

Isaac H. Godlove

The Earliest Peoples and their Colors

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Introduction

My father, affectionately known by everyone as I.H., spent his life on the three foundation areas of the Color Council: science, art and industry. In science, he published many journal articles. In art, our family files have many of his sketches, and of course he was an ardent student of the history of color, culminating in this volume. In industry, he started with the Munsell Color Co., then worked at duPont and finally General Aniline and Film. He was special color editor for Webster's International Dictionary 1921-1932. He was editor of the Color Council Newsletter for 18 years until his death. From his notes and letters we believe that he began work on the history manuscript in the early 1940s. A complete biography can be found in ISCC Newsletter No. 114, Sept. 1954, which can readily be found on the internet by searching on I.H. Godlove.

Following the earlier, untimely death of my mother, he later married Margaret Noss. She worked closely helping organize his notes and files on the history manuscript and helped prepare the newsletters. He enjoyed playing bridge and tennis and was in excellent condition until his death in 1954 from a ruptured appendix, at the age of 62. After his death Margaret helped establish the biennial Godlove Award and continued organizing his files.

Newsletter No. 114 contains many individual tributes to him. This issue also provides a list of 46 publications by him or with coauthors. The Jubilee Issue, No. 115, Nov. 1954, the 100th issue under his editorship, contains additional tributes. Here is one quote from Dorothy Nickerson, ISCC President 1954-55: "While he is not here to receive our congratulations on his first one hundred issues, we rejoice – as he would have wanted us to – that this Jubilee Issue can serve as such an appropriate memorial to him."

Later it became clear to Margaret that organizing and editing the notes in preparation for possible publication of the present manuscript was a formidable task. Happily, Rolf Kuehni recently agreed to take on this task and to place it on the ISCC web site. The Godlove family is grateful to him for all of his fine work. Incidentally, he received the Godlove Award in 2003 for his contributions in the field of color. I believe my father would be very pleased and proud of the resulting monograph.

Terry F. Godlove

The Earliest Peoples and their Colors

Coloring is the sunshine of art, that clothes poverty in smiles, and renders the prospect of barrenness itself agreeable, while it heightens the interest and doubles the charm of beauty.

-- Opie

Foreword

From time immemorial men must have been intrigued by the glowing scarlets and oranges of the setting sun, delighted by the mystery of the rainbow, entranced by the deep and fathomless blue of the zenith sky, a blue not too different from that of child eyes. The peacock's proud plumage, the golden browns and russets of autumnal foliage, the yellow-greens of luxuriant growing vegetation in shadow and in bright sunlight, the flickering yellow light of a tallow lamp in the deep recesses of early man's caves painting restless shadow-pictures on their walls, the deep red of spilled blood; -- all these were but a few of the vibrant notes in the stirring color-symphony of life.

The brilliantly colored corollas of the flowers which constituted nature's embroidery on the dress of her landscape, were also throbbing accents in a more drab chant. Gay insects or otherwise repulsive beetles of prognathous mien were garbed in richly chromatic green and gold scales whose iridescence delighted the eye. Earthy clays yielded to our ancestors the cave men, and even to his forbears, warm red and yellow ochers; and we have found the bone tubes in which he carried grease paints made from these for decorating his body. Forerunners of Cleopatra spread malachite green on their cosmetic palettes wherewith to shade and embellish their eyes. Noting that life ebbed and fled when too much red blood was spilled by lance, stone mace, fang or claw, it was natural for primitive minds to reason that red substance was life-giving: So the men of the last Ice Age buried their dead in red ocher or painted the bones with red paint, starting a custom which lasted many thousands of years, as we shall see. Such was the provenance of the "Red Lady of Paviland," found in a Welsh cave in 1823 along with periwinkle shells and ivory implements to make her happier in the after-life. But really she was no lady at all; for debunking Science proved "her" to be a youth.

But women have played a role in our color-drama in a less spurious way, if not from the very beginning, at least from an early stage. For there is little doubt that they were the makers and the decorators of the infinite variety of pots and vases, a task included with their many other chores so as to leave their lords the men free to bear the weapons necessary for fighting and food provision in the chase. At least this was the case till pottery-making became commercialized.

Brilliant dyes too were to be had when savage men had reached the state less advanced even than that we dignify with the name "civilization": indigo, scarlets from insects and vegetable sources; royal purple from a mollusk. The excavator of the Royal Tombs of Ur of the Chaldees told us how 68 women, on the death of their husband the king, donned their scarlet-dyed garments, their wrought-gold ornaments, their silver hairpins, their beads of blue ultramarine and red carnelian, walked calmly into the death-chamber of their lord, chewed

hashish (probably) till unconscious, and were laid down gracefully in regular formation to await death and eternity happily with their master while workmen sealed up the tomb. The legend of the discovery of the priceless purple so prized by ancient royalty, though suffused with quaint whimsy, illustrates also that basic truth in some elements of legendary lore which it has been recently science's roll often to confirm. A second-century writer told us that in the old days of Hercules, hero of the Twelve Labors, a nymph of Tyre was one day walking along the shore of the sea with her lover, Hercules, and her dog. Suddenly the dog darted after a shell fish and bit into it. The dog's lip was dyed a rich purple! The nymph immediately expressed a desire to possess a gown of that color. (If she were a modern, she would have demanded that it be "of that exact shade.") Hercules, who could accomplish anything, even the pleasing of women, brought her wish to fulfillment.

During the last century man has competed with nature's dyemaking, and from the viscid black tar of the coke-ovens he has brought forth a myriad of dyes whose hues rival those of the rainbow or Joseph's cloak.

The clays with which nature coated the eroded surfaces of her hard rock yielded not only paint-pigment for man to use in decorating his body or his dwelling, or for woman her cosmetic; they served as plastic bases for the vases which in many times and climes were colorfully ornamented. Patient archaeologists excavating the ruins of ancient cities and settlements, to dig up and reveal the remains of early cultures in the Near East, from whence flowed slowly into Europe to build its civilization -- our civilization -- have long used pottery wares, especially color-decorated vases, as criteria for identification of racial elements and cultures and their interacting influences; also as means wherewith to date and trace the origins of the many civilizations. Hence we shall speak of Painted-pottery cultures; Buff-ware, Red-ware and polychrome-ware cultures. ("Red-ware" by controlled firing could be made black, or gray in imitation of silver vessels, or parti-colored red and black). Such cultures and others spread over great areas and were measured not in decades but in centuries, before even the history of ancient Egypt began! The decorative schemes of pottery served, as has been said, not only for identification, characterization, dating and tracing of origins; but can serve to illustrate how universal and inevitable is the urge to take a hand in nature's decoration and coloring of our environment, and thus of our lives.

Because of the great diagnostic importance of pottery in the identification and dating of peoples and their cultures, it is appropriate to consider here the process of pot-making and coloring. Although pottery was a relatively late invention, one might almost say that (after the earliest beginnings) prehistoric archaeology and "pre-history" are founded on the study of pottery. While the varied forms and techniques are of prime importance, the colors too very often have important diagnostic value. Before the invention of pottery, liquids were contained in gourds, baskets lined with clay or leather bags. Naturally, therefore, we find early pots in hemispherical gourd form, decorated with zigzag lines imitating the old carrying-sling for the gourd; basketry forms with "geometric" patterns derived from the old woven work (checkers, etc), and leather-bag or bottle forms often with lines to represent the old girth-band and rows of impressions to imitate seams and stitching. The "invention" of pottery itself may have evolved from the use of clay-lined baskets, the plastic clay at first being hardened by the sun, later by controlled firing.

The vase colors depend both on the chemical nature of the available clay and upon the

firing. The most important "impurity" in ceramic clays is iron (ferric) oxide, whose presence on firing yields red to brown colors, even though the original unfired-clay color may have been yellow, green, blue or black. If 4% to 15% ferric oxide is present, proper firing at 900°- 1050° will produce a beautiful deep red. By "proper" firing we mean usually slow firing within the indicated temperature range with the use of an oxidizing atmosphere (plenty of air). Over-firing may yield "muddy" browns, while under-firing may produce grays, buffs or mottled colors. The iron of clays has a chameleon-like nature, for it can produce also variously tinged buff colors, as well as oranges, brick red and dark gray. If less than 3% iron oxide is present, the color may vary between buff and a poor white. If too much calcium or magnesium is also present, the color may be yellow, drab or gray. Too much aluminum replacing iron yields a pink, cream, ivory or white color. When the iron is present as hydroxides (or "hydrated oxides") the colors tend toward yellow to cream; when as carbonate, toward gray. Organic matter (bitumen, oil, etc.) in the clay tends to give dark grays, blacks and browns; but alternatively, a smoky fire (reducing atmosphere) by depositing carbonaceous matter in the pores of the clay, also produces grays and blacks, even blue-black.

A potter may apply a clay wash containing iron to obtain the red may color or he may fire the vessel upside down in the embers of the kiln, or in other ways, to produce a black-topped ware, with other parts red. He may incise or impress patterns on the plastic clay and emphasize them by white filling or use other colors ("incrusted ware"). He may burnish the whole vessel, or parts of it in patterns, to enhance the color by means of added glossiness. He may go further and give the vessel a "slip," that is, a coating of finer and more vividly colored clay which is fired on the vessel (perhaps changing color thereby). This may be left on portions only of the vase surface, by wiping off some of the slip to disclose the body-clay color ("reserved-slip ware"). He may use both slip and burnish, as was done in some very early pottery found at Jericho in Palestine. It is well to distinguish here a slip from a "wash." Both are clay of the consistency of cream, but the wash is a cheap substitute for the slip, containing lime, ocher or other pigment. But, unlike the slip, the "wash" (when the term is correctly used) is never fired; it is applied to a plain vessel after the firing.

The painting of simple geometric designs on the vessel was presumably a development of the use of a slip, in an attempt to imitate ancient parti-colored materials such as basketry. Basketry itself is marked by symmetry and "rhythm" in a geometric design, while leather work which was the origin of another tradition of pottery-painting, is less symmetrical. The pigments employed of course had to be stable to the high firing temperatures, in some cases after first changing color somewhat, so that the painter had to think in terms of the final colors rather than the colors as applied. Hence inorganic others, umbers, siennas and other native "earths" were used. Organic matter, however, was also used, applying the pigment after firing ("crusted ware"). The potter usually desired to produce sufficient contrast for variety along with harmonious color effect, so often used red, dark brown or black on a "ground" color which was pale buff, pink or other light color.

The use of parti-coloring (as red and black), contrasts of slip color with the natural color of the baked clay, and polychroming arose from an urge for variety combined with sufficient sense of order in the ensemble not to be confusing, the whole leading to a pleasing sense of contrast. That such color contrasts were pleasing in the work of ancient craftsmen is also evidenced in the existence in early times of the processes of cloisonné, champlevé, inlay,

repoussé and chasing. The first two of these are the opposite of each other. In cloisonné work, open cells made usually of flattened wire are fastened to the metal surface, generally by means of solder. The cells are then filled in with inlay or enamel. Often semi-precious stones such as garnets, carnelians, lapis lazuli (natural blue ultramarine), or even glass, are put between the cloissons. In champlevé work, recesses are cut into the metal surface by means of chisel or graving tool, and the troughs so formed are filled in with the material of contrasting color. In repoussé work, the proximate aim is at relief, but the ultimate aim is no doubt by means of punches in the metal to roughen the surface and so diffuse the light reflected from it as to secure contrast of texture. "Repoussé" strictly refers to work done from the back, "chasing" to work done from the front of the metal.

After this brief digression from pottery-color contrasts to color-contrasts in other fields, we return briefly to pottery to remark that pottery was a relatively late human invention. Thousands of years before its advent our "cave-dwelling" ancestors, as we have indicated and shall briefly describe, had developed a cave mural art, culminating in a great polychrome animal art. Formal burial customs perhaps originated still earlier; and we have mentioned the constantly recurring red-ocher interments. Sporadic glimpses of still earlier times reveal uncertain evidences that such earliest documented utilizations of color were preceded by early man's decorating of his own body and his implements. The craving for beauty is a deep-seated human urge. Beauty is not resident merely in color; but one does not have to be a sophisticated color-devotee to realize, after reviewing the age-old evidence, that the love and appreciation of color is firmly ingrained in the human consciousness. Perhaps a more basic urge for variety along with a sense of order, at which we have just barely hinted, is an important ingredient of the age-old love of color. But that is a subject for the color-psychologist and the theorists of esthetics. However, it is neither platitude nor extravagant statement to assert that from remote times to the present, color has played fascinating and ever more potent roles, both utilitarian and esthetic, in the drama of life.

The scope and function of this work precludes our treatment of the origins of art and color in anything more than sketchy outline form. Nor is this a history of color merely, much less of art. Though we must leave to others the psychological, social and artistic aspects of the Why of color usage, we shall regard it as our task to review briefly how men have used color throughout the ages, how they applied colors to their invented products, the coloring agents and gamuts that were available, and perhaps even the combinations employed and enjoyed by various folk in various periods.

The ubiquity of color and the universality of its influence in all pre-historical and historical periods fails to astonish the color-specialist; indeed he regards such primacy of interest as inevitable in the nature of color experience. He is equally confident that the layman, made consciously aware of the facts, will find the subject absorbing and even fascinating. For the dominant role played by vision in our acquisition of knowledge and experience is too well known even to the layman to need elaboration; and the color-specialist knows, that every visual sensation is in part at least a sensation of color. As stated by the psychologist Ewald Hering, "Our visual world consists essentially of differently presented colors; and objects as seen, that is, visual objects are nothing but colors of different nature and form." Or, as expressed by Clerk Maxwell, physicist, "All vision is color vision, for it is only by observing differences of color that we distinguish form."

Chapter 1 Outline of the History of Color

110,000 B.C. (?) Burial in red ocher and similar practices were prevalent in Mousterian times; body painting, begun earlier, was probably continued. (See the entry a few items below and the Introduction.)

100,000 B.C. (?) There are signs of artistic awakening in Chatelperronian-culture (early Aurignacian) times; sculpturing, engraving and painting all appeared; sculpturing came to fruition first, while engraving developed more slowly. Aurignacian man's early paintings were simply outlines in red, black and yellow, which have no more relation to the actual colors of the object than do our own drawings in black pencil; the sculpturing consisted of animals in relief; the engraving of simple outlines of animals in absolute profile; at first only two legs were indicated; often eyes were omitted, possibly having originally been painted in; red in some cases of engravings and reliefs, traces of red paint have remained; probably the oldest forms were parallel curves, spirals, serpentines, meanderings and interlacings traced with the fingers, generally with three, or with a forked branch or toothed instrument.; the simplest were meandering parallel lines in red or yellow; also drawings of animals traced with the finger in clay, a form of engraving; but at La Pileta (Spain) these digital lines were painted in yellow on the solid wall. There were also painted representations of human hands in black and red; these were both in a positive form, made by soaking the hand in paint and applying it to the surface, and in a negative form made by painting around the hand held on the wall. There were finally monochrome drawings in black or red, single thin linear outline tracings, without a trace of modeling, indicating only a silhouette, with only two legs portrayed.

80,000 B.C. (?) middle Aurignacian mural paintings showed some modeling of the colors, but this variegation was not greatly developed; the characteristic paintings were black and red monochrome silhouettes. But primitive drawing and engraving had begun' to replace sculpture, while ornamentation developed but retained a simple geometric character. There occurred also the first plastic representations of the human figure in the round, the Cro-Magnon artist taking as his subject chiefly the female figure. The "Venus of Brassempouy" from the beginning of the period is typical; but we shall reserve the discussion of these figures for the next culture period. (The Aurignacian-culture folk spread from Syria and Palestine into the Caucasus region of Russia, but did not penetrate into the southern Russian plains; it then skirted the northern shore of the Black Sea and reached the caves of the Crimea; it pushed westward and separated the two cultures which were also originally called Aurignacian (Lower and Upper), but are now called Chatelperronian and Gravettian; the former sent a branch into East Africa and another into Northeast Europe, where it developed into the Gravettian. From the Aurignacian and Gravettian centers, migrations then poured into Central and Eastern Europe along the southern edge of the ice-sheet, forming cultures which succeeded and influenced each other, until at the limit of their journey they formed the classical sequence called in France by the old names, Lower, Middle and Upper Aurignacian. After passing through Bulgaria, Rumania, Hungary and Austria, the Aurignacian impinged upon the still developing Chatelperronian. The Chatelperronian culture is generally attributed to the race found at Combe-Capelle (France), with very long skull form, moderately broad nose and short stature; the Aurignacian culture is

attributed to the Cro-Magnon type, with long, medium low skull, broad face, narrow nose, and very tall stature; the Gravettian culture may be due to the race of mammoth hunters found at Brunn and Predmost in Moravia (Czechoslovakia) with narrow noses and faces and moderate stature. Related to all of these was the type of a skeleton found in terrace gravels high above the Thames River in England; it could have been ancestral to some of them. Related also to all of these was a race of moderate stature, responsible for rock paintings and engravings in French North Africa and for an Aurignacian-type culture.

50,000 B.C. (?) The period of early South African and East African paintings associated with cultures not yet clearly characterized. In South Africa, there were several series of paintings with stylistic differences as well as execution in differently colored pigments. The oldest series was in black, the next in white, while at another site early paintings were yellow and then "bright red"; not so old described were a "dark claret" series described in 1928, followed by an earthy yellow and white series culminating in a polychrome series. In zones in a certain well-studied cave were found numerous specimens of raw pigment, consisting of balls, pencils and fragments of yellow ocher and red and brown hematites and others. The wall-painting technique showed that the animals and figures were first drawn in outline, and then filled in with chromatic pigment in the way a child uses crayons. The associated cultures make up what is known as the "Middle Stone Age Complex," roughly contemporary with the Upper Aurignacian culture of East Africa. (Associated with this complex of cultures was the "Boskop man," known from a skull found in the Transvaal in 1913; and "Florisbad man," found near a hot springs north of Bloemfontein; the latter is a transition from the former, a great-brained man with smooth forehead, roughly contemporary with the Neanderthals and Cro-Magnons of Europe, to the earlier Broken Hill man, found in 1921 in Northern Rhodesia, which was small-brained and beetle-browed. The Boskop and Florisbad men are regarded as possible ancestors of the artistic modern Bushmen and Hottentots, who were known to have painted upon the walls of the caves and rock-shelters in which they lived.

For East Africa, L.S.B. Leakey in his "Stone Age Africa" (1936), distinguished 13 styles of painting, of which the first ten are probably of Stone Age date. The first five styles are described as follows: (1) The earliest figures of animals in red with the whole figure colored, except the face, which is drawn in thick outline only; (2) very curious human figures in "an unusual purple," rather badly drawn animals in the same purple, and large areas of concentric rings of dots drawn with the fingertip; (3) figures in which ostriches and giraffes predominate, drawn in outline in a purplish red; (4) a few very indistinct (and very uncertainly classifiable) black outline figures; and (5) claret-red very naturalistic figures of animals in outline, drawn with very thin lines of paint, with details such as sex organs, manes, etc. carefully shown; this group contains the best of the art. (Associated with the East African Upper Aurignacian cultures were Oldoway man, known from a 1913 discovery of a ceremonial burial, with the skeleton overlaid with a red material, and remains found in a cave in the Elmenteita district of Kenya Colony and buried with red ocher. These fossil types were broadly negroid but not Negro. Their foreheads and some details of structure were negroid; but they had narrow noses, unlike Negroes; they were tall, "heavy faced," heavily built and with big brains. Related to these were also a South African type with a Middle Stone Age culture and a later Elmenteita negroid type.)

45,000 B.C. (?) The most characteristic art-object of the Gravettian culture was the female statuettes, apparently of pregnant women. These stretch from France for 7000 miles across Europe to Siberia. They are usually attributed to a cult of fertility. Engravings included human and animal figures, with all four quadruped limbs shown, with some attempt at perspective in the head and horns. Certain reliefs in stone had traces of red coloring matter persisting on them. The cave paintings evinced greater skill than before, and attempts at modeling by shading at certain parts. Details such as hair, all four legs and attempts at perspective are seen. Filling in of lines at first was feeble, then grew more and more, and was finally associated with contour modeling which covered the entire silhouette. Color was used more and more until there was developed well-modeled monochrome silhouette, frequently in black. In a grotto in Spain, there were deer in yellow ocher, chamois in red.

30,000 B.C. (?) The Solutrean culture which arose in caves in Northern Hungary and spread from France to Rumania, that of hunters of the reindeer and the horse, was long supposed to be an inartistic one; but an increasing number of Solutrean art finds show that they were not antagonistic to the production of art objects. An uncertainly dated phase of monochrome linear painting of a more realistic style than before may belong to the Solutrean. Roughly of this date were five reliefs in stone from Laussel, France, which were found with traces of red paint.

25,000 B.C. (?) Balls and pencils of yellow ocher, red and brown hematites and ochers and paintings were left in the Bambata cave of Rhodesia, Africa, and other African sites.

20,000 B.C. (?) The period of the Early Magdalenian culture paintings. At La Pasiega, Spain, a grotto contains over two hundred paintings of this and the two preceding periods. The paintings of deer are in yellow ocher, the chamois in red. The outlines are in solid red or in stripes of red and black, or there is a sequence of spots. In general the paintings of the period were of two sorts of monochromes; one included figures of a "flat" effect and "Chinese" shading without modeling, but succeeding to an effect of relief.

There was an excessive use of color, completely filling the silhouette. The drawing was frequently, bad; the colors were black, red and brown. In another style the outline consisted of a series of carefully made punctuations, the body of the animal itself being sometimes covered with these dots, resulting in a somewhat conventionalized effect. The best work of the period is at Font-de-Gaume. In the figure of a black and gray galloping horse here the color graduates off from the black outline to enhance the effect of round relief. Most of these paintings are in red and black; but in the Niaux cave many of the paintings are in a brilliant light ocher yellow, while outlines are executed in black manganese oxide. At another station, the outlines are in red and black.

20,000 - 12,000 B.C. (?) This is the period of the "rock-shelter art" of Southeast Spain, which was of Chatelperronian type and developed a distinctive "shadow-picture" style, in which animals and human figures appear together in lively scenes of hunting with the bow.

15,000 B.C. (?) Probably to this period belong some of the South African series of paintings described by Burkitt, Breuil and Miss Nicol; the series were successively dark claret,

"earthy yellow," and white and finally polychrome in coloring. Human beings were commonly pictured in the South African and Rhodesian paintings, unlike the situation in Europe. Usually they are "far less naturalistically drawn than are the animals in the same style. At the same time the artists were often at pains to emphasize - almost to the point of caricature - such characteristics as steatopygia." (Leakey). In some regions, paintings are replaced by engravings, though in one shelter there were both engravings and red and yellow paintings. According to Burkitt, the engravings are in four styles. In the third style is a masked human figure in a site in Orange Free State; he wears a pair of antelope horns and a long tail like a lion's. Other masked figures are also known; they are thought to have a religious or magical significance. The famous archaeologist Breuil believed that the South African engravings and paintings were not made by the same people. He and others trace the path of the engravers southward and the painters northward to a point where they met and we find a combination of the two techniques. The painters were cave dwellers, while the engravers lived in round huts on rocky hills. Breuil classified the paintings into 16 pictorial series, of which only the first eight belong to the true Stone Age. The polychromes perhaps were later than the date here given. For neither South nor East Africa is the chronology very well established.

In East Africa there continued the 13 painting styles classified by Leakey and described through the first five above. Possibly belonging to the present period are the claret-red paintings of the fifth style, already mentioned. Then come in turn the following: Some comparatively rare curious yellow and orange human figures and animals rather badly drawn; a style with animals common and humans rarer, in dark claret-red with the whole body colored, done naturalistically enough to make the animal recognizable but with the detail poor; less naturalistic animals drawn in thick red outline, including very large elephants with wrinkles represented; a very stiff, conventionalized series of animals in brick red, often with tails omitted; and a series of very curious orange human figures and badly drawn animals in "solid" color. Three styles following these, and possibly some of the last of these, belong to a later date.

This is perhaps the time of the Middle Magdalenian culture of western Europe. There was now greater skill in producing engraving tools, and dart throwers and "batons of commandment" were often beautifully carved; bone needles were used for preparing clothing; sculpturing included slender nude human figurines in ivory and bone, and animal forms in reindeer and stag horn on implements of the chase as well as ceremonial insignia such as batons carved with animals' heads. This decorative art was bold and highly naturalistic. Engraving, often with finer lines than before, was frequently combined with the sculpturing. A Spanish cavern picture of a wounded bison has the form partly engraved, partly painted in red. Below the animal are pictured in color six club-shaped bludgeons. These claviform signs are probably a part of the magical means invoked by the hunters for success in the chase. Full flat wash was frequently applied to the engravings, the register between the two techniques often being imperfect, with one or the other overlapping. The result was crude and unnatural. There was little evidence of shading; but a punctuation style of earlier times was combined with engraving, the dots becoming larger and fusing into a sort of outline. Examples are a horse in red flatwash at Altamira (Spain) and a group of bisons, some punctuated, at Marsoulas (France).

12,000 B.C. This is the period in which the cave man's art reached its apogee with the

culture known as the Upper Magdalenian. Painting reached its zenith in the polychromes. We pass over beautiful examples of carving, sculpturing and engraving, the latter now with rather fine lines, to describe the painting. Animal figures were beautifully done, though toward the end of the period there was some retrogression. The fresco was accompanied by a foundation of engraving. The outlines were usually done in black; in black also were the eyes, horns, mane and hoofs. The interior modeling was skillfully executed with various colors produced by mixing yellow, red and black pigments. The black animal outlines are well exemplified at Niaux, while the great polychrome frescoes may be seen at their best on the ceiling at Altamira, Font-de-Gaurie and Marsoulas (all but Altamira stations in France). A reindeer-bone paint receptacle was found in the cave of Les Cottés; others were made from bivalve shells, and bone tubes and stone mortars were also used. Crayons of red ochre were found in the cave of Les Eyzies and the rock-shelter of Laugerie-Haute. Other pigments were yellow, orange and chocolate-brown ochers, hematite and limonite, and mixtures of varying amounts of ferric and manganese oxides, possibly mixed with grease. Manganese oxide produced a blue-black, while burnt bones yielded a coal black; there were no true blues, greens or whites. The work was done in caves largely, in the flickering light from the flame of a stone lamp in which grease was burned, with no models to look at, the work being done from memory. Yet realism is the very essence of the cave-man's art. Along with this were some cases of conventionalism, as well as the use of impressionistic or "suggestion" pictures (herds, etc.). Except in Southeast Spanish and African art, there was little attempt at composition in the cave-man's art. The subjects were much more often animals than humans, especially quadrupeds. The game-animals, including here the horse, were most frequent. Inanimate figures included chevrons, spirals, circles, frets, volutes, wave ornaments, and claviform, tectiform (tent-like), and alphabetiform figures. There were no mythical or fabulous figures, centaurs, gryphons, or gods, though there were some examples of "sorcerers." There was nothing like modern perspective, and modeling only in the later styles. But when we consider the difficulties under which the cave artist worked, and that he had no background of inheritance to draw upon, as later artists did, his achievements in realistic animal painting especially are truly remarkable.

12,000 - 7,000 B. C. Old Stone Age art, which had risen to its finest style, grew careless while reacting to a changed environment as the ice sheets receded, degenerated and finally collapsed suddenly. In the Ice Age, hunters had found ample supplies of horse, mammoth, bison and reindeer meat; and in fairly permanent camp sites, time to enjoy leisure and cultivate art. But with the passing of the glacial conditions, there were both little game to hunt and small space in which to hunt it. For the forests encroached more and more on the old-hunting grounds, and the herds disappeared. Naturalistic animal painting gradually disappeared as art degenerated and conventionalization appeared in increasing tempo. Schematic and conventional figures included banded and branched figures, lines and punctuated or dotted surfaces. In the Azilian culture which succeeded the Magdalenian, even the stone tools became smaller, "microliths" including diminutive graving tools. The most characteristic feature of the culture comprised a series of smooth pebbles with lines and simple patterns painted on them in flat red paint. Conventions in Southeast Spanish art are somewhat similar, and their development may be followed in the rock-paintings which spread over Spain and finally reached the Azilian area to the north. By comparison with the petroglyphs on the cave walls,

the figures have been perceived as conventionalized standing and seated male and female figures. In a typical Azilian site in the Pyrenees mountains were found the bones of two Azilians painted with red ocher; at another site is the cave of Ofnet (Bavaria), where were found the 33 skulls arranged like eggs in a basket, faces all to the west, without bodies but with red ocher, as told in the Introduction. In Palestine has been found the remains of another microlithic culture which had sickles for cutting some cereal, but no painting nor pottery (which we shall see was often painted), their artistic progress being exhibited only in a few carved statuettes of men and animals. In Africa, in Uganda there was a microlithic culture which had pottery in its later stages; and in Kenya Colony was an African Aurignacian culture with stone blades used as knives and with abundant hand-made decorated pottery. This culture occurred in a "pluvial" or wet phase (date perhaps from 13,000 to 8,300 B.C.) Probably toward the end of this period, or a little later, came the South African polychrome paintings already described, and in Europe the remains at Ofnet. For this period and the next one (8300 - 6800 B.C.), which in Europe was cold and wet, there is almost nothing of color interest to record. There was little naturalistic art and decoration took largely geometric conventional forms. Cultures with pottery arose, and a "Forest Folk" evolved in Northern Europe; in other parts of Europe (Great Britain was still not separated off by a sea) the early culture-folk were becoming the ancestors of the Nordic, Mediterranean and Alpine races of modern times. This was the Middle Stone Age.

6,000 B.C. In the sixth millenium B. C. there arose in Egypt, Assyria, Northern Syria and the portion of Anatolia adjacent to Syria and Assyria, the Neolithic or New Stone Age. This was characterized by the use of polished-stone implements, primitive metallurgy, food production as distinguished from mere food gathering, and the development of pottery styles, frequently with color interest. The chronology from this point until about 3,000 B. C. is uncertain; it may not always be even relatively correct, due to acceptance of the datings of different authors for different cultures without having any general synthesis of the chronologies. A culture which grew up around the Faiyum depression or lake in Northern Egypt had a pottery, but it was in simple undecorated round bag-like forms without even lugs for the hands to grip them. But a nearly contemporary culture discovered in 1928-9 in Middle Egypt had gray pottery jars with black patches and rim bands, and a vertically rippled surface. It included also broad, flaring, trumpet-mouthed beakers made on basketry and leather-bag models, with incised ornament filled in with white pigment.

5,800 B.C. J. Garstang in 1938-9 found at Mersin in Cilicia (Southeastern Asia Minor) a neolithic culture with an industry of obsidian (black volcanic glass) lance-heads and daggers and a thin, polished black or brown monochrome pottery. At other sites in Iraq, Syria and Mesopotamia, beneath the so-called "painted-pottery" culture layers, were found highly polished black wares with white-filled incised decoration; and in other sites the pottery consisted of holemouthed vessels of a softer, coarser ware, well burnished and frequently with incised decoration. At about the same time (5,500 B.C ?), the Forest-culture Folk of Northern Europe, who had bone implements decorated with punctuated geometric patterns, but no painting, were burying their dead in red ocher, as already mentioned in the Introduction.

5,500 - 4,000 B.C. (?) Many engravings and rock paintings have been discovered in

North Africa, but are mostly of late date. A few discovered in expeditions in 1928 and in 1934 may be much earlier; and this is probably true of some of a series of 25 rock drawings in red and white found by W.B. Kennedy in 1936 in the desert of Libya.

5100 B.C. At certain recently excavated sites in Northern Iraq and in Northern Syria the early neolithic pottery was a brittle orange ware with wavy red decoration.

5000 B.C. In the Egyptian culture discovered at Merimbda west of the Nile Delta, there had been development from scattered habitation sites to a compact town traversed by streets. Among the numerous pottery styles were fine hard clayey basins, with a brilliant red exterior polish except for an unpolished horizontal band engraved with a palm-leaf motive. There was also a simple dark plain ware, based on leather and open-basket forms, often with lugs for holding with the hands or supporting with strings.

