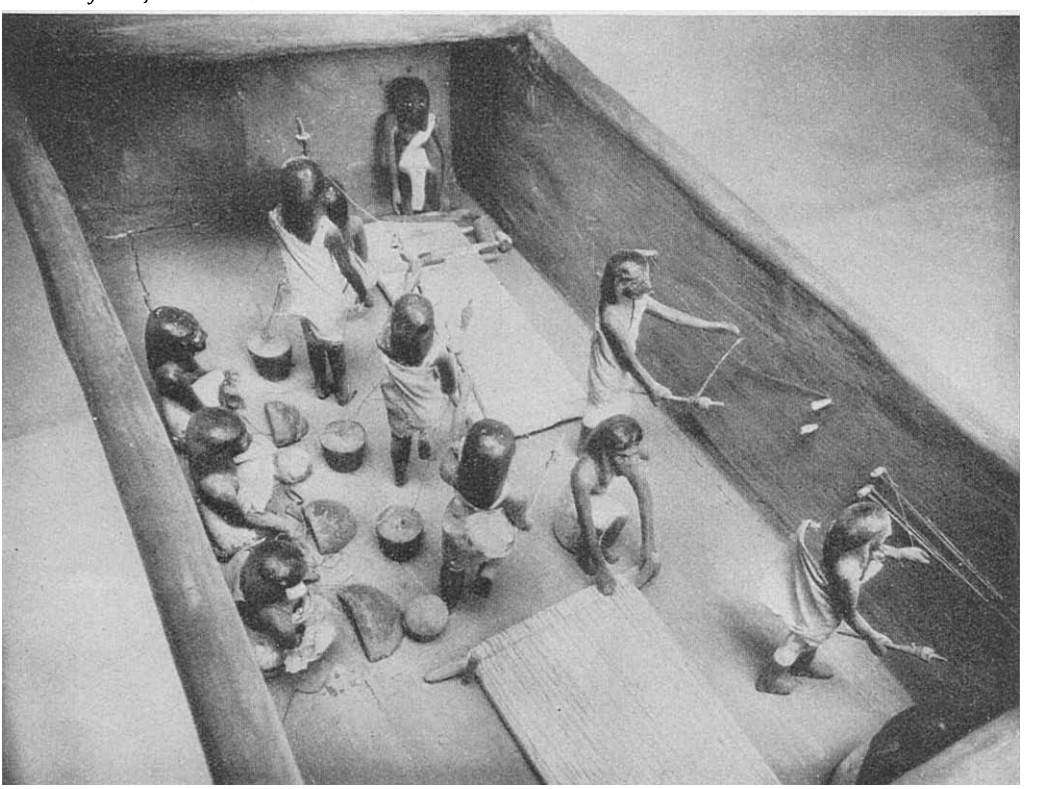




Egyptian tanners and sandal-makers. From a painting in the tomb of Chmen Hotep in Beni-Hassan, 12th dynasty (2000–1788). From left to right: Boring the soles; making the leather flexible on a currier's bench; making thong-loops. The occupation of the fourth figure is unclear. On the wall sandals and leather-workers' tools.

worn over the short under-garment. If the wearer was a high official, entitled to wear the shendot, a waist-cloth similar to that worn by the King, the outer garment was transparent, that the distinction might be seen. Transparent clothing soon became a general fashion. Cloths of exquisitely delicate texture were made. As in every age of luxury fashions began to change with great rapidity. This change was expressed particularly in the relation of the two waist-cloths to each other. They were alternately lengthened, shortened,

Model showing horizontal Egyptian looms, at which women are working, also assistants and spinners. Metropolitan Museum of Art, New York.



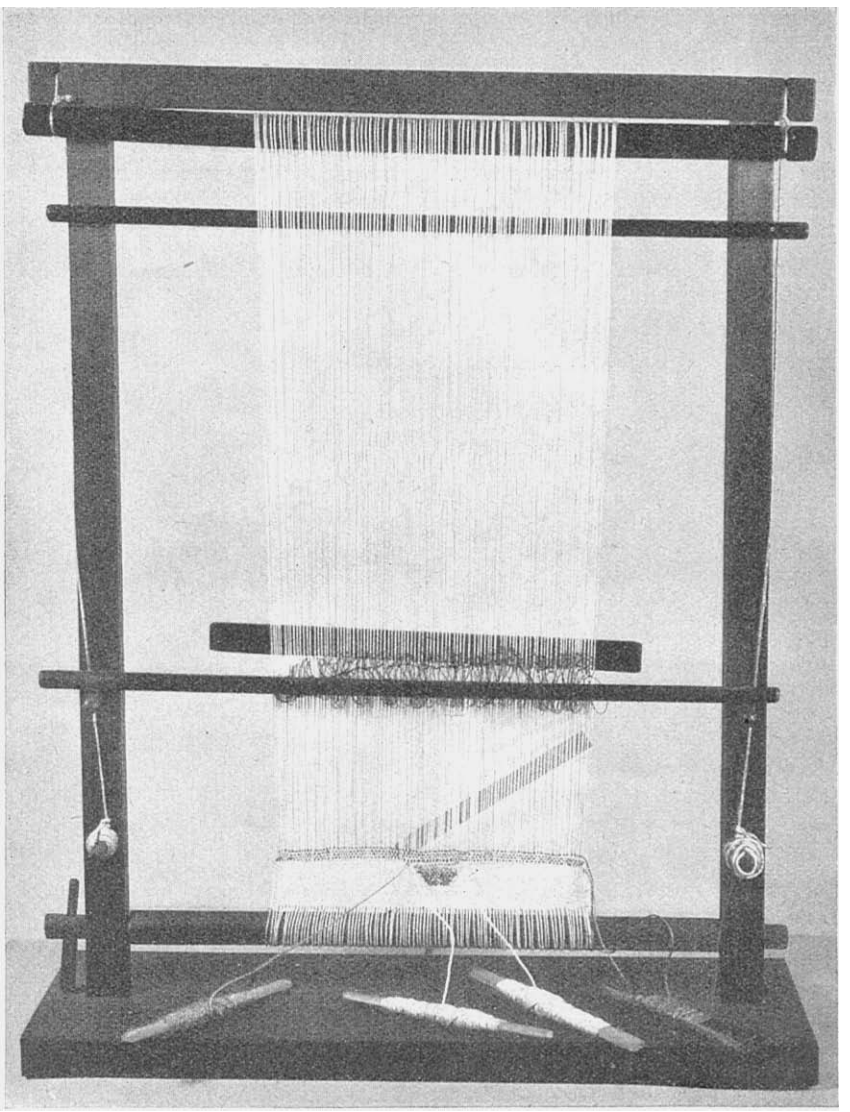
and widened until, in about 1200 B.C., the outer garment was no more than a broad apron-like cloth. The king wore a long voluminous cloak, unless ceremony demanded that he should appear in the shendot.

All these facts can be gleaned from paintings and sculptures. What they rarely show, and what has been learned from finds made in tombs, is that there were robes of the most varied colours, and a much more highly developed technique of weaving than would appear at first sight.

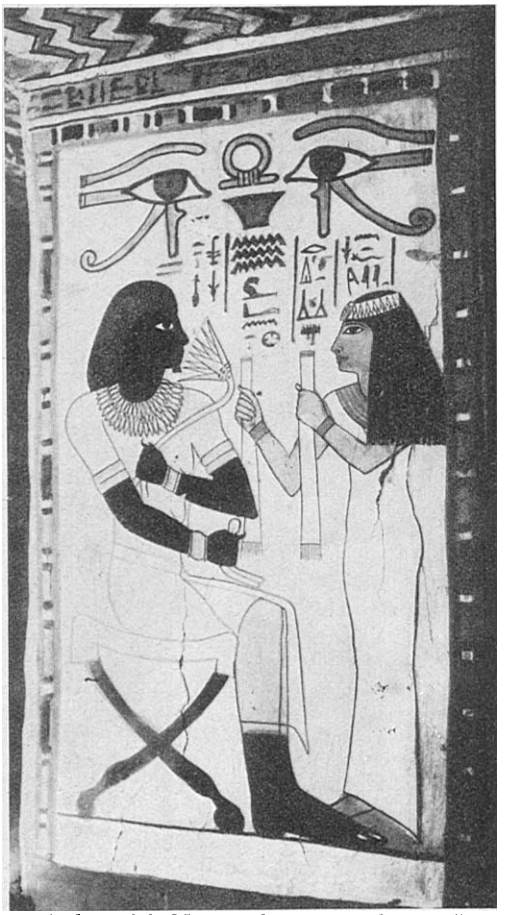
A piece of a robe belonging to Amenophis II (1447–1421 B.C.) was found in the tomb of his successor Thutmosis IV. The piece is woven, and the technique is so delicate that there are 60 warp-threads to an inch. The pattern is composed of rows of papyrus and lotus-blossoms, interrupted only by the royal name and emblems. The border is made up of the typical frieze of lotus-blossoms, the colours are red, blue, yellow, green, brown, and black.

Another similar fragment is of earlier date. As it bears the name of Thutmosis III, it must have been made at the beginning of the 15th century B.C. Paintings on the walls of tombs seem to indicate that intricate designs were embroidered, and not woven.

It was the finds in the grave of Tut-ankh-



Model of a vertical Egyptian loom. State Museum, Berlin.



Men's dress of the New Kingdom, covering the torso. Prince Sennefera. Painting in his tomb at Thebes.

Amon which taught us how great a perfection Egyptian textile crafts really had reached. Though only preliminary reports are at present available, and though it will take many years before all the finds have been thoroughly examined and classified, our knowledge has already been not only increased but revolutionized.