4700 - 4600 B.C. In the Early Copper Age Tel Halaf culture period of North Syria and Assyria were made beautifully painted vases, black, white, and red to orange, with, polychrome-geometric and floral designs, often over a cream-yellow slip; these had horizontal broad bands of variable red separating the registers and often a red and black chevron pattern. Other designs used by the Halafian (Tel Halaf) potters included circles, rosettes, checkerings and stipplings. Conventionalized bull heads were common. In this age, the "highest stage in the early history of the decorative art was reached by the vase-painters, probably in close imitation of skill already attained by basket-makers and rug-weavers. The intricate polychrome geometric and floral designs with which the Halafians decorated the inside of shallow bowls a platters have not been surpassed in beauty, at least from our modern viewpoint, at any subsequent time in history." (W. F. Albright). In the Halafian cities were found sophisticated, monumental, circular buildings, cobbled streets, wheeled vehicles and stamp-seals for marking property, indications of a highly organized though early society. In the contemporary culture layer at Arpachiyah near Ninevah in Assyria were found many stone amulets of figurines around the beehive-shaped temples. The human figurines were nude, painted females, of the type familiar in the far earlier Aurignacian and Gravettian cultures. At Ninevah itself, there was painted pottery.

4400 B.C. In Egypt, the Badarian culture included thin polished black bowls and beaker-shaped black pots; also pots red on the lower outside but black on the rim and inside. There were also human figurines in ivory and an industry in hammered copper. In the Lower Copper Age culture called Ghassulian from Teleilat Ghassul or Sodom near Jericho, there were rectangular houses of adobe on stone foundations, decorated inside and outside with fresco designs painted on a lime surface. Models of these houses, used as ossuary urns to hold the bones of the deceased, were also found. These early Palestinians worshipped a goddess ("in embroidered shoes") and a god, the goddess being given preference. One Ghassulian fresco shows an elaborate geometric pattern based on an 8-pointed star, around which are an intricate field of dragons, and geometric figures; another represents a bird naturalistically painted. The well-baked pottery was mostly covered inside and outside with a slip of a different color from that of the paste, generally nearly white or light pink, sometimes brown or yellow-

green. The painted decoration over the slip was yellow, red or brownish black. The motives were simple, largely geometric: parallel straight or wavy horizontal bands, incised or pendant, cross-hatched triangles, checkerboard and ladder designs, metopic arrangements, conventionalized trees and a few animals.

Frescoes were also found at Persepolis in Southwest Iran and on a shattered vase from a site in Iraq; at the former were black-painted vases, and in the 20th to 15th stratigraphic layers of the latter were found traces of purplish red paint in the rooms of houses, lapis lazuli (ultramarine mineral) beads and pendants with the swastika design ("an ancient and purely oriental symbol"). In the 16th layer at Mersin was a trichrome ware, and at Arpachiyah in a vase-painter's home was found a block of red paint. In Elam (modern Persia), the First Susa culture included the beautiful, delicate "Highland ware" pottery, with geometric and stylized naturalistic designs in black, sometimes with a violet tinge, purplish red, brown or yellow, on a pale buff or yellowish white ground. Of this pottery Professor E. A. Speiser, in his "Mesopotamian Origins" (University of Pennsylvania Press, 1930) had this to say (p. 610) "These simple forms (graceful tumblers, open bowls, etc.) are ornamented with designs executed in a matt black paint upon a light surface. The patterns present a rare combination of purely geometric motives with representations of natural models done in a highly stylized manner. The whole has an abstract, one might say expressionistic, effect. Most admirable is the subordination of the individual motives to the main, purely decorative scheme; the ornament is with equal mastery adapted to the given shape. The vigor and simplicity of execution are further examples of the consummate skill and faultless taste of the proto-Elamite artist."

In Assyria, 100 miles north of Baghdad, the Samarran culture, related to the Highland, included in its pottery deep bowls with vertically arranged decoration in black or plum red. Apparently, the Highland culture flourished in Persia and Babylonia at nearly the same time that the Halafian culture spread over Northern Syria and Mesopotamia proper. Assyria, the country between the middle Tigris River and the hills of Kurdistan, was the meeting ground. Jericho, whose lowest levels were excavated by J. Garstang in 1935-36, lagged somewhat in development, but had first a Neolithic culture without pottery and then one with ceramic wares. But Mersin was a fortified city, with a whole group of buildings laid out according to plan, indicating a well-organized society when Egypt, Babylonia and especially Europe were still in their infancies. The island of Cyprus in this general period had three kinds of red-on-white wares.

4100 B.C. The Obeidian culture found at Tel el Obeid near "Ur of the Chaldees," the home of Abraham, and revealed also at other sites in Babylonia, included Highland ware painted with geometric designs in dull black, or more rarely, light red, on a light reddish yellow (buff) or greenish clay ground. The walls of buildings were found decorated with mosaics of slender conical pegs or nails of baked clay, with variously colored heads, which were driven into the mud brick in regular patterns. The el Obeid farmers who settled between the Tigris and Euphrates rivers were using copper, but it was as yet by no means common. This culture and the ones preceding it came before the Great Flood of the country about the Two Rivers, the flood which Noah was thought to have survived; but the el Obeid stratum is interrupted at some points by the alluvium deposited by the Flood. This flood occurred probably sometime near the end of the first quarter of the fourth millennium B.C.

Burial customs in Susa, Arpachiyah and el Obeid presented strong contrasts, which imply different ethnical stocks or at least different religions. At Susa, the dead were laid out very carelessly in the grave, in any position whatever. In Babylonia, there were rules for the position of the corpse, while in Assyria the peculiar practice of "fractional burial" was practiced. This consisted in exposing the corpse to the putrefactive action of atmospheric bacteria and carion birds and beasts until completely rotted away. Then the skull and main bones were collected and buried with offerings. Apparently, the ancient Assyrians believed that the physical body had to be entirely gone before the soul could enter the next world, as European gypsies believed much later. In Babylonia, the corpse was stretched flat on its back, the hands crossed on the stomach, in a grave whose floor had been covered with broken pottery sherds. Vases of offerings were placed at its feet and strings of beads adorned it. Copper weapons were still too rare to be often found in the graves; but in some were found painted clay idols representing nude women with slender, well-modeled bodies but grotesque -heads, like those of snakes or lizards, surmounted by odd conical headdresses made of hardened pitch. Here we have one of the most venerable religious traditions of the world: the worship of the Mother Goddess (in various times and places called variously Isis, Ishtar, Aphrodite, Cybele and so on) who figures in primitive religious creeds as the giver and sustainer of life and reviver of the dead. Her reptilian head recalls the many myths in which a goddess is identified with a snake or dragon. In later times, the Sumerians of Babylonia, who will be discussed, worshipped the "Mother Dragon of Heaven"; and, as in Genesis, a snake was supposed to have stolen the secret of renewed life from men. The snake's shedding of his old discolored skin, so as to make him fresh and bright again, was a miracle which greatly impressed primitive minds and led them to believe that this reptile, which seemed to renew life at will, was mysteriously connected with the Mother of Life.

The remains of the Obeidian culture underlay nearly all of the oldest cities of Babylonia, such as Ur, Erech (Uruk), Eridu, Kish, etc. It was paralleled in Syria at a site called Ras Shamra and at a place on the Orontes River. At Tepe Gawra in Assyria, it was represented by the 14th to 12th out of 26 levels: ("Tepe" and "Tel" mean "mound"). In level XIII here, which appears to represent a new intrusive racial element from the Iranian highlands, Halafian pottery was no longer mixed with Samarra-Obeidian. In this level, an "impressive acropolis, with its beautifully arranged temples displaying red-painted walls and floors and utilizing deep niches, piers, and pilasters for functional as well as decorative purposes, is sophisticated to an anachronistic degree. The ground plan of such a temple presupposes a long period of evolution." (E. A. Speiser, the excavator). Later, we shall comment on this evolution.

4000 B.C. Roughly at this date, the Badarian culture of the Nile valley developed into the Amratian, the first of three cultures which were long called "Pre-dynastic," since they were the known ones which preceded the historical dynasties of Egypt. The pottery of this culture was a finely burnt red ware with black top; it was followed by a ware with chalky white lines on a reddish wash and a black one with incised designs. To this general period belongs the rock-shelter at Njoro in East Africa, where were found the remains of over 70 individuals racially similar to the Middle Stone Age folk we have already mentioned. The bodies had been covered with soil and red ocher, and a fire lighted above them to bake them. Items of interest in their culture were beautiful stone pendants; the stones included fire-opals, carnelians, banded and moss agates, green quartz and Amazon stone.

A very notable series of papers by R. Vaufrey, published between 1934 and 1939, gave evidence serving to date the characteristic art of prehistoric North Africa, the naturalistic rock engravings of animal and human forms, at a comparatively recent date. This art had been previously ascribed to a so-called Capsian culture, which was immeasurably older than the period now under discussion and the supposed ancestor of the Aurignacian culture of Europe, that of the first European artists. It was supposed to have arrived by way of Gibraltar before the two continents were severed by water at that point. But Vaufrey proved that the culture associated with the art was too young. It was not an Old Stone Age but rather a Neolithic (New Stone Age) "culture of Capsian tradition." By linking it with certain borrowings of traits from the "Predynastic cultures" of Egypt, Vaufrey dated the culture and the art as not before 4000 B.C., or at the earliest the middle of the sixth millennium B.C. For one of these dates, the engravings extend to that of some showing chariots with galloping horses, which date around 1600 B.C. Further, the art was linked with a race of men, called the Mechta race, a non-negroid Middle Stone Age race whose remains have been found at Mechta-el-Arbi in Tunisia and at another site further west on the Algerian coast. It had been described as related to the Cro-Magnon artists of the Aurignacian culture; but the Mechta men had shorter stature, shorter and higher skull and a broader nose. They were not related to the Asselar race of West Africa, who had broad noses and have been thought by some to be the ancestors of the modern negroes. The Neolithic culture, with pottery, polished axes and bifacial arrow heads broke in upon the Upper Capstan culture, when the local industry was on the way to developing an arrowhead with transverse cutting edge. One result of the fusion was the magnificent flowering of naturalistic mural rock art. The impact came from Egypt across Libya. The engravings and the culture extended into the Sahara desert, where there is evidence of a wet "pluvial phase" from 5500 to 1500 B.C. (the warm, damp "Atlantic" climatic period of Europe dated about 5000 to 2700 B.C.). At one site, the culture included a type of pottery with pointed base, richly ornamented, a type belonging to the second of the three Egyptian Predynastic cultures. There were also the earliest spirals found as a decorative motive of painted ware; this motive became a classical one in Eastern Mediterranean decoration.

3800 B.C. In the lower Neolithic levels of Crete, that island so important to art history, as we shall soon see, in the ruins of villages, were found figurines of the fertility-cult Mother Goddess and plain, dark, brownish pottery, more or less burnished. At this time or a century later, there began a great racial movement from Western Asia Minor (later the site of Troy), toward the areas of the Highland and Halafian cultures. The intrusive culture, which profoundly influenced the earlier ones, is called by several names, among them the "Red-ware culture," though actually the pots were black, ash gray, brown or red, the fine clear red being produced rather late when copper was introduced. Style in the shaping, decoration and coloring of pottery is one of the archaeologist's most reliable criteria for the identity and contacts of ancient cultures. The early cultures of the Near East may be grouped into two groups. The Halafian and Highland styles of el Obeid, Samarra and the first settlement at Susa had painted pottery; the wares of the early Egyptian and Anatolian communities were "Plain" (unpainted): Painted designs on pale backgrounds developed from the weave patterns of basketry prototypes. Basketry is as old as the Middle Stone Age barbarians; and it seems to have inspired the criss-cross motives of Northern European art about 6500 B.C. Baskets lined with clay hold

water; and if then fired produce a material resembling stone, the beginnings of pottery. The artist's imagination then leads to the inclusion of animal, plant and abstract motives for decoration. In the Plain-ware cultures, plain surfaces are the rule for pots, the colors being gray, black, brown or red. Here the shapes are derived especially from leather-bag or gourd models. When the carrying sling, binding or girth-band (or a basket) is recalled, decoration is most often incised, and may be emphasized by filling up the incision with white pigment. The varying colors come from the different clays and uses of the fuels for firing. In hot, dry regions the color is frequently pink or buff; the smoky fire of damper woods burns clay gray or black, unless the pot can stand free of the charcoal for the iron in the clay to oxidize red. A rich red surface may also be obtained by applying a "slip" coating rich in iron. With this a black top will make an effective contrast if the mouth of the vessel is buried in charcoal while firing; or black can be obtained by applying matter which will char of itself. A refinement of the slip is the painting on the unfired pot of a pattern which will burn red, or black, while the ground fires pale pink or buff; but control of such a light ground requires the intense, smoke-free heat of a built oven or kiln.

To this general period probably belongs the culture excavated at Amri in Southern Sind (India). Here the polychrome pottery was a black on red on pale slip ware which might be regarded as a development of that found at Nal in Western Baluchistan, which had conventionalized animals outlined in brownish black and filled in with either plain dark red or a combination of red with white, yellow, green or blue.

The Red Ware culture reached Syria very early, being found in the lowest levels beneath Syrian pottery. It then spread into the provinces of the Highland and Halafian cultures, producing "mixed" cultures with, for example, red pots with designs in black paint in the Highland tradition. With them were found small stone "stamp seals," their flat surfaces bearing engraved designs. These were used for stamping on soft clay lumps to seal the cords of packages, the mouths of jars or other property. The mingling of cultures is shown well at Ur and in the 15th to 8th levels at Uruk in Southern Babylonia. The el Obeid pottery began to go out of fashion; and in the 7th layer (from the top), after the Great Flood, the triumph of the Red-ware was complete. This was an artistic loss, perhaps balanced by other elements of a more developed and vigorous civilization.

3600 B.C. The pottery of the walled city of the first settlement at Anau in Russian Turkestan was painted, never incised nor glazed, the pigments varying from black or brown to violet. At Uruk, excavation has revealed an artificial platform for protection from the Flood, on which were built elaborately constructed temples. Hybrid vigor, no doubt, had led to a great burst of progress. Writing had been invented and had passed the purely pictograph stage, though many of the signs retained the form of the objects they represented. The culture of the 7th to 4th levels at Uruk extended over the whole of Babylonia and Assyria. In the 7th level occurred the first use of stone in Babylonia. Soon afterward arose the first great monumental building of the country. This was a "ziggurat," or high place where dwelt a god, the original "tower of Babel" (of Babylon); more will be said of this type of building later. Over the 30-foot high ziggurat or cascaded tower rose a 65-foot whitewashed mud-brick temple, the "White Temple." In this were found small square tablets of gypsum plaster bearing impressions of roller-shaped "cylinder-seals" with figures of dancers and numerals. Not long after was erected

the "Limestone Temple," the sacred enclosure of the Mother Goddess. This was built on foundations of limestone, very rare in Babylonia, and was thought to be due to the foreign mountain-folk invaders with the Red-ware culture. To the 4th level belongs the "Mosaic building." Excavation in 1930-31 revealed remains of a wall beautifully decorated with a mosaic of slender terra-cotta cones, their heads colored red, white and black, driven in the plaster in such a way as to cover the whole surface with a rich pattern of triangles and zigzags. Courtyard walls were ornamented with a 3-color mosaic of clay cones in zigzag and diamond patterns. This brilliant, richly colored but harmonious and intricate decoration contrasted strongly with the usual tawny build colored brick of most Babylonian buildings excavated by archaeologists. The red, white and black banded patterns were said to be derived from the mats with which primitive huts were lined. At the end of the period was the "Red Temple," whose ruined walls showed signs of painting with a rich plum-colored paint. During the period of this building, the art of writing had developed. The limitations of our subject do not permit discussion of the conventionalized pictographs or hieroglyphs out of which cuneiform writing later developed. The writing was first used for business transactions, keeping tallies and lists of merchandise. The number system was not decimal based on the habit of counting 5 plus 5 fingers, but sexigesimal based on the 5 fingers plus one palm. Clay inventories were found; the stamp seals had been replaced by cylinder seals, with realistic carvings. The Uruk pottery, besides the typical Red-ware (colors black, gray and red) included a painted ware decorated with horizontal bands of light red on "pinkish buff" clay. The art of the period, revealed on the exquisitely carved cylinder seals, had reached standardization by extraction and symbolism, and canons of proportion had been established. The motives included processions of human and animal figures, pairs of fabulous monsters with interlaced necks and tails, and temple facades.

3500 B.C. The Gerzean or second Predynastic culture of Egypt was that of invaders from Palestine and Syria, who cultivated grain, domesticated cattle, introduced the 365-day calendar, a more advanced metallurgy, the worship of Isis and Osiris, and painted pottery with designs including spirals in brownish red on a light buff ground. In the late Copper Age culture revealed at Jemdet Nasr in Northern Babylonia near Kish and in other cities probably due to an invasion of a new people, the pigtailed Hurrians (Horites of the Bible), the pottery was a "Lowland ware," including compartment, and animal-shaped vases decorated in both realistic and geometrical styles with black and a dull, greasy but rich purplish red or plum-colored paint side by side; building walls of a "Labyrinth" at Uruk were painted with red, white or black paint. The intruders established themselves among the Sumerians, the people in possession, of Babylonia when history dawned. But the Sumerians had themselves come from a hilly country, its location unknown but a matter of much conjecture. They conceived their gods as dwelling on mountains, so on the level Babylonian plain they provided the gods with artificial mountains. These were the ziggurats, one of which was previously mentioned. They had only a single word for "mountain," "country," and "east"; and it is believed that they came from the hilly east. Preceding the Sumerians were Semites and in the hilly country the Elamites. The first Copper Age civilization in the country of the Two Rivers northwest of the Persian Gulf, including the Susa Highland, the Samarran and Obeidian potteries, was supplanted by the Sumerians, who had only a plain and undecorated drab ware. Simultaneously, the Hurrians from the northwest brought the second Copper Age to Elam, Babylonia and Akkad (farther north up the rivers),

while the Semites also reached Akkad from the west. Later (about 3000 B.C.) the Sumerians extended their influence from the Gulf northward to Akkad also, only to be eventually stopped by the Semites at the time of the great Sargon. As to the Hurrians, Biblical references to "Hittites" really refer to them, the error being, due to the political supremacy of the later Hittites in Hurrian country after overthrowing the horse-breeding Mitanni kingdom nearer the Mediterranean Sea.

Sumerian paintings, if they existed, have perished. Our knowledge of the culture comes mainly from sculptured reliefs, tablets and seals, statues in the round, pottery and metal work. Reliefs were often crude and barbaric but vigorous. They showed the people with large noses (that of the "Armenoid" variety of the Alpine race), shaven heads and flounced skirts. A convention used colossal size to represent power, as in kings; another showed a king's sons in an upper panel larger as they receded from him. The famous Stele of the Vultures shows the gruesomeness of battle, much freedom of drawing; and some advance in composition, but no mastery of perspective. The engraving of a silver vase, of great artistic power, made use of the guilloche pattern, which later appeared in Oriental, Ionic and Greek art. Also the two-headed eagle, which became familiar in Hittite, Persian and Byzantine art and the coats of arms of Russia and the Hapsburgs. From Sumeria, too, came other fantastic and hybrid monsters: the gryphon, the centaur and the chimera, inventions of a lively imagination. There was also a tendency to indicate landscape in monuments, an interesting trait. This great culture, which left such a great impress on the later civilization of the Near East and the world, had only a drab, unpainted pottery. But it was wheel-made, not handmade, indicating that industrialization we expect of a commercial people. At Tepe Gawra, between the polychrome Hurrian level and the Sumerian level, was a "Semitic" one with unpainted pottery. These three folk and the Elamites of Susa, round-headed like the Hurrians, all fought for centuries for the control of the fertile area, and their wars were marked by the rise and fall of numerous dynasties in the city-states of the region.

The Jemdet Nasr folk were visited (about 3200 B.C.) by a great flood. One of their cities was the home of Ziusuddu, the Babylonian Noah who, with his family, alone survived its destruction by flood. There is doubt whether this flood, or the one which came during the el Obeid period and destroyed Ur is the original of the Sumerian and Biblical stories of a Deluge. The Hebrews borrowed the story of the flood directly or indirectly from the Sumerians. This culture here and in other sites represents the height of the Copper Age, but there were few copper-ore deposits and their possession was of such strategic importance as to add to the warring, unsettled conditions in the Near East. In the early cultures of Anatolia, further northwest in Asia Minor, there could be distinguished a western province around the region of Troy and a central or eastern one revealed at Alisar. Here, below Hittite, Bronze Age and five Copper Age levels, was found a self-colored black to red pottery, generally "muddy" and sometimes parti-colored, black inside and around the rim, but brownish below on the exterior. In the Upper Copper Age "Esdraelan" culture of Palestine, revealed at Megiddo (the site of the Biblical Armageddon), Byblus on the coast, Beth-Shan and Gaza, was a gray burnished pottery with a red slip.

3400 B.C. In the Middle Neolithic culture of the island of Crete, the pottery had developed to a burnished black, brown or gray ware, often with incised geometric designs filled

in with white or red paint. The forms were varied, some vases having genuine handles instead of mere lugs. At Uruk, the "Labyrinth" had walls decorated with sculpturing in the round of a woman's figure in alabaster with ultramarine blue inlay forming a fillet outlining the face, ultramarine and pink shell eyes, bituminous inlay for dark eyebrows, and hair in dark paint. The Chaldaeans of Ninevah, in this general period, may have used magnifying glasses.

We now return to Europe, recalling that there has been almost nothing of color interest here since the great days of the cave men of the Ice Age. The degeneration of life in Europe has been mentioned; in some parts life was sustained merely by gathering shellfish. It is instructive to contrast at this point the picture in Europe with the contemporary one in the Near East. This has been done very graphically by Professor V. Gordon Childe, archaeologist author of several books, including the interesting "The Dawn of European Civilization." We find an east-to-northwest series as follows: (1) In Mesopotamia and Egypt, true cities of a walled area of two square miles, with organized commerce, public works, artisans and artists, officials and scribes; (2) in Syria, smaller cities less richly equipped and less literate; (3) in Anatolia and lower Greece, Copper Age townships with a walled area of a few acres, with smiths and other craftsmen well provided by trade with metal and other raw materials; (4) in Thessaly, Macedonia and the Morava-Maros river region beyond the Balkan mountains, Neolithic villages permanently occupied by experienced farmers content to do without metal; (5) in Eastern Hungary and Slovakia, herdsmen and troglodytes, grazing and tilling patches of loess and, then moving on (but making pottery and exporting obsidian); (6) still farther north, so-called "Danubian I" hoe-cultivating peasants shifting their hamlets of a score of huts every few years to fresh fields until they reach the edge of the loess; and (7) on the north European plain, only scattered bands of food-gatherers, hunting, fishing and collecting berries, nuts and shell fish.

The earliest European Neolithic culture is that revealed at Sesklo, the "First Thessalian" or Grecian Neolithic A. Here the pottery was a fine white on red or mottled burnished ware; also basketry designs in red on a white slip, the latter being used likewise in Copper Age Cyprus. The farmers of this culture now lived in regular villages of round or square huts of wattle and daub. The discovery of whorls and spools indicated a textile industry. There were no evidences of possession of weapons of war. Figurines of the fertility cult, the basketry motives, and the use of stamp seals and brick all suggest that the Greek Neolithic farmers came from Asia.

3300 B.C. Tomb walls of the Semainian culture revealed at Hierakonapolis (Egypt), the third Predynastic one, were painted, with scenes of the chase, combats and dances in red, reddish brown, malachite green, black and white on an ocher-yellow ground, all in the style of the decorated pots. In this period, the grain growers in the Nile Delta were pressed upon by two nomadic steppe folk, one from the hills of Judaea or beyond, the other from Libya.

3200 B.C. In the Upper Neolithic of Crete of about this time, the pottery was still a plain hand-made highly burnished ware, sometimes painted with a nearly matt black glaze slip. In the second city at Susa (Persia), realistically decorated polychrome pots were made with purplish red on black or gray. This ware was possibly due to the pig-tailed Hurrians. The pottery of the second settlement at Anau in Turkestan was partly like that of the first, partly a monochrome red or gray. These settlements were made in the same general period as the founding of the city of Troy and of some of the city-states in Babylonia, the first dynasties of Kish and Erech

(Uruk), but somewhat earlier (especially Anay II). Serbia in Macedonia was an outpost of the Grecian Neolithic culture where the red and painted Sesklo pottery were replaced by black polished wares, decorated by fluting, striped burnishing, incision or white paint with geometric patterns including spirals. The culture spread all over Macedonia and up the Vardar river toward the Balkan mountains, then spread still farther north up the Morava river toward the Danube country. The result was known as the Vardar Morava culture. The typical sites are at Vinca, on the Danube below Belgrade, Tordos in Western Rumania and Olynthus in Greece. Here the peasants lived in pit-dwellings half sunk in the loess, and in wattle-and-daub houses. Their typical tools were certain stone hoes. The pottery was extremely varied: (1) "Rusticated" or "barbotine" coarse brownish ware, made by roughening the surface, usually covered with a thick slip, by pinching with the fingers to make it hummocky or by brushing; (2) gray and black to red wares, polished or incised, pedestalled and carinated bowls, lugs imitating animal heads; designs of punctuated ribbons including spirals and meanders; (3) anthropomorphic or "face-urn" hollow lids, molded and incised in the form of a horned and owl-like human face (found also in the second city at Troy); (4) "red-slipped" wares, often black inside and around the rim; and (5) wares painted with spiral designs in black or white on a red ground (in Greece and the middle Danube). At a group of sites farther north the ornament included much "spiral-meander" pattern. In the Cyclades islands of the Aegean Sea, important because of the possession of copper, obsidian, marble and emery, and as stepping stones from Asia to Europe, were found decorated bone tubes designed to hold pigments.

3100 B.C. About this time the "Red Crown" of the Libyans in Lower Egypt was united by a warlike family with the "White Crown" of the Osiris-worshipping, grain-growing Upper Egyptian invaders from Asia, already present in some numbers in Predynastic times. Thus a change took place in the people of Egypt and their art. An important relic of the time is the slate shield-shaped palette of the warrior king who is shown on the two sides wearing the "red" and the "white" crowns. On the one side the god Horus, incarnate as a hawk, brings captives before the king, who wields a stone mace and grasps the hair of a conquered enemy. On the other side, the entwined necks of two animals form a circle. In this circular area no doubt was mixed the paint used to adorn the face of the divine statue of the god, the palette itself being a votive offering to commemorate a victory. In the first two dynasties (Thinite period) the rulers were buried in the royal tombs at Abydos; here, the jewelry of a queen was decorated with gold, ultramarine (blue), carnelian, amethyst and turquoise or blue glaze. Both paintings and animal-figured reliefs in Egypt were treated as outlines of saturated red or other color filled in with "solid" colors. In relief, the effect of modeling was often lost by the practice of using saturated colors, as strong red, for outlines, without regard for light and shade; thus it was a flat drawing raised above the background, which was cut away from the painted outline. The earliest reliefs represented animals, often in processions. In these and in the palettes we may see that the later Egyptian art conventions were already in making: the composite "memory picture" of the human form, with the eye in front view in a profile face, the shoulders turned forward while the limbs are in profile by a curious twist of the waist-line; the composition by division into registers, one above the other. But there is also seen vivid action in running figures, advance in anatomical treatment and the power of imagination in the design of long-necked animals.

The great "Minoan" civilization of Crete had Asiatic and Egyptian elements fused onto those of the native Neolithic substratum. Probably brought by displaced Egyptians or through contacts with Egypt, were the forms of Early Minoan stone vases, the technique and esthetic elements in the use of semi-precious stones, some religious customs, the wearing of amulets, Gerzean statuettes, the use of depilatory tweezers and stone unguent palettes, and multi-compartment paint pots hollowed out of stone (used also by Sumerians). Sumerian was the practice by coppersmiths of casting axe-heads with a hole for hafting. The distinctive technique of glaze paint had been used by Tel Halaf potters of North Syria. Artists treated rosettes and similar figures in the Asiatic manner. Engraved bead and button seals were used as in Syria and Iran. In religion, the famed cult of the Double Axe was foreshadowed by Tel Halaf amulets. Striking Minoan pot forms, the pyxis with cylindrical neck and string-hole lid and the so-called "tea-pot" with curious spout, had Asiatic parallels. But all these and the native elements were blended to a remarkable European civilization which was notable for its great vigor. Minoan pottery was extremely varied in form and color. The "Early Minoan I" culture had a gray to black, so-called "bucchero" dark ware with incised or impressed patterns; there was also a ware with white paint on glazed buff or light brown and a dark on light ware.

In the First City of Troy - that immortalized by Homer was Troy VII - the late Copper Age pottery varied in color from deep black to brown or brick red. It was decorated with bosses, ribs, burnished grooves and incisions; in the related culture at Yortan in Mysia, with rectilinear geometric patterns in thin white paint, while in the first and second settlements at Thermi, which were also part of the West Anatolian Copper Age (3000 B.C.), the pottery was very similar. Troy I was girt with a massive stone wall; it was in a key position to command at once the sea-trade up the straits and the main land crossing from Asia to Europe.

3000 B.C. In India, the Harappa or Indus culture is revealed in sites at Mohenjo-Daro on the Indus River, and in Harappa in the Punjab; here were found many gaily colored toys and red-ocher face paint and pottery with designs in black on a highly burnished red ground, motives including intersecting circles and peacocks in file. This pottery graded off geographically through a buff ware in Baluchistan to yellow in Persia. At Tel Brak in Northeast Syria was the "Temple of a Thousand Eyes" with alabaster white "eye idols"; here was a frieze of three panels of gold encasing blue limestone, white marble and green shale, around which were mosaics of brightly colored clay cones and rosettes of alternate white and green petals and a central red corolla.

Sumerian walls, as revealed in the crude brick houses excavated in Eridu, showed horizontal bands of red and white or red, white and black. This primitive three-color scheme was characteristic of Sumerian art, as were also the gryphon and other fabulous animals previously mentioned. Another important element of Sumerian art was inlay with shells, mother-of-pearl and (blue) ultramarine. The Royal Tombs of Ur belong to this general period, the Early Dynastic Period of the classical Sumerians; they yielded many art treasures. The sounding box of a harp was edged with a mosaic in red stone, white shell and blue lapis lazuli; a wooden sledge chariot was also decorated with a red, white and blue mosaic. Queen Shub-ad's tomb, as usual, contained shells filled with green cosmetic paint; other women's graves contained shells with white, black and red paint. In a great death-pit, the bodies of 68 women who went to their death with their king, were found in coats of wool dyed with a crimson red

dye. This is the first instance of a dye in history. A famous mosaic composed of figures silhouetted in shell with details engraved which are set in a background of blue lapis lazuli, relieved here and there with red, also came from the tombs.

In Egypt, there was a falling off in art in the Second Dynasty as compared with the First. The island of Malta had polished gray studded pottery and a ware painted with matt red geometric designs on a buff ground. In Western Rumania, the Vardar-Morava pottery traditions were continued, with the colors being black and red to brown and buff, or even white.

2900 B.C. The Pyramid Age began in Egypt with its Third Dynasty. For the son of the first king was built the first pyramid, the step-pyramid of Sakkara, by his prime minister who was also architect and physician, and later deified as a patron of science. The next king, the last of the Third, or first of the Fourth Dynasty, was a great organizer and kept miners busy in Sinai mining copper or turquoise. His widow married Cheops, who became the next king and built the Great Pyramid at Gizeh, said to be laid out with a precision "equal to opticians work of the present day." Some of the earliest examples of flat painting are from the tomb of Hesi-Re at Sakkara. The brick-built piers and recesses of this tomb are decorated with geometrical patterns in a simple color scheme of black, red, yellow, green and white, which is found also at Hierakonpolis.

At about this time and even before in the loess lands of Hungary, Slovakia and nearby Germany democratic, if not communistic, peasants developed the so-called "Danubian I" culture. They lived in pit-dwellings, by cultivating grains and some vegetables, not by hunting. When a plot ceased to be fertile, they moved on to another. Their pottery was a slate-gray ware modeled after gourds, and typically decorated with spiral and meander designs.

2800 B.C. The Egyptian Fourth Dynasty (of its "Old Kingdom.; or "Memphite" Period) was one in which some of the finest works of Egyptian art were executed. We know these mainly through the tombs, one of which was the Great Pyramid of Cheops or Khufu at Giza. Usually painting was here an accessory to sculpturing, but an exception belonging to the period was a realistic painting of geese from the mastaba of Nefermet at Medun, in brown, green and blue on a gray ground. Also of this period is the famous portrait statue of Princess Neferti; this has bluish black hair, yellow skin, and rich red, white, green, green, grayish blue and black in the collar and head-band. The masses of color are outlined in red and. black. This portrait reveals the Egyptian love of vivid color. Polychromy on murals, sculptures and reliefs was prevalent. A commonly used ceiling decoration was with stars of gold against a ground of "midnight blue." Landscape was conceived in conventional fashion, with various distance levels on top one another. Red, black, white, green, blue and yellow were used in conventional schemes. The painting was merely outline drawing filled in with washes of solid color. But in spite of conventions, the art was sincere and forcible, showing balance, rhythm and action.

In Europe, progress was slow; but the cultures of Greece, the Balkan countries and the lower Danube region were developing, due to contacts with the Near East. The pottery of the Vardar-Morava culture in Western Rumania had angular and criss-cross (basketry) patterns in dark brown to black on a brown to red ground. The Balkan and Hungarian Bükk culture included thin elegant vases with bands of finely cut lines, often with white or red inlay, in a great variety of geometric patterns; in the last two of three stages, linear ornament was replaced by bands of

dark red or white paint. There were also gray and buff wares with spiral designs in black paint applied before firing. On the other hand, in the Bulgarian "Boian A" culture, pots were "crusted" after firing; here emphasis was on spiral, meander and chevron patterns with white inlay to bring out the design on the red-brown or other dark ground.

Venturesome mariners travelling west in the Mediterranean Sea, start from Crete, the Grecian islands or Egypt, apparently reached first Southeast Sicily. Here Stentinello, Megara and Matrensa, fortified villages with cobbled streets, comprised the neolithic culture, known by the first of these names. The animal-breeding inhabitants made burnished, incised geometric, gray or red-slipped pots as well as a polychrome rarer ware with rectilinear patterns in red and black on a buff ground. The mariners, possibly crossing from Africa, reached a site called El Garcel in Southeast Spain. Here the culture was largely that of a Middle Stone Age people; but they bred stock and cultivated cereals and olive trees. Their pottery included vases of the so-called tied-bag ware, which imitated vessels in tensile leather. The forms of some of the pots were like those of the earliest Egyptian cultures. But there also grew up in Southeast Spain what are known as Cave Cultures. The bearers of these painted on cave walls-and in, their adjacent shelters pictures of wild animals and scenes of the chase, as well as domestic animals, painting in a conventional manner. Their pottery included black to reddish pots with horizontal and vertical patterns executed with the edge or back of a shell ("Cardinal style"); also ladder patterns.

2700 B.C. The second phase ("II") of the Early Minoan culture of Crete, a development of the first phase, was marked by many articles of gold and notable examples of the goldsmith's art. The pottery now included a red-wash ware with blackish blotches deliberately produced; also a clear buff ware with a lustrous dark red to black glaze paint; patterns, largely geometric, were of both white-on-dark and dark-on-light sorts. With some lag, the mainland of Greece also reached the second phase of its culture, known as "Early Helladic"; its pottery, called "Urfinis ware," was a glazed dark red to black on buff ware. This was an attempt to reproduce the old burnished ware and a reaction to Cretan influences. Farther north, the First Thessalian culture, revealed at Sesklo, was now replaced by one best exemplified by the fortified settlement at Dimini, not far from Sesklo. Here now the "megaron" type of house, with porch and central hearth, made its appearance. Copper and gold were now imported; and there were other evidences of a break with the past. But there were also many similarities to a culture which grew up beyond the Danube. The old basketry designs were now supplemented with spirals in white or warm black on the buff, red or brown clay, sometimes with black or white outline. At the Vardar-Morava sites, the pottery wares were red on black, sepia on black, and black, red, brown, buff or even white on red; and at West Rumanian sites, the pottery had dark brown and black designs on brown and red grounds and red designs on a white-slip ground. In Spain, the "Early Almerian" culture continued the "red-bag ware" of El Garcel (2800 B.C.), while the Spanish cave-culture paintings included conventionalized animal, chase and pastoral scenes.

Probably by this time the Harappa or Indus Valley civilization, which may have begun as early as 3300 B.C. and was described in part at 3000 B.C., was at its height. We shall digress from our subject here, and linger over a further view of this culture while we cite a bit of history. The great Indian religious works, the Vedas, began with a time, probably about 1500 B.C., when a people from Europe, speaking the Aryan language, invaded India and overcame

the aboriginal inhabitants after cruel and unceasing warfare. The Indo-Europeans with the Aryan tongue had fair complexions, blond hair, long narrow skulls, large bones, tall stature and prominent narrow noses. They and many of their customs contrasted strongly with the "Dasyus" whom they conquered; and it is because of these strange contrasts that the Aryans' descriptions of the early Indians appear to be prejudiced. The latter were described as small, dark-skinned and flat-faced. They were "hostile-talking" (speaking a non-Aryan tongue); they were non-sacrificers (sacrificing no animals); they were malignant demons (they hated the invaders who exterminated or enslaved them). They were said to have inhabited great and wealthy cities and to have been skilled in the various arts. By their magic they could raise the dead. They traded with the Aryans; but cheated and deceived them at every opportunity - so said the simple, honest, but prejudiced Indo-Europeans, called "Aryans" from their own word for "noble." The dark people's religion disgusted the invaders; it included obscene ceremonies and the use of indecent emblems. The Aryan-speakers were "generous to bards, bold to smite the dark-skinned Dasyus, lovers of strong drink, dicing and horseracing." Their wealth was in cattle and horses, their vehicle the horse-drawn chariot, their weapons the bow, the mace and the spear. They had strongholds, but not temples nor cities. The dead were generally cremated, the ashes interred under a barrow.

The people of Mohenjo-Daro, on the Indus river in Sindh, at about 3000 B.C. were revealed as traders remarkably gifted and ingenious, rich in material wealth, and incomparably more civilized than the early Aryans; but definitely unwarlike. They did not have the armor, the horse and worked iron possessed by the Indo Europeans. The Dasyus were probably of the racial stock known to ethnologists as the Dravidians (a blend of Mediterranean, Australoid and Melanesian types). The people who spoke the Aryan tongue may have been a branch of the ancestors of the typical Nordics of today. The hatred of the Aryans and Dasyus for each other was the basis of India's caste system, her curse today. The Sanskrit (Aryan) word distinction for "caste" means "color"; and the original caste distinction was between light-skinned Aryans and dark-skinned Dasyus.

Some elements of the Indus civilization were very briefly, listed following the date 3000 B.C. Another important element included the seals, decorated with the "most exquisite designs," usually of animals and with inscriptions in an unknown language. The animals were those the people worshipped: the aurochs bull, the humped or Brahman bull, the buffalo, the Indian rhinoceros and elephant, the tiger, the cobra, the fish-eating crocodile and, rarely the antelope. There were also monsters, like a man with horns and a tail, and composite animals. According to the excavator, the art of the seals is "distinguished by a breadth of treatment and a feeling for line and plastic form that has rarely been surpassed in glyptic art." The script on them, like cuneiform, is a picture-writing; but conventionalization has gone only so far as to permit recognition of the objects: houses, chairs, a pair of arms, etc. Some of these Indus seals have been found in early Babylonian levels.

Harappa was a great brick-built city. As to the similarly built city of Mohenjo-Daro, its streets, though unpaved, ran in parallels east to west and north to south, intersecting strictly-at right angles, "instead of meandering vaguely, intersecting where the spirit moved them, beginning in caprice and ending in confusion." Such evidence of good organization would have been remarkable even for a European city several thousand years later. But there was much more. Below most of the streets ran a main drain provided with sumps and inspection traps and

covered with brick or stone. Individual houses, each with its sump-pit, had drains opening into the main drains. On the ground floor of the homes was a bathroom, and a lavatory, something unknown even in Babylonia. Here the ancient Indians could sluice themselves with water from the large pottery jars, and oil and scrape their bodies as did the athletes of Greece. Pottery scrapers have been found. Some houses had rubbish-chutes, down which rubbish could be slid to brick ashbins in the street. Although no temples were found, there was a Great Bath, a sacred bathing place in a large building; it was a swimming pool provided with a cloister flanked by small bathrooms. Certain buildings at street corners were identified as restaurants. Other finds make it probable that here the men sat and gossiped or gambled while the women gossiped on the brick benches about the numerous public wells. The architecture was plain and of a utilitarian character and built for endurance; there were none of the colored washes, beautiful cone-mosaics or rich wall-inlays of Babylonia.

Besides the seals, the art included some statuettes. A remarkable one of a nude male in red stone from Harappa was so naturalistically and beautifully done that the excavator could at first hardly believe that it was done by an ancient artist. It was unequalled in the ancient world until the days of the Greeks Phidias and Praxiteles. Another masterpiece is the bronze figure of a dancing girl treated in impressionistic style. Rough terra-cotta female figures showed the female fashions, including long skirts and elaborate hooped headdresses. Two limestone heads showed the men of the ruling class to have low foreheads, short straight noses, slightly receding chins and thick protruding lips. The straight hair was either clipped or worn very long, braided, wrapped round the skull and knotted into a big bun or chignon at the back of the head. This way of dressing the hair was also found 'in Babylon.

In metallurgy, the ancient Indians were ahead of their contemporaries in Babylonia, for they produced vessels of cast and beaten bronze and molten bronze statuettes, while the Sumerians produced only unalloyed copper objects. In the arts and crafts generally, the former were at least the equals of the latter. Pottery models showed that the Indus civilization had wheeled vehicles. But nothing found at Mohenjo-daro rivals the beauty and delicacy of the gold and copper objects of Ur; and the Indus culture did not include the fine socketed tools and weapons of Simeria. The ancient Indians were not warlike; swords and daggers were rare. Other items of the culture include beads of semi-precious stone, frit, gold, silver, gilt bronze and turquoise; stone and bronze figures of animals; little glazed figures of squatting monkeys; carvings in ivory; gold, silver and copper earrings and finger-rings.

The pottery of the culture consisted chiefly of very fine wheel-made wares. They were of five types: (1) plain ware, usually red, more rarely buff or gray, with or without a fine red or gray slip; (2) black-painted ware with a fine coating of red slip on which geometric and animal designs are painted in glossy black; a favorite design being of intersecting circles, some painted with almost mathematical precision over the whole body of the vase; (3) blackslip ware, of-gray clay coated with a thick polished black slip; (4) reserved slip ware, produced by laying a light slip over the dark ground clay and then wiping it off again in streaks, so as to form a pattern of contrasting dark and light bands; and (5) rarer polychrome ware, chiefly small vases decorated with geometric patterns in red, black and green, more rarely white and yellow.

At Chanh-Daro, besides the bathrooms and drains found at the other sites there were many other interesting items. A bronze toy cart with a pent roof, for example, this vehicle being common. There were many stone palettes, probably for face paint or cosmetics. A remarkable

number of toys was found. Toy vehicles were made of pottery, mounted on two or four wheels and drawn by humped oxen. Every child must have had a toy cart. Pottery model rams had the fleece indicated in red paint. Marbles of pottery and stone and brightly colored pottery rattles were abundant. There were also a number of Mother Goddess figurines, and model doves with outstretched wings (worshipped with the Goddess in Crete, Sardinia, Mesopotamia, etc.) On the pottery, a motive often used at Chanhu-Daro, but rarely at Mohenjo-Daro, is a scene of peacocks in file, generally on large jars. But quite small vessels were ornamented with paint, even if only with a few bands of red around the shoulder. Certain small pottery vessels seem to have been supplied by shop-keepers to purchasers of small quantities of cooking oil and the like, as at present. Other small jars, with very narrow mouths once contained eye paints, which cosmetic was used by men and women alike. There was also found a rectangular slip of red ochre with beveled end; this was probably used as face paint or lip stick.

Pottery wares very similar to those of the Indus culture were found in many sites in Babylonia and Mesopotamia; and archaeologists have frequently discussed the connections between the two far-distant lands. Other items than the pottery styles show the connection across Asia. Lapis lazuli (ultramarine blue) and red carnelian beads with a white design were apparently imported from Ur and copied in Sindh. They were also copied in steatite, with the red ground being burnished hematite. A peculiar bead with rhomboidal section was also found at Ur and Kish. A copper blade at Mohenjo-Daro is exactly like one from Kish. Cubical dice, tetrahedral gamesmen, and pottery rings thought to belong to a game, are found in both India and Sumeria. The Greek cross and the swastika are found in both areas. In a lower level of Mohenjo was found a fragment of a vase, of exactly the same intricate and very unusual pattern as one on a double vase of the second settlement at Susa, and of the same material, a greenish gray steatite. In a 1931-33 trip across Asia, Sir Aurel Stein found links of the Copper Age civilization of Baluchistan (traced by him in 1926-28) on the one hand with the Indus culture, and on the other with ancient Western Asia.

To describe all the cultural connections between ancient India and Mesopotamia-Babylonia would take us much too far afield; and the interested person may be referred, for example, to P. Carleton's "Buried Empires" (E.P. Dutton & Co., 1939), pp. 157-62, a book from which we quoted the comparison of the streets of Mohenjo-Daro and European cities. But it may be said that there are evidences from several sites in Baluchistan of these connections, for example Maltese crosses decorating dishes from here as well as from Susa and Samarra. Pottery sherds illustrate the transition from the prevailing gray to, pink as well as to the greenish tint common at El Obeid. The intermediate sites represent an extension of the Highland culture eastward; on the other hand, a few objects from India have been found in early Babylonian levels.

2600 B.C. The pigments used in Egypt as early as the Fifth Dynasty were red, yellow, brown, blue, green, white and black in color. Later, the number was increased materially. Blue is not found in the earliest paintings and seems to have been used in the later ones as an alternative for black. It was employed especially for depicting hair. The technique was that of tempera, utilizing a protein medium; the fresco method was not used. Many conventions such as the use of red for the flesh of men, and yellow for women, passed on to Greece by way of Crete. Painting in registers was still practiced; painting was still subservient to architecture and

art was declining. The paintings exhibited scenes of daily life-and hunting scenes and landscape. The colors were in washes of solid areas filling in outlines; they included red, black, white, green, blue and yellow. In a typical scene of boatmen, the boat is bright green, the figures red, water and lotus flowers blue. In the famous painted reliefs of the tomb of Ti, he and his wife are seen against a ground of yellow and green rushes and reeds. His skin is terra-cotta red, hers yellow; black was used for hair and details, white for garments; green, blue and yellow for necklaces and armlets.

The political history of Babylonia (Sumeria and Akkad) was for a long time complex, troubled and somewhat obscure, though interesting; but it so far afield from our subject that we must pass over it. Suffice it to say that after the First Dynasties at Kish and Erech (Uruk) there followed within five centuries the Second Dynasties at these cities and one at Awan, one at Umasi and the important First Dynasty at Ur. The rulers of Lagash also held considerable power for a long period.

Chapter 2 The Evolution of the Art of Coloring

The great drama played by our ancestors during the long climb to our present state, however colorful it may have been, was played for the most part behind a curtain opaque to our present sight. For perhaps the last tenth of human history on earth we have been able to lift the curtain only here and there, to follow the actors on the shifting stage, to observe how our forebears lived and loved, fought and fed, aspired and accomplished. A small very specialized class of people among us has observed with special techniques how these actors have behaved and have thus greatly aided our observation and understanding of our predecessors and theirs. They are the excavators of buried cities and settlements, patient archaeologists digging, sifting, sorting, cataloging, dating and drawing connections and parallels. We too may find it interesting to remain amateur specialists, reviewing in quick glances the information they have dug up about the way in which our ancestors used pigments, dyes and colors to make their lives more colorful.

As a necessary digression, we shall here state that in most of the Near East, wherein what we know as civilization first arose, the site of an ancient settlement is usually marked by a mound (Arabic Tell or Tall, Persian Tepe, or Turkish Hüyük), which is composed of the accumulated wastes or debris of successive levels of settlement. For when a village or town was destroyed or abandoned temporarily, a new settlement often grew on its ruins. As the process was repeated through the centuries, the level of the ground surface gradually rose above the original surface. It is therefore generally, and quite safely, assumed that the remains of buildings and objects which are discovered are successively older as the excavator digs deeper into the lower levels, which are arranged like the layers of a cake. This should make clear what is meant by stratification; and to avoid monotony we shall often use the terms level or layer as alternative to stratum. It should be clear too that the archaeologist usually feels more secure and happy in his dating ("chronology") of strata and objects definitely associated with them when he is dealing with well stratified sites than when he must rely upon indirect comparisons with objects similar to those he finds, in unstratified sites. The latter is often the case when dealing with the objects left in the graves of a cemetery for the use of the deceased in the afterworld.

A human race evolving in an environment so colorful as that afforded by nature, for those who will use their eyes to see, could not have been indifferent to, the beauty and charm that adds romance to the utility of its forms and objects. It was only natural that very early in their cycle of evolution our prehistoric ancestors should have imitated in permanent form the transitory colors exhibited by nature, and to use these colors for emotional, symbolic, utilitarian and decorative purposes. Every schoolboy has probably come to know about the great polychrome animal art revealed in some of the caves of the Ice Age. But far less completely revealed from back of the nearly opaque curtain must have been scores of centuries of hard-won knowledge and experiment leading up to that great art. Indeed, we shall very briefly disclose a bit of that older record of achievement in these pages, insofar as it has been our good fortune to receive a little light from time to time.

Polychrome painting of animals in rapid motion portrayed on hard walls made of very irregular surfaces in the deep recesses of caves, working by the weak flickering light of a tallow lamp, must have been an extremely difficult art. But being both accurately observing and

inventive creatures, early men other than the cave-painting specialists soon learned to use colors for the adornment of their bodies and their ornaments, for the decoration of their implements, utensils and weapons used in industrial, domestic, magical and religious purposes, and for the structures erected as abodes of themselves and their gods. These beginning steps must have occurred tens of thousands of years before the culminating great animal art, the hard-won steps up the ladder of progress rendering that ascent less difficult.

Aspects and incidents of this drama, often redolent of romance, yield bright accents in our unfolding color story. We shall need no artificial constraints to keep our gaze fixed upon the attempts of different races of men, widely separated in space and time, to develop an art of assembling and combining colors in ways pleasing and satisfying, as well as fitting and appropriate to the function of the objects colored, or else filled with symbolic significance or practical utility.

For the acts in the earliest stages of the drama of evolving human life and color usage, we may make the opaque curtain slightly more translucent by the artifice, well-known to cultural anthropologists and students of societies, of observing the ways of life of modern primitive folks and of adapting or transposing the information so gained to round out the story of our own racial lives. This method is based upon the tacit assumption that all peoples, whatever their racial derivation or chronology, will upon reaching a given (primitive) state of cultural development, react to stimuli in about the same manner. Some early customs involving color are excellent examples of this principle. Whether or not ancient man responded to any given situation as we do, influenced as we are by the inhibitions of our complex civilization, a little thought on the data we shall present usually shows that his motivations were apparently very similar to our own.

Though we have learned to date the cave art to a period thousands of years before our era, we have evidence that the beginnings of color and art go back still more thousands of years. We are reasonably sure that men began painting and tattooing their bodies and decorating their implements before they painted their homes. We shall see that these customs are connected in considerable part with the substance blood, whose color when exposed is red. Red blood was spilled. In warfare and sometimes when the fangs and claws of dangerous hungry or cornered beasts rent the flesh. Red was connected with exciting times and danger, thus originating by constant repetition a symbolism still effectively used in our society today. But we are less interested at the moment in such interesting symbols than in the enhanced emotional tone which was connected with the letting of blood.

The hunter and warrior returned to the settlement with blood stains on him: his own, his quarry's or his enemy's. He was greeted everywhere with respect and admiration, and his vanity was flattered. In early times physical prowess was almost the only standard of worth. An intelligent primitive would be in no hurry to remove the meritorious blood marks and scars. First they would be allowed to remain as long as possible; later in gradual stages schemes of artificial decoration would be devised, at first with red as the dominant color. Available materials would include certain vegetable juices as well as red, brown and yellow ochreous clays or perhaps more or less pure bright ochre pigments. Tattooing no doubt first arose from the filling in with colored pigments of the cuts and slashes on the body from war and the chase or made artificially with flint-knives.

Such practices are more readily understood by comparison with the similar habits of

primitive races who retrace, we think, the early steps of the human family, as we have already indicated. The steatopygous (great-buttocked) women discovered in Upper Egypt by Sir W. Flinders Petrie, British Nestor of archaeologists, were colored red with four lines on each cheek. The custom of having three or four horizontal cuts on the cheeks has been preserved by the people of the Sudan and is also found in South America, especially among women. The female statuettes from the Neolithic (New-Stone) Age excavations of Portugal and France according to J. Déchélette also bear four horizontal incisions on each cheek. R. H. Lowie, in "An introduction to Cultural Anthropology," pp. 83-4, after discussing cases of tattooing and scarification, treats of body painting as a popular form of temporary decoration. "Often it becomes an art comparable to tattooing," he says, "the natives not only smear themselves with pigment but work out decorative patterns. Thus, on the Colorado River young women rarely appear in public without striking red or yellow designs on their cheeks. This was merely for decoration; but in Plains Indian organizations, painting became a marker of status. For instance, members of the Dog club of the Arapaho tribe (Wyoming) had red face paint and over it long black lines crossed by shorter ones, along with black stripes on the forehead. Finally, among the Ona art activity is largely centered on the painting of the body, which attains its climax in one act of the great initiation festival." More detail follows; and the book gives interesting examples of tattooing and scarification, practices persisted in even though they may be very painful and troublesome.

That the comparison may be pointed in two directions is illustrated by a delightful quotation from Will Durant's "The Story of Civilization I; Our Oriental Heritage," pp. 84/5. "Apparently the first form of art is the artificial coloring of the body -- sometimes to attract women, sometimes to frighten foes... The Fellatah ladies of Central Africa spent several hours a day over their toilette; they made their fingers and toes purple by keeping them wrapped all night in henna leaves, they stained their teeth alternately with blue, yellow and purple dyes, they colored their hair with indigo, and pencilled their eyelids with sulphuret of antimony.") And after citing similar practices: "It is all very barbarous, says the modern lady, as she bores her ears for rings, paints her lips and her cheeks, tweezes her eyebrows, reforms her eyelashes, powders her face, her neck and her arms, and compresses her feet."

Besides the connection of the color red and of blood with body and implement ornamentation and with symbolism (red and excitement, danger, etc.), we have indicated but not elaborated upon another aspect of the color, that of the red-ocher burials; and here one of the actors in our cast, the Red Lady of Paviland, may be recalled. This practice is, we believe, so important to the understanding of the symbolism, the mood-stimulating value and the use of red in the general design-field, that we are led to give here a few other instances of the custom.

At Brünn (Moravia) and Oberkassel (Germany), red-ocher grains were apparently scattered in or around the bones and the accompanying funerary furniture. At Grimaldi (Northwest Italy), the trench of a triple sepulcher in one cave had been bedded with red ocher; and one skeleton had a red coating that would look like a skull cap. Another cave there held thousands of marine shells, many perforated, covered with red ocher. In another, ornaments and a plaque on which the head rested, were colored red; and in a fourth cave the red coloring matter filled the cavities of the bones. At the Chancelade (France) rock-shelter, where an Eskimo-like type of man was found, the ocher was spread over the whole body, coloring the bones a brick red, or in some places violet (the color of large particle-aggregates of iron oxide, the coloring matter of red ocher). At Ofnet (Bavaria) were found 33 crania and jaws severed

from the bodies in two pits, like eggs in a basket, all neatly facing toward the setting sun and all stained deep red. At two localities in France, one the "type station" of a race, the other that of a culture, and in at least three "stations" (sites) in Russia, similar situations were discovered. Northward in the steppes, so-called pit-graves of a certain period contained skeletons in a contracted attitude, covered with red ocher. The Forest Folk, given this name by the archaeologists and prehistorians, buried their corpses in extended attitude on camp sites and sprinkled them with red ocher. In passing, it may be mentioned that whether bodies are buried in "contracted" attitude (with knees up under the chins and perhaps originally bound with thongs) or "extended," is an important diagnostic criterion of race or culture. One of the so-called "Battle-axe" cultures, important in the early pre-history of Europe, also had the red-ocher practice. The nomad proto-Aryan Nordics of the steppes, who buried their dead under "kurgans" (mounds), possessed the custom; and their graves are often called "ocher graves." The practice was not confined to mainland Europe, for it was found in Sardinia; and L. S. B. Leakey mentions it in his "Stone Age Africa" as a practice of the non-negroid people who developed the African Aurignacian culture. And to go farther afield, red ocher was found with a mixed folk represented by remains of at least seven persons found in the Upper Cave where the ancient Peking man of China was found. Examples might be multiplied; but it will suffice here to add that the custom has been reported also for modern primitive aborigenes of Australia.

In G. H. Luquet's book "The Art and Religion of Fossil Man," translated by J. T. Russell, Jr. (Yale Univ. Press, 1930), we find potent arguments to prove that the essential attitude of the ancient living toward the dead was one of fear, and that the funerary practices were measures of protection against them. The ditches and tombs were not shelters for the dead, but prisons. The reason for the contracted attitudes of many skeletons is clear from the explanations of living peoples that they bind their dead tightly to keep them from "coming back" to torment the living. The two ideas are not conflicting, as may be supposed at first thought. The dead, who were dead because their life-giving red blood had been spilled, were given continued life through contact with a red substitute. They plagued the living (in dreams and as "ghosts") because they resented their deadness. Giving them eternal life might assuage this resentment; but binding them and putting them in funerary prisons was the safe course. Proof was always at hand: let the carcasses remain scattered about in the caves, then mysterious odors and maladies soon appeared to compete with the ever-present arthritis for the torment of the living.

Having sketchily reviewed an early act or two of the drama, it now seems appropriate to say a few words about the *dramatis personae* and the order in which they appear on the bill. In view of our function in this book, obviously any detailed discussion either of chronology (the dating of civilizations or "cultures") or of racial types, is out of the question. Such discussions may, however, be found in numerous books on archaeology, anthropology and pre-history. In the following paragraphs, the barest outlines will be given, for it is very difficult to make lucid any narrative of color or art history, without mentioning the actors in the drama, or without their order of appearance (a chronology, hinging around and hanging upon its dating posts the names of peoples and cultures). The beginnings of coloring and art, however we may define those incipient steps, were known to have occurred in the Palaeolithic period of time, the age when chipped and flaked stones were man's only implements and weapons. This was approximately synchronous, in at least most of the Old World, with the geologists' Pleistocene

period, which may be roughly described as the Great Ice Age, and which began about 600,000 years ago. There were four major glacial periods when the ice advanced over much of Northern Europe, making it uninhabitable, with three "interglacial periods" of melting and recession between. In each case there were at least doubled peaks of glaciation (temperature minima, with lags), in the last (most recent) case with additional minor minima or ice advances. The names of the cold periods were Günz, Mindel, Riss and Würm, with initial letters in alphabetical order, while late minor fluctuations were named with initial Greek letters alphabetized. The geologists had also discovered the fact that the middle interglacial was by far the longest of the three. Recent pioneering work by Koeppen, Wegener, Soergel and F. E. Zeuner and astronomical calculations based upon theories and calculations of solar radiation by Milutin and Milankovitch, yielded a splendid correlation with the geologists' relative chronology, so that we may with some confidence make use of the synthesis as an absolute chronology. The task of archaeologists and anthropologists is thus converted into one of finding in what geological horizons belong any given skeletal remains or "artifacts" (implements, tools, weapons, etc., fashioned by man for his use) and correlating these synchronized remains with the similar ones of similar folk in other areas.

The artifacts include tools, implements and weapons of war and the chase (in the beginnings of chipped or flaked stone); pottery "sherds" (fragments); engraved, sculptured or painted objects, as figurines; beads, pierced shells or teeth used for necklaces, and other decorated objects used as ornaments. An assemblage of artifacts, found at one or more sites ("stations") and proved to be all of about the same age, is called an "industry." An assemblage of industries is called a "culture," in general presumed to be made by people of the same racial stock; but the term also includes their way of life (hunting, farming, living in villages or towns, etc.) and their mental outlook.

For the last few thousand years, the geological-astronomical time-scale has been supplemented by several other ones, especially in Africa (where wet or "pluvial" periods are the mile stones), and by a painstakingly exact method of "geochronology" applied to Northern Europe. For these methods, texts of archaeological and geological books must be consulted.

The most recently developed method for dating geological strata, with their included objects, was reported in 1949 by Professor W. F. Libby and Dr. J. R. Arnold of the University of Chicago. It depends upon the determination of the proportion of radiocarbon (the isotope carbon-14) present in the carbon-containing portions of the archaeological material, by means of a count of the residual radioactivity of the specimen. The method has been applied particularly to determination of the age of remains of early American cultures; but also more generally. When the proper kind and amount of material is available, the method is said to be accurate, within 200 years, back as far as 20,000 years ago. The accuracy has been checked against samples of known age. Some materials which can be so dated include charred wood, grain, straw, grass or reeds, matting, basketry or cloth fragments; the skin, hide, hair, nails, claws, horn, antler, teeth or ivory of animals; and probably also bits of charcoal from darkened floor debris as well as charred bone.

A method of "pollen chronology," based upon counts of the relative frequencies of the pollens of different plants found in the earthy material found along with the culture assemblage, noting the warm or cold-loving and wet or dry-loving tendencies of the plants has also been very useful. Discussion of the method in detail is, however, beyond our scope here.

In Egypt historical records going back to roughly 3000 B.C. have been checked by certain astronomical calculations which we lack space to discuss. The Egyptian chronology has been extrapolated and extended by the archaeologists, checking and re-checking at every stage, by studying the contacts and influences of Egypt upon Western Asia, Africa, Crete and Europe. Moreover, for the two or three millenia back of 3000 B.C., reasonably accurate datings may be obtained by assuming that the rates of erosion or the rates of deposit of refuse by successive culture-layers in the most recent pre-historical levels are at least roughly similar to those of the accurately dated historical levels. For a better appreciation of such methods of making "educated guesses" and of the antiquity of the beginnings of civilization, we may refer the reader to articles and books by that ever-lucid writer V. Gordon Childe, especially his article "The Orient and Europe," which appeared, among other places, in *Nature*, Sept. 24, 1938, pp. 557-9.

The Red Lady of Paviland, as well as the first folk who may definitely be called artists, but probably not the first people who purposefully used color, were no doubt of the great hybrid race called the Cro-Magnon race who, according to the older archaeological textbooks, possessed the Aurignacian culture, and who were said to have assisted in the disappearance and extinction of the lumbering, beetle-browed Neanderthal race, which long had held the stage in Europe, and whose skeletal remains were first found over a century ago.

This simple picture, in the light of recent finds, no longer suffices. Nor does *Pithecanthropus erectus*, known to every schoolchild as the "missing link" who stood alone near the Y-shaped branching off of the great apes and the "ape-men" supposed to be our ancestors, from their common parent, now remain isolated. For there have been other *Pithecanthropus* finds, and still other ape-men and man-apes very near the branching point and older than this "missing link" (including, some quite monstrous ones). Since these do not enter into the drama of color except as ancestors of the color-using races, we pass them by entirely.

It is still believed that in a general quantitative sense, the Neanderthals, who left no art remains at all, became extinct in the warmer interval between the first and second Würm glaciations, though individuals lived on and are represented by their descendants among living races. But more important is the growing realization that many hybrids of Neanderthaloid folk with the so-called "modern" or "Neanthropic" men, were actors in the early drama and the forbears of later actors. These hybrids become important if we apply to color and art the biological principle of "heterosis" [FN below] for hybrid-vigor; for according to this principle art and culture should flourish when hybridization occurs. Cro-Magnon man, of special importance because the great flowering of cave art is generally attributed to him, is an example; but others will be cited below.

FOOTNOTE:

In making these statements, it is realized that the hypothesis of hybrid vigor in the case of human beings and its relation to the flowering of cultures is no longer the most popular one used to explain the facts indicated or implied here and elsewhere in this book, and that there are many facts which can be cited against it. Further, that the idea of hybridization of Neanderthaloid men with "modern" men, as in the "Mt. Carmel men" to be discussed later, is only one of four or more theories that have been applied to explain the facts here attributed to hybridization. But as this is not a textbook of anthropology, ethnology or biological evolution, it has been thought best for the general reader to make use of perhaps the most easily understood theory. Perhaps the attitude exemplified here may be put somewhat as follows. The hypotheses of hybridization of some peoples important to cultural progress (and our color story), and of hybrid-vigor as largely accounting for the flowering of their cultures, may not be the best ones to explain the

facts. But they are useful working hypotheses, easily understood, which may often be "correct" and if they were correct, the picture which they present would be essentially that portraying most of the known facts. Moreover, from these working hypotheses one can predict, with some degree of success, from the known past histories of two interbreeding racial strains, what may be expected of their hybrid descendants.