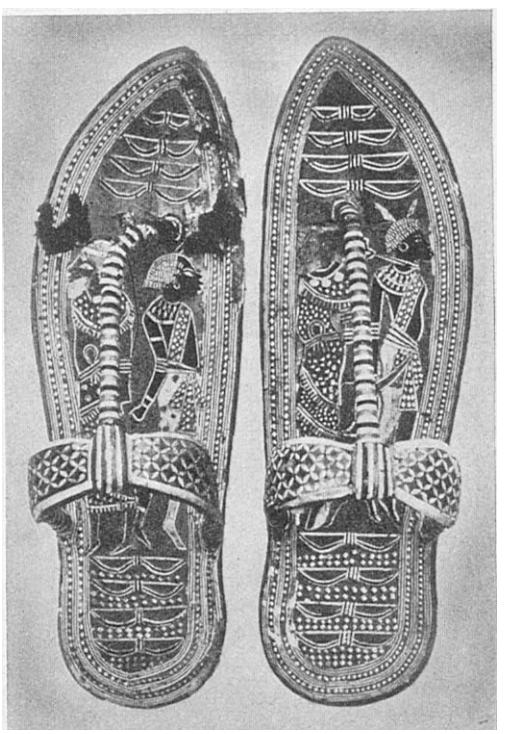
In a chest within the tomb the remnants of at least seven royal robes were found. Some of these are woven as described above, others are embroidered. One of the most magnificent of them was covered with a network of faience beads, and with tiny gold sequins in diamond-shape. The robe was bordered with tiny glass beads in different colours. All these were sewn on to the material. Gilded bronze discs in the shape of daisies covered the linen cloth spread over the coffins. The same style of decoration with gold sequins was also familiar to Mycenae. Glass beads sewn to the fabrics were very popular in Egypt; the lion's tail which adorned the royal dress was made in this way, and the technique is still common in Egyptian popular art.

Tut-ankh-Amon's finest robe is decorated in front with a loop-cross, the sign of Life; it is composed of the King's name and other symbols, executed according to the report of the excavation in embroidery.

It is remarkable, in view of the climate, that gloves were found in the grave, though it was customary for archers to wear a glove as protection for the hand. The king also had a pair adorned with a kind of fish-scale pattern ending in the typical lotus-frieze. Thongs were sewn to the gloves to enable them to be tied tightly round the wrists. It is probable that they served for some special purpose.

This truly royal magnificence is also evident in the shoes found in the grave. In earliest Egypt footwear was as simple as the remainder of the dress, being composed of a sole of strong leather held by a strap over the instep and one between the toes, a simple form of sandal. In primitive times women appear to have gone bare-footed. The sole was compos-

State sandals of King Tut-ankh-Amon. Museum, Cairo.

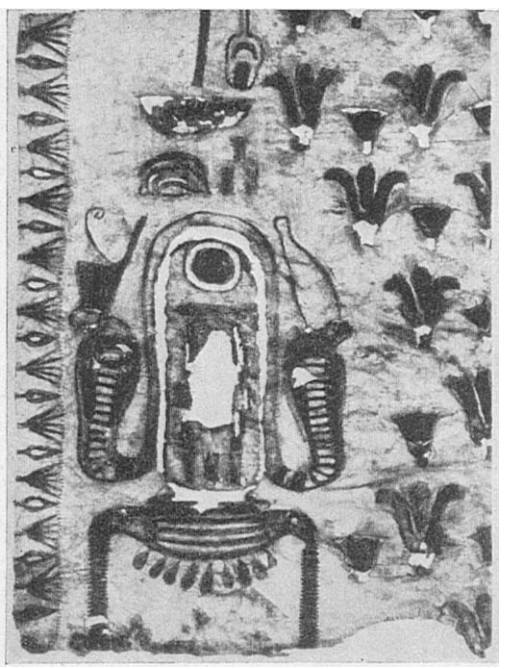


ed of calf-skin, though sandals of rushes and palm-leaf have also been found. Later, shoes shared in the general elegance of dress. There are fine examples of very thin goatskin, dyed red or green. For tanning the husk of acacia arabica seems to have been used. Madder served for a red, and pomegranate skin for a yellow dye.

The footwear found in Tut-ankh-Amon's grave represents the highest level of craftsmanship. There are three pairs, one of which may be described as slippers. One pair was adorned with a flower-pattern worked in beads. Another pair was evidently for wear on state occasions. On the inner sole of one sandal the picture of a captive Syrian was executed in coloured leather, while the other showed a similar portrait of a Lybian. Those were Egypt's traditional enemies; the bows which show the numbers of enemy peoples, are also seen in the picture. The impression to be conveyed is that of the king setting his foot on his enemies; they also form the footstool of his throne.

Egyptian art is never purely decorative. It is always full of symbols, often of profound religious or human significance, even when it appears to serve only as ornament.

Right: Female statue of wood, showing the elegant lines of the robe. 19th dynasty (?), ab. 1250 B.C. *Museum, Cairo. Below: Piece of a robe of Amenophis II (1447–1421* B.C.*).*



Fashionable shades

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Babylon-Assur, the Land of Wool

By Alfred Leix

Just as Egypt may be described as the classical land of linen-weaving in the Ancient Orient, Mesopotamia is the country of wool-production and wool-weaving. The reason is not to be sought entirely in geographic conditions, which were, it is true, very favourable to sheep-breeding in Mesopotamia, but also in the fact that entirely different standards of taste from those prevalent in the valley of the Nile demanded a different material. In art and life the Egyptian loved clarity of form retaining for long the simple waist-cloth which did not obscure the natural line of the body, and preferring for the same reason linen materials of fine texture. The Babylonian loved pomp and luxury, clothing his body in heavy stuffs with rich patterns and elaborate fringes. Moral reasons probably were of considerable influence in this development; for ethical problems were much more to the fore in the religions of Mesopotamia than in those of Egypt. It will be remembered that the peoples

The oldest form of Babylonian dress, a fleecy skirt. 3000 B.C. *Statue. Louvre, Paris.*

Younger form of Babylonian dress. 2500 B.C. *Statue. Louvre, Paris.*

of the Old Testament belong to the same civilization.

At any rate, the age of the loin-cloth, if it ever was the sole article of apparel, can only have been very short. About 2800 B.C. already it was worn only in battle, but 1000 years earlier, and perhaps even in primitive times, the usual dress for the lower part of the body—leaving the torso bare—was a goat or sheep-skin with long tufts of hair, which long remained the dress of honour for great warriors.

Not later than 2800 B.C. this archaic clothing was superseded by a clearly-defined style of dress. It was the time of the decisive cultural development of Mesopotamia, and of a growing textile industry. Unfortunately, the soil of Mesopotamia is not so dry as that of Egypt, and practically nothing of these materials has been preserved. Documentary evidence is, however, very strong. From a number

of cuneiform inscriptions, all from Asia Minor (so-called Cappadocian tablets) we learn that Assur, later the centre of the great Assyrian Empire, at that time maintained trading-centres in Asia Minor. These colonies administered their own affairs, and held courts of justice and arbitration. The courts fixed rates of interest, financed business undertakings, and generally acted as the bank of the colony. The merchants were organized in guilds, and were for that reason called tamkarum. The whole organization bears a striking resemblance to that of the foreign stations of the Hanseatic League in the Middle Ages, even in the fact that one of their principal sources of income was the wool-trade. Woollen materials of various qualities, in lengths or as finished clothing, as well as skins, formed the basis of this trade. There are many details

Assyrian Royal dress. Statue of Assurnasirpal III (from 884 to 850 B.C.*). British Museum, London.*

Dress of the Assyrian Kings. 9th century B.C. *Relief. British Museum, London.*

of caravan transports, of buying and selling, and of business-methods. In one letter we read: «I wished to take 10 black stuffs, five and six yards in length, and two hides into the company's house in your name, but was not allowed to do so.» Another instructive document reads: 1 chiton, 1 length of black cloth, one complete robe, 1 piece of thin material

High Assyrian official with two pages, in hunting-dress. 9th century B.C. *Relief. Berlin.*

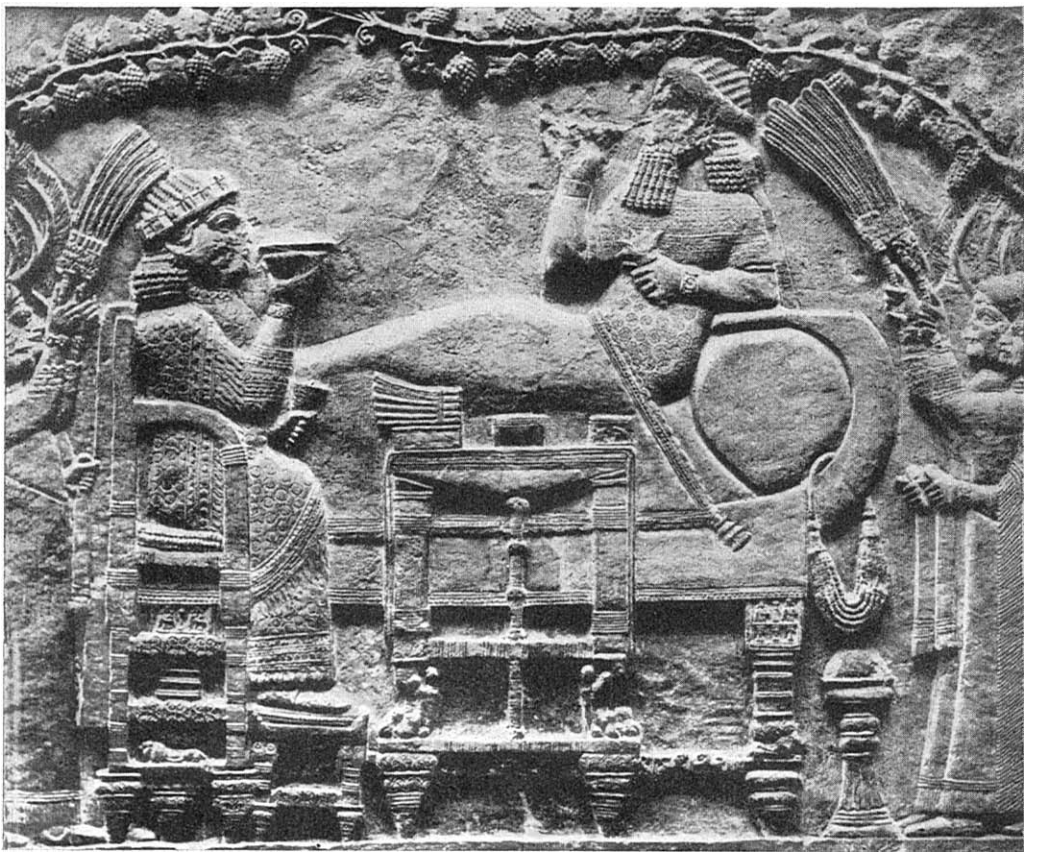
did the merchant A receive for delivery to B; 3 chitons and 10 thin cloths I gave to A to have them dressed; he has received his share of the bargain and the costs of transport for eight pieces. Five shekels of silver will be added to the price.» This shows that there was an established system of currency in Mesopotamia nearly 3000 years B.C., whereas Egypt did not get beyond barter until much later. The trade of Babylon extended far beyond its own borders. On conquering Ai in Canaan the Israelites found a rich robe from Sinear, imported from Babylon (Joshua, 7, 21). As that event took place about 1350 B.C., this is an early piece of evidence for Babylonian trade.

There can be no doubt that the raw material used by the Babylonian and Assyrian textile industries was wool. There is ample evidence to prove this. We know, it is true, that there were linen-weavers (ispar kiti), and fragments of linen have been found at Susa. Linen and flax are, however, rarely mentioned in the ancient records, whereas the chief products of the country are described in a constantly recurring phrase as "še'um šipâtum šamnum" (barley, wool, oil). Woollen clothing and woollen materials are frequently mentioned in the records. We even know the prices; one talent of wool (about 60lbs) cost 6–15 shekels, a robe $^1/_3$–$^5/_6$ of a shekel. A shekel contained 8.4 grammes of silver. As well as clothes, tapestries, and curtains were made of wool, often richly adorned with mythological and hunting scenes. The weavers of Babylon were organized in guilds (kisru ša išparê) at the head of which was the "ràb" (master). Apart from linen-weavers, wool-weavers, weavers of clothes, and weavers of coloured stuffs are mentioned.

The weaver's period of apprenticeship appears to have been fairly long. A contract has been preserved, according to which a slave was apprenticed to a weaver for a period of five years. In comparison it may be mentioned that the apprenticeship of a baker was 15 months, and that even a seal-carver, who had to be a veritable master of the glyptic art, only served 4 years.

This long period of apprenticeship seems less extraordinary when we consider the variety of Babylonian and Assyrian textiles. This can only be done by means of a study of statues and reliefs, and it is not easy to gauge the technical details of the dresses, as these were not the prime concern of the artists. Furthermore, dress seems to have changed rapidly, if not in essentials, at least in cut, decoration, and manner of wearing. The decisive step was taken about 3000 years B.C.

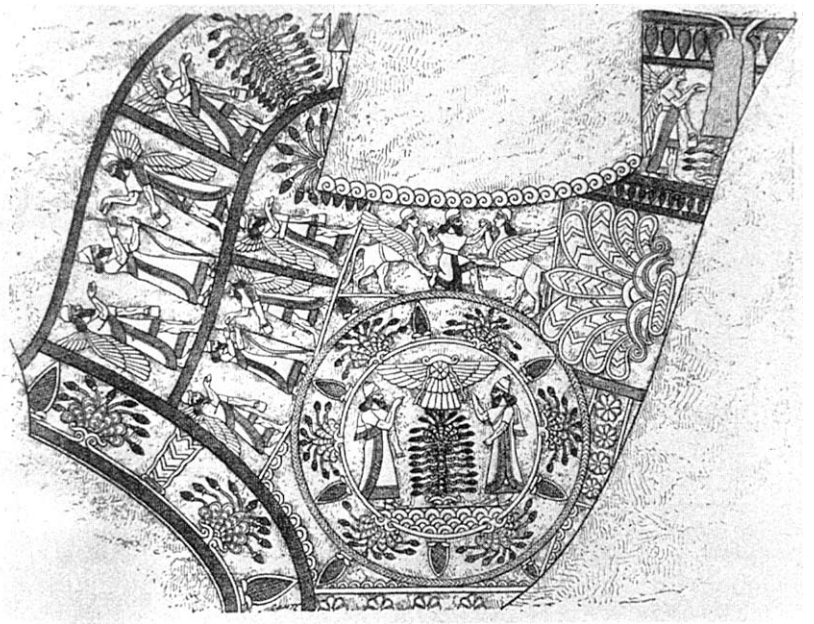
King Assurbanipal (668–626 B.C.*) hunting.*



King Assurbanipal and his wife at a banquet. Example of Assyrian female dress. British Museum, London.

Over a long under-garment a cloak woven of one piece was thrown, one end of which was tucked into the right breast of the under-garment, the other flung over the left shoulder to drape to the ground, leaving the right arm and shoulder free. Another kind of outer garment is really a shawl many yards long with long fringes, which is first wound obliquely round the upper, and then horizontally round the lower part of the body, also leaving the right shoulder uncovered. This costume appears, at least in the earlier period, to have been considered the garb of the gods, and is perhaps a reminiscence of the archaic skin clothing.

In the Assyrian period this became a luxurious dress with many variations. The under-garment, which could also be worn without any cloak, had short sleeves and a belt. The cloak became a fringed shawl, one end of which hung down to the ground, the other being draped across the breast. It was frequently held in position by a belt, in which a dagger was worn. It may be that only the king and the vezier carried a dagger in this belt. The vezier also wore a band round the forehead, similar to that affected by the king except on state occasions. The robes of state were gorgeous in the extreme. The under-garment was fringed with a row of tassels, long tassels hung down at the sides, and the king wore the high gold tiara. The hunting dress of the king and his pages was a tunic reaching to the ground at the back, and to the knees in front, so that the hunter was not hampered in the use of his legs. With this tunic, a peculiar rectagonal piece was worn, hanging from the neck and covering the breast. It does not appear to have been embroidery, but rather an engraved piece of metal, a species of breast-plate used particularly when lion-hunting. Assyrian warriors are always depicted as wearing a short tunic or a coat-of-mail of like appearance. The few statues of women show as most important distinction of their dress the long sleeves



Breast ornament of Assyrian Royal robe. 7th century B.C.

worn for reasons of modesty to this day by women throughout the Orient.

The patterns of these stuffs must often have been very elaborate, but as they are carved in stone we can only guess at the technique in which they were woven. A regular pattern of circles or rosettes is most frequent, and we may probably assume that these stuffs were woven in two colours. Similar patterned materials also formed the basis of royal robes of state, but apart from the rich fringes, the tops of these latter were adorned with exceedingly complicated figural designs, most probably sewn on to the material of the robe. They are always shown on the reliefs as rich centre-pieces, surrounded by narrow frieze-like scenes. They show the conventional types of Assyrian relievo-sculpture, and appear to have little to do with textile art. In one case the middle-piece has the form of a medallion, which shows two symmetrical figures of the King on either side of the tree of life; in the narrow friezes he is seen between winged demons.

It is generally supposed that these figural scenes were embroidered, especially as Babylonian embroidery is mentioned in Roman times. That was not, however, necessarily the case. In the late Persian, Sassanid period similar medallions, equally profusely adorned, were made by weavers. Furthermore the centre-piece and the frieze-bands do not appear to fit; there are always gaps filled in with some ornament. These strips or bands look more like borders which have been cut and pieced together. They may have been embroidered, but it is also possible that they were woven, like the decorations on the robe of Tut-ankh-Amon. Embroidery would probably have formed a pattern distributed over the whole robe. The colours of such robes must have been gorgeous. An idea is conveyed by faiences which have been preserved. One of these shows a green robe with hems and fringes in which red and green alternate. In another case the colours are green and red. The various shades between red and purple seem to have been particularly popular. We hear of purple-blue wool, light purple-blue robes, blue wool, red-brown wool, red and dark purple, and dark red clothing. One species of clothes was of a reddish-yellow colour, and gave the effect of gold. It is expressly stated that this colour resembled that of the saba-plant, which perhaps supplied the dye. Unfortunately we are not able to connect the name with any known plant. As a technical detail it may be mentioned that wool was generally dyed in the raw, before being spun, whereas in the case of linen, the thread was dyed before being woven into cloth. Taken altogether, Western Asia certainly had the most highly developed textile industry of the Ancient World, the more so as Phoenicia is to be considered, which had close trade connections with Assyria.

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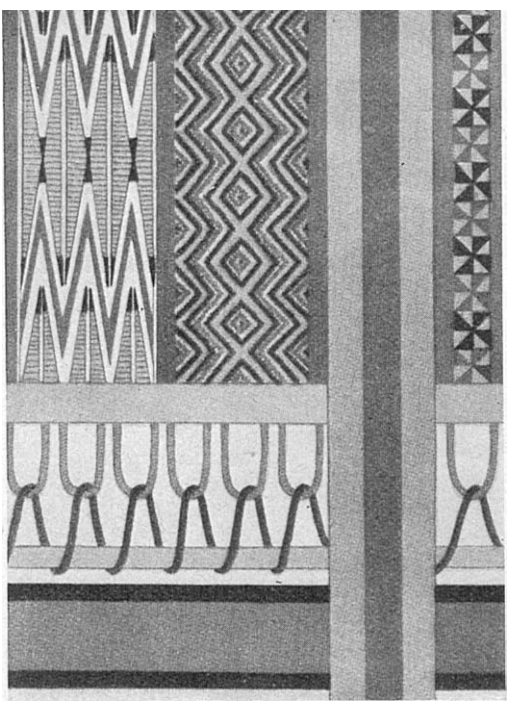
Colours of the Ancient Orient

By Alfred Leix

In order to understand the colour effect of the clothing and the textiles in general of any period it is necessary to know the surroundings in which they were worn. The Egyptians, for instance, preferred plain, generally white stuffs for their dress; it would, however, be a mistake to assume that the Egyptians were averse to colours of any kind. Quite the contrary. In all their 3000 years' history the ancient Egyptians lived in surroundings of brilliant colour. The houses of the nobles, which were excavated at Tell el Amarna, were painted throughout in colours. The pillars were red, their capitals green, and the geometrical patterns of the ceiling were richly painted in all the colours of the Egyptian palette. On the floors whole scenes were painted, e.g. ponds, through the rushes of which birds flew —a system of decoration not quite logical for a floor. From the paintings on the walls of tombs we may infer that 3000 years B.C., when the houses were simpler in style, their walls were hung with coloured mats, and similar mats were hung in doorways and windows, as is the custom to this day in hot countries like India. The coarser of these mats were of palm-ribs, the finer of palm-fibre, and were wrought in a close zig-zag pattern of different colours. The colours used are unknown to us, as none of the mats have been preserved in the original. Paintings of these mats in the graves of Hesire (2800 B.C.) and of Ptahhotep (2500 B.C.) show that they were attached to the floor by an ingenious system of cords and loops, so that they could be tautened at will.

Pattern of a mat on the wall of an Egyptian tomb. 2800 B.C.



The geometrical pattern is typical of other branches of ancient Egyptian wicker-work, for instance, baskets and ships' sails, which were probably also of woven matting. In a Theban grave there is a painting of a mat-weaver, whose work shows the same pattern. Unfortunately it is not possible to determine the technique adopted.