The following account of the actors on our stage may prove tedious and uninteresting if not bewildering because of the many new names. We hasten therefore to reassure the reader with the promise that each new actor as he comes on will be briefly described along with a few remarks intended to put him in his most illuminating and interesting background.

There has been a growing tendency to classify all early types of men, many of whom are actors in the drama of color or art, in four general groups. First there are the "ape-men" and their relatives, with small brains and muzzle-like faces. These include *Pithecanthropus* (both species *erectus* and *robustus*) and his other Java relatives, *Modjokerto*, *Sangiran* and *Solo* men. Having affinities to these were *Keilor* man, *Wadjak* man, *Talgai* man and others who evolved in the direction of the primitive Australians and Tasmanians. So similar to *Pithecanthropus* as to be put by some in the same genus was *Peking* man of China, who evolved in the direction of the modern Mongoloids, including as offshoots the Eskimos and American Indians and the fossil type of *Chancelade* man of France with resemblances to the Eskimos. Also belonging to the

same general stock, which has been called "gorrilloid" by some, were *Njara* or *Eyassi* and *Rhodesian* men of Africa, among early types, as well as *Florisbad* and *Boskop* men, later ones who evolved toward the artistic Bushmen and the Hottentots; and *Asselar* man, who leads to the modern negroes.

Having some affinities with these but perhaps better placed tentatively as a separate group, are the Neanderthal-like races, whose earliest representatives were *Heidelberg* and *Steinheim* men. Later ones were *Ehringsdorf*, *Krapina* and *Saccopastore* men, as well as *Mousterian* man, whose place of discovery gave its name to the typical culture of the "Middle Paleolithic" period, that one which was most characteristically Neanderthaloid. Also to be listed here, as most typical, is the man of *La Chapelle-aux-Saints*; and the list includes many others in Europe. An Asiatic group includes remains from caves near the Sea of Galilee, from the *Gissar* mountains of Siberia, the Russian rock-shelter of *Teshik-Tash* near *Tashkent*, and the man of *Kiik-Koba*, found in a grotto in the Crimea in 1925 but well described only in 1941. His grave is the oldest human one known to us.

Latest to appear on the scene (in Europe probably as invaders originally from Asia), were the Neanthropic races, those whom we dignify and exalt by assigning them to the same species as ourselves and naming them *Homo sapiens*. Among fossil types to be put here are *Piltdown*, *Galley Hill*, *Swanscombe* and *London* men of *Gt. Britain* and *Kanam*, *Kanjera* and *Oldoway* men of Africa. Of only the *Oldoway* type may we say that there are some signs of negroid character; but in this connection we must quote C.S. Coon, who says ("The Races of Europe," 1939, P. 34): "There is no type of man more completely sapiens than a negro." Quite "white" and sapiens are the men of *Gamblers Cave* in the *Elmenteita* district of East, Africa. An important North African series comes from the sites of *Beni Segoual*, *Afalou bou Rhummel* and *Mechta el Arbi*, where the culture was generally similar to the *Aurignacian* and the people similar to the *Cro-Magnons*, except for broader noses (and possibly longer and lower heads).

Coon regards both the *Cro-Magnons* and their relatives of the *Afalou* or *Mechta* race as

hybrids of the basic sapiens type with Neanderthaloids, with which blend was associated a variant tendency to round-headedness, except that he regarded one cranium (cataloged Afalou #28) as that of a "basic white" man of the Galley Hill type. If this be correct, we have in the two related types examples of the fourth general group.

With these two groups may belong also the Paviland men and the "Grimaldi race," represented by two skeletons, possibly those of mother and son, found in Italy with limbs in a flexed position and tightly bound to the body. These showed several "negroid" traits, though Aurignacian in a general sense. But the importance of hybridization in human remains first became generally appreciated after the material from the caves of Mt. Carmel in Palestine became better known. Here in two caves, in the same cultural level dating in the last half of the last interglacial, were found Tabtn man of Neanderthaloid type and Skhūl man of sapiens type. Some were of intermediate character and all gave evidence of hybridization, the characters being such that Skhūl man might be considered the ancestor of the Cro-Magnons.

The only other hybrid types we need to consider here were the so-called Predmost and Brunn races, mammoth hunters of Moravia. These might be considered as Neanderthal-Cro-Magnon blends or rather as of an earlier blend of the sort exemplified by the Skuhl men. They were actors in the color drama because they were important bearers of the Gravettian culture, which is the third one chronologically which used to be known as "Aurignacian." The earliest "Aurignacian," of Würm 1-II date, is now known as Chatelperronian; it was possessed by the Grimaldi and Combe Capelle men among others, the latter a modern or Galley Hill type. The second, or Middle, Aurignacian, possessed by the Cro-Magnons, is still called by that name. Certain hybrid types also flourished in the period of the Magdalenian which followed, when cave art flowered. We shall not, however, detail these or other hybrid types here.

It has been indicated that there was some broad-headed tendency noticeable among the Cro-Magnon and Afalou hybrids. None of the other types we have so far considered evinced the round-headedness, even the Brunn-Predmost race of mammoth hunters of Central Europe being moderately long-headed. While descendants of these three types, with some admixture of negro and probably of some early round-headed stock, became the modern "Caucasians," the exact relations are not fully known. Some authors regard the "basic white" stock, the dark and slender Mediterranean peoples and the blonder Nordics, as essentially of Galley Hill stock, others regard the Skhūl stock of Mt. Carmel as the proto-Caucasian or at least the proto-Cro-Magnon stock. The Alpine races and the Mongoloid types constitute the important roundheads.

Although many of the scenes of our color drama were laid in the right-wing (eastern or Asiatic) and rear (southern or African) portions of the pre-historic and early-historic stage, and in the later phases in a left-(European) wing, some of the most climactic scenes took place center-stage (in the Near East), where cultural traditions and blood mingled to enliven and accelerate the tempo of progress. If we extend the term Near East to include some of what is called the Middle East, we may say that probably the four most important discoveries of ancient man were made in or near the Near East. These were the domestication of animals, beginning with the dog, the cultivation of grain in a primitive farming, the making of pottery and the smelting of metals. The first two were necessary before sedentary communities could thrive. Political organization also was necessary not only for self-defense but for regulating the use of canals and dams to bring water for irrigation farming and to safeguard commerce. We shall see that the first historically recorded battle arose from a quarrel over water rights

between two cities of Mesopotamia.

Paleolithic Color

Having introduced the actors, indicated the order of their appearance and sketched the nature of the drama and its beginnings, we now get on with first act, We have indicated that, although we have no definite proof, it is probable that the use of color in body decoration, tattooing and no doubt filling in scarification marks with color began very early. It is impossible to say how early, except that it was surely in pre-Mousterian times, thus perhaps 150,000 to 200,000 years ago on the astronomical scale. This was followed, in the Mousterian times when Neanderthal man flourished in Europe, by the earliest burials in red ocher, possibly over 100,000 years ago.

To Mousterian times belonged the earliest cosmetics, faceted chunks of manganese oxide, showing signs of having been scraped with a flint tool, and revealing man's innate vanity. For the lumbering, loutish-looking Neanderthals of the period dusted their beetle-browed faces with the blue powder. As in the case of most animals, only the males so ornamented themselves, for the powder has been found only on the facial bones of skeletons of males. This was at a time when the body was covered with only single animal pelts, for no implement that could have been used for piecing skins together has been found in the Neanderthal strata.

During this period with little doubt body decoration took the added form of the wearing of ornaments, the first probably being bits of bone, sea shells, colored pebbles, etc. By and by these ornaments were supplemented by trophies of the chase and war. Chieftains wore necklaces and bracelets of perforated shells and animal teeth, and later beads. At Predmost, in the stratum which yielded the remains of over 800 mammoths were also found the bones of a child adorned with oval beads of mammoth ivory. Around an Aurignacian skeleton at Brunn were over 600 fragments of fossil shells as well as perforated stone disks. A necklace and belt of perforated bear and lion teeth was found in the cave of Duruthy, near Sorde, France. At Laugerie Basse, an Aurignacian skeleton was adorned with sea shells from the Mediterranean. It is interesting to compare this item of very early commerce with the beginnings of Phoenician commerce, which began with a luxury item, the dye Tyrian purple, not with an article which may be considered a staple necessity. But perhaps the best place for such examples of decoration is in the caves of Grimaldi. Here one of three skeletons in the Barma Grande (a cave in the commune of Grimaldi, Liguria, Italy), in a layer of red hematite, was decorated with a necklace which is very revealing as to some of the beginnings of art. Between large canine stag teeth were strung regularly three rows of smaller objects, two rows of fish vertebrae, twice four in all between each pair of teeth, and a row of three sea shells. It is a fine example of arrangement or easily perceived order, symmetry and well thought-out pattern. Even alternation, repetition and balance, other "modern" art principles may be said to be illustrated here.

Parallel to or possibly following the adornment of the body was adornment of implements and weapons. This began probably not with color but with simple incision with a sharp tool. According to the Abbé Breuil (*Journal de Psychologie*; 1926, p. 367) this may have occurred as early as Mousterian times in the form of lines on bone objects used in cooking found at La Quina and La Ferrassie (Dordogne, France). Some of these had accidental scores on them; these were no doubt noted and appreciated in part because of their functional value, enabling the bones to be grasped more firmly; and then, as seen in other examples, the lines

were imitated. As soon as such markings were deliberately made with any regularity, we have the beginnings of "geometric" ornament. Embellishments in the form of parallel lines, notches and punctuations, added to improve articles of bone, ivory or stone, would develop into zigzags, chevrons and more complex ornaments, pleasing to the eye, but often made more pleasing by -the use of color. This must have been at least one form of the rudimentary beginning of "art for art's sake."

In these rude beginnings we may see that Early Aurignacian men, or more properly the men who possessed the Chatelperronian (Early Aurignacian) culture, who are commonly hailed as the first artists, were not the first when art and coloring is viewed in the broader sense. They did, however, probably paint the first representational pictures and mold the first sculpturings. But art in the broader sense, as we have seen, was much older.

Though apparently sculpturing, engraving and painting more or less simultaneously marked the artistic awakening due to Neanthropic men of the Grimaldi and Combe Capelle types who were the makers of the Chatelperronian culture, sculpturing came to fruition first; the other arts followed closely. Chatelperronian man's earliest paintings were simply outlines in red, black and yellow which have no more relation to the actual colors of the object than do our own drawings in black pencil; the sculpturing consisted of animals in relief, the engraving of simple outlines of animals in absolute profile. At first only two legs were indicated; often eyes were omitted, possibly having originally been painted in. In some cases of engravings and reliefs, traces of red paint have remained. Probably the oldest forms were parallel curves, spirals, serpentines, meanderings and interlacings traced with the fingers, generally with three, or with a forked branch or toothed instrument. The simplest were meandering parallel lines in red or yellow; also drawings of animals traced with the finger in clay, a form of engraving, but at La Pileta (Spain) these digital lines were painted in yellow on the solid wall.

There were also painted representations of human hands in black and red; these were both in a "positive" form, made by soaking the hand in paint and applying it to the surface, and in a "negative" form made by painting around the hand held on the wall. There were finally monochrome drawings in black or red, single thin linear outline tracings, without a bit of modelling, indicating merely a silhouette, with only two legs portrayed. The time of these beginnings was in the interval between the first and second maxima of ice in the last or Würm glaciation.

One of the most recent discoveries of Early Aurignacian (Chatelperronian) art has been called the "Sistine Chapel of Aurignacian Art." This is in the cave of Lascaux, near the town of Montignac, home of the writer Joubert, in the valley of the river Vézère of southwestern France. This valley was a highway along which ancient man often travelled. About 15 miles below Montignac is the village of Les Eyzies, famous for the art of the surrounding caves, grottoes and rock-shelters. Nearby is the great painted cave Font-de-Gaume with its powerful red rhinoceros (now fading out) and about 200 figures in black, red, ochre yellow and brown. The grottoes whose walls were embellished by the Aurignacian painters were theaters for the enactment of magical rites, for the curious enchantments of a hunting-wizardry.

The Lascaux painted caves were first discovered in 1940 by five boys off on a holiday lark, who let themselves down through a hole in the ground to recover their lost dog. Here they, the local priest and schoolmaster soon called in by them, and three famous archaeologists summoned in their turn, found representations of bulls, oxen, a "jumping cow," stags, deer

with branching antlers, fawn-colored horses of the steppes and ponies, as well as simple symbolic figures (checkers, "traps," combs), painted in black, red, brown, ochre yellow, crimson and bistre (a dull yellow-brown). These were covered with a thin film of stalactitic (calcite) crystals, which not only protected them from destruction but enriched the colors to a splendor beyond that of nearly all other known "frescoed" caves. The archaeologists decided that the eighty-odd paintings of the Montignac "Main Hall" and "Axial Gallery" leading out of it, represented an art different from that of the red, brown, yellow and black polychromes of the great cave of Altamira, some of the former being older (30,000 to 15,000 B.C., according to Abbé Breuil). Altamira and Font-de-Gaume chiefly illustrate the art of the Magdalenian culture, which followed the trio of Aurignacian ones in time. Photographs and descriptions of the new paintings came out of "occupied" France in the period 1940-1942, appearing in the French magazine "L'Illustration" and the British "Nature" and "Illustrated London News." In the February 24, 1947, issue of the American magazine "Life" may be found full-color reproductions.

All of the ancient painted caves, rock-shelters and caverns of France (the "Aquitaine" district) and northern Spain ("Cantabria"), some 80 in all, illustrate an art style called Franco-cantabrian. A very different style, resulting from an evolution to be discussed presently, was that of southeastern Spain. Whether the Franco-cantabrian "frescoes" were painted by the neanthropic ("modern") type of men who possessed one of the trio of Aurignacian cultures, or by the Magdalenians, there were many points of similarity. But naturally the subjects and techniques varied over so long a time range. The subjects included naturalistic pictures of animals, highly conventionalized representations of semi-human figures bordering on caricatures (though more likely of serious ritual character), and symbols or emblems of unknown purpose. There were very few clearly human figures, scenes or compositions of groups. On the other hand, the cave-art of Levantine (southeastern) Spain included all of these three classes, but was also replete with representations of men and women, often shown in the vigorous movements of war, the chase or the dance (but even here too showing human faces either caricatured, masked or turned away).

Since near the start of the present century controversy has raged concerning the dating of the Levantine paintings, some archaeologists insisting on an Old Stone Age date and others assigning the style to the New Stone Age. The former view is now generally held for the bulk of the southeastern Spanish paintings. The Franco-Cantabrian style can be traced by its infiltrations, in Aurignacian times, all the way from the north to the south of Spain.

Apparently, as the climate got colder toward the peak of the last phase of the Würm glaciation, there was a migration towards the southwest by the Aurignacian peoples, bearing their characteristic (Franco-Cantabrian) art. When the glaciers cut off Levantine Spain from Cantabria and Aquitaine, southeastern Spanish art developed the schematic but semi-realistic style peculiar to itself. With the waning of the ice, the Franco-Cantabrian art rapidly degenerated and disappeared; but the more southerly art continued throughout the Middle into the Late Stone Age. Its vigorous spirit of former times was gone, but conventionalization had not reached the degree exhibited in the very late French art.

The Montignac caves on the Lascaux property included, besides the "Main Hall" and its extension the "Axial Gallery," already mentioned, what are known as the "Crypt," the "Apse" and the "Nave," forming together an arc roughly parallel to the first-named caverns and

connected to them by a "Lateral Passage" covered with engravings. The Abbé Breuil has distinguished 13 or 14 classes or styles of paintings in the caves, some of them with two sub-classes. Probably the oldest painting there is merely the outline of a little child's hand and forearm, done with faded red pigment. Hand outlines at Font-de-Gaume were black. In general, the hands were left ones, the painters using the right hand to hold the powder while blowing it on. One may speculate on this observation in connection with the fact that the oldest clumsy stone tools, chipped by Europeans long before the Aurignacians, seem to have been fashioned with either right or left hand.

In the Nave and Lateral Passage were also engravings, all engraving apparently being later than the paintings. The second group of paintings included small horses and conventionalized stags antlers done in thin red outline, and a frieze of bulls' heads in the same style but in yellow. Another group comprised two stags in pale red, one of them with antlers slewed around in a "twisted" perspective in a way better illustrated by the so-called "Irish Elk," the oldest example of this "Lascaux perspective." The older Aurignacian paintings in general, but not the Franco-cantabrian ones of Magdalenian age, do not show hoofs, horns or antlers in true perspective, but with one horn or antler above the other. Examples were found in yellow and red Aurignacian drawings at La Pasiega. But the slewed perspective is used for horns and antlers in Levantine art of both Aurignacian and Magdalenian art.

The fourth group includes horses, ponies and a wild ass in bister (dull yellow-broom) color touched up later with black; and a bister-colored ibex executed with a multitude of dabs or spots. In a fifth class is a boldly drawn crimson bull executed in a dabbing and rubbing technique and wild cows in red outline. In the Axial Gallery, a sixth group includes horses and a bison in broad red outline partially filled in with color. Hoofs and muzzle are made with dabs of dark-colored or black pigment. In the Hall and Gallery are a number of fawn-colored horses with modeling and details in dark or black pigment. The short-legged and stout-bodied horses look much like those rendered by Chinese painters and sculptors thousands of years later.

In the next group are horses with missiles striking at or near them, along with a bear and a brown-colored deer. In group eight are a bichrome horse in flat red wash, with legs, head and outline in black; a bister-colored deer with black outline and some beautiful, slender horses in the same colors, horses very different from the "Chinese" ones. One is slipping into a pit, illustrating the way Aurignacian hunters chiefly secured their prey. The ninth group contains horses in the "Chinese" style, but in dark brown instead of fawn color; also an ibex in thick black outline done with blow-pipe, and in the same style an "apocalyptic beast," a peculiar composite monster. The massive sagging body seems to be that of a pregnant ox or rhinoceros; the cat-like neck and head are very small for the body-size, but equipped with two appendages which are more like long spikes than horns. The flanks are splotted with several elliptical markings. Rather than a beast, this figure may be a sorcerer or shaman in his ritual animal-skin vestments and horns. It is known that Aurignacian sorcerers wearing masks, skins and horns were the forerunners of later priests, medicine-men, shamans and kings. The heads and horns of beasts may have constituted the ancient equivalent of helmet, crown, miter and mask, all in one.

Group ten embraces a number of animals in flat red wash, including a wounded and dying bull or aurochs and a cow of the same species followed by her calf. Group eleven contains wild oxen, while group twelve contains small horses and shaggy ponies in flat black wash. The thirteenth group contains excellent horses done in red (or crimson) and black or red and dark

brown; also a black bull and a leaping black cow who suggests the "cow who jumped over the moon," superimposed on some red figure so as to give the body a polychrome effect. The cow's muzzle touches a large grill-like object in thick red outline. It may be a gate, a snare or a trap; but like some other peculiar figures in the Montignac caves and elsewhere, may be a ritual, magical or sexual symbol, a tribal mark (a sort of primitive heraldry), or a very primitive ideograph.

In the Crypt is pictured a group involved in a prehistoric tragedy. A man out hunting, wearing his bird-mask and carrying his bird-stick, has wounded a bison with his javelin. The wounded bison has turned on the man and gored him to death. But while about to mangle his prey, a great woolly rhinoceros, outlined surely and effectively in black with furry, fuzzy strokes, has ripped open the belly of the bison.

Cave-man's pigments were in general limited in number and range, the colors being reds (rose, crimson and vermillion from iron oxides), orange, bright and pale yellow, violet brown; and a greenish black, a blue-black and a "dead black" (these from a manganese compound); but no trace of blue or green. The Montignac colors were rose, crimson, vermillion, bright yellow, ocher yellow, brown, "mauve," and black. The pigments were mixed with fat and applied with fingers, tampons made of tufts of hair or feathers, or brushes made from animal tails. The blow-pipe, as a sort of primitive air-brush, was also used during the Old Stone Age.

The next actors on the stage were the Cro-Magnons, chief bearers of the (Middle) Aurignacian culture. Their mural paintings showed some modeling of the colors; but this variegation was not yet greatly developed. The characteristic paintings were still black and red monochrome silhouettes. But primitive drawing and engraving had begun to replace sculpture, while ornamentation developed but retained a simple geometric character. There occurred also the first plastic representations of the human figure in the round, the Cro-Magnon artist taking as his subject the female figure. The "Venus of Brassempouy" from the beginning of the period is typical; but we shall reserve the discussion of these figures for the next culture-period.

The Aurignacian-culture folk spread from Syria and Palestine into the Caucasus region of Russia, but did not penetrate the South Russian. They then skirted the northern shore of the Black Sea and reached the caves of the Crimea; they pushed westward and separated the Chatelperronian and Gravettian cultures, the latter having developed from the former in Northeast Europe. The former also sent a branch into East Africa, where the African Aurignacian developed. From the Aurignacian and Gravettian centers migrations then poured into Central and Eastern Europe along the southern edge of the ice-sheet, forming cultures which succeeded and influenced each other. After passing through Bulgaria, Rumania, Hungary and Austria, the Aurignacian impinged upon the still developing Chatelperronian.

If the primitive folk who possessed the trio of Aurignacian cultures were, like the earlier Neanderthals, profoundly impressed by the mystery of death and made provision for the after-life, they seem to have given equal thought to the mystery of death.

For the most characteristic art-objects of the Gravettian (Upper Aurignacian) culture are the female statuettes, apparently of pregnant women, which have been found in an area stretching for seven thousand miles across Europe into Siberia. These "Venuses" are usually attributed to a cult of fertility which later developed, as we shall see, into the cult of the Mother Goddess. Traces of paint were found on the famous Venus of Willendorf (Austria); traces of red color were also found on the statuette of a kid from St. Michel d'Arudy; and these

suggest that the absence of eyes and mouth on the "Hooded figure" of Brassempouy (France) is due to the disappearance of color originally there.

Certain reliefs in stone also had traces of red coloring matter persisting on them. Engravings of the period included both animal and human figures, with all four quadruped limbs shown, with some attempt at perspective in the head and horns. The cave paintings of the Gravettian period evinced greater skill than before, and attempts at modeling icy shading at certain parts. Details such as hair were given more attention. Filling in of lines at first was feeble, then grew more and more, and was finally associated with contour modeling which covered the entire silhouette. Color was used more and more until there was developed a well-modeled monochrome silhouette, frequently in black. In a grotto of Spain, there were deer in yellow ocher, chamois in red.

Most of the material of the last few pages on Paleolithic art and color was written before the appearance in 1949 of a most interesting summarizing article by Professor Karel Absolon of Prague. It dealt with the archaeological work of many years carried out in Moravia, the central part of Czechoslovakia. This is a country immensely rich in relics of ancient man. As Prof. Absolon says, one does not ask where fossil man lived in Moravia; one might ask: "Where did he not live?" Over 200 "stations" are known there, many of them large. This "Promised land" or "Eldorado of the hunters" was so because it lay on the great Eurasian migration route from Asia and Russia to the west along the southern edge of the glaciers through the "Moravian Gate" between the mountains; and animals as well as hunters followed this bridge from East to West. It ran along the Dniester, Vistula, Oder, Morava and Danube rivers towards the Rhine, the Oder at that time emptying into the Morava and the latter into the Danube. The glaciers crowded many animals, including the "mammoth and thee woolly-haired rhinoceros, into Moravia. The largest sites there were Predmost and Dolni Vestonice.

According to Prof. Absolon, these hunters were not primitive Neanderthals, but Cro-Magnons possessed of a relatively high culture. The now "classical" work on the western Neanderthals, principally in France, had set up something like an equation: Neanderthal man = Mousterian culture = time of the last or Würm glaciation. But more recently it had come to be recognized that more eastern Neanderthals, found between 1892 and 1933 in Germany and at Krapina (Croatia), belonged to the earlier and warmer Riss-Würm interglacial period, but in spite of this were physically somewhat more advanced in the direction of "modern" man. Still more eastern finds of Neanderthaloids have already been mentioned, as have also the Neanthropic Brünn-Predmost hybrids. Absolon regards twenty Predmost people discovered as fossils in 1894, and one he found at the capital, Brünn (Brno), as Cro-Magnons. He regards their cultures as "Early" and "Upper Aurignacian." These are now generally called Chatelperronian and Gravettian, respectively. The Middle Aurignacian, now generally retaining the old name "Aurignacian," was absent. In the first of these cultures, which Absolon regards as being as early as the French Mousterian, the tools were of quartz and quartzite and the fauna were principally the cave-bear and rhinoceros; in the second, the minerals jasper, rock crystal, chalcedony, opal, etc. were imported and the chief animal hunted was the great mammoth. The Magdalenian period which followed was marked by a "bone industry" (bone tools, etc.) and the presence of the reindeer and the wild horse. The cultures perished suddenly about 15,000 B.C., and neither cultures nor animals reappeared until the advent of the Neolithic about 1000 B.C. The supposed cause of the hiatus is not stated, except for vague hints at a connection with the "lost Atlantis"

problem, to be discussed in promised later articles. Absolon, who is an archaeologist of great reputation, claims that a Moravian country doctor, Henry Wankel, in 1867 discovered Paleolithic cultures for the first time in Europe, in a Moravian cave, and interpreted them in the correct way just stated. He also made other important discoveries, including the great site at Predmost.

For a long time, there raged a controversy among archaeologists as to whether ceramics, or at least pottery, was ever produced in the Paleolithic period. According to Absolon, pots were not produced before the Neolithic age, but he cited a few authentic examples of late Paleolithic ceramics, stating that earlier than any of these was a sculptured bear's head from the Moravian station, Vestonice. Soon a collection of Paleolithic sculpturings was obtained; mammoth, reindeer, rhinoceros, lioness, cave-bear, wolverine and wild horse were among the species found. These were mostly small, but true to nature, enough so as to be readily identified. It was stated that a pair of cave-bear heads occurred along with "dyes"; also that rubbing stones were found with red and yellow dyes in a fireplace, and that many bone objects at the scene of a "mystic cult" of mammoth hunters was dyed red. One suspects that what Absolon calls "dyes," we in this country would regard as "pigments," colorants usually of more permanent, inorganic materials; otherwise they stood only a small chance of being preserved for nearly a hundred thousand years. Simple geometric line drawings were also found; but as is the case with children, the plastic art of sculpturing came first.

The animal figures were all ceramic; anthropomorphic statuettes were either ceramic or made of mammoth ivory. Most interesting were the pair of sister cave-bears found with "dyes." They were equally large and similarly modeled. One was modeled bilaterally in symmetrical proportion. The second "was true to nature only on the right side." On the left, it was disfigured by an artificial wound, with deep holes in the place of the eye and temple. Somewhat related is a drawing, in the "Trois Frères" cave in the Pyrenees mountains, of a stoned cave-bear, bleeding profusely from nostrils, eye and temple. It is believed that these animals were so reproduced as a sort of magic, making it easier (it was believed) to catch the animal, as by a spear-thrust into the eye or temple. In the same spirit was a legless cave-bear from Moravia, otherwise perfect. "Venus" statuettes as well as a male figure (rare in Paleolithic art) were also found. It is interesting and a cause for speculation that the intelligent mammoth-hunters did not use their skill in modeling household implements and vessels. For even earlier than the hunters was a perfect fossilized loam spheroid in a well authenticated Mousterian stratum. It could have been made only by man; and must be considered the oldest ceramic object in the world. But this and the artistic objects are not pottery. Two British scientists, Absolon and others are agreed that late Paleolithic ceramics have certainly been found at two sites in England; and several instances of Magdalenian artistic ceramics are known from the Pyrenees region.

For many years cave paintings and rock engravings in South Africa were known to travellers and scientists; but they could not be well dated. Since when Europeans first arrived in South Africa the Bushmen were living a Stone Age life, and the Bushmen were known to have painted on the walls of their cave and rock shelter habitations, all rock paintings in Africa were commonly casually described as "Bushman paintings." This attribution of course implied a late date. But in 1928 M.C. Burkitt's book "South Africa's Past in Stone and Paint," showed that several styles, utilizing different colorants and of various ages, were included; and a sequence

which we shall briefly describe in a moment was outlined. Professor Breuil amplified these findings the same year, and his work was confirmed by recent work by Miss M. Nicol. The following year, A.L. Armstrong made a detailed report on both the art and the stratigraphic culture succession of the Bambata Cave in Southern Rhodesia. Included was positive evidence that the culture of the painters could be dated roughly in the Upper Paleolithic age in a period broadly contemporary with a loosely connected group of South African cultures known as the "Middle Stone Age Complex," with East African Aurignacian and with the late Aurignacian of Europe (or a little later). The makers of these cultures will be briefly described; we shall see that some of them can be considered ancestors of the Bushmen. In Burkitt's book, in one by Breuil (*Cahiers d'Art*, Paris, 1931) and in other places similarities have been pointed out between African art and the art of Eastern Spain, which we shall see differs from that of the rest of Europe, with supposed connections through the art of Northern Africa. Recent work has rather upset the old ideas about the transmission of this art, but the evidence suggesting this link has not been weakened, according to L. S. B. Leakey's "Stone Age Africa," in which there is a fine chapter on this art. Leakey believes that it was the East African Aurignacians who spread the artistic ideas over Africa.

In South Africa, the paintings may be put into several series with stylistic differences as well as execution in differently colored pigments. The oldest series was in black, the next in white, while at another site early paintings were yellow and then "bright red"; not so old were a "dark claret" series described in 1928, followed by an earthy yellow and white series culminating in a polychrome series. The wall painting technique in the Bambata cave of Rhodesia showed that the animals and figures were first drawn in outline, and then filled in with chromatic pigment in the way a child uses crayons.

The culture which in the classical sequences followed the trio of Aurignacian ones was called the Solutrian, from the type-site Solutré in France. This is believed to have arisen in caves in Northern Hungary and was known to have ranged from Rumania to France. This culture, borne by hunters of the reindeer and especially of the horse, was long supposed to have been an inartistic one; but an increasing number of Solutrian art finds show that the race, a high-headed-type including both long-heads and round-heads, was not antagonistic to the production of art objects. During the mild to cold steppe conditions of the time of the second maximum of the last (Würm) glaciation, the culture penetrated as far as the district of Valencia in Spain. An uncertainly datable phase of monochrome linear painting of a more realistic style than before may belong to the Solutrian; while roughly of this date were five reliefs in stone from Laussel, France, which were found with traces of red paint. Quite uncertain in date, but not improperly put here in a rough chronology are balls and pencils of yellow ocher, red and brown hematites and ochers (raw pigment) and paintings found in the Bambata cave of Rhodesia, Africa, and other African sites.

As the temperature became milder after the second Würmian maximum, there developed in Europe the Magdalenian culture, so-called from its type-station, La Madeleine in France. The culture and its artistic expression bear many similarities to the Aurignacian rather than to the Solutrian culture which intervened. Though the evidence is not conclusive, it has been customary in fact to look upon the Solutrian as an intrusion on the Aurignacian trio of cultures. The Solutrian period was a rather short one, while the Magdalenian was quite long. It was during the latter period that the art of painting attained the highest development that it

was to reach until the fifth (or possibly the third) millennium B.C.

Magdalenian culture has been frequently classified as "Lower" (with three sub-phases), "Middle" (with two sub-phases) and "Upper" (with only one), these corresponding to the third to fifth (out of six) art phases of Southwest France. But Magdalenian art can be found also throughout many caves of France and Spain, constituting that known as Franco-cantabrian art. The drawings and paintings in these caves are not all assignable to the Magdalenian culture, since some quite obviously date back to the Aurignacian period.

At La Pasiega, Spain, a grotto contains over two hundred paintings of the Early or Lower Magdalenian and the two preceding periods. The paintings of deer are in yellow ochre, the chamois in red. The outlines are in solid red or in stripes of red and black, or there is a sequence of spots. In general the paintings of the period were of two sorts of monochromes; one included figures of a "flat" effect and "Chinese" shading without modeling, but succeeding to an effect of relief. There was an excessive use of color, completely filling the silhouette. The drawing was frequently bad; the colors were black, red and brown. In another style the outline consisted of a series of carefully made punctuations, the body of the animal itself being sometimes covered with these dots, resulting in a somewhat conventionalized effect. Some of the best work of the period is a cavern at Font-de-Gaume in the Dordogne region of France. In a figure of a black and gray galloping horse here the color graduates away from the black outline to enhance the effect of round relief. Most of these paintings are in red and black; but in the cavern at Niaux many of the paintings are in a brilliant light ochre yellow, while outlines are executed in black manganese oxide. At another station, the outlines are in red and black.