The regard for detail with which these mats are reproduced has its foundation in the Egyptian conception of life after death. In the earlier period at any rate, life after death was believed to be exactly like life on earth. Thus tombs were the houses of the dead, and were furnished accordingly. In direct contrast to European notions, tombs were not dark and gloomy, but were adorned with vivid reliefs which filled every wall. They represented the life which the deceased had led on earth, and which in these paintings was to be with him in the next world. If he was an official, his office would be painted on the wall of his tomb, with all his clerks, before whom the village chiefs would be dragged with much show of cuffing and kicking to tender up their accounts. In other graves there are scenes from fishing (very early) and agriculture from sowing to reaping and to the threshing of the corn under the hoofs of donkeys. Every single stage is reproduced, as well as all the crafts and their representatives: tanners and weavers, carpenters and potters, etc. The most important objects in the tomb were, however, the statues of the deceased, which were his representatives, and received on his behalf the funeral offerings, which were to be his food in the next world.

These sculptures and reliefs were without exception painted. That was necessary, as they were intended to be as close as possible to reality to guarantee a continuation of this life

Coloured relief from an Egyptian tomb. 2700 B.C. *Dancers and musicians. Museum, Cairo.*

in the world beyond. They were realistic, not in the sense of conveying a number of momentary movements or fleeting expressions, but in an eternal sense, as it were, laying stress only on the most outstanding gestures and features. For the same reason only a few unmixed colours were used for painting; the aim was not the reproduction of the minute shades of colour formed by the light on the surface of the objects represented, but rather of the simple and unbroken colours of the objects themselves. The fine group of Prince Rahotep and Nofret, his wife, which is among the oldest of the Egyptian sculptures, shows the skin of the man as brown-red, that of the woman as yellow, while the clothing of both is white. These colours are typical, and recur again and again.

Painted statues of Prince Rahotep and his wife. 2900 B.C. *Museum, Cairo.*

For the reproduction of jewellery, especially of the large necklaces so frequently worn, blue and red were used, as they were composed chiefly of turquoises and red cornelians. The landscape reliefs of the sun-temple at Abusir, built about 2600 B.C., shows green for plants, and blue for water. For the patterns of mats all colours then known were used.

At first they were without exception natural colours and were used unmixed in their natural state, for the Egyptian of 3000 B.C. was very close to the Stone Age, may indeed be said to have belonged to it. His chemical knowledge was small, many important materials were as yet unknown to him. A. Lucas has analysed with great care and detail the Egyptian colours, including those found in the grave of Tut-ankh-Amon. In years of labour conducted with the help of the most modern technical equipment, he has answered this much debated question. Lucas' results are briefly these:

Black is always carbon, generally beyond question soot. For the use of charcoal there is no proof. Chalk or gypsum-powder was generally used for white. Ochre occurred so frequently in Egypt as a natural ferro-oxyde

Harembeb hunting birds. Mural in his tomb at Thebes. 1300 B.C.

that its various shades of red, yellow, and brown are among the oldest Egyptian colours. It was found in especially large quantities near Assuan and in the oases of the desert which flank the Nile valley in the west.

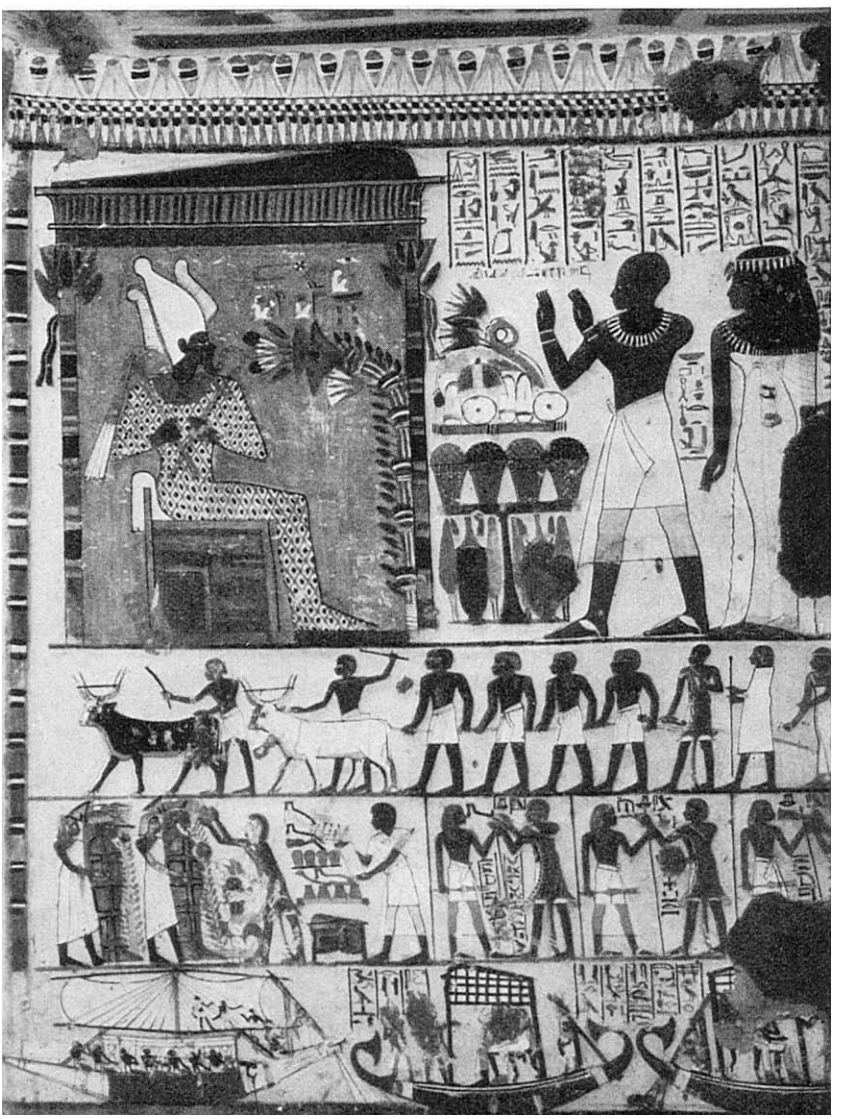
Green was perhaps the oldest colour known to the Egyptians. In prehistoric times it was used for painting round the eyes, a practice which doubtless had its foundation in magic. This paint or dye consisted of powdered malachite. It was found both in the eastern desert of Egypt and in the hills to the west of the peninsula of Sinai. The oldest mines were probably those in the Wadi Maghara on the peninsula of Sinai, which were called after King Snofru, who reigned 3000 years B.C. On a hill rising from the Wadi Maghara there stand to this day the stone huts of the labourers and a fort which protected the mines against attacks by Sinai Bedouins. The work, probably compulsory labour of prisoners-of-war who were regarded simply as slaves, must have been very hard indeed. Here there was at least water in plenty, whereas positively horrifying details of the fate of workers in other Egyptian mines have been recorded. It is highly probable that the search for malachite preceded copper-mining in Egypt, which for the next great period in the development of civilization was to become so important. The use of malachite as a dye preceded the Copper Age in Egypt.

Blue appears to have been used comparatively rarely in the earliest period, though azurite, a blue cupro-carbonate, occurs both in Sinai and in the eastern desert, that is, in the same districts as malachite. Nevertheless, its use as a paint was but rare. Cobalt does not occur at all in Egypt, and was for that reason not used in the earliest period. Blue seems only to have become available at the time of the 5th dynasty. It was an artificial compound, a calcium-copper silicate, produced by melting quartz, a copper ore (probably malachite), and chalk, and then grinding the resultant compound to a powder which served as paint. The advantage of quartz was its entire lack of iron content, which would have produced a green instead of a blue colour. It is probable that this compound was discovered by way of faience, which was well known in Egypt, and that it was intended to serve as a substitute for the precious turquoise. This blue paint was still in use in Graeco-Roman days, and was known to Theophrastes, Vitruvius, and Pliny. The fact that at the time of the 5th dynasty a colour which did not occur naturally was produced by a process of smelting various minerals shows what progress chemistry had made in Egypt. From that period, however, until about the middle of the second thousand years B.C., the beginning of the New Kingdom, it remained practically stationary. And even after the latter date and through all the centuries of Egyptian art these colours remained dominant in the ceremonial decoration of temples and royal tombs. Nevertheless, most of the Theban tombs do show a change in the technique of painting and the paints used, a change which began with the New Kingdom. The white walls are covered with scenes in which the rigidity of type has been abandoned for something more like the modern conception of painting. No longer are merely the possessions of the deceased reproduced, but rather his life and death. The paint no longer serves merely to colour the surface of a relief. It is applied to the sur-

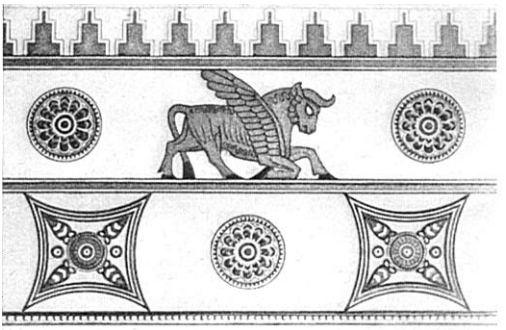
face of the wall as an entirely independent medium. The technique is frequently so bold and light, that one might almost compare it with impressionism. The colour-scale has also become greatly enriched. Pink was added in the 18th dynasty, a green paint is manufactured by methods similar to those described above for blue. Orpiment as well as ochre is used for yellow, a natural sulphide of arsenic, which does not, however, occur in Egypt. It must have been imported, probably from Asia Minor.

That was in accordance with the general situation. By about 1500 B.C. Egypt had emerged from the isolation in which it had until then remained, war and commerce had brought it into touch with the peoples of Asia and the Mediterranean. That was the only period of Egyptian art, the spirit of which can really be felt on contemplating its paintings. Furthermore, they are of such technical excellence that the colours have retained their full freshness until this day. Unfortunately, we know nothing of the medium used for binding the paints; albumen, rubber, or gum have been suggested. In some tombs the use of bees-wax has been established.

Withal, Egypt remained positively backward as compared with the truly "Oriental" luxury of Babylon and Assyria. If the reliefs



Mural in a Theban grave of the New Kingdom. The governor Hui before Osiris, god of the underworld. Below, his funeral, 1500 B.C.



Assyrian wall-decorations from Nimrud-Kalach. Fresco. 9th century B.C.

which covered the walls of Assyrian palaces and the statues which adorned their gates are today devoid of colour it is only because the soil of Mesopotamia has not preserved the colours so well as that of Egypt. The excavators found many remains of coloured work.

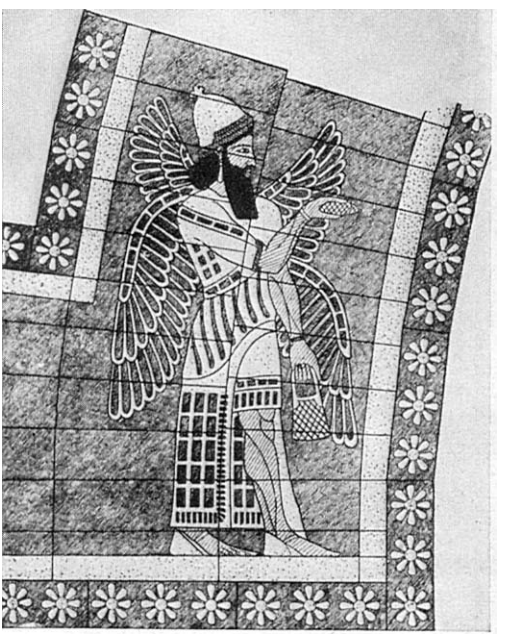
Layard (Nineveh and its Remains, London 1849, Vol. I, p. 130) reports that on the floors of the rooms in the palace of Nineveh he found large fragments of painted plaster, which had once adorned the walls. The colours, especially blue and red, were as brilliant and vivid, when the earth was removed, as they must have been when first used, though they faded rapidly when exposed to the air. Layard and Place preserved some sketches of these decorations. They were very simple. Stripes, sometimes with rosettes or a crenellated pattern, occasionally with kneeling bulls between the stripes, these were the principal forms.

According to written records, however, the subjects of the reliefs, the demons, hunting-scenes, battles, and triumphal pageants were also found as painted friezes. According to Layard all the reliefs were painted. Hair, beards, and eyes were black, the King's tiara red, the plumage of the helmets and the trappings of the horses blue and red, the red being often merely a basis for gilding. Trees were painted green, and the fiery tongues of torches and burning towns red. The vision of the prophet Ezekiel (ch. 23, v. 14 and 15) appears to allude to such reliefs or frescoes.

The paints were doubtless the same natural products as those used in Egypt. All who have compared the two state that Assyrian blue was much more brilliant than that of Egypt. It was probably cobalt-blue, found in large quantities in Iran and the Caucasus, both within the sphere of Assyrian power. When Egypt entered into contact with these countries, it also produced cobalt-blue, which was, however, only used for staining glass, and not as a paint.

The Assyrian preference for brilliant colours is shown by the liberal use of glaze (faience technique) for the façades of buildings. Egypt was also acquainted with glaze, and that at a very early date. It is found on the doors of the terraced pyramid of King Snofru, one of which is to be seen in a Berlin museum. But this form of decoration was never used so lavishly as in Assyria. When Place was conducting excavations at Khorsabad, he found two pieces of paint. One of these was red and easily dissolved in water. The other was blue, and when the artist accompanying the expedition attempted to use it for his sketches, he found it impossible, as it left an insoluble residue in his paint-pot. Finally it proved to be a glazing-colour, probably the same that was known as "lagward" to the Mohammedan potters of those countries. That the habit of covering the fronts of entire buildings with glaze became so popular in Mesopotamia, was due to both technical and aesthetic reasons. First of all, glaze was much more lasting than frescoes. Furthermore it imparted

Part of the faience decoration of an arch at Khorsabad. 8th century B.C.



under the brilliant sun of the East a lustre which no other material could give. We do not know how old this mode of decoration is; in Assyrian architecture, that is, 800 B.C., it was already at its height. In Khorsabad Place found the decorations of a city gate in an almost perfect state of preservation. The principal piece was a glazed frame above the arch, in which winged genii and rosettes alternated. The entrance to the courtyard of the harem at Khorsabad was also decorated with a faience relief. Of another frieze a piece has been preserved, which shows the King with his retinue, and even an offering to the god Assur was once executed in faience.

But all this pales beside the brilliant achievements of Nebuchadnezzar's artists in Babylon. It was they who covered entire façades with coloured glaze. The walls of the king's throne-room were decorated with faience made to appear like a line of pillars over a frieze of lions. A frieze of majestically pacing lions covered the walls of the street leading to the Ishtar Gate, one of the great double gates of the city, itself decorated with the figures of dragons, also in coloured glaze. The Babylon of Nebuchadnezzar must have been a fairy city. And yet only six colours were used, white, black, yellow-gold, light-blue, dark-blue, and green. The numerous shades of these principal colours probably resulted from inability to regulate the heat of the kilns exactly, and from the thousands of years which the tiles have lain in the earth.

Assyrian faience painting. The King and his retinue. 9th century B.C.

The picture would be incomplete if one failed to add that even these Babylonian decorations were only a beginning. Mohammedan artists in medieval Persia adopted the faience technique, and raised it to the highest pinnacle of perfection. Among other things they invented the art of lustration, of imparting the lustre of mother-of-pearl or rubies to the glaze by the addition of certain metallic oxydes. It is impossible to describe the beauty of such buildings. Who has never seen the glazed mosques and minarets in Samarkand or Bokhara, or at least the Mosque of Omar in Jerusalem and the buildings at Lahore, can have no idea of the brilliance of the Orient.

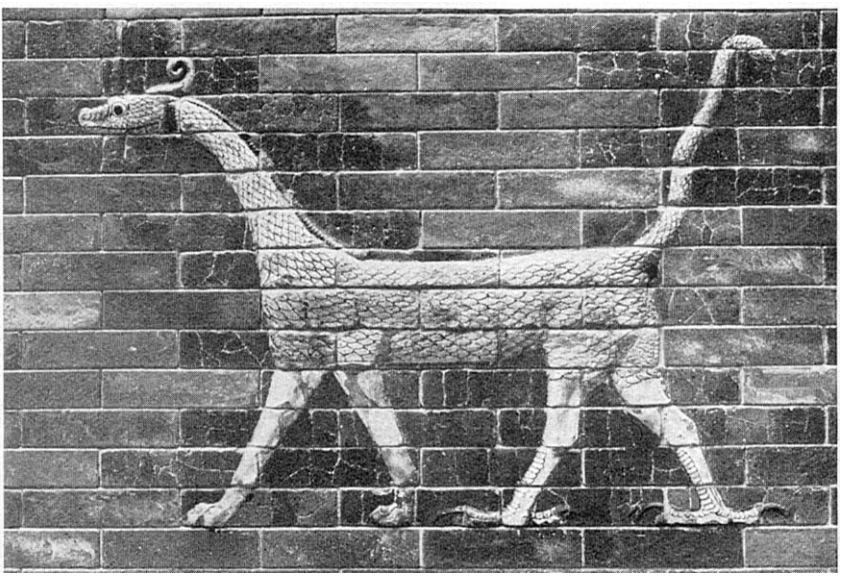


Figure of a dragon from the Ishtar Gate in Babylon. Faience 6th century B.C. *State Museum, Berlin.*

Historical Gleanings

Dressing the Gods

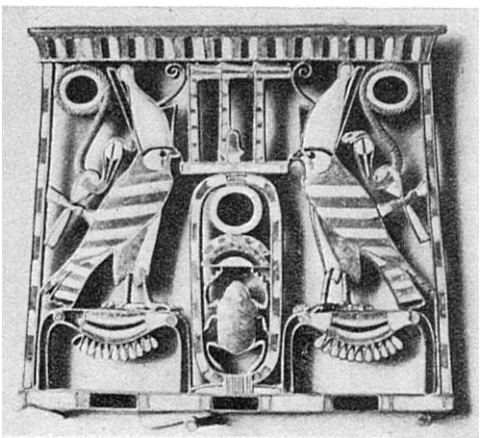
Clothing was in Ancient Egypt not only a necessity of daily life, but also had its religious significance. From an age where the conception of the gods was completely anthropomorphous down to the end of Egyptian history the custom of clothing and adorning the gods every morning persisted. The toilet of the gods was one of the principal cares of the priest. After opening the temple-doors in the morning to the accompaniment of the sacred formula, he first took yesterday's clothes from the figure of the god, also removing the cosmetics of the day before. Then the idol was clothed in a white robe over which the "great dress" was drawn. The next step was the renewal of cosmetics, and the replacing of jewellery and ornaments: bracelets, anklets, and the traditional headdress of two white feathers. After adding a necklace, the most popular jewellery in Egypt, an amulet, two red, two green, and two white linen bands, the priest might leave the temple and close the door once more. Every detail of the ceremony was accompanied by prescribed formulae, to which magic qualities were attributed; the priest had to be very careful, and make no mistake, otherwise the magic could not take effect. A. L.

Egyptian Jewellery

was traditionally inlaid work. The finest pieces executed in this technique, brooches and diadems have been found at Dahshur in the pyramids of the Middle Kingdom, and belong to the 2nd thousand years B.C. The kings owned complete suits of armour in this style.

The technique combines the precision of line typical of every branch of Egyptian art with an exquisite taste in colour. Following the lines of the design tiny strips of gold about 1/20th of an inch in height are soldered onto a small gold plate. The space between the figures of the pattern is then carefully cut out, giving the effect of fine fret-work; then the cells formed by the vertical strips of gold are filled with carefully cut pieces of lapis-lazuli, sard, or coloured faience. In the entire history of arts and crafts the precision of this work has never been equalled. The difference as compared with enamel-work consists in the fact that the latter is made by pouring coloured glass in a liquid state into the cells, whereas the Egyptian technique, according to which precious stones were cut to fit the pattern, required much greater precision. A. L.

Egyptian brooch. Middle Kingdom. Museum, Cairo.