Roughly contemporary with the art of Southern France and Northern Spain was that of a rather different style known as East Spanish or Levant art, which has been attributed to men possessing the Capsian culture. The latter was named from Gafsa in Tunis, called Capsa in antiquity. Recent papers by R. Vaufray have seriously questioned the old view of the chronology, origin and spread of the Capsian culture. Its bearers were supposed to have been invaders who crossed the Straits of Gibraltar from North Africa shortly after Aurignacian man reached Aurignacian Southern France. Early Capsian was thought contemporary with Upper (Gravettian) and Solutrian} and Late Capsian with the Magdalenian.

The East Spanish style is rather strongly contrasted with the Franco-Cantabrian style. The latter engravings and skillfully executed polychrome paintings are generally found in underground caves where large animals of the chase are portrayed in a static style; that is, standing or lying down. Human figures rarely occur and compositions are absent, or if present are rarely complex. The East Spanish pictures are lighted by daylight because found under overhanging rocks or in natural niches in the cliffs. The subjects involve dynamic action; they include men in the chase, at war, dancing or even climbing trees. They are commonly monochromes executed in red ochre. Wild animals are less frequently portrayed than men. A feeling for composition is evident and the atmosphere is a lively one of movement and speed. But the figures are almost miniatures and so poorly drawn as to look almost like caricatures; in some there is better drawing and there are several phases in which the quality varies. This art has been described as in a "shadow-picture" style. It has often been stated that it shows similarities with the art of Rhodesia and the Bushman country of Africa. There may be a connection through the rock-pictures of the Sahara; but those of North Africa are not the connecting link, for they have been shown to be much too late in date.

For East Africa, Leakey distinguished 13 styles of painting, of which the first ten are probably of Stone Age date. The first five styles are described as follows: (1) The earliest figures of animals in red with the whole figure colored, except the face, which is drawn in thick outline only; (2) very curious human figures in "an unusual purple," rather badly drawn animals in the same purple, and large areas of concentric rings of dots drawn with the fingertip; (3) figures in which ostriches and giraffes predominate, drawn in outline in a purplish red; (4) a few very indistinct (and very uncertainly classifiable) black outline figures; and (5) claret-red very naturalistic figures of animals in outline, drawn with very thin lines of paint, with details such as sex organs, manes, etc. carefully shown. This group contains the best of the art.

Associated with the "Middle Stone Age Complex" of cultures of South Africa, previously mentioned, was the "Boskop man," known from a skull found in the Transvaal in 1913; and "Florisbad man," found near a hot springs north of Bloemfontein. The latter is a transition from the former, a great-brained man with smooth forehead, to "Rhodesian man." They were roughly contemporary with the late Neanderthals, Cro-Magnons and Solutrians of Europe and the Mehta race of Africa. Rhodesian man was found at Broken Hill in Northern Rhodesia in 1921; he was a small-brained, low headed, beetle-browed and ancient type. The Boskop and Florisbad men, as well as Boskop-type men represented by skulls found at Tzitzikama on the coast of South Africa 100 miles west of Port Elizabeth, are regarded as possible ancestors of the artistic modern Bushmen and Hottentots, who were known to have painted upon the walls of the caves and rock-shelters in which they lived.

Associated with the East African Upper Aurignacian cultures were "Oldoway man," known from a 1913 discovery of a ceremonial burial, with the skeleton overlaid with a red material; also the similar skulls and skeletons found in Gamble's Cave in the Elmenteita district of Kenya Colony and buried with red ocher. These fossil types were broadly negroid but not Negro. Their foreheads and some details of structure were negroid; but they had narrow noses, unlike Negroes; they were tall, "heavy faced," heavily built and with big brains. Related to these were also the South African "Springbok Flats" man found not far from Pretoria with a Middle Stone Age culture and a later Elmenteita negroid type.

The Middle Magdalenian culture of Western Europe evinced increased skill in producing engraving tools, and dart throwers and perforated or ceremonial staves or "batons de commandement" were often beautifully carved; bone needles were used for preparing clothing; sculpturing included slender nude human figurines in ivory and bone, and animal forms in reindeer and stag horn on implements of the chase as well as ceremonial insignia such as the batons carved with animals' heads. This decorative art was bold and highly naturalistic. Engraving, often with finer lines than before, was frequently combined with sculpturing. A Spanish cavern picture of a wounded bison has the form partly engraved, partly painted in red. Below the animal are pictured in color six club-shaped bludgeons. These claviform signs are probably a part of the magical means invoked by the hunters for success in the chase. Full flat wash was frequently applied to the engravings, the register between the two techniques often being imperfect, with one or the other overlapping. The result was crude and unnatural. There was little evidence of shading; but a punctuation style of earlier times was combined with engraving, the dots becoming larger and fusing into a sort of outline. Examples are a horse in red flatwash at Altamira (Spain) and a group of bisons, some punctuated, at Marsoulas (France).

At least roughly contemporary with Middle Magdalenian are perhaps some of the South

African series of paintings described by Burkitt, Breuil and Miss Nicol. These series were successively dominated by dark claret, "earthy yellow," and white and finally polychrome coloring. Human beings were commonly pictured in the South African and Rhodesian paintings, unlike the situation in the Franco-Cantabrian art. Usually they "are far less naturalistically drawn than are the animals in the same style. At the same time the artists were often at pains to emphasize - almost to the point of caricature - such characteristics as steatopygia." (Leakey). In some regions, paintings are replaced by engravings, though in one shelter there were both engravings and red and yellow paintings. According to Burkitt, the engravings are in four styles. In the third of these is a masked human figure in a site in Orange Free State; he wears a pair of antelope horns and a long tail like a lion's. Other masked figures are also known. They are thought to have a religious or magical significance. The famous archaeologist Breuil believed that the South African engravings and paintings were not made by the same people. He and others traced the path of the engravers southward and the painters northward to a point where they met and we find a combination of the two techniques. The painters were cave dwellers, while the engravers lived in round huts on rocky hills. Breuil classified the paintings into 16 pictorial series, of which only the first eight belong to the true Stone Age. The polychromes perhaps were later than the date we are now discussing. For neither South nor East Africa is the chronology very well established.

In East Africa there continued the 13 painting styles classified by Leakey and already described through the first five; of these, the fifth one, in claret-red, possibly belongs to the present period. Then come in turn the following: Some comparatively rare curious yellow and orange human figures and animals rather badly drawn; a style with animals common and humans rarer, in dark claret-red with the whole body colored, done naturalistically enough to make the animal recognizable but with the detail poor; less naturalistic animals drawn in thick red outline, including very large elephants with wrinkles represented; a very stiff, conventionalized series of animals in brick red, often with tails omitted; and a series of very curious orange human figures and badly drawn animals in "solid" color. Three styles following these, and possibly some of the latest of these, belong to a later date.

The period in which European cave man's art reached its apogee was in the culture phase known as the Upper Magdalenian. Painting reached its zenith in the polychromes of the time. We pass over beautiful examples of carving, sculpturing and engraving, the latter now with fine lines, being as beyond our subject, resting upon a description of the painting. Animal figures were beautifully done, though toward the end of the period there was some retrogression. The fresco was accompanied by a foundation of engraving. The outlines were usually done in black; in black also were the eyes, horns, mane and hoofs. The interior modeling was skillfully executed with various colors produced by mixing yellow, red and black pigments. The black animal outlines are well exemplified at Niaux, while the great polychrome frescoes may be seen at their best on the ceiling at Altamira, Font-de-Gaume and Marsoulas (all but Altamira stations in France; Altamira is in Spain.) A reindeer-bone paint receptacle was found in the cave of Les Cottés; others were made from bivalve shells, and bone tubes and stone mortars were also used. Crayons of red ocher were found in the cave of Les Eyzies and the rock-shelter of Laugerie-Haute. Other pigments were yellow, orange and chocolate-brown ochers, hematite and limonite, and mixtures of varying amounts of ferric and manganese oxides, possibly mixed with grease. Manganese oxide produced a blue-black, while burnt bones yielded a

coal black; there were no true blues, greens or whites. The work was done in caves largely, in the flickering light from the flame of a stone lamp in which grease was burned, with no models to look at, the execution being from memory. Yet realism is the very essence of the cave-man's art. Along with this were some cases of conventionalism, as well as the use of impressionistic or "suggestion" pictures (herds, etc.). Except in the Southeast Spanish and African art, compositions rather than single figures were relatively rare. The subjects were humans much less often than animals, especially quadrupeds. The game animals, including here the horse, were most frequent. The animals, and consequently the general tone or atmosphere of the paintings, varied with the station. At La Pasiega were chiefly stags and does, at Font-de-Gaume bison, and at Les Combarelles horses. When reindeer were pictured, the atmosphere was usually bright and cheerful, while horses led to one of lively vivacity. Mammoths of course produced an aura of heavy dignity and gravity, while bison were actors in a stormy drama.

Inanimate figures among the cave-man's subjects included chevrons, spirals, circles, frets, volutes, wave ornaments; also claviform, tectiform (tent-like) and alphabetiform figures. There were no mythical or fabulous figures (as in later art), no centaurs, gryphons or gods, though there were some examples of "sorcerers." There was nothing like modern perspective, and modeling only in the relatively late styles. But when we consider the difficulties under which the cave-man artist worked, and that he had no background of inheritance to draw upon, as later artists did, his achievement in realistic animal painting is truly remarkable.

The most striking characteristic of the best of this cave art was this remarkable realism. Except in rare cases, fancy was wholly excluded. Animals were depicted with a correctness to which we find no parallel in the art of primitive peoples who flourished in the thousands of years since the great cave paintings. We say "the best of this cave art," for then, as now there were good artists and bad artists. It was an incentive, however, to the ancient artist to believe that his welfare depended on his artistic effort; and he thought that the more accurate his drawing, the greater his power over the animal as well as the greater his sway over his fellow men. It is to be presumed that the painters were professionals, forerunners of priests, medicine-men, magicians or sorcerers; indeed, we have mentioned pictures of the sorcerers themselves. That of the cavern of Trois Frères, Ariège, France, partly engraved and partly in black, is famous. The painter had ample opportunity to observe animals at rest and in flight. We find him picturing animals in attitudes which only modern motion-picture photography has revealed to us. This is easily understood. But other characteristics of the cave art reveal in the artist qualities which today we attribute to great art: these are the attributes of reserve and economy of means. The best cave art did not waste effort on useless detail; it sought and abstracted the essentials. Unfortunately, our available space and function do not permit our dwelling on this aspect of the art.

It is of course impossible to state definitely the purpose for which these pictures were made, though tacitly implied in the preceding paragraph. However, it is fascinating to speculate. It seems unreasonable to assume that they were made for decorative purposes. The people did not live in the nearly inaccessible parts of the caves where the pictures were found. Traces of their "industries" are rarely found there. They lived near the mouths of the caves or on the terraces in front. It seems unlikely, therefore, that the paintings were made as decorations for their homes. Frequently drawings were made right over other and older ones. The result, to say the least, cannot be considered as decorative.

Circumstances also argue against the "self-expression" motive. If this were the case, an element of pride would surely enter and at least a considerable portion of the paintings would be found where other members of the tribe would frequently see the execution as well as the finished product.

Other theories may be found discussed in books specializing on this and related subjects. The most plausible theory at the moment seems to be that the pictures were part of a "sympathetic magic." Food was the prime necessity of these men, who lived almost wholly by hunting. They did not practice agriculture; they had no domestic animals, their weapons were poor and they had no facilities for storing or preserving food. They were therefore dependent from day to day upon success in the chase. The priest-artist-medicine man, having created these pictures in the dim recesses of the cave, probably escorted the hunter prior to his departure in search of food into this dim mysterious cavern lighted by the very flickering glow of an oil-fed torch, with mysterious shadows dancing on the irregular walls and ceilings of the caves. The surroundings were weird and probably inspired superstitious awe in the mind of the hunter. Here perhaps he was shown the Picture of an animal with a spear in its side or possibly with no eyes, therefore in a helpless condition. He therefore felt confident that he might place a dart in the animal's side or that it was more helpless than he had supposed and therefore much easier to slaughter and bring back to the tribe for food. Inspired with this confidence, he went out and killed. On the basis of this assumption it seems reasonable to say that the earliest prehistoric art was not "art for art's sake" but "art for food's sake."

Our picture of the motivation of this art is not entirely hypothetical and drawn from inference, for in the East Spanish and Capsian arts we find pictures of the animals being hunted by men now using bow and arrow.

Mesolithic and Neolithic Color

In the Near East, whose cultures we shall find playing a most important role in the subsequent acts of our color drama, there is a great gap of at least ten thousand years in our knowledge, between the latest Aurignacian and the earliest following culture, a gap which in Europe is filled by the Solutrean, the Magdalenian, and certain other cultures we shall now discuss.

In the cave of Mas d'Azil in Ariège (France) a layer of flood-clay overlays an Upper Magdalenian culture level and is followed by one known from the site as Azilian. Fossil bones found in the latter layer were no longer those of the reindeer or other arctic-climate animals, as during the Ice Age, but were those of the red deer and wild boar of the forest. For in the period, apparently about 20,000 to 16,000 B.C., of the waning of the ice formations, open steppe and tundra was gradually replaced by forest. In the Ice Age, hunters had found ample supplies of horse, mammoth, bison and reindeer meat; and in fairly permanent camp sites, time to enjoy some leisure and cultivate art. But with the passing of glacial conditions, there were both less game to hunt and smaller range in which to hunt it. For the forests encroached more and more on the old hunting grounds, and the herds gradually disappeared. This was in the period which followed the third of the triad of temperature minima of the fourth and last glaciation (Würm III). A still further minor return of the ice occurred at about 11,800 B.C., and may be taken as marking the end of the Arctic climate and late Glacial times.

Parallel with the climatic changes and the consequent changes of flora and fauna, were

fundamental changes in both the industries characterized by the stone and bone tools, implements and weapons and in the art of the times. In the former field the outstanding feature was the almost universal appearance of quite small tools ("microliths"), even diminutive graving tools. The Old Stone Age art, which during the Magdalenian had risen to its finest style, reacted to the changed environment and conditions of life by changing in a way which has generally been described as a mere degeneration. For the polychrome animal art disappeared. Undoubtedly, this does mark a great retrogression. But along with the fine naturalism of the cave art at its best, there were elements of suggestion, symbolism, conventionalism and abstraction, not all of which are elements of merit. Particularly in the rock-paintings distributed over Spain, related not so much to the Franco-Cantabrian as to the East Spanish art, are signs of a gradual conventionalism of the traditions. This evolution may be invoked to help explain the characteristic feature of the Azilian culture. Schematic and conventional figures heretofore had included banded and branched figures, lines and punctuated and dotted surfaces. With the Azilian industry were found smooth round pebbles with lines and simple patterns painted on them in flat red paint. By comparison with the petroglyphs on the cave walls, the figures have been perceived or interpreted as conventionalized standing or seated male and female figures.

In a typical Azilian site in the Pyrenees mountains were found the bones of two Azilians painted with red color; and in an early section we mentioned the Azilian skulls of Ofnet, red-painted and laid "like eggs in a basket."

The Azilian is one of several cultures grouped together under the term Mesolithic (Middle Stone Age), a term invented to embrace these cultures not classifiable as of the Old-, nor yet of the New-Stone (Neolithic) Age. The cultures of the last-named age were those clearly marked as possessed, at least in the East from which they migrated, of many of the arts of "civilization." No other cultures of the European Mesolithic, at least of the known and published portions of them, have much interest to our color story, with one possible exception. They followed cultures of Würm III date (20,000 B.C.), such as that revealed by excavation of a reindeer-hunters' camp at Meiendorf near Hamburg, and cultures in Italy (the Grimaldian) and in England (the Creswellian) which were survivals of the Gravettian, these paralleling the declining Late Magdalenian of the West. With an exception, these cultures were all pre-ceramic (i.e., pre-pottery), pre-agricultural and pre-metallurgical.

However, because of the importance of pottery, it seems necessary to mention the exception, namely the culture of the "kitchen middens," found most typically in Denmark. For though we shall see that these were mere refuse-heaps, lacking in color interest and chronologically overlapping (about 5000 B.C.) the start of the Neolithic, we encounter in the middens vessels of pottery for the first time in Europe. To be sure, these were very crude, bag-bodied, splay-rimmed, built up like coils by hand from gritty, coarse clay, but decorated with marks made with the finger-nail or by a stabbing technique. The middens indicate an advanced stage of the degeneration of which we have spoken, for they are simply the refuse or kitchen-discord mounds of a people who found it easiest to live by gathering shellfish; and the great heaps of shells were those of oysters, mussels and periwinkle. Thus this culture, which is usually classed as Mesolithic, had pottery, while the Natufian culture, sometimes classed as Neolithic, was without it.

In Africa, the triad of Würm glaciations was replaced by a "pluvial" (wet) period, in

which the decreasing rainfall was still able to maintain life in the Sahara region. North of this great area, in French North Africa, appeared a succession of cultures which was long supposed to include the ancestor of the Capsian culture that, according to the theory, invaded Spain (as the "Spanish Capsian") and was responsible for the East Spanish art. But the work of R. Vaufrey showed that African Capsian is much too young to be the ancestor of the Spanish Capsian, dating at the very end of the "pluvial" period. The former culture is now thought to have evolved in East Africa out of the Upper Kenya (East African) Aurignacian, while the latter had an independent origin in Spain. Like the Magdalenian north of it, Spanish Capsian decayed and likewise developed microlithic tools.

Although the theory of an invasion across the Straits of Gibraltar has been discredited, it seems fairly clear that Mesolithic hunters and fishers migrated northward and eastward from Spain and France into central Europe, where we shall meet them, or rather their descendants, in later acts of the color drama. But because of its meager (known) color interest we pass rapidly over the European Pre-boreal climatic phase (11,800 - 6800 B.C.), which included a variety of Mesolithic cultures, and in which the chief event was the invention of the axe. We pass on without tarrying also through the warm, dry Boreal period 6800 - 5600 B.C.), in which the chief events were the separation of Gt. Britain from the Continent and the advent of the domestic dog.

In Palestine have been found the remains of a microlithic culture which one authority calls a "final food-collectors' assemblage," while another one regards it as witnessing the birth of the food-producing revolution. This culture, called the Natufian, was found in the upper levels of Palestinian caves which have been dated at 10,000 B.C., in the period of the Pre-boreal climatic phase of Europe. The best-known example of the culture was at Mt. Carmel. Here the Natufians lived in the open mouth of a large cave and on the terrace in front of it. On the terrace were short curving lines of stones perhaps either benches or the low walls of open pens. There was also a ring of stones around a fireplace and some laid like paving. A basin-shaped depression had been cut into the rock of the terrace. The flint tools were microliths, tiny blades in various geometric forms. The larger flint tools were backed blades (knives), burins (chisels), scrapers, arrow-points and sickle blades mounted in rib-bones. The last-named were recognized as such because of the peculiar luster or sheen which develops on the cutting edge when the blade has been used to cut grasses or grain. But we do not know what wild or cultivated grass was cut. The bone handles in which the sickle blades were set have been found. There were also implements of ground or pecked (abraded, not chipped) stone; they included mortars and pestles. Some of the pestles showed traces of red ocher. These may not have been used for grinding food.

Other items in the rich bone industry besides the sickle blades were harpoons, "points," awls, pins and needles, fish-hooks and various beads and pendants. The last two items occurred also in shell and pierced teeth. There were no evidences of a spinning or weaving industry (such as we will find in Neolithic cultures). Among the weapons were no maces nor sling pellets. There was also no pottery.

The artistic progress the moderate-statured, slender, longheaded Natufians, who strongly resembled the earliest Predynastic Egyptians, was exhibited in the form of carved statuettes ("figurines") of men and animals. At Kilwa in southeast Transjordan is a rock drawing of a human pair clasped in close embrace, very similar to a Natufian lime stone statuette from

near Bethlehem. Natufian burials, one or more to a grave, were either extended (in the Mt. Carmel cave) or flexed (on the terrace), usually with beads or other possessions. There were also traces of elaborate headdresses of shell beads. With the culture were many bones of gazelles, a dry-climate animal; also of hyenas, bears, wild boars and leopards, as well as a large domesticated dog (which antedates those of northern Europe). When we come to the description of the earliest Neolithic villages, we shall see that the Natufian assemblage was an appreciably simpler or more primitive one. The people themselves, so far as we know, were a "basically Mediterranean type with minor Negroid affinities" (Professor Coon).

So late as 1948, archaeologists of the Oriental Institute of the University of Chicago discovered at Qalat Jarmo, in the foothills of southern Kurdistan, a technological stage intermediate between the food-gathering, "cave-dwelling" Natufian and that of the villages like Hassuna and Siyalk, very soon to be described. Jarmo was a village with simple mud-walled houses of several rectangular rooms. Microliths had persisted; and the assemblage included animal bones, a few kernels of grain, animal and human clay figurines and "Mother Goddesses," and ground stone vessels, but no pottery nor spindle whorls. Pottery was found only in an upper stone (late) level; it included a red burnished ware. The stone of the stone vessels was said to have been "chosen with some care as to the desired color effect." The stage represented at Jarmo is known elsewhere only in early levels of Jericho (levels 17-10).

The Natufian culture was in a period of dessication in the Near East which followed the retreat of the European glaciations. The latter caused the rain-yielding Atlantic storm-belt to move slowly northward from the Sahara, Arabian and Mediterranean regions. The former grass and park-belt tracts supported only a gradually thinning human and animal population which here and there in the resulting desert gathered in oases and on the rivers. In these crowded areas, domestication of animals was facilitated; and familiarity with naturally-growing cereals finally led to their cultivation. This was the origin of that revolution, the dawn of "civilization", in which food was not merely gathered by man, but was produced by him. This revolution occurred in the period long known as the Neolithic. It was soon followed by a second revolution, or more accurately a highly accelerated evolution; for soon in the valleys of the Nile, the Tigris-Euphrates and the Indus rivers, commercial cities sprung up. Here the growers disposed of their surplus products, and as one result of this commerce, organized city-states arose.

The Neolithic (New Stone) period at the start of our century was defined as that characterized by the use of polished or smooth stone implements, the Paleolithic being in contrast a rough-stone period. That is, the Paleolithic artifacts were considered as flints or other stones worked by percussion or pressure, either by a chipping or flaking technique. The Neolithic artifacts were worked by friction. The Old Stone Age method produced a rough, irregular edge and surface, while the New Stone Age technique yielded a smoother and somewhat polished artifact. But these definitions no longer suffice and other ones have been used by various authors. For one thing, flaked flints still continued in use after the end of the Paleolithic. The crucial changes in the two ages were connected with revolutionary inventions having nothing to do with stone implements. The presence of metal (first, copper) with the culture-objects is often considered important in distinguishing the Neolithic from later cultures. But authors differ in their usage in this connection because of greater or lesser emphasis upon the development of a true metallurgical industry rather than the possession of occasional metal objects. An important factor, food production, has been mentioned. Along with the

domestication of plants went the domestication of animals. For the latter, the chief actors were probably the men; for the former, the women. Neolithic man did not wholly give up hunting, fishing and the gathering of food. Both plant and animal husbandry require storage vessels; and so the development of the ceramic and textile industries accelerated. We shall find it necessary in our story particularly, as already indicated, to deal with the development of pottery styles. Pottery is considered by some as a specially important aspect of the definition of culture-periods broadly considered.

Thus, the Paleolithic was essentially Pre-Ceramic. What has been called the Mesolithic by some, has been called by others "Early Neolithic," and described as Ceramic but Pre-Agricultural. The Full Neolithic or later Neolithic (simply "Neolithic" of some authors), was Agricultural but Pre-Metallurgical. The subsequent Metal (Copper, Bronze and Iron) Ages are, of course, Metallurgical, at least if the author of the term is not too much impressed by a few chance finds of copper.

We have described the Mesolithic as largely a mere continuation of the Paleolithic, with the Upper Paleolithic people adapting themselves to the new forest conditions. There was increased use of basketry, netting for fishery, the use of canoes and of domesticated dogs for hunting, though large portions of the people themselves were the same. But it was also a period of migration. The cold-loving reindeer followed the retreating ice northward; and the men followed the deer. Settlement along the European shore lines was encouraged by the abundance of shell-fish. The people were still predominantly the Upper Paleolithic type, long-headed, large-brained and tall. Here and there were a few round-heads; and we have seen them at the cave of Ofnet in Bavaria. In Egypt and portions of the Near East were lighter-boned long-heads with the smaller skulls of modern men.

During the Neolithic this picture was considerably changed. For it is quite generally believed that the civilization which grew out the European Neolithic was due to invasions from the Near East. The trek lasted for most of two millennia and took at least four routes. The actual process of learning to seed vegetables and cereals and breed animals, selecting the most prolific and the hardiest, must have taken still more thousands of years.

Uncertain existing evidence points to the Iranian plateau or some place north and east of it as the place where cereal grains and cattle were first domesticated. This led to a tremendous increase in population, overcrowding and the urge to hunt new and more fertile soils homelands as the old soils became denuded. Probably decreased rainfall was also an important factor in the migrations.

It is the pottery which gives archaeologists their chief clues in tracing the trails by which Neolithic men travelled from the old homelands. But during the growth of the Neolithic in Southwest Asia other arts were developing: weaving, writing and mathematics and the other arts of commerce, the sciences and the rude beginnings of metallurgy. During the trek across Europe, much of the knowledge was lost and had to be learned over again or re-invented. The Neolithic begins much later by centuries in the West of Europe than it does in the East, and later in Eastern Europe than in the Near East and Western Asia. Discussion of the several routes of invasion will be deferred until we have described the beginnings of the Neolithic in Asia and in Egypt.

It is very difficult for anyone, especially for one not a professional prehistorian, to write a coherent account of the development of civilization in the Neolithic period. For a very large

portion of the evidence and factual data which must be taken into account has been published only within the last decade, in a large number of journals of many countries (and a larger number of not generally available - and often extraordinarily expensive - books), some of the best of it within the two or three years preceding the writing of this book, whose primary function is not an account of the development of civilization, but the development of the use of color. The general outlines of a reasonably accurate account, however, may be given if the reader is not too much concerned with possible errors of chronology or with some details of culture assemblages.

Some time during the last half of the sixth millenium there arose in western Asia and northeastern Egypt a number of Neolithic village settlements in an extension of an arc that has long been known as the "Fertile Crescent." This crescent of lands extends from the Nile Delta in Egypt along the coasts of Palestine and Syria, then eastward and down the valleys of the Tigris and Euphrates rivers. The more recently characterized extension of the crescent continues eastward between the Caspian Sea and the Persian Gulf into Iran (old Persia); here it splits into two forks, each following one of these bodies of water. The southern branch extends to an excavation-site near Persepolis called Tall-i-Bakun, while the northern one goes to a west central Iranian site, near the rug city Kashan, called Tepe Siyalk, then on to the mounds of Anau, just across the border in Russian Turkestan. North of Siyalk, toward the Caspian Sea and Anau, was excavated Chasmah Ali, perhaps older than Siyalk. In northern Mesopotamia, not far from Ninevah (itself an early Neolithic site) or the modern Mosul, has been uncovered perhaps the oldest of the village settlements. It was covered by a mound called Tell Hassuna. A little north of it is Tepe Gawra, not so old. Westward, near the Mediterranean Sea, in Cilicia (south central Turkey), is Mersin. Around the bend of the Mediterranean Sea in Syria are two important sites called Tell ej-Judeideh and Ras Shamrah. To the south is Jericho, well known to Bible readers, while farther south and west, in northern Egypt, are three more, all important Neolithic sites which we will take up later in turn.

Not all of these, as already indicated, are equally old. All of those mentioned, including the last three (unnamed) ones of Egypt, go back at least approximately to 5000 B.C. (some of them to several centuries earlier), except Anau, Bakun and possibly Ras Shamrah, which are not quite so ancient. These last are, probably, no older than a few other sites which might be listed here. We know the minimum antiquity of these sites by comparing the depth of the debris accumulated in the tells in the prehistoric periods with that deposited by the refuse of the period of historic times, say since 3000 B.C., computing on a conservative basis by using a "factor of safety" in the comparison.

The words tell, tepe or hüyük, found attached to the names of so many archaeological sites in western Asia, all mean a mound. This may be partly due to a hill formed by nature and picked for defensive reasons, or almost wholly due to the accumulation of refuse and debris from the settlements over the years or centuries of the life of the place.

The Neolithic cultures which grew up at the end of the 6th millenium B.C. were primarily those of peasant-villages or settlements, usually around sources of water where people living by "hoe culture" (and digging-stick culture) came into contact with nomadic pastoral folk. In a very broad sense, these cultures may be grouped as: (1) Egyptian, (2) Syrian, (3) Iranian or Highland, and (4) Anatolian or Northern; but somewhat more locally the cultures are designated as Halaf, Ubaid, Uruk, etc. cultures, from important excavation sites possessing the

culture assemblages in question, or Buff-ware, Red-ware, and so on, from the characteristic pottery wares. The Egyptian cultures centered in the Nile valley and around the great Fayum depression or lake in northern Egypt. The Syrian culture extended from the area of modern Syria around the northern arc of the "Fertile Crescent" into northern Mesopotamia, where between the Tigris and the Euphrates rivers it came into contact with the remaining two culture-groups. The Anatolian culture-area extended from Anatolia (Turkish Asia Minor) to the Caucasus region south of the mountains of that name and between the Black and Caspian Seas, and from these eastward into Asia north and south of the Elburz and the Kopet Dag as far as the Hindu Kush mountains; also southeast down the Fertile Crescent in the "Land of the Two Rivers" (the Tigris-Euphrates valley) to the Persian Gulf. The Iranian culture group, beginning with its extensions into this last region, extended into the Highland region of Iran. This great plateau is bounded on the north by the Elburz and Kopet Dag mountains (the culture extending across these into Turkestan), on the south and west by the Zagros mountains (which divide Iran from Iraq), and on the east by the Hindu Kush mountains and the Helmand and Indus rivers.

It is hardly possible from the present evidence to decide on the original home of the Neolithic cultures, although we have mentioned the Iranian plateau as possibly the first place where cereal grains were cultivated. But claims have been made for several other possible centers: the Caspian basin, the Nile valley, the Armenian highlands (where several plants and animals were indigenous), or in other centers of northern Africa, Syria or Palestine. The plants cultivated early were two varieties of wheat (emmer and einkorn), barley and millet. The animals that were domesticated were dogs (mastiffs, hounds, and later, terriers), pigs, cattle, goats and sheep. Possibly more than one people and source may ultimately be shown to have taken independently the first steps toward the domestication of plants and animals.

Wherever may have occurred the earliest beginnings, it seems likely that the greatest impetus to rapid development came in the area extending from the Nile through the Fertile Crescent to the region of the Two Rivers (Tigris and Euphrates) south of the Taurus-Zagros mountain range along the Iraq-Iran border; for here was the greatest opportunity for exchange of ideas and of products and even that intermingling of bloods which may lead to hybrid vigor. Rapid development may also have occurred in those extensions of the Fertile Crescent which we listed a few paragraphs back, at Deir Tasa on the Nile in Middle Egypt, at Tall-i-Bakun, Tepe Siyalk, Chasmah Ali and Anau, though this seems somewhat less likely.

Before going on to a more detailed picture of Neolithic times, perhaps it is worthwhile to pause to draw a rough outline of world conditions in, say, the middle of the 6th millennium B.C. The Egypt-to-Iran area of early settled village life has just been described. The peoples responsible were broadly Caucasoid ("White"). Other Caucasoid groups peopled Europe, northern and northeastern Africa and India, and constituted the Ainu of Japan. Along the Baltic were advanced hunting and fishing cultures with a steady food supply assured by small game and shellfish, while food production may have begun in North Africa as well as in the Near East. Possibly but not probably food production had begun in China, which was, along with the rest of eastern Asia, broadly Mongoloid. Basically Mongoloid too was the New World, where with some additions of diluted Caucasoid blood, immigration had begun some ten or fifteen thousand years before. Mongoloid elements were present also in Malasia and in South Africa, where they are evident in the Bushmen. Most of Africa and the East Indies were peopled by

Negroids, while in Australia and southern India were Australoids. The fossil ancestors of these peoples have been discussed in preceding pages. It remains here to say that, except for the food-producing areas just mentioned, most of the world was still merely food-gathering. For clarity, it should be mentioned that in this paragraph the term "Caucasoid" embraces mainly the "Mediterranean" peoples, including with them the blonder "Nordic" types, and the Alpines and variant strains of these.

Remembering the questions as to the definition of the Neolithic, we may begin consideration of specific Neolithic cultures with the first of the four groups listed above, namely the Egyptian. In this area, following a North African Mesolithic culture with microliths there developed a Neolithic one known as the Tasian, revealed first at Deir Tasa on the Nile in Middle Egypt, which may date as far back as the middle of the sixth millennium. Here typical pottery jars were of a black or grayish ware with black patches, showing vaguely a vertically rippled surface with sometimes an irregular black band around the rim. There was also a leather-bag-type pottery, including trumpet-mouthed or tulip-shaped beakers having on them incised geometric designs filled in with white clay, suggestive of basketry or of the sinew bindings of skin cups. The village-dwelling Tasians combined hunting and fishing with primitive farming and animal husbandry. They used stone axes, ground from pebbles, to cut the undergrowth. They employed the bow and arrow to hunt the antelope, gazelle and hippopotamus, and kept oxen, sheep and goats. They were ignorant of metal, but apparently they made linen. They decked their bodies with a variety of personal ornaments: necklaces, girdles and circlets of beads, teeth and fish vertebrae, by the women; and ivory bracelets by men and women alike. A similar culture of northern Egypt will be described presently. The Tasians had broad faces, square jaws and rounder heads than the people who were to follow them; but they were a purely "white" long-headed folk of Mechta (or Early Natufian) type.

To a "guess-date" which may be even earlier than that of the Tasian, may be assigned the Lower Neolithic culture found at Mersin in Cilicia (south central Turkey) below 19 stratified occupation levels. Here two phases of the Neolithic, underlying ten feet of Copper-Age strata with polychrome pottery, constitute 35 feet of refuse below no more than another 35 feet of an 80-foot mound. The lower levels had thin burnished vessels associated with obsidian (black volcanic glass) tools, the simple but highly finished bowls being sometimes decorated with "surprisingly stylized" incised designs. The color of this monochrome ware was brown, black or sometimes red. A somewhat similar black or dark gray ware, burnished or with incisions filled in with white chalk or clay, was found at Sakje Geuzi (period 1), northeast of Aleppo, and at Tall Chagar Bazar in northwest Mesopotamia. The makers of this lug-handled pottery must have lived in huts which have perished without leaving their traces. In the Late Neolithic which followed, the monochrome ware was made from a pinkish clay.

In Palestine, following the Natufian, the earliest Neolithic culture was at first without pottery. It was revealed in the tenth to 17th excavation levels at Jericho, where there was exhibited no worked metal but skill in building, with walls of beaten earth (pisé) or of "plano-convex" shaped adobe bricks. The floors and probably the walls of houses, perhaps the oldest known permanent ones, were lime-surfaced, burnished by rubbing with stone implements, and decorated with splashes of red paint. A building of Jericho XI contained a portico originally laid on six wooden posts. Here there were found numerous figurines of animals and plastic models of male organs, while in the houses were mud figurines and plastic statues of animals and

humans. The latter occurred in triads of father, mother and son, suggesting the Near Eastern divine triads of later days. No doubt these had some religious or cultic significance.

Dating at the end of the sixth millennium B.C. or early in the fifth was the culture of the Fayum depression, that of a folk who lived on a lake-shore line in northern Egypt 180 feet above the modern lake level; this lake filled a depression which was formed originally by wind erosion. Their homes, which may have been mere tent-like structures, have perished; but two groups of numerous straw-lined silos for storing grain denote some fixity of settlement. They tilled the soil with flint hoes and had sickles with flint teeth mounted in a straight wooden handle. They also had querns for grinding flour from emmer wheat and barley. They kept pigs, cattle and sheep or goats; remains of a feast on a hippopotamus and of an elephant feast have been discovered with the culture. They used bone harpoons and dart-heads and flint arrowheads, and they ground and polished axe-heads. They made beads from ostrich-shell disks and imported shells and blue turquoise; and they made fine basketry, but they employed no metal. They were possessed of the art of weaving sheep's wool and linen from flax. Their pots were somewhat similar to the Tasian vessels, simple black bag forms devoid of lugs but sometimes with footed bases, and usually not decorated except sometimes by incisions. These Neolithic Fayumis, long-headed folk of "Mediterranean" type, with no trace of negroid features but heads larger than the "Predynastic" Egyptians of later times, may have been the folk or the influence which introduced the Neolithic economy into Europe by way of North Africa and the Straits of Gibraltar, in Europe meeting other streams travelling by other routes.

The cultures of the depression have been divided into two groups, Fayum A and Fayum B. "A" had the pottery while "B" had little or none. Also, the flints of B were more archaic in type. Apparently, at the beginning of the fifth millennium there was an intrusion of a food-gathering people from the drier plains of northern Africa, bringing the more archaic flints.

In the approximately contemporary "Amouq A" culture of the Plain of Antioch in northern Syria, there were hints of the presence of copper; and the pottery was decorated in patterns made by localized burnishing. This "pattern burnishing," with bright and dull (matt) areas due respectively to mirrored ("specular") and diffuse reflection of light, occurred also at Sakje Geuzi and at Ras esh-Shamrah near the Syrian coast. The "A" culture and the subsequent "B" assembly make up the excavator's "XIV" level at Tell ej-Judeideh, a site of this region.

Here the color of the pottery, burnished in local areas so as to form patterns, varied from black to brown and rarely red; and some brittle orange-buff wares had a vertical wavy-line decoration in red. Besides these and pattern-burnished vessels were incised wares, like those of earliest Ninevah, the ancient capital of Assyria.

Nearly all the culture-items mentioned as found in the Fayum (or in the closely related Merimbdian culture, to be described presently) were likewise present at Judeideh, except that there was no direct evidence for the domestication of sheep and dogs, while neither needles nor cloth were found in spite of evidence of a weaving industry. There was also no evidence of a basketry industry. On the other hand, stamp seals, here of unknown utility though in some later cultures known to be used to mark property rights, were present in the Judeideh assemblage. Judeideh was a true village built of mud houses, some of them on stone foundations. The dead were buried under the house floors, sometimes with pottery and other things to assure their comfort in the afterworld.

The lowest ("V") level at Ras Shamrah had the peculiar black pottery already met, and

point-incised wares. Here, in a library between two great temples, were found, the clay tablets (of much later period) bearing texts in a cuneiform alphabet, the earliest known written with wedge-shaped signs, the language being closely related to Hebrew and to Phoenician. If a "guess-date" must be assigned to these two cultures, those of Judeideh and of Ras Shamrah (earliest levels), we would mark them down at 5100 B.C., though statement to the nearest hundred years is meant to indicate only relative order of dates, along with a rough approximation to an absolute scale, but not absolute accuracy. For our chronology before about 3200 B.C., and in many cases after that, is generally not precise within a century or two.

The earliest level (M) at Hama or Hamath on the Orontes river in Syria, with monochrome black or light brown pottery, has sometimes been dated as early as Ras Shamrah V; but our guess for its beginning is several centuries later.

Also dating in the last half of the sixth millenium are the site of Tepe Hassuna, in the Mosul (or Ninevah) region, and two sites in Iran. Hassuna is a well stratified site only thoroughly described so recently as 1944. Here in the earliest or "I (a)" stratum of excavation were found large storage jars, usually with carinated profile, in some of which infants were buried. The coarse buff-colored clay of the pottery with black core was mixed with straw (the "temper") and smoothed while wet. There were also carinated bowls with a light burnished slip. The culture was based on a hunting and herding economy, using both chipped and ground stone tools. The typical Hassuna culture was found in two later -building levels, I (b) and I (c). This included two characteristic pottery wares called "Archaic" and "Standard," the former essentially lustrous and the latter with matt (dull) finish. The main feature of the Archaic ware, which occurred in levels I (b) - III and at many sites, was the glossy surface produced by the use of either lustrous or matt paint on a burnished surface or of heavy lustrous paint on a matt surface. Evidently the makers or users of this ware were intrigued by the bright, shiny surface. At Hassuna the paint was red and the clay usually pink, sometimes buff or brown, with a cream or pinkish-cream slip. The "Standard painted" ware matured later in level III. The earliest painted pottery of Iraq was a I (a)-level bowl with a band of red paint at the rim beneath the burnish. "Standard incised" ware, which began in I (b) and was common in I(c), had buff or pink clay and fine sand or white grits for temper, and also a thin cream-colored slip which sometimes turned pink on firing: The designs were carelessly executed in a linear style.

The Archaic ware had parallels in various other sites in the Near East. It was very similar to that of the Proto-chalcolithic levels of Mersin which was painted with linear motifs, including the chevron, with dull black or red paint on a burnished cream-colored or "pinkish-red" surface. Some of the ware was represented at Ras Shamrah and in the first level at Ninevah ("Ninevite"); and the painted ware of Jericho which succeeded its first one (in its IX level, about 5000 B.C.) was similar. Here decoration with painted bands followed the use of a red slip, usually burnished, on simple jars with loop or knob handles. The paint was dark brown, contrasting with the natural clay color of reserved bands or chevrons; or the designs were painted in brown on a cream-colored slip. The Jericho wares were not much akin to the Neolithic wares outside Palestine.

In Hassuna I (c), the burnished pottery had an almost white slip, and motifs commonly including zones of truncated chevrons. More common was Standard incised ware with herringbone patterns and "sprigs". Here "Standard painted" ware began; in this the clay was like that of the Archaic ware, the slip being usually cream-colored but varying toward pink or

green, the paint reddish brown or deep brown to almost black. There was also a combination "Standard painted-and-incised" ware.

In level II, the coarse-ware was used for so-called "husking trays," and there were globular jars in both Archaic painted and Standard incised wares. The combination type included bowls with incised decoration outside and a painted band just inside the rim. In levels III and IV, husking trays and Standard painted ware continued, but Standard incised ware was most common in III, while in IV deep bowls with the combination decoration, painted and incised, appeared along with much pottery of the type found at Samarra, to be described soon.

The hunters and herdsmen of Hassuna I (a) built no true buildings, but left three superimposed rude camp sites, while I (c) to VI contained several-roomed buildings with bread ovens and storage jars. Level III was a definite village with adobe houses grouped around a courtyard. Beginning with I (b) there were grain bins, built as large pots and coated with bitumen and gypsum plaster. Biconical clay spindle whorls were sometimes decorated with paint. Crude female figurines ("Mother Goddesses"?) were found in levels IV and V. Blue turquoise occurred in several levels. Awls and spatulas were of bone, blades and "points" of flint and obsidian. "Hoes" were of chipped flint; and many sickle blades were found. These materials were still much in use; no metal was a part of the culture. The bones of several types of domesticated animals were found with the cultural remains. Although several burials were discovered, some those of infants in pots, the racial types of the people are unknown. The only ornaments were simple beads, pendants and amulets. Malachite, a green copper mineral much used later in Egypt to paint around the eyes, as well as "kohl," was in use. The latter material, used as an "eye shade," was composed of antimony sulfide, a manganese compound, or merely of soot, and varied in color from black to blue-black, dark blue and dark brown.

Nearly all the culture-items found at Fayum and Judeideh were repeated at Hassuna, except perhaps domesticated dogs, basketry and stamp seals. The Hassuna culture extended all the way from the Tigris river to the Mediterranean sea; but it was not discovered until very recently in southern Mesopotamia, whose swamps may have been then still uninhabited. The same 1948 expedition which excavated Qalat Jarmo uncovered Matarrah, 34 kilometers south of Kirkuk on the main Baghdad road, which turned out to be a "rather impoverished southern variant" of the Hassuna culture. Here the houses were plain mud-walled structures of a least four rectangular rooms. There were also round storage pits. Although the profiles of the large, coarse pottery wares of Hassuna, especially "milk jars" and "husking trays," were present, there was greater emphasis on the plain incised ware than at Hassuna. But the characteristic motifs of the Hassunan painted pottery were not there, nor were the better types of Hassunan flint work, including hoes. The artistic handling of the material at hand seemed generally static, in contrast to a feeling of "vitality and creativeness" evoked by the material of the earlier site of Jarmo. But a form of painted pottery found at Samarra, soon to be described, was found at Matarrah.

None of the other Mesopotamian sites of this period so far excavated have yielded architectural remains. These sites include Tell Halaf and probably Tell Arpachiyah (of more importance in a later culture-period), Samarra, Tell Chagar Bazar and Ninevah. "Ninevite 1" began slightly later than Hassuna, about the time of Hassuna I(b) or I(c). Ninevah was a stratified hut settlement, but without well-defined building levels. In Ninevite 1 was a light gray ware with point-scratched or gouged geometric incision. Some was painted with matt red or black

paint. In Ninevite 2 (a), painting was more common and more varied (brown to greenish black). Motifs included hatching, cross-hatching, chevrons, zigzags, intersecting multiple lines and solid triangles, often in a horizontal zone. In 2(b), the pottery was definitely of the type known as Samarran, which will shortly be described in connection with Samarra and other sites. At Chagar Bazar, far northwest within modern Syria, in level 15 was a "cache of monochrome burnished gray and black ware" of several types: rough light drab incised ware like that of Ninevite 1, burnished gray with fine-line incision as in Neolithic Sakje Geuzi, pattern-burnished black ware as in Amouq phases A to C; and also some undecorated burnished buff ware.

Roughly contemporary with the Syrian and North Mesopotamian Neolithic were two cultures of Iran, with a third there nearly as old. That of the mound Tepe Siyalk, close to modern Kashan, the rug city of west central Iran, is perhaps of greatest importance, and dating back to early in the fifth millenium B.C., while possibly beginning earlier was the Chasmah Ali site at Rayy near Teheran, in northeast Iran south of the Caspian Sea. The earliest pottery of Siyalk included a slipped light-colored coarse ware, painted with simple geometric patterns inside the rims, and a less common fine slipped or coarse plain Red-ware, at first unpainted; also probably a black ware. The Light-ware folk buried their dead in red ocher; they were a long-headed people of the "Iranian variety" of Mediterraneans, though some Alpines were also present. Their light ware is thought to be close to the "parent" of the buff-colored ware so important to the west and southwest that we speak of Buff-ware cultures. In a second phase, designs characteristic of light ware appeared on Red-ware; in a fourth phase, distinctive Red-ware designs appeared, with a preference for hatching rather than cross-hatching.

The two cultures influenced each other, but in Siyalk II (4500 B.C.) the Red-ware dominated and replaced light ware.

The Siyalk folk lived at first in mud-plastered reed huts in a village located in a small oasis watered by a spring, which provided water both for drinking and for irrigating small plots. Siyalk II included mud houses with painted interiors. The game animals and wild fowl attracted by the water of the spring were hunted with slings, maces and clubs bows and (but no bows and arrows); they included gazelles, various birds, wild oxen, panthers and even lions. Neither arrows nor harpoons were in use. But the Siyalk folk were primitive agriculturalists, growing grains, as we know from finds of their sickles querns and hoes. The bone sickles were provided with teeth like the Natufians'. The economy included a spinning and weaving industry; and whorls and pins have been found with the culture, but what fibers were used is unknown. Sheep and probably cattle were domesticated; and horse bones, not necessarily of domesticated animals, were found in Siyalk II. Vases were made both from stone and pottery. Men and women wore strings of beads of small shells and white stone or stone rings and bracelets. They had terra cotta pestles for crushing the pigments, in small stone mortars, for tattooing their bodies. The decoration of their pots, with parallel lines united with vertical strokes, on a pinkish ground, and their excellent bone carving shows high development of esthetic feeling. Flint holders were carved from animal bones and finished off with an animal head or a human figure. A chief or priest with cap on head is represented in a carved figurine on a flint knife holder; it is the oldest human image of western Asia. Heated and hammered copper pins and awls were present in the late phases of Siyalk I, so that we have here the beginning of a Chalcolithic period in a culture which had not progressed far into the Neolithic. The "Siyalk culture" includes the lower portion of the "I A" level at Rayy. The upper portion of the latter is

embraced in the (later) Chasmah Ali culture along with Siyalk II and the earliest stratum of Anau in Russian Turkestan.

The Third Egyptian culture of our list of settlement assemblages was that found at Merimdeh Beni-Salomeh, west of the Rosetta branch of the Nile river Delta. It was nearly contemporary with that of the Fayum and not differing greatly from the latter. The pottery of this culture, mostly with flat bases, was a simple incised blackish ware based on leather or open-basket forms, often with lugs for hand-hold or string-hold. It was related to that of the Tasian culture and of the Fayum. There were also hard basins with brilliant red exterior polish except for an unpolished horizontal band engraved with a palm-leaf motif. This was rarer in a second phase and absent in a third. The culture was characterized too by distinctive pottery spoons or ladles and by the domestication of pigs, along with dogs, cattle, sheep and goats. Besides the flimsy village huts made of matting screens were granaries containing barley and emmer wheat. Also found were the remains of threshing floors where the grains were separated from the chaff, as well as hoes, sickles and querns. The huts were arranged in regular rows, forming streets, indicating definite organization of communal life. Apparently, there was some sort of a belief in an afterlife, for here on the west side of the Nile the people of the culture were buried with their bodies all facing east toward the river, while at a neolithic site on the east side called al-Umari, recently excavated, the bodies were always oriented toward the west. But there was still no metal in use at the settlement.

In the twin-mounds at Tall-i-Bakun, close to Persepolis in Iran, were found remains of a Neolithic culture in the earliest or B I level with crude, handmade, half-baked, unpainted light brown pottery and flint and bone tools. This underlaid a level with painted Buff-ware; and at several other Iranian sites unpainted coarse ware was similarly found to underlay painted pottery. Paralleling the next level at Bakun, which will be considered later because of its close connections to cultures to be taken up later, was the first or V A level at Tepe Giyan near Nihavand in western Iran. In this level no metal nor architectural remains were found. The pottery was a coarse ware with chamois-colored slip and a fine ware sometimes with red slip. Various other western Asiatic Neolithic sites might be mentioned, but the descriptions would be more or less repetitions of those already met; for example, the Neolithic pottery of Tabbat al-Hamman, on the Syrian seashore, was red-brown to black burnished bowls, similar to the wares of the lowest levels of Judeideh, Ras Shamrah and Mersin.

Going farther north and west, we may perhaps mention the late Neolithic or early Chalcolithic of Alisar Hüyük, on the eastern Anatolian plateau, although it is at present difficult to date. Here were found a coarse gray ware with burnished black slip, a fine black ware, often neatly ornamented by incision, an incised gray ware, a plain brownish ware and some pots painted with red-brown to black designs on buff clay.

The Neolithic of Europe and transitions to it will be considered in a later section; for they were very much later in date; and we are trying, at least in a rough sense, to follow the chronological order in which the various peoples come upon the stage upon which the colorful drama is played.

Chapter 3 Eastern Chalcolithic Color

The term "chalcolithic," meaning copper and stone used together, with which this section is headed is one which conveniently refers to cultures which might be regarded as of the end of the Neolithic of the beginning of the Bronze Age. It was broadly a period when objects both of hammered copper and of stone were in use, but when usually the metal was not very generally employed and true metallurgy, involving complex chemical techniques, had not been developed. At the very start of the period were "Proto-chalcolithic" strata, such as certain ones at Mersin whose pottery was similar to Hassuna Archaic ware. The introduction of copper (and bronze too) was a gradual process, occurring at very different times in different areas; and in any given area, the development of its use was generally a slow process.

The first Egyptian culture with copper was that discovered at Badari in Middle Egypt near Deir Tasa, which may date back to 4600 B.C. But the copper was still hammered into shape, not melted to form objects. The pots of the Badarians included two finer wares as well as coarse ones. Very thin steep-sided bowls were burnished with a blunt comb to produce a splendid rippled effect, were then coated with an iron-containing wash and fired to permit free oxidation to form red ferric oxide, while the rim and inside were deoxidized by the reducing action of glowing ashes and gases, and blackened by reduction to dark oxide. The second fine ware was black and included tulip-shaped beakers decorated with incised and white-encrusted, horizontally zoned patterns of triangles, bar-chevron and hatchings. The Badarians imported mineral malachite from Nubia or Sinai and ground it on slate palettes to use for green eye-paint and perhaps as protection from flies (as modern Africans sometimes do). Blue turquoise was imported, while red rouge was probably also in use. Beads were made of ostrich-shell disks, as Capsians and Fayumis had made them. The wild castor-oil plant was gathered to get oil for anointing the Badarians' bodies. Ladles carved like an animal's head out of ivory have been found; and probably women used ivory combs for the hair, which was sometimes plaited. The economy was mainly agricultural, with some domestication of animals, not including swine, which were an element of the Fayum culture. Tent-like matting covers or wind-screens were erected on posts over burials, away from the dwellings and facing west. The cultures of Deir Tasa, Merimde and the Fayum seem closely related; but the Badari culture complex, in part an elaboration of these, was significantly different.

These Badarians, probably newcomers to Egypt who dislodged the Tasians, were a delicate and small variety of the Mediterranean race, with small faces but very high heads, and with some negroid tendencies (in prognathism and width of nose) but with their dark fine hair of form definitely not negroid. Insofar as they had negroid tendencies, they differed from the Egyptian types who followed them.

Possibly referring to a pottery style only, rather than to a definite culture, is the name "Samarran," arising from Samarra, north of Baghdad, the site where pots of this style were first found. Though it was characteristic of villages formally Neolithic, it is described in this section because of its very close connection to the Chalcolithic wares of the Hassuna and splendid Halaf cultures, to be described presently. The Samarran ware occurred also at several other sites, ones of special interest being the "2 B" level at Ninevah and a recently examined mound near Baghouz across the Euphrates river from Abou Kemal. It was found also in strata III to VIII at Hassuna and in comparable levels at Chagar Bazar, Judeideh and other sites. It partly precedes

and partly overlaps the Hassuna and Halaf cultures, and may have begun slightly earlier (4700 B.C. ?) than the Badarian. The pottery ware current at Samarra had dark (red to black) designs on a matt cream-colored slip.

The color of the Samarran paint at Baghouz was normally brownish black to purplish black, varying from an ochreous red-orange to greenish and purplish black. At Hassuna, the order of popularity of the paint colors was said by the excavators to be a chocolate brown which was rich and almost purple, then red-brown, red, dark brown and black; these were applied over a thick cream-colored slip. The clay color was normally ochre-yellow to buff at Baghouz and buff to pinkish (occasionally bright ink to red) at Hassuna. Clay surface, slip and paint were dull or mat, not glossy. Samarra design has been described as compact, uniformly rather dark and quite static, with few wavy lines and with figures appearing rather stiff though carefully and deliberately done. That of Baghouz was more carelessly and clumsily executed, and at Tinevah with even less accuracy of detail. The painted decoration was monochrome, in no case with two colors.

Similarities to the Samarran pottery design were found in the B II level at Tall-i-Bakun, and recent work indicates that this painted ware of Bakun arrived in Fars (southwest Iran) at roughly the same time that Samarran ware entered northern Mesopotamia, coming here from a source in Iran. This is the earliest Buff-ware of Fars, but before long the Buff-ware was widely spread and took the forms which will be described in the following paragraphs. The nearly contemporary level at Gyan, soon a Buff-ware site, has been mentioned. This (V B) level contained houses built of pisé, sometimes on stone foundations, and exhibited metal and obsidian objects; while red-slipped pottery still made, the Buff-ware was no longer slipped. The geometrical designs were ones typical of the Buff-ware culture. At the end of B (and beginning of the C) period, influence of the Halaf culture may be seen. It was probably due to pressure on the Halafians by the people whose culture displaced and followed them in Mesopotamia.

These Buff-ware cultures were located in the west and southwest of Iran. Approximately contemporary with them was the Chasmali-Ali culture centered south of the Caspian Sea, with an extension east of it at Anau, just across the border in Russian Turkestan. This was essentially a culture of the people who made the Red-ware. Three sites of the culture were important. In Siyalk II, new elements were handmade bricks used in three architectural strata, the use of blue turquoise and shells from the Persian Gulf in necklaces, concave-base whorls for spinning, and new pottery designs on ware which was a finer development of Red-ware. Animal designs included crude ones of geometric type, developed by hatching, and more decorative linear ones. The forms of the pots included high cups, open bowls and bowls with inverted rims. The light ware of level I was no longer in use; but the employment of copper had increased. The culture was present also in the Upper I A level of Chasmah Ali at Rayy, where the pottery exhibited attractive patterns in black on red surface. In the I A level at Anau, which at the start was without metal but later had copper and lead, occurred fine light brown (or rarely, light red) handmade cups, with thin mat, black or brown paint on thin unburnished light brown or light red slips. A second, similar colored ware differed in having at least two, usually burnished, slips colored brown to red and pale yellowish green, a red-slipped variety of the fine ware and a coarse ware. Joined diamonds were executed in a carmine-red to violet pigment. Other designs, derived from basketry, were geometric; animal designs were absent. Pots were handmade, without handles, and never incised nor glazed. Wheat and barley were cultivated, and later the

ox, the turbarry pig, the sheep, the dog, and doubtfully the horse were domesticated. Rectangular houses were made of air-dried bricks; under them children were buried in a contracted position. Stone mace heads and awls of flint and bone were used, but no axes, spear heads nor arrow heads were parts of the culture. The culture of the twin mounds at Anau never reached a true Copper Age stage of development.

The Chasmah fill culture of these three sites, and the early Buff-ware sites were roughly contemporary with the culture of northwest Mesopotamia revealed at Tell el-Halaf on the Khabur River. The time of these cultures was roughly the last half of the fifth millenium B.C., the Buff and Samarran wares going back to perhaps 4700 B.C.

The graceful, delicate Halaf pottery was found also in levels 10-6 of Tell Arpachiyah near Ninevah (and surrounding area outside the tell), in level 2 (c) of Ninevah itself, in level XX of Tepe Gawra (and areas at the northeast and southeast base of the mound), in levels VI-X of Hassuna, in levels 15-6 of Chagar Bazar (with 8-6 a transition to the Ubaid period); also in Tell Brak, Carchemish and other sites. Its home was probably the area of modern Mosul (northern Iraq). It extended as far south as Samarra (middle Mesopotamia) and as far north as Samiramalti (on Lake Van); across the Khabur, Balikh and upper Euphrates rivers to Carchemish, to Hama and the Amouq plain and Ras Shainrah in western Syria and northwest to Anatolia. In an "Early" phase, the clay of the pottery was light: buff, creamy, pinkish or, less commonly, apricot-color. Sometimes a buff-colored slip or burnish, or both, was applied. The monochrome decoration was painted on orange-red, black or white mat or lustrous paint (most commonly a genuine glaze). Some unpainted buff to brown ware and rough "cooking-pot" ware also appeared. In a "Middle" phase, slip and burnishing were more common. In the "Late" phase, the fine, thin ware, fired to a porcelain-like finish, had its slip usually burnished.

In the Early phase, concave-sided, flat-based bowls, jars with rounded bodies and flaring necks were common; "cream bowls," shallow bowls with rounded base:, carinate profile above, and widely flaring mouth, were characteristic of the Mjddle phase (Arpachiyah 10-7), along with low, squat jars and miniature vessels. In the Late phase (level 6), the common form was a. simple, shallow, flat-based plate, as in the "polychrome (black and red) plates," Halaf's finest product. But it has been said that an "infinite variety" of forms were employed by the Halaf potters: bowls, basins, plates, spouted vessels and a bowl with a tube for sucking. Favorite geometric motifs were rosettes, circles, rows of circles bordered by dots, "egg and dot" (Middle), waves, lozenges, crosshatched running lozenges (Early), cables, multiple zigzags, filled checkers and stipplings. Common were patterns arranged into metopes or panels, as groups of straight lines separating wavy ones. The keeled base of the "scream bowls" had a metope arrangement with alternating solid color and reserved panels. A conventionalized bull's head (the "bucranium"), and bird, animal and human representations were also applied. The last-- named were sometimes shown in rows grasping hands; the bull's head was the emblem of the Hurrian god Teshup. There were also birds flying away, hoofed animals with legs "broken" under them (bent inward), centipedes, plant designs, herons, horses with short manes, chariots, gazelles and other designs. An interesting feature of Gawra XX was the presence of characteristic pendants with the swastika design, which the excavator called "an ancient and purely oriental symbol"; and it may be added, certainly at least not an "Aryan" one.

The late phase patterns were commonly built on "filled checkers" (both dark and light squares containing a design) or squares and diagonals. The St. Andrews cross in a zone of

squares, the "double axe" or "butterfly" design and a diaper pattern occurred; and a negative design was increasingly used. All these and other motifs were elaborated by the use of polychromy in red and black, often over the apricot-colored slip, sometimes enriched by details of white over the darker paints of the plates. The combination of vivid colors was typical of the Oriental love of color. Though they may seem almost gaudy to some Occidental eyes, the combinations were ones of considerable esthetic value. But the Halaf ware has been judged as a trifle "static" when compared with the sense of movement achieved by the Samarran potters, the former relying more on balance and symmetry and more closely knit designs, coverage of the surface being carefully developed in detail.

The pottery description so far is based primarily on finds at Arpachiyah. At Tell Halaf itself, the Early phase, with its characteristic motifs, was absent; Middle phase cream bowls and squat jars were present. "Late" designs were also present, as was polychromy, "bichrome" and "trichrome," including the use of white stipple over dark paint. Most of the paint of these was mat rather than lustrous, the former being characteristic of the following period. In Chagar Bazar 12 was again found the white stipple over dark paint; but some of the polychrome ware, though with Halaf motifs, seems to belong to the subsequent period. Ninevite 2 (c), where much Halaf ware suddenly appeared, used frequently a burnished cream or apricot-colored slip, on which designs were painted with red or black paint.

At Arpachiyah, a potter's and craftsman's shop known as the "burnt house," contained a flat stone trough for a palette and a little rounded bowl, probably the water-container of a painter's outfit, since these were found associated with paint. Four stone palettes were found at Gawra, some with traces of paint; and here was a stone bowl decorated with red semicircles. Stone "seal pendants" were characteristic of the Halaf culture; and there were also plano-convex-shaped perforated true "stamp seals," with their designs probably used to mark the ownership of property. One was made of glazed frit, the earliest known Mesopotamian example of this material. Ornaments included a necklace from the "burnt house" which was made from large biconical obsidian beads and cowrie shells filled with red paint. Objects presumably amulets included a limestone and a shell bull's head and a limestone bull's hoof along with a marble cow's head. Toggle-like objects were probably ear or nose studs. Beads included some in the form of a "double axe," foreshadowing the "Cult of the double axe," an important one which we shall meet in a later context. Conical and biconical clay objects were no doubt the spindle whorls of a textile "industry." Animal remains from one site included bones of pig, sheep or goat, ox, and a small member of the *Equus* genus. Grains of emmer, wheat and barley were found at Arpachiyah, while in the "burnt house" was a piece of lead; and at Halaf were found a copper ax-blade, spear-point, dagger and arrowhead. Pieces of copper and even a chisel-like implement of iron were found in a grave at Samarra. But most implements were still of flint, obsidian, basalt, limestone or bone.

The building art of the Halafian culture was well developed. Houses were rectangular, of mud brick, without the central court of the south; larger buildings, regarded as temples, called "tholoi," were of circular plan, and corbel-vaulted. At Arpachiyah they developed from simple circular buildings of pisé on stone foundations to larger circular ones with rectangular antechambers or passages (levels 7-10). These were very similar to the Mycenaean "beehive tombs" of Greece, which we shall meet at a very much later date. It has been suggested that the tholoi were shrines devoted to the cult of the "Mother Goddess." At Halaf, a sloped stone

citadel with a rock-hewn moat before it underlaid the platform of a later palace. There were some burials near the tholoi, but burials were frequently made beneath the floors of private houses.

Around the tholoi were also found many nude, painted, clay female figurines with heads barely indicated or bird-like but with special attention given to the sexual parts, as was the case in Aurignacian times. Most of them were in the squatting position assumed by women in labor in the East. Figurines of cattle, pigs and sheep were also numerous, as well as doves, which were later closely associated with the Mother Goddess of the Near East. No doubt these figurines were of cultic significance and they were all of the general type found quite broadly in painted-pottery sites. At Tell Halaf the terra cotta figurines were painted with dark stripes, which may have represented clothing. Objects excavated here included also a golden mouth-plaque with moustache and beard, in blue and white enamel, with rings at the ends for fastening. Besides the "naturalistic" type of figurines with exaggerated sexual parts, others had stylized bodies, with breasts and navel not usually shown. At Gawra, facial features of the figurines were indicated with paint. Here an animal figurine (a mouse?) was rendered in a black ware, while a bird from the "burnt house" was ornamented with black paint. Some small clay figurines from Chagar Bazar were painted with simple bands around the neck, arms, legs or breasts, representing either tattooing, clothing or ornaments. Two small stone ones for the "burnt house" are possibly the oldest stone sculptures from Mesopotamia. A pottery shard from Tell Halaf may portray the earliest use of a wheeled vehicle. The extent of the Halaf culture has been given. It was found 38 feet below the historical horizon at Ninevah. A "guess date" for the start of the culture may be as early as 4500 B.C.; the eminent archaeologist and prehistorian V. Gordon Childe, writing in 1930, put it down as 5000. Yet he spoke feelingly of the culture's sophistication, with "sophisticated monumental circular buildings, cobbled streets, delicate and beautifully painted vases, ingenuously carved stone beads and stamps already used for sealing property attest a well-organized society, an advanced economy and highly developed craftsmanship." In one building, that of a vase painter, along with magnificent specimens of the polychrome pottery, was found a block of red paint.