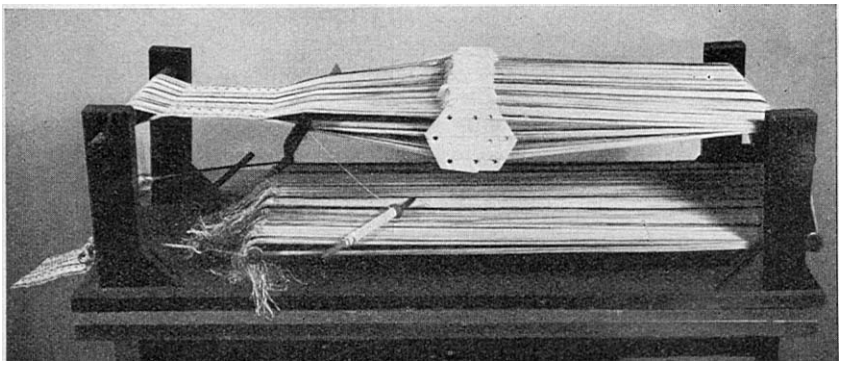


Egypt as seen by a Greek Historian

That the first stage of acquaintance with the vastly different culture of Egypt gave the Greeks of the classical period the impression of a topsy-turvy world, is shown by the account given by Herodotus (5th century B.C.), which though perhaps somewhat exaggerated, is nevertheless probably substantially true. He says that their habits and customs are the reverse of those of other nations, that in Egypt the women went to the market and carried on business there, whilst the men sat at home at the looms. When in mourning they let their hair grow long, instead of cutting it, as others did. They kneaded the dough with their feet, and clay with their hands. They had their lavatories indoors, and their meals in the open, saying that ugly necessities should be kept hidden, whilst such things as are agreeable and pleasant should take place in public. The Greek writer also commented unfavourably on the Egyptian script, which reads from right to left, and especially on the way in which this people regarded its mode of life as most in accordance with nature. In spite of the superiority which the Greeks felt towards Egypt, they nevertheless were greatly attracted by all that seemed to them mysterious, and they regarded the religious ceremonies of the country with peculiar reverence. W. N.

Egyptian and Babylonian Chronology

demands the adoption of complicated scientific methods for its proper understanding; one of the most important is that of mathematical astronomy. In documents and inscriptions eclipses of the sun or moon, unusual constellations of the planets and other natural phenomena are often mentioned, which accompanied some historical event. The time of these phenomena can be exactly determined, and with it that of the historical events. As both Egyptians and Babylonians had their own style of chronology this had to be coordinated with the dates calculated by means of astronomy. Frequently, however, it is not possible to fix the precise date of an event, but merely its simultaneity with other happenings. Another important factor is that the ancient peoples distinguished the years according to the names of their rulers, detailed records of kings were kept in the temples, which



Model of a board or card loom. State Museum, Berlin.

were made use of by ancient historians. The subdivisions of the Egyptian solar year are comparatively simple, owing to their co-ordination with the rise and fall of the Nile. The "Water-festivals" of the Egyptian calendar serve as a guide in this respect; i.e. the "Night of Drops" (June 5th) which marked the beginning of the river's rise, or the feast of the "Marriage of the Nile" (August 11th) which coincides with the period at which the river begins to flood the surrounding country. W. N.

So-called Board-Weaving

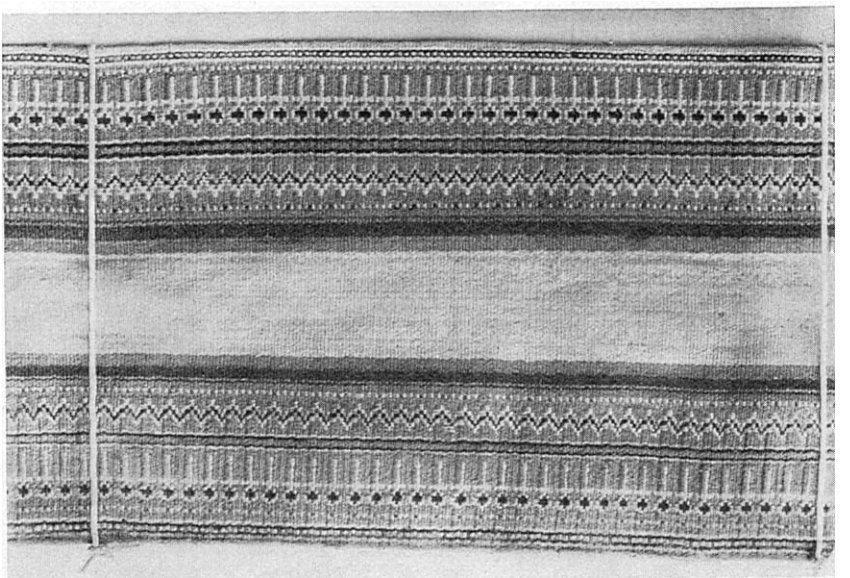
is a technique which was common in Egypt for the manufacture of ribbon-like fabric. The most beautiful of the pieces preserved is a scarf about 5½ yards in length now in the Museum of Liverpool, which may have belonged to Rameses III, and which would therefore date about 1200 B.C.

The small horizontal loom is so constructed that instead of a rod a large number of small boards are inserted into the warp. These are either square or hexagonal with a hole in each corner.

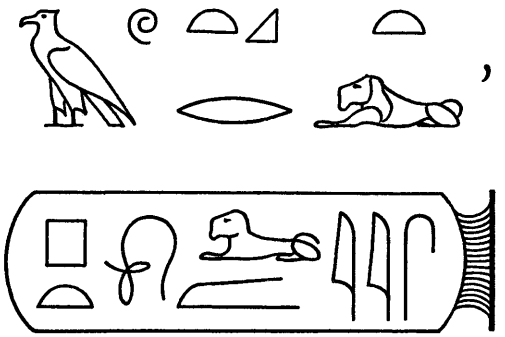
In the first case one leash is produced, in the second, two. As the threads of the warp are of different colours, very complicated patterns can be produced by turning the board. They are essentially the same zig-zag patterns as those common to other Egyptian fabrics discussed elsewhere in this number. A long row of Egyptian life-symbols is woven into the Liverpool sash. Here the warp-threads are mainly white, blue, and red. Yellow and green occur only in two rows of dots. The weft, which is scarcely noticeable, is undyed. The material is linen. Johl, who discussed this technique in his book "Alt-ägyptische Webestühle und Brettchenweberei in Alt-Ägypten", Leipzig 1924, counted no fewer than 342 warp-threads. A. L.

The Deciphering of Hieroglyphic Characters

and the establishment of the fact that each symbol was equivalent to a sound did not take place until the beginning of the 19th century. Before that the opinion was widely held that hieroglyphs were a species of picture-writing, in which each sign signified an idea or concept. This belief led to arbitrary and often fantastic interpretations. The famous 17th century scholar Athanasius Kircher (1601–1680) translated the



The so-called sash of Rameses III. Museum, Liverpool.



Above: The seven hieroglyphics which correspond to the sounds a w t k r t r (autocrator = imperator). Below: Ring of Hieroglyphics containing the name Ptolemy.

seven letters, which in reality signify a w t k r t r (αὐτοκράτωρ = ruler) and correspond to the title Imperator of the Roman emperors, as follows: "Osiris is the origin of all fertility and vegetation; the holy Mophta draws his virile power down from heaven into his Kingdom." It is not surprising that such fantastic renderings discredited all who strove to solve the riddle of the hieroglyphs.

A change was brought about after Napoleon's Egyptian campaign of 1798. An army of scholars accompanied the troops, and the result of their labours was laid down in the great work "Description de l'Egypte", which laid the foundations of modern Egyptology. The deciphering of hieroglyphics was furthered by a peculiar accident. In 1799 soldiers were digging trenches at St. Julien, a fort near Rosette in the neighbourhood of the western Nile delta, when they discovered a block of basalt, one side of which was covered with inscriptions in three languages. At the top were hieroglyphics, in the centre characters of the Demotic language, the idiom of the late Egyptian period, whilst the third inscription was in Greek. As the Greek writing intimated that all three inscriptions were of the same content, an attempt was made to elucidate the other characters. An additional clue was furnished by the fact that, as was well-known, beside the heads of Egyptian Kings in temple-paintings there is generally a ring filled with hieroglyphic characters, which was supposed to convey the name of the sovereign. As the hieroglyphic inscription on the basalt block contained such a ring (see ill.) and as the name of King Ptolemy occurred in the Greek, it was possible to assign certain sound values to the hieroglyphics of the ring This was first accomplished in 1819 by the English scientist Thomas Young. Independently of Young the Frenchman Jean François Champollion adopted the same method, and already in Sept. 1822 he put before the "Académie des Inscriptions et Belles Arts" in Paris a complete key. Champollion demonstrated his discovery in numerous publications, and at his death in 1832 Egyptology already possessed a number of absolutely authentic documents. W. N.

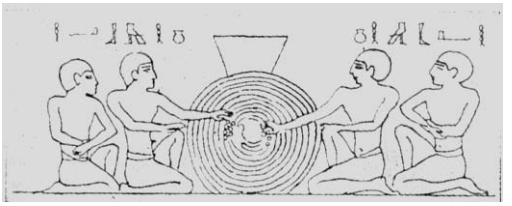
An Ancient Egyptian Snake Game

A mural painting in a tomb of the 3rd dynasty (2895–2840 B.C.) shows three different board-games. Two of them were described in the 19th century, an explanation of the third, a "snake-game", was attempted in 1920 by the Heidelberg Egyptologist Hermann Ranke.

The snake-game was played on a circular board, generally fitted with a handle, a board on which a coiled snake was depicted, the head being in the centre, the tail at the outside edge of the board. Several boards of this kind have been found in tombs of the early Egyptian period (see ill.). The ebony casket seen in the mural mentioned above shows other figures for a board-game, lions and dogs of ivory and six sets of stone balls. Nothing certain is known of the details of the snake-game. According to the two paintings showing the game, four players seem to have taken part. In the first picture all four players appear to be holding figures or stone balls hidden in their hands, apparently drawing lots to determine who shall begin. In the other pictures two players are placing their pieces on the board (see ill.). From the period after the end of the First Kingdom (about 2000 B.C.) there are no more traces of the game.

In his explanation Ranke remarks that this snake-game is connected with a game played–according to an ancient tradition—in prehistoric times by the two principal gods Horus and Set either for or with the teeth of a snake called "mhn", though the two games are not absolutely identical. In this connection Ranke also mentions a third game, which is known to us from several records of the "New Kingdom". This game, which was played on a board of 30 squares in two colours, was placed in the tomb with the mummy, that the deceased might play the game with a snake

Limestone snake-game-board, found in a tomb of the early Egyptian period. After Ranke.



Egyptians playing the snake-game. 5th dynasty. The two players seated nearest the board are putting the balls on the table. After Ranke.

called mhn. If he succeeded in taking one square after the other and winning his opponent's pieces, he could throw the snake into the water and kill it. This game was probably intended to protect the dead against poisonous snakes, and it is possible that the game played on the circular board had the same significance.