The contrast between the mat finish of the Hassuna "Standard" pottery and its earlier, lustrous Archaic ware, has already been mentioned. The former developed from the latter, beginning in the I (b) level and maturing in III. Levels III to VI paralleled the Samarra-Halaf painted pottery. Standard ware included bowls and jars incised or painted or both. The color of its clay was still buff to pink; the slip varied from cream-colored toward pink or green; the paint was only rarely the red color of the Archaic ware, but varied through red-brown and brown to dark brown and almost black. Opposed groups of oblique lines were still a common motif. On the shoulders of jars were often rows of cross-hatched triangles or chevrons, with round "blobs" of paint in the intervening triangular spaces. The "painted-and-incised" ware combined the point-scratched ornament common in Ninevite 1 with some simpler Hassuna motifs.

Some time about the middle of the fifth millenium, copper first came into use in Palestine, marking the start of an Early Chalcolithic period there. This includes Jericho VIII, most of Megiddo XX (a composite stratum), early levels at Teleilat el-Ghassul, the Biblical Sodom not far from Jericho, and certain other sites in Palestine. It was followed at the start of the fourth millenium B.C. by the middle Chalcolithic Ghassulian culture which was named from the site just mentioned. The culture was not developed at nearby Jericho. At Ghassul, the houses,

though of mud brick, were plastered inside and the walls covered with mural paintings. These frescoes were in light and dark red, various browns, black, yellow and white, the same hues as those of the painted pottery. According to Rev. J. G. Duncan, a bird in a hunting scene was "painted with a master's touch" in a naturalistic style. Many of the frescoes exhibited geometric patterns. A quite elaborate one was based on an 8-pointed star around which were dragons and geometric figures. A frequently described but not well preserved painting here shows, in what is left, human legs and feet facing all one way, except those of a smaller figure in front facing the other way, that of a nude man. Before him were two pairs of stylized feet, one in embroidered shoes, each pair on a four-legged footstool, with chairs behind. From later parallels we suppose one figure to be a goddess (in embroidered shoes) worshipped by the Ghassulians. We know them to have had beliefs in a life after death because of their burials, which were with ornaments and pottery containing food, in stone graves. The colors of the mural here described were red, yellow, black and white. Ghassulian pottery included a brown and buff ware, decorated with incisions or painted bands. There was also a well-baked ware covered inside and out with a white or light pink slip, sometimes brown or yellow green. On the slip were painted simple designs in yellow, sometimes red or brownish black. Motifs were largely geometric: parallel straight or wavy horizontal bands, incised or pendant; cross-hatched triangles, checkerboard and ladder designs, metope arrangements, conventionalized trees and a few animals. But the most characteristic decoration was rope-molding and raised scalloped bands around the rims, necks and shoulders of jugs and jars. Characteristic also were horn-shaped cups ("cornets") like ice-cream cones of today. Neolithic loop-handles were replaced by "ear" or "lug" handles, and the earliest ledge handles appeared. The Ghassulians exhibited a high level of artistic development in their pottery and in their mural paintings.

In Egypt there developed at the end of the fifth millennium B.C. the first of the three cultures long known as "Pre-dynastic"; this one was called the Amratian, from a site at El Amrah. It extended from Badari to Lower Nubia and included village sites more settled than in previous Egyptian cultures. The cemeteries included doubled-up bodies buried with weapons, ornaments and food. As possible substitutes for the living beings of earlier times sent to the grave with their master as attendants in the after-world were statuettes of women and servants with water-pots. On some of the pots were representations of men and animals; but the several classes were inferior to the earlier Badarian pottery wares.

The most common ware of the Amratians was a Red-ware which was made with black top by controlled oxidation of the ferruginous wash. Along with this was a polished Red-ware fired wholly in an oxidizing atmosphere. The Black-topped ware, the forms of which included flasks, carinated bowls, twin vases and goblets on low pedestals, lacked the reality and fine ripple finish or combing of the Badarian pottery. Very characteristic also was a so-called "white-cross-line" or "whiteline" ware, a red-polished ware decorated with rectilinear basketry-type designs in a chalky or dull white paint; on others were the men and animals mentioned in the preceding paragraph (as well as plants and boats). Also borrowing motifs from basketry was an incised black ware mainly found in Nubia (and probably of somewhat later date). This had designs emphasized by white filling. There was also a plain black ware, produced by a reducing atmosphere. Pottery was also used by the Amratians for making models of boats, which the Badarians had also modeled (roughly), and of wigs, arrowheads and bows, besides the human and animal figurines already mentioned. On some pots, owner's marks were incised, suggesting

a possible origin of hieroglyphs.

Though their pottery was inferior in quality, the Amratians were probably somewhat advanced over the Badarians in wider use of copper, in a more settled life with the beginnings of political organization, and in increased commerce: malachite from Sinai, gold from Nubia, and obsidian from Arabia or Abyssinia. The origin of the Amratian culture is uncertain, though derivation from Libya has been advocated and it is generally agreed to be a southern Egyptian culture. But possibly people or influences from the Sudan also contributed. The Badarians may have been a Nilotic people (with much negroid blood), and the changes in Amratian times may have been due to the decrease of negroid elements. The Amratian or first Pre-dynastic culture is sometimes called Nakada I, with the remaining Pre-dynastic cultures together being called Nakada II.

Dating to a time which could not be long after 4000 B.C. were the first prehistoric wall pictures ever found in Palestine, where they were discovered in the cave of Umm Qatafah by Rene Neuville in 1932. The cave is about seven miles south of Bethlehem. Several techniques were employed: adapting the lines of the rocks to the picture by simple means, cutting into the rock, embossing the figures or using black paint. It had been stated that there were shown several different animals standing one behind the other at the same level, all facing the cave entrance; but later work proved that the supposed pictures were due to an "illusion."

At Tepe Musyan, near the southwestern border of Iran, was a settlement of the general period with hand-made pots of reddish clay sometimes decorated with incised or relief ornament and at other times burnished with geometric designs in red paint.

In the early centuries of the fourth millennium other cultures occupied the stage in Iran and Mesopotamia. Embraced in the Hissar culture, so-called from its occurrence in the IA, IB and IC levels of Tepe Hissar near Damghan in northeast Iran were also the finely stratified III level at Tepe Siyalk and the IB stratum at Chasmah Ali (Rayy). In the seven or eight sub-levels of Siyalk III interesting changes in the pottery wares, probably reflecting ethnical developments, were observable. At the start, along with a ware with chamois-color slip were Red-ware pots with red slip. Then followed a steady change toward Buff-ware, the Red-ware at first assuming a buff slip. At the end, the pottery was gray, unslipped (and unpainted).

Skeletons still showed the traces of red-ocher stain already mentioned, though now on the heads only, not on all the bones as in I and II. Tanged and thin awls and crystal drills were still used, as in II. Along with the replacement of red by buff slips near the middle of III, the potter's wheel first appeared and a real Copper Age, the first with open-mold casting, was reached; and stamp seals came into use for marking property, new pottery forms appeared (a cylindrical beaker and a cauldron) and animal designs became commoner.

At Hissar, though stamp seals, molded bricks and some pottery designs were used as in Siyalk III, there were no red-ocher burials. Though the racial types in general remained about as they were, and the culture remained founded on agriculture and animal husbandry, it is evident from the pottery changes that there was pressure on the Hissar folk by invaders with buff and gray pots and that the Hissar folk were pushed westward (to show their influence in Giyan V). At Tepe Hissar occurred changes paralleling those at Siyalk.

The black-painted Red-ware of the Chasmah Ali culture, which was still being made at the beginning of the Hissar period, was replaced toward its end by a ware very much like that of the Buff-ware culture, and many designs typical of Buff-ware were taken over. The forms were

more elaborate, and at the end of the period, sophisticated. Variety and good adaptation of designs to the pot forms were merits of the ware. The animal designs departed from the style of those of the Chasmah Ali culture to become more like those of the Buff-ware of southwest Iran. Although the bow and arrow were added to the simple arms (as copper daggers) of preceding times, it is interesting to note that Hissar weapons of offense were rare; and few villages over all of Iran were well located for defense.

Though women never were more than a third of the Hissar adult population, their graves were richer than the men's; but the dead of both sexes were well provided with vessels containing food. The bodies were laid loosely flexed on the right side, facing east or west. The contents of tip graves revealed a greater love of ornament than was the case at Siyalk. Men and women alike wore necklaces and belts of beads.

The painted ware of Hissar IA had simple geometric patterns on a dark brown or red-brown ground. The IB and IC ware was painted in both geometric and conventionalized naturalistic styles (with goats, leopards, ibex, gazelles and rows of birds) in dark gray or brown on a light brown or buff ground.

Contemporary with the Hissar culture was the full development of the Buff-ware cultures found in the AI to AIV levels at Bakun, the VC level at Tepe Giyan and the first settlement at Susa in western Iran. Although divided into four phases, Bakun A showed few changes within its levels, and its painted Buff-ware was replaced in a fifth phase by plain Red-ware. But seals, molded bricks and a developed type of pottery oven, present here, were not present in earlier Bakun strata. Red burnished cooking ware and painted lines descending from the design zone to the base on some vessels indicate contact with the Chasmah Ali culture. An interesting feature is the "skid" position of animals on the pottery; this and the quartered-circle design on the convex-faced button seals were shared with Siyalk III. Giyan VC was a development of VB, already described; but red-slipped pottery occurred and the paint was vitreous and shiny as in Siyalk III, but unlike Bakun.

In Elam (modern western Iran), the First Susa culture included the beautiful, delicate "Highland" ware, with geometric and stylized naturalistic designs in a glossy black, sometimes with a violet tinge, purplish red, brown or yellow, on a pale buff or yellowish white ground. Of this pottery Professor E.A. Speiser, in his interesting "Mesopotamian Origins" (University of Pennsylvania-Press, 1930, p. 610) had this to say: "These simple forms (graceful tumblers, open bowls, etc.) are ornamented with designs executed in a matt black paint upon a light surface. The patterns present a rare combination of purely geometric motives with representations of natural models done in a highly stylized manner. The whole has an abstract, one might say expressionistic, effect. Most admirable is the subordination of the individual motives to the main, purely decorative scheme; the ornament is with equal mastery adapted to the given shape. The vigor and simplicity of execution are further examples of the consummate skill and faultless taste of the proto-Elamite artist." Other writers have described the thin, fragile vessels by such terms as "marvelously delicate" or "a joy forever." They were too porous to hold liquid; and it is believed that they were intended only to be buried with the dead in the graves, where three or more were found with each corpse. Along with triangles, diamonds, crosses, zigzags and other geometrical patterns, the designs included stylized birds, dogs, goats (though only the dog was domesticated), rows of persons with joined hands, tree branches and other arrangements. Goats were represented by two solid triangles with two great arcs of circles for

the horns, or by other conventionalized designs. But considerable originality and power of imagination marked the work of these artists; and it is clear that the non-representational art of today has a history going back nearly six millenia to these masterpieces at least.

And yet the Susians had a rather primitive economy. For apparently even the goats they pictured were wild, not domesticated. They did not know how to hammer copper into swords, daggers or vessels, or the use of bricks in building, and they made no statues or statuettes of clay or stone; but they made copper mirrors and copper-headed tomahawks, and they had beads of black and white limestone or imported blue turquoise. Turquoise and the black obsidian (volcanic glass) with which they sometimes tipped their arrows must have been obtained in trade, for it is not native to the plains around Susa. And the remains of their civilization include little conical vases which once contained mineral green paint for to eyelids, and fragments of cloth which show that they knew the art of making fine linen.

At Anau in Turkestan just across the border from Iran at the time of its "IB" stratum, the first half of the fourth millenium, more metal was being put into use (in the form of copper pins and spiral beads), though a true Copper Age had not been reached. At this stage Anau probably had no domestic animals, nor any axes, spear-heads or even arrow-heads of stone or metal. But like the early Egyptians, Mesopotamians and Cretans, they used stone mace-heads as weapons. They possessed wheat and barley and knew how to grind grain for food. Their houses were built of sun-dried bricks, but they did not know how to burn bricks in a kiln. The Anau folk, like Susa, painted its pottery, likewise ornamenting it with geometrical motifs. The Anau folk did not know the use of the potter's wheel, and they put no handles on their pots, which were never incised nor glazed. The culture of the IB level included a fine light or reddish brown painted ware, differing from that of the earlier cups in having at least two, usually burnished, slips colored brown to red and pale to yellowish green. There were also a coarse straw-tempered buff or reddish ware with similarly colored slips and a coarse red-slipped variant of the fine ware. The culture of Anau I was ended with the appearance of one characterized by fine gray and coarser red unpainted pottery.

In Mesopotamia, some time near the start of the fourth millenium, the Halafian culture was followed by the Ubaid or Highland culture, which derives its most usual name from Tell al-Ubaid or el-Obeid, where it was best known. It is the earliest well defined culture of Babylonia (southern Mesopotamia), where its remains underlie most of the older cities: Ur, Erech, Eridu and Lagash; in Syria corresponding strata constitute the III level of Ras Shamrah, and it is found in level L of Harna or Hanath on the Orontes river. It probably had its beginnings earlier by a century or two in the south than in the north; but it could not start in the south as early as the northern (Hassuna and Halaf) cultures, because of the geological nature of the south. The coast line of the Persian Gulf was farther north than it was in later times, and only slowly receded southward as silt was deposited more and more in the mouths of the Tigris and Euphrates rivers. This alluvium and the marsh lands between the rivers was not fit for human settlement until the Halaf culture had been established for some centuries in the north. But on the other hand, Northern Ubaid was later than Southern Ubaid, for the northern extension had to compete with the Halaf culture. But only so late as 1948, in a brief publication of new discoveries at Eridu, it was claimed that there were settlers in the drying delta who preceded the Ubaid folk, and that the latter were not the primitive marsh-dwellers they had long been supposed to be. Beneath a temple of the Ubaid period were found other buildings. In an area

southwest of this was a cemetery contemporary with the temples. In over 200 tombs the dead were buried full length with feet pointing southeast, surrounded by beautiful painted pottery and their small possessions. In one grave was a boy with his pet dog; in another perhaps the earliest clay model of a sailboat. In the 16th excavation level, ten meters below the surface, the Ubaid pottery abruptly stopped (so said the excavators) and was replaced by an elaborately painted type of pottery with geometrical patterns and some features like northern ware. A few feet above the surface of the sandhill upon which the earliest settlement was built was a minute temple, the earliest building of its sort known to archaeologists. While the excavators regarded the painted ware as pre-Ubaid, a book published in 1949 (Ann L. Perkins; *The Comparative Archaeology of Early Mesopotamia*, p. 74) classed it as very early Ubaid. Both authorities agree that it is similar to pottery found at Hajji Muhammad, a site near Erech. The latter painted ware is remarkable in that the decorative colors include dark green and dark purple, which were rare in ancient times (especially green). Other colors included dark brown and light red, two pigments being never mixed, which were painted in large, bold designs on a yellowish or greenish surface. Many of the unusual motifs of this pottery were significantly similar to those of Iran, especially at Bakun.

The Ubaid culture is well known from the early levels at Ur, from Erech XVIII to XV, in the north from Gawra XIX to XII and from Hassuna XIII to XI, and froze many other sites. A variant of the culture combined with a native painting tradition spread over much of Syria. Archaeologists have recently distinguished a Northern Ubaid and a Southern Ubaid culture, the latter beginning somewhat earlier than the former while the Halaf culture was flourishing in northern Mesopotamia. The Ubaid culture has been thought to be due mainly to a migration from southwestern Iran, during the period of the Chasmah Ali culture, and to the Giyan variant of the Buff-ware culture entering the north. In the north, copper, known in the Halaf period, was increasingly employed, but it was by no means common yet; and hoes, axes, hammers, saws, arrowheads and maces were still made of stone. In the south (Babylonia), copper may also have been used; but the fact that most of the early levels of the southern sites are under, or close to, present water level, has prevented the metal being preserved for modern discovery.

Tell al-Ubaid and the city "Ur of the Chaldees," a few miles away, were once situated on the Euphrates River; but the river later changed its course and left these places some distance away. As the great swamps near the mouths of this river and the Tigris dried up, the Ubaid people, attracted by the fertile land, built their dwellings there and began cultivating the soil. The homes of the commoner people were simple wattle-and-daub shanties, often using the abundant reeds and marsh grass and plastering them with mud; but some, probably those of the wealthy, had small houses of crude sun-dried mud bricks. In the north, in Tepe Gawra's 19th level, there was a large house, with inclosed courtyard, having at least a dozen rooms. Here there was a series of interesting temples, covering a period of more than a thousand years, while at Eridu excavation has revealed a long series of sacred buildings, each one older than the last and showing some new characteristic of primitive architecture or marks of a religious cult. We shall have more to say of these later.

Sheep were domesticated (unlike Susa); grain was grown, cut with clay sickles, and ground in stone querns. Boats were constructed, for models of them, one with painted end, have been found on three sites. A sailing-boat model from an Eridu cemetery had a socket for

the mast and holes to which stays could be attached. Mortars and pestles were often of basalt. Crescent-shaped clay sickles with flint teeth were used in great numbers, other clay objects were probably spindle whorls and loom weights. Bone awls were sometimes set in bitumen handles. Axes, adzes, adz-axes, double axes and hammer-axes were used, some small ones of clay probably being merely models. Weapons included stone mace-heads and stone, bitumen and clay sling missiles. Stamp seals of various shapes and seal pendants were engraved with linear, geometric and animal designs, the favorite material being black steatite; but red carnelian and hematite and blue lapis lazuli were also used. Beads were worn all over the body, as necklaces, bracelets, armbands, anklets, girdles and headdresses. They were made of various materials, including black obsidian, white frit, red carnelian and hematite, violet amethyst, blue lapis and green jadeite. Two of amazonite, from Ur, indicate trade with distant lands, for the nearest known source is India. Possibly a more common ornament type was a nose or ear stud, a small peg with flat or conical head. Very characteristic were so-called "bent nails," probably used as mullers. Rather similar slender conical pegs or cones of baked clay, plain or painted red or black, were used for architectural adornment, as mosaics obtained by driving them into the mud-plastered walls in regular patterns. Other conical clay objects have been considered game pieces; one from Gawra had a little ball on top.

Painted clay female figurines, with monstrous and grotesque heads, obviously made so deliberately, are an interesting item of the culture. Some were greenish, perhaps due to overfiring, with details in black. Others were lighter colored, with details in red and black. Painted bands, stripes and spots probably indicated ornaments, tattooing and ornamental cicatrices. These female figurines, first found at Ur below its "Flood" deposit of sand, have been found also at other Ubaid sites; and a male counterpart was found in a cemetery at Eridu. From Erech have come human and animal figurines ornamented with black paint; and from a cemetery at Ur came a crudely modeled bird in "greenish drab" clay.

The pottery of the Ubaid culture, while primarily a Highland-type ware decorated with geometric designs, had little of the charm of the Susa vessels. It was handmade or made on the slow, hand-turned wheel, though the fast potter's wheel is claimed for Erech from the beginning and for some pottery from the "3" level at Ninevah. The free geometric patterns were painted in dull black to dark brown, more rarely reddish brown or red, on a clay fired to a light color, usually light reddish yellow buff, or greenish when over-fired, occasionally light red.

The rare paint colors at Hajji Muhammad, green and purple, have been mentioned. Here and at Ur the paint was often lustrous; elsewhere it was always matt (dull). Unpainted vessels occurred at every site, but painted ones were always more common. They were usually wet-smoothed or self-slipped. The quality of the designs varied, but when the pottery was technically fine, the drawing was also good. A long list of motifs could be given; of these a few are the following: chevrons, arrows, pendant scallops and triangles, "hearts," reversing triangles, truncated zigzags, diagonal checkers, the diaper pattern, the gyron pattern, the "butterfly" or "double-axe" pattern, the herringbone pattern, circular blobs of paint, festoons, "Maltese squares," and many others. These simple motifs, nearly all geometric and usually rectilinear, were combined sometimes into more complex designs. Often they covered a large portion of the vase surface, so that the small reserved clay surface practically constituted a "negative" design. Representational motifs (birds, a scorpion, a frog) were extremely rare.

There were many variations in the Ubaid pottery wares and colors at the two dozen

well-studied southern and northern sites; but to detail them would take many more pages than we have available here. Besides the monochrome-painted ware just described, there was some Ubaid polychrome. In Gawra XIII appeared light buff or cream-colored slips, with brown, bistre and black paint. In a later level, a "sprig" motif was painted in black or brown on a red slip. At a northern site, Grai Resh, west of Ninevah, there was an unpainted buff ware with cream slip or pink to orange ware with slip of the same clay. At a nearby site, Tell Brak, there was a "sealing-wax red" slip ware with black painted designs. In the "3" level at Ninevah, four infants were buried in dark gray burnished urns. And finally, a polychrome variant of Ubaid painted ware was found on the Amouq plain of Syria, previously mentioned. Such ware occurred in levels D and E there, in levels 7 and 6 of Chagar Bazar and in levels XX and XIX of Gawra. In these sites it was apparently strongly influenced by the Halaf pottery, utilizing many Halaf motifs.

One of the great floods which from time to time inundated portions of Babylonia, occurred some time near the middle of the Ubaid period at Ur. This flood has sometimes been claimed as the origin of the Sumerian, and hence the Biblical, story of the Deluge which occurs in the sixth to eighth chapters of the book of Genesis. It is known that the Hebrews borrowed the legend directly or indirectly from the Sumerians, who filtered into Babylonia sometime late in the fourth millennium B.C. Stratified Ubaid rubbish and pottery sherds were found both above and below eight feet of water-laid clay. But it is improbable that the flood which deposited this clay is that responsible for the Biblical story. For the Sumerians believed that the Deluge came just before the start of written history, damaging a great area, especially Shuruppak, the traditional home of Ziusuddu or Xisuthros, the Babylonian Noah. The theme of a Babylonian epic is that he successfully escaped the Flood in a boat or ark, landing on a mountain peak after sending out a white dove, a gray swallow and a black raven. An interesting translation of this epic (and the great epic of Gilgamesh as well) is given in P. Carleton's "Buried Empires" (E. F. Dutton, 1939; pp. 64-67). The Ur flood does not fit well with the Sumerian epic account. Another flood, which occurred much later, has at least greater probability of being the traditional Deluge, as we shall see. But the evidence connecting either of these floods with the Biblical Deluge is quite inconclusive.

The building of the Ark by Noah, described in Genesis VI, has been pictured in paint by the 19th-century painters G. F. Watts (English), and James J. Tissot (French), among many others. Both these artists well portrayed the magnitude of the task with which God enjoined Noah. The entrance of the animals into the Ark (Gen. VII) has been painted by the 19th-century Genoan, Carl Schorn, and the noted 16th century religious painter, Gerard de Jode. The Deluge and the death and destruction wrought by it were graphically depicted by the 19th-century painters E. N. Lilien, Lesser Ury and Walter Crane. Noah's sacrifice after the flood (Genesis VIII) has been painted by the famous Raphael (16th century), by the great 17th-century Frenchman, Nicolas Poussin, and by the 19th-century Irishman, Daniel Maclise. In earlier times, a picture of Noah in the Ark was discovered in an early second century A.D. catacomb of Rome, called the Catacomb of Priscilla; and a 12th-century Byzantine mosaic pictured the building of the Ark.

At Erech (Uruk), where the excavation was very carefully executed by German workers in 1928-1931, strata XV111 to XVI revealed typical Highland (Ubaid) culture, though no copper was found. In level XV Ubaid ware was found mingled with gray ware and Red-ware, the latter often with red slip, these wares being typical of the Northern or Anatolian culture of the following (Uruk) culture period. This mingling continued, though with decreased proportion of

Highland ware, and is taken as evidence of peaceful penetration of a new stock into Iraq. In the seventh level (from the top) the transition was practically complete; this was late in the fourth millenium.

According to their traditional accounts, the Sumerians, whose civilization dominated Babylonia century after century, believed that they were established in the land long before the Flood. But this flood (or more likely, group of floods) could not have been the early one near the middle of the Ubaid period, say at 3600 B.C., so must have been one of the later floods, or more than one of the later ones united in racial memory. According to the Sumerian accounts preserved by the scribes, the country was ruled before the Deluge by the "Ante-diluvian monarchs" who ruled at Eridu, Shuruppak (Fara) and other cities. The first of these was Alulu or Alulim of Eridu. He was a Sumerian Methuselah, for according to variant texts, he ruled for 28,800 or 67,200 years. The text preserved in the British Ashmolean Museum states that, after another long reign at Eridu, it was overthrown; and the next capital had three kings, one of them a god. In all, there were five capitals, eight long-reigned kings; they had ruled "241,200 years when the Flood came." And later, when the Flood had passed and "kingship came down from heaven" again, "the kingship was at Kish." Then followed dynasties, also with impossibly long reigns, at Kish, Erech, Ur and other cities. But another text contradicts the story of early establishment, making the Sumerians come from an Utopian Eden in the land of Dilmun after a flood which destroyed all of an erring mankind except one man. Dilmun was probably the east coast of the Persian Gulf.

The order of the kings of the various dynasties and the lengths of their reigns, many of them (especially the early ones) impossibly long, are given in certain "king lists" found on cuneiform tablets unearthed by archaeologists or orientalists. The Sumerians may have filtered into Babylonia over a very long period, perhaps beginning in the culture period (Uruk or Warka) which followed the Ubaid, entering the land in force during the first dynasty of Erech (or even the next one). Erech Dynasty I may have been contemporary with Kish Dynasty I or overlapped it, though according to the scribes the latter came first by 24,510 years! According to the king-lists, the 35 kings of Kish Dynasty I and Erech Dynasty I ruled for 26,820 years. Etana "the shepherd" of Kish was said to have ruled 1,500 years before attempting to fly to heaven on the back of an eagle. But it is now pretty generally believed that most of the rulers of the king-lists were actual persons whose exploits figure in extant texts. Probably the accounts were misguided attempts of the Sumerian scribes, often writing long afterwards, to combine in one account the several historical traditions of different cities and peoples.

The second culture-period after the Ubaid ended in a catastrophe. Above the stratum of this period was a layer of clean water-laid clay, clearly indicating a flood, both at Erech and at Shuruppak (Fara). The latter city was the home of Ziusuddu, the Noah of Babylonia, whose family were the lone survivors of a great flood. This may have been the Deluge of the Babylonian traditions, which the Semites borrowed, since it spread over a wide area, as tradition said, and came just before the first dynasties of Kish and Erech.

The king-lists and the legendary accounts indicate and foreshadow the centuries of struggle between Ur and Erech (Uruk) to control the South and between Kish and other cities to control the land to the north. Not long after the Sumerians were present in Babylonia in force, the Semitic "Akkadians" began to enter the country, becoming dominant a few centuries later. We shall see too that several other peoples entered Mesopotamia and took prominent parts in

the struggle for mastery. But whatever the political outlook, cultural history was dominated by the heritage of the Sumerians for many a century indeed!

At Tepe Gawra, levels XII to XIX were regarded by the excavator as exhibiting a mixture of Ubaid and a southern variant of the Samarra cultures, along with some Halaf pottery; but recent workers do not regard the so-called Samarran wares of the 19th to 15th strata as true Samarran. The characteristic features of the pottery and its decoration persisted during the eight levels. A common shape was a deep bowl with vertically arranged decoration in black or plum-red. Various geometric designs were used, but naturalistic representations were sometimes utilized, especially of birds. From stratum XVII came beakers decorated near the rim with rows of long-necked birds very similar to beakers from Susa I. Globular jars had curvilinear or wave ornament; and other novel shapes were not infrequent. Other objects (of XVII) included painted figurines of the Mother Goddess and a rattle and toy animal in a child's grave. In level XIX, of early Ubaid date, were found the remains of a temple which is the oldest religious structure known to man. In level XIII, late in the period, an "extraordinarily impressive" acropolis has been discovered. Three monumental buildings - temples- surrounded a main courtyard. "Entering this court the ancient worshiper would have seen on the right the white-plastered facade of what the archaeologists now call the Eastern Shrine, on the left the warm reddish-brown brick walls of the Northern Temple, and directly ahead the great niche of the Central Temple whose exterior was white and whose inner rooms and cult chamber were painted in purple." (J. Finegan, "Light from the Ancient Past," Princeton Univ. Press, 1947; p. 17). In a Gawra grave was a potter's burial, including a palette for mixing paints.

At Mersin, the main Ubaid-culture levels were XV and XIV, while XVI was transitional between this culture and the Halafian. Here storage jars and cooking pots found in a barracks room of a walled city were freely decorated with varied linear motifs in matt black paint on a burnished cream-colored slip, the standard chalcolithic ware of Mersin. Other wares included "trichrome" jugs and bowls in yellow, black and deep red. Rosettes were the central feature of the decoration.

At Khederah, south of Mt. Carmel, were found house-urns or ossuaries which were clay chests for the bones of the dead shaped like the houses of the living. The typical house of the region evidently had a door at one end and three windows in the other. The walls were decorated on the outside with red paint, with horizontal bands and rows of alternating vertical lines and triangles. Such customs, indicating advanced ideas of an after-life, appeared in Neolithic Europe in later times. The building described, which has been called the "around-the-corner" type, distinguishing it from the long room with door at one end and the broad room with door in the center, was believed to have been introduced into Mesopotamia from the Eastern Mediterranean area by Semites. It was indeed about the time we are now discussing that the Western Semites, called by the Babylonians "Amorites," that is westerners, were coming into southern Syria and Palestine. These people were later called Canaanites, and after the 12th century B.C., Phoenicians. Canaan is a Hurrian (Biblical "Horite") expression meaning "belonging to (the land of) purple," and Phoenicia comes from a Greek word for "purple." The Greeks regarded Palestine and Phoenicia as parts of Syria; and Ugarit (Ras Shamrah) in Syria was the center of manufacture of the purple dye from the murex shellfish found on the coast. Later the dye, although it was perhaps closer in color to what we would today call crimson, became known as Tyrian purple, from the city Tyre. Amalgamation of the Amorites with a

bronze-smelting people from North Syria, who invaded the land before 2500 B.C. , produced the Canaanites.

On the Syrian coast, in what is known as the Jebelah region, the earliest (XIX) level of the well documented site Qal' at er-Rus was characterized by "Natural" burnished and unburnished pottery and "Early Reserved-slip" ware. The term "natural" here means both that no slip was used other than the body clay of the vessel and that the color was that natural to the clay: buff, light orange, brownish or mottled. In the "Early Reserved-slip" ware, the interior was covered with a red or brownish slip of which only parallel horizontal stripes were left on the final vessel, the rest being wiped away before firing with a soft tool such as could be made by tipping a slender or pointed stick with leather. In this ware, the exterior was plain or burnished; the color of the clay was brownish buff. These wares were also found in the XIII level of Tell el-Judeideh, the reserved-slip technique apparently travelling southward; for the farther south the site of excavation, the later was the date of the stratum containing this pottery ware.

The islands of Crete and Cyprus, the "Copper Island," in this general period (first half of the fourth millennium B.C.) were probably still in an early Neolithic stage of development. The Neolithic I culture revealed at Khirokitia and other sites in Cyprus was characterized by stone vessels made of andesite or diabase and decorated in relief, and included some poorly fired black pottery, idols, obsidian knives and carnelian beads. It was that of an agricultural community living in mud-brick huts, made up of long-headed Mediterraneans as well as round-headed folk. Later, in Neolithic II, best represented at Sotira, pots were decorated in two different ways. The reserved slip or "Combed" ware was made by applying a lustrous red slip over the clay or on a buff wash, then using a multiple-pointed implement ("comb") to scrape off wavy linear bands and reveal the buff undercoat. Later there was developed a "Red-on-White" ware, with red designs painted on a creamy white, usually matt, slip.