W. N.

Two English Pioneers of Research on Ancient Babylon

The first scholars who systematically examined and described the ruins of Babylon were two Englishmen: Claudius James Rich (1787–1821) and Sir Austen Henry Layard (1817–1894).

Rich went to the East in 1803 in the service of the East India Company; in 1807 he was in Bombay as the guest of Sir James Mackintosh, whose son-in-law he later became. In 1808 he was appointed Resident in Bagdad. From there he made many expeditions to all parts of the ancient Babylonian Kingdom, the results of which he published in 1813 under the title "Memoir on the Ruins of Babylon" in the Viennese periodical "Fundgruben des Orients", and illustrated with crude sketches. In 1815 the treatise was published in England in book-form under the titles "Narrative of a Journey to the Site of Babylon in 1811". Rich spent the major part of 1813 and 1814 in Europe; he then returned to Bagdad, and travelled widely in Asia Minor, Kurdistan, and Persia, in 1821 he died of cholera in Shiraz.

From 1845–1849 Layard carried out extensive excavations in Mesopotamia for the British Museum, and with his book "Inscriptions in the Cuneiform Character, from Assyrian Monuments" he laid the foundation for the cuneiform research carried on later at the instigation of the trustees of the British Museum. His most important travel-books are "Nineveh and its Remains" and "Nineveh and Babylon". Layard's later years were devoted to politics. From 1861–1866 he was an Under Secretary of State, in 1868 a Cabinet Minister, and from 1869–1880 Ambassador; in this latter capacity he was of service to Lord Beaconsfield in furthering the latter's Orient policy. W. N.

Thessalos of Tralleis

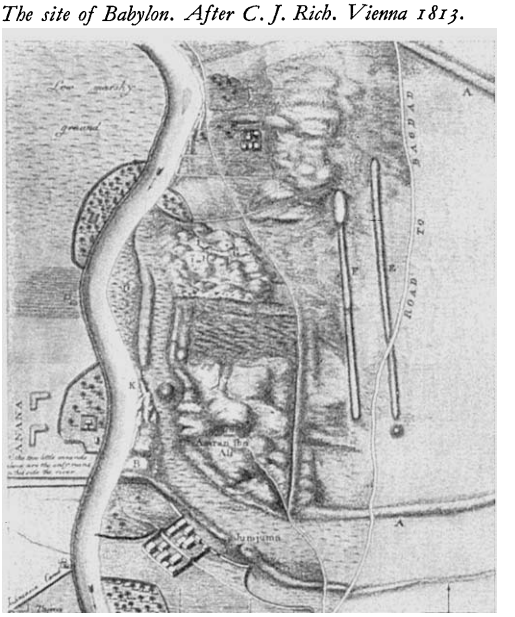
The medical profession was no less overcrowded in Ancient Rome than it sometimes is at the present day. Nevertheless, a motley collection of quacks appear to have thriven in the city, much to the disgust of more orthodox practitioners. Whereas we hear of physicians impelled by circumstances to become gravediggers, gladiators, dyers, dye-merchants, shoemakers, and blacksmiths set up as physicians without possessing the most elementary qualifications, some of them, as the famous physician Galenus reports, not even being able to write. One of the most notorious examples of such quackery was set by Thessalos of Tralleis (Asia Minor), the son of a weaver. He must have achieved a certain eminence, as he was bold enough to dedicate his works to the Emperor Nero. The orthodox physicians whom he treated with studied affrontery—his tomb on the Via Appia bears the legend Conqueror of the Physicians—considered him a presumptuous fool. He outraged them most by stating that medical science can be mastered in six months, and not content with propounding this startling theory, he began to instruct the rabble who were his followers in such six-months' courses at the sickbed. Galenus cannot altogether be blamed for contemptuously calling him a Jack-of-all-trades, and his disciples "The asses of Thessalos". Nevertheless, he seems to have achieved some measure of success in practical medicine, and today he is in some respects less harshly judged than by his contemporaries.

G. A. F.

The Area of Babylon

The excavation of the complete area of Ancient Babylon was begun on the 26th of March 1899 by the German Oriental Society, and is, owing to the very extensive area surrounded as it is by a long outer wall, not completed yet. The principal parts of the town have, however, meanwhile been unearthed, especially the hill—known in Arabic as Kasr—on which stands the great palace which Nebuchadnezzar (604–562) built in extension of the one erected by his father. The Kasr is the oldest part of Babylon.—"Bab Ilani", the correct form of the name Babylon, means "Gate of

The site of Babylon. After C. J. Rich. Vienna 1813.

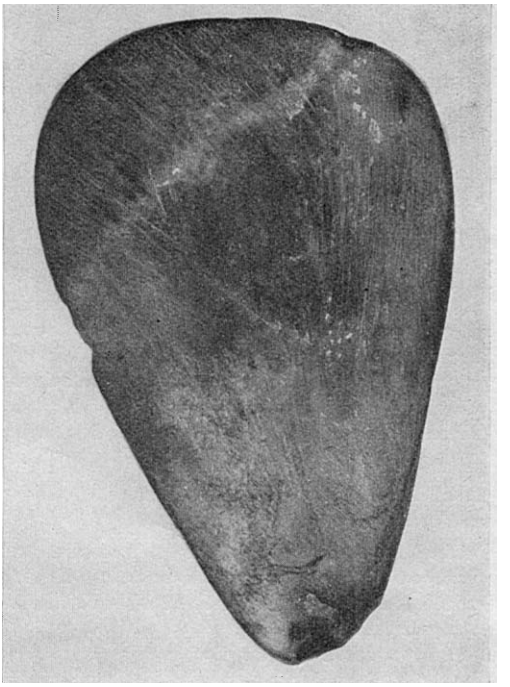


the Gods". The palace dominated the entrance to the largest and most famous temple of Babylon, dedicated to the god Marduk, and known as "Esagila", situated somewhat to the south of the Kasr on Amran. Ibn Ali Hill, close to this hill is "E-temen-anki", the ruin of the Tower of Babel. The Ishtar Gate and the superbly paved processional street with its famous animal-friezes in coloured faience are also part of the Kasr. South-east of the Kasr was the principal residential and business quarter, known to the Arabs as "Merkes", 'Centre of the dwellings'. Entire house-fronts have been uncovered here, and a large number of household utensils found. The present state of the excavations makes a complete reconstruction of the different architectural periods of Babylon possible from the time of Hammurapi (2000 B.C.) to that of the Arabs in the Middle Ages. During this time Babylon had many different masters, Hettites, Kossaeans, Assyrians, Chaldaeans, etc. It was destroyed and rebuilt, the latter most notably by Nebuchadnezzar. W. N.

Palettes in Egyptian Graves

The oldest Egyptian artist's implement was the palette of green slate found in the hands of the dead in prehistoric graves. On it the Egyptian mixed the green paint with which he painted the rims of his eyes. This practice no doubt possessed magic significance, and therefore the dead were equipped with a palette. Protection against the monsters with which the Egyptian believed the Underworld to be peopled determined to a large extent the articles placed in the graves. To this day children's eyes are painted black in India as a protection against magic. The paint used in Egypt was powdered malachite.

Palette of an Egyptian King. Early period.



Egyptian palette for cosmetics. Prehistoric period.

In primitive times the palette was generally oblong, pointed at one end. But it might also have the shape of a hippopotamus, a tortoise, a fish, or of some other animal. Having more than everyday importance, it will be readily understood that from a very early age palettes were made which were veritable works of art. Palettes have been found which are so large that they could never have served their real purpose. Perhaps they were hung on the walls of temples. They show a paint-pot carved into the stone, and surrounded by figures of the most varying kinds. Fantastic animals were skilfully grouped into the strange and difficult outline of the palette. Other palettes are actually monuments of victories in battle. They show the king mowing down his enemies in the guise of a wild bull, or felling an adversary with his club, or reviewing a field of battle. It was by such work that the relief-style of Egypt was developed.

In conservative Egypt tradition died hard, and in later, historic times this green paint was remembered: painting the eyes of the mummy was an important part of the burial ceremony performed by the priest.

Palettes were still placed in the graves. There connection with painting the eyes was however forgotten, and they became painters' palettes. In Tut-ankh-Amon's grave three were found, all rectangular in shape, and fitted to hold paint-brushes. As the Egyptians did not

mix the colours, the surface of the palette was not large. A gold-inlaid palette of Tut-ankh-Amon's contained the colours red, brown, yellow, black, and green; a sixth colour, presumably blue, has been lost from the palette. A second royal palette this time of ivory, contained only the colours black and red. The same colours were found on a similar ivory palette, which had once belonged to a princess named Mert-Aten, but which had also been placed in Tut-ankh-Amon's tomb. A. L.

Ancient Babylonian Pounding Mills

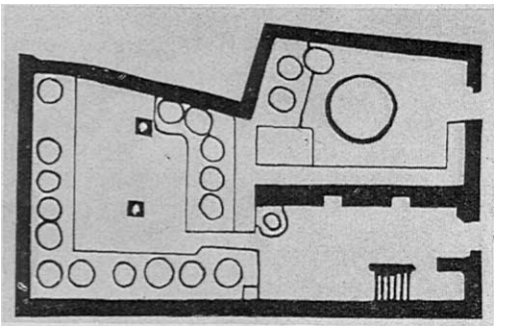
used for grinding grain and probably also for other purposes have been found in large numbers among Babylonian ruins in all parts of that ancient country. They consisted of a flat understone, usually hollowed by use, and a second stone with which the substance in question was pounded (see ill. below). Both stones were of fairly hard basalt, a black volcanic stone. Of the circular hand-mills, such as are found today in every Arab household, only a very few have been found in the uppermost strata of excavation. These probably only came into use at the very end of the Babylonian period, and then only in very small numbers. Conic mills as used by the Romans appear to have been unknown in Babylon. W. N.

An Egyptian Dyer's Workshop

belonging to the Roman period is found among the ruins of Athribis, near Sohag, which were first examined by Flinders Petrie.

It consists of three rooms. The actual workshop had no fewer than 16 vats, carefully lined with cement and let into a stone bench which ran round three sides of the room. Most of them still showed the blue-black of indigo, whilst some were red. Immediately adjacent was the rinsing room, with a deep water-tank and three vat-like pits. A room separated from the others by a thick wall probably served for the reception of customers. A thick wall was necessary, as the air in the workshop must have been extremely foul owing to the large quantities of urine which were used

Ancient Babylonian hand-mill being used by an Arab. After Koldewey.



Groundplan of a dyers' workshop at Athribis.

in the process of dyeing. From this room a staircase led up to the living rooms and from there to the flat roof where the stuffs were probably dried. A. L.

Parchment, an Invention of the Ancients

Nowadays the word parchment invokes visions of ancient documents and treaties or of bulky volumes, jealously guarded in museums, archives, and libraries, and containing ancient lore accessible only to the happy few. And indeed, the time is long past when the skins of animals were of prime importance as writing-materials. According to Pliny, the idea of using specially prepared animal skins for this purpose originated at Pergamon in Asia Minor. When the Ptolomies, the kings of Egypt, learnt that King Eumenes II. (197–159 B. C.) wished to found a library which should rival that of Alexandria, they forbade the export of papyrus, the writing-material at that time customary. Thereupon it was decided at Pergamon to use animal skins instead of papyrus for their scrolls. The new material was called pergamentum (parchment) after the town where it was invented. There is, however, no doubt that animal skins were used as writing material long before the date given by Pliny. It was an ancient custom among the original inhabitants of Italy to inscribe agreements between two tribes on the skin of the animal sacrificed when the treaty was concluded. Gradually this custom lost the magic aspects originally governing it, and the durability of the skin as a writing material became the prime consideration. Damaged papyri were transcribed on to parchment, and under Constantine the Great (4th century A. D.) the demand for parchment exceeded that for papyrus. The dressing of parchment was done by the following process. The hair was removed from the skins of sheep, goats, donkeys, asses, calves etc., which were then dressed with unslaked lime or dates, according to whether a stiff or soft material was desired. That was the practice of the Arabs, the method adopted by the Ancients was probably very similar. In the West it was customary to rub the flesh-side of the skins with lime, and after leaving them lying for some days, to scrape the hair off. The skins were then soaked in limewater, dried, strewn with chalk or lime, and then polished with pumice stone. G. A. F.

Scientific Notes

Roots and Wood of the Barberry Shrub

yield a yellow dye of basic quality, which was principally used in dyeing leather and wood. The barberry is native to Central and Southern Europe; its wood is used by cabinet-makers for inlaid work The yellow dye known as berberine, is found in all the ligneous parts, especially in the bark of the roots, but not in the yellowish red berries.

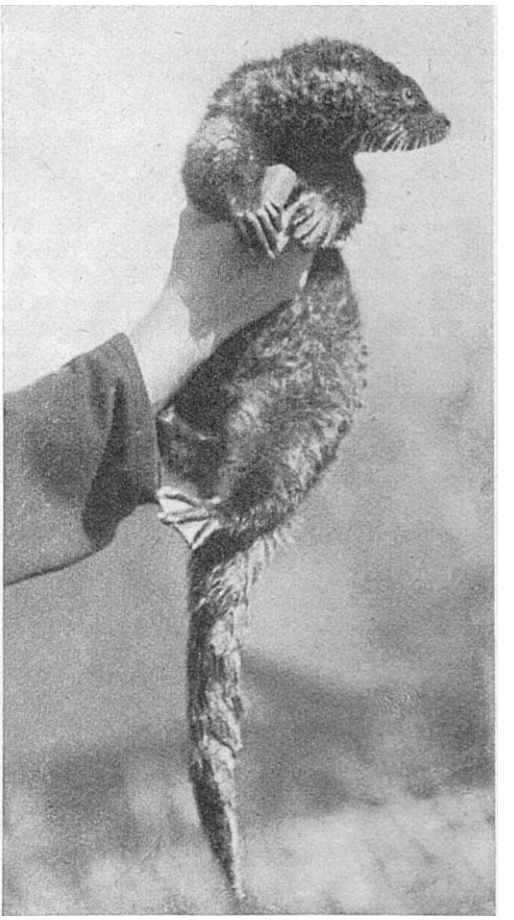
Though, like the basic aniline dyes, berberine can be applied directly to the fibre, it is of very little value in wool and silk dyeing, owing to its very poor fastness to light. It was formerly of importance in the manufacture of glove-leather, but has been entirely superseded by yellow chromate and picric acid. K.

A Hydrophobe Otter

It is a controversial question among biologists, whether the behaviour and appearance of animals is influenced more by heredity or by their surroundings. An interesting light is cast on this problem by observations made at the Budapest Zoological and Botanical Gardens. In the winter of 1936 a young otter was presented to the gardens by an anonymous donor. The animal was first placed in a cage, where it displayed its agitation by squealing and jumping up at the bars. The zoologists noticed that its fur, instead of being smooth, was wooly like the hair of a negro. In order to quieten the animal its cage was opened, whereupon it immediately jumped out, and nestled under the keeper's coat, thus demonstrating its tameness. More surprising still was its behaviour when taken to a pond. The otter could not be persuaded to go near the water, usually the chosen element of its kind. When fish were placed in the water to give it is accustomed food, the little animal waited patiently at the edge of the tank until a fish came near enough, whereupon, with a swift movement of its webbed foot, it jerked it on to dry land and devoured it.

The otter persisted in this unorthodox behaviour until the summer, when it was induced by the increasing heat to take to the water. By midsummer it had assumed the normal habits of its kind, and its fur became smooth. A letter of the donor solved the mystery; the otter had been caught when very young and kept indoors, never coming into contact with water.

Similar anomalies brought about by changed environment are well known to zoologists. Lions which were born in the Leipzig Zoo, and sold to Kairo, could not stand the African climate and died. Before the war an excellent strain of horses, mostly white or grey, light, graceful animals with a pronounced touch



Tame otter. Photo: Zoological Garden, Budapest.

of Arab blood, were bred at Lipizza in Croatia. They were luxury animals, and much admired for their beauty and delicate build. After the war they were removed to the Kisbér stud in Hungary, and in a few years the breed changed entirely, producing much larger, heavier animals with little of their former beauty.

Man, too, is subjected to such changes brought about by environment. For years American anthropologists have noticed that the Americans are beginning to approach the Indian type; the children and grandchildren of small-statured immigrants are becoming taller, and developing the keen, sharp profile which characterized the Indians of the prairie. M. B.

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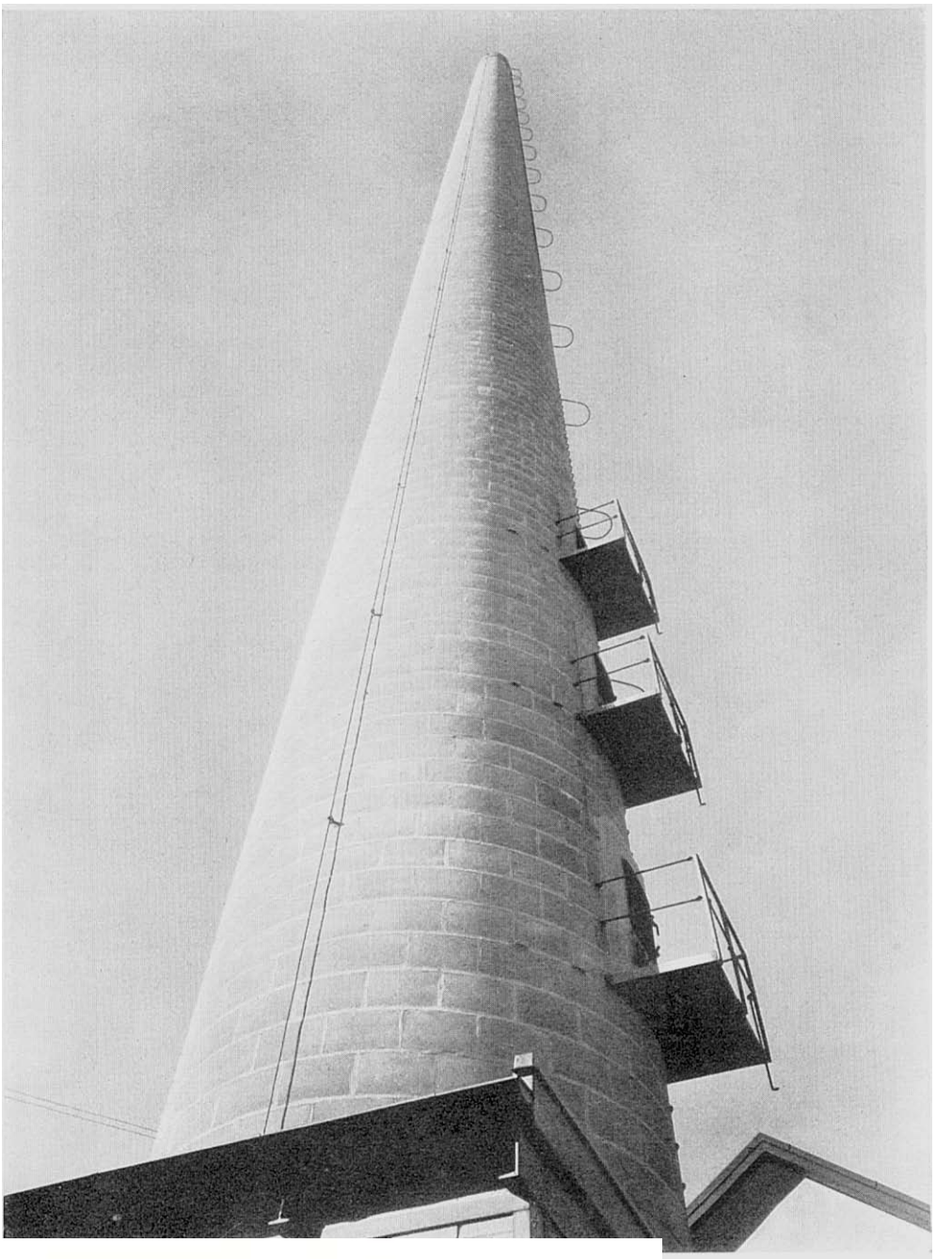

Chimney-stalk in the main works of the Ciba Basle

Height of the chimney: 246 ft (one of the highest chimneys in Switzerland) • Outside diameter: bottom 13,45 ft, top 6,56 ft • Weight of the chimney: 770 tons • Oscillation at the top: 2 inches • Time for ascending (for a skilful professional climber): 4 minutes • Material: on the outside re-enforced concrete, on the inside fire and acid proof Chamotte plates, between the lower ones there is a layer of air • Access in case of repair: by ascending from the outside and passing down the inside by means of a whim • Time of construction: 120 working days • Purpose of the chimney: outlet for the waste gases from the azo-works • At the bottom part of the chimney there are two ventilators of 35 H. P., which effect an outlet of 39 cub. yd. a second.

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