As we briefly indicated in an earlier section, the old idea that the Capsian culture of Africa was the ancestor of the Aurignacian and Capsian of Europe, so that Africa was the original home of Homo sapiens, has gone by the board because of the work of R. Vaufrey published in 1934-39. The Capsian of Africa is now thought to have originated in East Africa, changing later to a Mesolithic "Upper Capsian" differing somewhat in the forms of its stone implements. Under influences coming from the Sahara region and especially from Egypt, in North Africa the culture developed in turn into the so-called "Neolithic of Capsian tradition." This occurred at a time late in a "pluvial" period when the Upper Capsian was just developing a stone arrowhead with transverse cutting edge. The resulting culture included pottery, polished axes, querns and mullers for grinding corn and bifacial arrowheads. An important consequence of the impacts of the culture streams on each other was a "magnificent efflorescence" of naturalistic rock engraving art including human and animal figures. The influences from Egypt came across Libya with a long time-lag natural to a colonial development, resulting in the appearance, more or less simultaneously, of elements of the successive Tasian, Badarian and Amratian cultures, all blended together; the typical pottery also, vessels with pointed bases, richly decorated with incised ornament and often provided with lugs, occurs in the "Gerzean" culture of Nagadah (or Nakadah) a later Egyptian culture soon to be described. In concluding this digression dealing with late Neolithic cultures in a Chalcolithic section, we may add that the authors of the rock-engraving culture appear to be of the Mechta or Afalou race related to the Cro-Magnons.

To return to Iran (at about 3500 B.C.) the plain (unpainted) Red-ware of Bakun AV, the disappearance of Buff-ware there, and the flood of Buff-ware designs in the late phases of Siyalk III may mark a movement of the Red-ware people and others displaced by them. In Iran, though not at Anau, either a plain gray or a plain Red-ware (not both) superseded the painted Buff-ware. Giyan VD shows continuity with preceding levels there, but includes pottery forms and designs typical of the Hissar culture, suggesting movement of Hissar people westward into the region of Giyan. Connected with this movement may have been the appearance of a plain gray ware, along with painted ware, in the area of the Hissar culture (Hissar II A). In Susa at this time (Susa B), plain Red-ware had also replaced painted Buff-ware. More will be said about Susa B presently.

Anau II continued the cultural traits of level I except in the pottery which has already been noted as including a fine gray alongside a coarser red ware exhibited in similar pot forms; in addition, there were two types of painted wares. One had monochrome designs on a burnished red slip or on an unburnished pale green slip or on an unslipped and unpolished light brown or pale green clay surface. The other painted ware had polychrome designs in black and red on a buff-slipped or unslipped buff pottery with gray core. Polychromy was also widespread at this time in Baluchistan and the Indus valley of India. The designs of the Anau II wares were more like those of the Buff-ware culture than those of the Chasmah Ali provincial culture which constituted Anau I.

The Anau II folk lived in rectangular houses built of air-dried bricks. They buried their children beneath the floor in a contracted position. To the domesticated animals of Anau I, the pig, the horse, the long-horned ox and two breeds of sheep, were added a short-horned ox, the goat, the camel and the dog. Lead and especially copper became more common; and carnelian, turquoise and ultramarine mineral beads were used; but no weapons or hunting implements from the culture level have been found.

The Red-ware, Northern or Anatolian culture reached Syria very early, its pottery being found in the lowest levels beneath Syrian wares. It then spread into the provinces of the Highland (Susa-Ubaid) and Halafian cultures, producing "mixed" cultures with, for example, red pots with designs in black paint in the Highland tradition. With them were found small stone "stamp seals," their flat surfaces bearing engraved designs. These were used for stamping on soft clay lumps to seal the cords of packages, the mouths of jars or other property. The mingling of cultures is shown well at Ur and in the 15th to 8th levels at Erech in southern Babylonia.

At Erech, the Ubaid pottery was gradually replaced (the overfired greenish type quickly), beginning with the first level by the characteristic "Red-ware" of the new Uruk or Warka culture, a burnished monochrome ware which was red, black or gray. This was made from a medium- to fine-grained, wet-smoothed, well-fired clay, sometimes coated with a fine red wash or sometimes painted red after firing; finally, a part was red-slipped and burnished. Gray-slipped ware, wheel-made and wet-smoothed, also occurred in level XIV of the Eanna precinct.

More important in respect to quantity was an unpainted, coarse or fine, light-colored ware, beginning in XIII, when Red-ware also became more common. This continued to level IV. In addition, a "smother kiln" was used to produce a dark (gray to black) clay by allowing the smoke to penetrate it. Much of the pottery was made on a true potter's wheel. Forms included spouted jars, small beakers with tapering button bases, carinate bowls and the "Glockentopf," a

crude bowl with flaring sides and beveled rim. Other rims were of a heavy, "club-headed" type. In XII, there were designs in red paint, and some of the Red-ware had a slip which was plum-red, a color we will meet in the next culture period. There were no interesting new wares in XI to IX.

The Uruk period was notable for its architectural remains, in spite of the lack of good building stone in Babylonia. At Erech, excavation has revealed an artificial platform for protection from the frequent great floods; and on it was built a complex of elaborately constructed temples. This was a "ziggurat," or high place where dwelt a god, the original type of the "tower of Babel" (that is, of Babylon, where the ziggurat was better known and of more typical construction). More will be said later of this type of building. Over the 30-foot-high ziggurat, which in its standard form is a stepped or cascaded tower, rose a 65-foot whitewashed mud-brick temple, the "White Temple." Ziggurat and temple were oriented with corners toward the four cardinal points of the compass. The excavators also found in a late level a second temple, which they called the "Red Temple," for, its walls were painted with rich plum-red paint. In the ziggurat, above a series of shallow niches was set a band of two to four rows of pottery jars whose bodies penetrated the core of the ziggurat and whose lips pointed outward. The white rims and dark interiors of these must have made a striking ornament. On a new surface at one level of the ziggurat, the plan of a new building was marked in red, with details, as niches, doorways, and so on, indicated. This was done by snapping a stretched cord dipped in red paint against the pavement. On another level, the walls of a certain "Temple E" were plastered with clay and painted with red and black stripes.

The White and Red Temples were outside the sacred temple-precinct known as Eanna. Another remarkable building not in this area was called the "Mosaic Temple," because of the striking decoration of its walls. This was accomplished by a mosaic of thousands of small terra cotta cones inserted in the plaster with their ends flush with the surface. These ends were colored red, white and black, and the whole was arranged to produce patterns of triangles, zigzags and diamonds. This brilliant, richly colored but harmonious and intricate decoration contrasts strongly with the usual tawny-colored brick of most Babylonian buildings excavated by archaeologists. The red, white and black banded patterns have been said to be derived from the mats with which primitive huts were often lined. In a second Mosaic Temple, or second phase of the first one, the cones were of red and black limestone or white alabaster and were laid in gypsum plaster. The girdle wall of this phase was ornamented with cones colored by firing at varying temperatures, producing a light greenish yellow and a deep blue-black, again yielding strong contrasts.

The ziggurat buildings were part of the temple-enclosure supposed to be sacred to the Sumerian sky-god An, though the evidence attributing the ziggurat to An is slight. The ziggurat levels probably extended from about the 14th level of the Eanna enclosure, sacred to the Mother Goddess, and extended to the time of the latter's level VIII. An early painted limestone pavement was probably contemporary with level X, the White Temple with level IX, the Mosaic Temples with levels with VIII-IV, with the Red Temple indefinitely placed but later. In the Eanna precinct, where these levels were named, were other monumental buildings. At level V was the Limestone Temple, so-called because it stood on a wall-bed of flat slabs of limestone, very rare in Mesopotamia. In level IV was the most monumental architectural complex of prehistoric Mesopotamia. It included a so-called "Pillar Temple" (or "Mosaic Building") and Temples A, B, C

and D. The first-named temple stood on a terrace, and was decorated with a cone-mosaic like that already-described. The patterns were the same, along with diagonal bands, and the colors were again red, white and black; but the great columns were in only black and white, and the large cones at the top of the Pillar Terrace wall were all black.

At Eridu (Tell Abu Shah-rain), over some 14 temples of the Ubaid period were excavated four more of the Uruk period. Temple IV was built of greenish colored bricks. A recently excavated site fifty miles southeast of modern Baghdad is the group of small mounds called Tell Uqair. Above two buildings of the Ubaid period, with painted pottery, was a Painted Temple, probably dating to late in the Uruk period. Here its terrace was decorated with a band of five rows of clay cones " Those hollowed ends had been dipped in black paint. The excavator states that "every surviving square foot (of the inside walls of the temple) bore traces of color washes or painted ornament." Reds, orange, yellow and black were put on a white ground. "The most usual arrangement was a band of plain color, usually some shade of red, forming a dado about one meter high all round the room. Above this there would be a band of geometrical ornament about 30 cm. high. The upper parts of the walls were decorated with scenes of human or animal figures on a plain white ground." Due to proximity to the surface, the figures were unfortunately not recoverable above the waistline. Other fragmentary frescoes showed cattle and humans. The northeast wall face had a dado of deep plum red, the characteristic color of the succeeding period, which faded to a bluish purple a few hours after exposure. The best preserved paintings were on the front and sides of an altar, where lions and leopards and imitation of a cone mosaic appeared. Representations of the buttresses of a miniature temple were alternately white and yellow stripes. On one side was an animal, something like a leopard with black spots on a white ground. A figure on the side platform was freely sketched in scarlet on white and outlined with black. On the walls above were bands of geometric ornament in the plum color separating black and white diamonds, producing a brilliant effect. Between these were panels with animals painted in solid dark red outlined with bright orange. In another room, a figure was done in red, white and black. Color was everywhere, but still no blue nor green.

At the foot of the platform was a little rectangular "chapel." Within and below it was a good deal of polychrome pottery of, the succeeding cultural period. Uqair pottery, of the Ubaid period was a pink-slipped one, unpainted. The late Uruk Painted Temple itself probably fell in the first two of four phases of what, in recent archaeological publications, has been called the "Protoliterate period," that of the beginnings of writing, which overlaps the old "Uruk." This period's date may be put at about 3200 to 2800 B.C.

In northern Mesopotamia, the Uruk period has recently been called the "Gawra period," because of the interest in the architectural and other remains excavated at Tepe Gawra, and the differences from the south noted there. We will reverse here our procedure of the Uruk (Warka) period, progressing from monumental buildings to pottery. The Halaf pottery found in Gawra XX and other cuts there has been mentioned.

Levels XIX to XII belong to the Ubaid period; the large house of XIX, and the existence of a series of temples at Gawra, were mentioned. Retracing our steps backward to Gawra XVII, we may note the existence of two tholos-type temples. In XVI, a room of a large mud-brick private house bore traces of murals consisting of a design of running lozenges, the rows alternately red and black on a white plaster ground. This is the earliest wall decoration known.

In level XIII was an "extraordinarily impressive" acropolis, consisting of three temples grouped around a main courtyard, the group occupying the entire excavated area, 30 meters square. "Entering this (main) court the ancient worshiper would have seen on the right the white-plastered facade of what the archaeologists now call the Eastern Shrine, on the left the warm reddish brown brick walls of the Northern Temple, and directly ahead the great niche of the Central Temple whose exterior was white and whose inner rooms and cult chamber were painted in (red-)purple." (J. Finegan, "Light from the Ancient Past"; Princeton Univ. Press; 1947, p. 17). The walls of a small room at the north corner of the Eastern Shrine were painted bright red. The next level (XII) seems to have come to a violent end.

Gawra levels XI A to VIII B belong to the northern Uruk or Gawra period. Level XI A was the first fortified level at Gawra. It had watch towers guarding the gates and in the center a so-called "Round House" with massive walls no doubt built by the conquerors of XII. In it were found numerous celts, maceheads and hammerstones. The mud bricks of the buildings were gray or reddish brown. Stone was still too rare to be commonly used. In level XI there was city planning, with partially stone-paved streets dividing the township into sectors. The bricks were usually gray, sometimes brown, while two short spur walls of the temple bore traces of red plaster. In X, the bricks were brown or reddish brown, few gray. In VIII C, near the end of the period, there were four temples of no special color interest.

From level XI A, with its Round House, to level VIII at Gawra, the temple architecture was outstanding: symmetrical structures with the entrance on the narrow side and a podium in the center of the long cult chamber, the walls decorated with double-recessed niches, regularly spaced. The excavator dwells upon the qualities of the builders, who "enjoyed something more precious (than wealth); its builders display faultless taste and unerring sense of balance.... The glory of this age is in the consummate mastery of architectural design " which included very early use of the true arch and spacious approaches and courtyards.

From the standpoint of a student of color, some of the most interesting structures of northern Mesopotamia were at Tell Brak, between Gawra and Halaf and just south of Chagar Bazar. The last of a series of "Eye" temples on the southern part of the mound, was the uppermost "Eye Temple." This stood on a 20-foot platform incorporating the remains of several earlier temples. The earliest, on the plain level, was the "Red Eye Temple," thought to be of the Uruk (Gawra) period because of red-slipped pottery associated with it. It was built of red mud bricks. Above the red

layer was a layer of gray mud bricks (the remains of the "Gray Eye Temple") in which was found a great mass of beads, amulets and other small objects, thought to be temple offerings left in place when the building was razed and filled in. Then came four meters of red brick, in which, a meter above the base of the layer, was a layer of white plaster thought to mark the floor of another temple (the "White Eye Temple").

The topmost building was the "Eye Temple" proper, which has also been called "The Temple of a Thousand Eyes." All of its walls were mud plastered, and those of the central shrine whitewashed and "decorated with coloured stone rosettes, strips of red limestone inlay, and copper panelling impressed with the design of a human eye" (hence the temple name). The outer walls were decorated with clay cones whose heads were painted red and black, and with large inlaid stone rosettes, with alternate petals of white marble and dark green shale and a central corolla of red limestone. Each of three sides of the altar against the south wall bore a

panel which was bordered with sheet gold. Below the top border was a band of blue limestone in which were cut three rows of concentric circles imitating cone mosaic. Below this was a narrow band of white marble and then a band of green shale with fluted pattern. The gold borders were turned over the panel edges and fastened to wooden backing with copper holdfasts. The topmost Eye Temple belonged to the period which followed, but the earlier ones probably were built in the Gawra period, while other remains including pottery at Brak were of the earlier Ubaid and Halaf periods.

Turning to the pottery of the northern Uruk or Gawra culture, we may begin with Tepe Gawra itself. In level XI A there was a sudden change from the green and greenish gray clay, common in late Ubaid times, to brown, red-brown or buff clay, while painting almost ceased. The last two colored fabrics continued in XI - X, with some gray, black and greenish ware and much use of light-colored slip. The fast potter's wheel made its advent in IX, being commonly used in VIII. In the three phases of VIII, the last of which overlaps the period subsequent to the Uruk or Gawra, the clay of the better ware was usually buff, sometimes shading to red; some was pale green, and rougher ware was reddish brown, brown or gray. Nearly all of these wares were thus self-colored and practically undecorated. At Ninevah, the level Ninevite 4 included the more interesting "sealing-wax-red-slipped" pottery, similar to that of Erech. There was also some decorated with incision; also early examples of "reserved-slip" pottery, mentioned in connection with Qalat er-Rus in Syria. The pottery of Nuzu (levels IX - VIII), southeast of Hassuna and north of Samarra, had no color interest. At Grai Resh, between Tell Halaf and Tell Hassuna, level V was transitional, containing Ubaid pottery. Levels IV - II contained three different pottery wares: (1) a buff ware with cream-colored slip; (2) a straw-tempered grayish-clay ware with pink slip, sometimes with the insides of the vessels burnished; and (3) a straw-tempered gray-clay fabric with gray slip, burnished on one or both sides. Gray ware, it will be remembered, was present in Gawra in Uruk times and in several southern Uruk sites.

Tiny black steatite vessels, which began in the Ubaid period, continued in Gawra XI A, along with small mortars for grinding paint. In levels X to VIII were beautifully fashioned and ornamented vessels of alabaster, translucent serpentine, obsidian, oolitic limestone and variegated marble. Stamp seals were found in early levels of Erech, and a cylinder seal of gypsum in middle levels of the Anu ziggurat. It showed human and several animal figures. In the White Temple were "gypsum tablets," with cylinder-seal impressions. In level V of the Erech Eanna precinct was a cylinder seal with a double-headed monster and other animals; and in IV were cylinder impressions in Uruk style. Their subjects included animals in file and in heraldic groups, scenes of offering or sacrifice or ritual acts, the king on the battle-field, and symbols of various fertility deities. Well-balanced designs and vigorous modeling mark the style. At Gawra were numerous stamp seals of steatite and serpentine, often with a single-animal design. In all levels from XI A to VII there were geometrical as well as animal designs. In X, two were made of blue lapis lazuli. Most of the seals of the north were stamp seals when the south had progressed to cylinders; but in at Brak in the Eye Temple platform debris were cylinder seals, including one of green marble, while cylinders occurred frequently in the north in the following period.

In the White Temple at Erech was a "horn" amulet made up of disks of variously colored stones closely fitted together and strung on copper wire; and there were stone animal amulets from the Anu ziggurat. Among personal objects, beads were of course common in most sites.

Other items of this sort were perforated amulets, while the beads and other objects were strung into necklaces and bracelets. Ninevite 4 contained white steatite beads, while in Gawra XI A to IX they were made of white frit, dark obsidian, red carnelian and white limestone. In VIII, these materials and others, including blue turquoise, were employed; while a copper pin had a blue lapis head, and a copper disk had an embossed concentric-circle design. From tombs came various ornaments in similarly constituted and colored materials.

Tools found at Gawra included clay spindle whorls, clay pottery-smoothers or burnishers, clay bobbins or toggles; also flint and obsidian flakes, while some blades of these materials were hafted with bitumen. In XI A Was found a limestone razor handle. The earliest datable copper objects in the south were of the Uruk period, while in the north they dated in the earlier Ubaid period. Copper tools and objects were rare in XI A-IX, but more frequent in VIII-VII (as chisels, hooks, awls, needles, tweezers). In Grai Resh II was the copper bit of a drill. Weapons included copper knife and dagger blades, maceheads, clay sling pellets, and flint arrowheads from Gawra; pear-shaped maceheads from the Brak Eye Temple, Ur and Erech, and weapons (and tools) of copper from Erech and Lagash (Telloh). Two copper snakes were found in Gawra VII and many lumps of unformed copper at Erech. Copper vessels have been found in some southern sites; and a cylindrical one appeared to contain a black cosmetic powder.

A set of crude little clay objects appearing to be for some game was found in the Round House at Gawra. Other interesting objects were a number of fragments of small stone building models found at Erech. From Gawra, Grai Resh and Tell Brak came so-called "hut symbols" or "eye symbols." These were mostly hollow clay objects with clay bases and two rings or volutes at the top. They were thought by one authority to represent huts with rounded roofs; but others have attributed to them some utilitarian function, such as loom weights. Small "eye symbols" from the Brak Eye Temple were believed to be some sort of amulet or temple-cult object, as were some peculiar double-horned terra-cotta objects from Gawra XII-IX. From Gawra came an ithyphallic male figurine with a spot of paint at the end of the phallus. Four human heads or masks from the Gray Eye Temple, completing our present list, were of alabaster and calcite, and consisted of face and neck only.

In the Uruk period, seal-engraving was executed with considerable skill. The use of cylinder seals was becoming quite common, but stamp seals were also employed during the period. Pictographic writing had reached a stage in Erech VII in which it could be used for keeping the temple accounts. The period beginning with Erech VII-VI (possibly VIII-VI) has recently been called the Protoliterate period, for it represents the very beginnings of writing. This culture reached its height in the temples of Erech V-IV. The Protoliterate period includes in its four subdivisions Erech VIII or VII through III, the first two parts coinciding with the Uruk period and the last two with the succeeding one, which will soon be enacted in these pages.

Farther toward the northwest, at Kum Tepe near the site of Troy but apparently antedating the first city at Troy, the culture complex included burnished gray, black and brown bowls (in a period perhaps beginning at 3400 B.C.), to which were added, in a third phase, red and even yellow ones. Characteristic of Kum Tepe and Alishar were also bowls on a tall hollow pedestal. In Syria at Qal'at er-Rus in strata XVIII to XVI the early reserved-slip and "natural"-colored wares continued along with red-rimmed pithoi and red-slipped wares. Fairly generally Syria as well as Palestine in the period under discussion (last half of the fourth millenium) were characterized by gray burnished ware related to the Uruk gray ware of Mesopotamia. At the

important city of Hama, in level L, the people lived in rectangular houses on stone foundations. They painted their pottery with simple geometric designs applied in monochrome matt black, violet, red or brown on a yellowish clay. There was also some Halaf-type pottery with lustrous paint, but the Halaf period is not clearly marked either here or at Judeideh, though Halaf-type painted ware occurs at the latter site in the lower phases of level XIII. Hama appears to compare best with Ras Shamrah III, at least in part overlapping the latter in date.

Besides the Ghassulian culture, already discussed, the Middle Chalcolithic period of Palestine included the house-urns discovered at Khederah, on the plain of Sharon, which have also been described. Following these Chalcolithic cultures was a Late Chalcolithic one named from the Plain of Esdraelon, southeast of Mt. Carmel, in which several important sites have been excavated. The pottery of the Esdraelon culture was a dark gray or black, highly burnished ware. This ware was found in Beth-Shean levels XVIII to XVI, among others. The first of these levels, which was a transition stratum, was also marked by pots with bands of chevrons painted on in red.

Archaeologists usually discuss the early cultures of Palestine primarily in terms of the various types of handles on the pottery vessels rather than in terms of the colors. The ubiquitous lug-handles, thick ledge handles and knob handles of early Ghassulian times were replaced in later times by loop handles and more developed forms of ledge handles; while scalloped and probably wavy ledge handles marked the Esdraelon period.

In Megiddo XX, an already-mentioned composite stratum much earlier than our presently-discussed period, the ledge handles had the outer edges decorated with finger impressions. Crude bowl shapes of very coarse gray ware were common. Decoration was often by burnishing; but parallel painted lines were profusely used, and the chevron pattern, both incised and painted, was fairly common. The people lived in homes cut in the solid natural rock and built crude stone walls. Megiddo is more commonly known by the Biblical name of Armageddon. Its ancient fortress held strategic command of the best route from Egypt to the Euphrates. It was here that the great Thutmose III surprised and defeated a coalition of Syrian kings, here that Josiah was slain by Necho, here that General Allenby surprised the Turkish armies in 1918, and finally here that the Book of Revelation says will be fought the "battle of that great day of God," when the forces of good will triumph over the forces of evil.

The next later level (XIX) exhibited the transition to the "Early Bronze" Age. Here in front of a building, which may have been a temple with a platform serving as an altar, were many paving stones with incised drawings of human and animal figures, forming a sort of "picture gallery" of art dating about 5000 years ago. The Chalcolithic pottery included numerous specimens of "cornet" shapes, recalling less excellent ones from the Ghassulian culture; here they were decorated with red lines. On bowl rims were incised herringbone patterns closed by red paint. A bronze object reported from the stratum was a large sword. If this was really of bronze, the period may technically be described as an "Early Bronze" one; but it is generally believed that the name is a misnomer.

An early cemetery at Byblos, containing objects of Middle Chalcolithic times, showed that the coast of southern Phoenicia, in which it was located, though north of Damascus, belonged then to the cultural area of Palestine rather than to Syria.

The Esdraelon culture levels of Beth-Shean (XVII - XVI) and other sites of the culture were marked by burnished dark gray carinated pottery and very little painting. This ware is

believed to have been derived from the Neolithic pottery of Mediterranean islands (Malta, Rhodes and Crete).

About the last quarter of the fourth millenium B.C. (starting at about 3250 B.C.?) arose "Neolithic III" of Cyprus (which may be actually Chalcolithic), best represented in levels I to VIII at Erimi. In this "Erimi I" period of about two centuries, the previously described Red-on-White pottery was continued, but accompanied by at least six other wares, with subtle variations of several, and painted wares predominating. There was a Coarse ware, a Red-on-Red ware with dark red designs painted on a pale red slip; also several slipped wares: unburnished and burnished red-slip, burnished black-slip (these last two called "Lustrous") and plain white slip. In the early levels, red slip was in preponderance over white slip; in levels XII:-XIII of the following Copper Age, "Erimi II," the reverse was true. The people of the early strata lived in huts of light construction, without the stone foundations employed in the earlier Neolithic I. The culture was characterized also by the presence of "bothroi" (pits in the earth). It has been remarked that the painted ware of Cyprus mentioned here, though having an attractive coloring, in the precision and balance of its decoration does not equal the mainland "bichrome" styles. There was a "less developed grasp of artistic possibilities, being more a hesitant experiment in color than an appreciation of the power of color to express a design." (J. R. Stewart.)

The Erimi II levels, IX to XIII, constituted a Chalcolithic or Copper-Age culture. The Erimi I decoration, mainly of geometric nature, originating in the earlier Combed ware, developed to a more elaborate style, with more variety of pattern. Toward the end, there was a "cruciform style," combining horizontally and vertically stressed patterns. In this culture period, which may have ended in the 28th century B.C., the people's round huts were built on stone foundations, the upper portions being of wattle-and-daub. Burials were in a contracted position in circular pits within the settlement. Many small stone objects of the culture have been recovered: amulets, figurines, axes, flint or chert blades and simply shaped bowls. There were also bone awls and pins; and seated and standing nude female terra-cotta figurines in the red-slipped, red-on-white slipped and unslipped wares. The pottery styles varied at Cyprian sites of the time other than Erimi; and at Ayios Epiktitos, on the north coast there was a ware with design in red on a black slip overlaying a red undercoat.

The Gerzean or Middle Predynastic culture of Egypt may have been due to invaders from Asia (perhaps from Syria or Palestine) or to people from Asia who had previously settled in the Nile Delta; but according to the noted Orientalist, Sir Flinders Petrie, they came down from the hills along the Egyptian coast of the Red Sea. But the people were already in contact with the earlier Amratians, for their distinctive painted pottery, the so-called "Decorated Pots," occurred sporadically in Amratian times. This painted ware had designs including spirals in red or reddish brown on a light buff ground, though in general Egypt followed the plain-ware tradition. In the latter part of the period, a very common design was some sort of a ship-pattern. Each boat carried an ensign. Authorities disagree as to whether these can be identified with the standards of Egypt's nomes (districts), each of which, at least in later times, recognized an animal or plant as its totem and placed it on the banner or ensign. The ships were of a type which evolved from Amratian times; but Gerzean ones were rounded, while Amratian ones were pointed. Other subjects included men in profile, women full-faced, an aloe in a tub or pot, gazelles, antelopes, crocodiles, goats, flamingos and river scenes. The early Decorated Pots

indicate a copying of stone vessels, and excellent stone jars of many colors form part of the culture. The shapes and special features are like those of stone vessels; and the early decoration includes copies of the marbling of coarse-grained stones. Amratian black-topped and red-polished wares continued in use; but the naturalism of the white-line ware died out with these pots. There was also a reddish coarse ware, often with pointed bases to stand the pot upright in the sand, some animal-shaped vessels and spouted jugs; and a finer drab-colored plain-ware with smooth surface, for storage purposes, usually jars with so-called "wavy-ledge handles," a second important characteristic of the Gerzean culture (Decorated Pots being the first). These were wavy ridges of clay on each shoulder in place of a handle. They degenerated step by step until they remained as a mere line of decoration; and the vessel shape also degenerated toward a plain cylinder. Petrie correlated the stages of this degeneration with articles of tomb furniture and other objects of this and related cultures to obtain a relative dating system, known as "Sequence Dating." For example, Tasian culture is S.D. 20; Badarian, S.D. 21 - 29; Amratian, S.D. 30 - 37; Gerzean, S.D. 38-60; Semainian (the next to be treated), S.D. 60 (or 63) - 77; and Dynasty I, S.D. 78 - 82. To convert these relative dates into absolute datings is an important task of the archaeologist and pre-historian.

Gerzean graves were rectangular trenches; on one side a ledge or shelf accommodated the increasing number of offerings tendered in this period for the welfare and comfort of the dead in the afterlife. The splendor of some of these tombs, including a somewhat later one with mural paintings at Hierakonpolis, indicates a stage of the rise of the institution of kingship, which ultimately unified Egypt. The worship of Isis and Osiris and the 365-day calendar are believed by some to have reached Egypt from Asia in this period; other Asiatic elements are mentioned below. Blue lapis lazuli (mineral ultramarine blue) is said to have been first imported in this period, probably from Asia. Spinning and weaving, the cultivation of grain and domestication of cattle were well developed. As weapons, previously used disk-shaped maces were replaced by pear-shaped ones, probably from Asia. Cylinder seals were also an Asiatic culture-contact item. Petrie dated the first use of glass in early Gerzean times; but others regard this as developing only very much later. Faience glazing was a Gerzean introduction; this was made from the soda deposits found west of the Nile Delta. Amulets representing bulls, cows, toads, falcons and flies were also produced. Rhomboid slate palettes went out of fashion, but animal-shaped ones continued to be employed. Metal became less rare, but was not yet in general use. But copper was used as cast metal, not merely hammered, and while there was no tin within or near Egypt with which to alloy the copper and produce bronze, the existence of a genuine metallurgical process for copper is usually a mark of a Bronze-Age stage of culture development, and in this case many of the other elements of a Bronze Age were taking shape.

The Gerzean culture was economically and socially advanced over the Amratian. Probably the organization of the land into nomes, on which the future administration of Egypt was based, was already under way. The pottery model of a house from El Amrah portrayed a mud-brick rectangular house with wood-framed door and ventilation holes in the end wall. The molded mud bricks of the period were rectangular. The Gerzean culture is best represented in Middle Egypt, but may have originated nearer, the Delta. It has not been found as yet in Nubia. While the preceding Predynastic culture gave us a pleasing color contrast in the rich hematite red with black in the black-topped pots, the Gerzeans left as a heritage in their pottery that feeling for balance and rhythm which persisted for long ages in Egyptian art.

At about 3100 B.C. or later, the Late Predynastic or Semainian culture, named from the site of Semaineh, developed from earlier ones with additions by nomadic peoples who approached the Nile Delta from both the east and the west. It was a period of turmoil; and the existence of the Semainian as a distinct culture has even been called in question (H. Kantor; JNES 1944, p. 110). It was the chief period of unification of Egypt, and contacts with Asia, possibly as far north as Byblos in Syria, were increasing. Although the tournette or slow potter's wheel was introduced, leading to technical improvement, esthetically the pottery declined. The red-polished ware was replaced by a poorer burnished red ware. The painted ware continued in use, but its decoration had degenerated to such forms as parallel lines and crude comma-shaped splashes. Though mass production had begun, the proportion of painted ware decreased steadily along with the quality, eventually only red or drab, hard-baked, vases surviving. The black-topped ware was almost gone, and the wavy-ledge-handled pots died out. Pointed bases became common and rim-collars were notable. Late in the period appeared open tubular stands whose walls were often perforated with triangular apertures, an Asiatic form.

The domestication of sheep and goats, and later wild asses, went hand in hand with the cultivation of grain. Copper was increasingly employed along with beads of purplish red porphyry and garnet; and copper became common for axes, daggers, spears and knives, though flint was also still used for such objects. The pear-shaped maces and animal-shaped palettes continued in fashion. Graves were now larger and divided into chambers with timber and possibly brick lining. From these developed the mastabas, masonry structures over the tombs; and from them in turn, the step-pyramid and true pyramid.

It was a period of growth and centralizing rule, villages growing into towns, clans uniting to form petty kingdoms, chieftains becoming their kings and later king-gods. There were several distinct peoples making up the population along the Nile. First there were Asiatic and Libyan nomads, with a capital at Sais, just south of Buto in the Delta. The crown of their king was a red wickerwork diadem, their symbol being the papyrus plant, which grew in the swamps and marshes of the Delta. In Middle Egypt, between Cairo and Assiut, there was a kingdom whose kings wore as crown a tall white helmet, and whose symbol was the lotus plant. The famous Palermo Stone indicates that there were ten kings in Lower and Middle Egypt before the close of the Predynastic periods. Between Assiut and Abydos, the Nile valley was occupied predominantly by another people, marked by their worship of Set (or Seth), the beastheaded deity who was brother and enemy of Osiris, and later of Horus. The southernmost part of Egypt, down to Assuan, was dominated by a people, thought by some to have come from the Arabian desert, who are traceable by their characteristic stone bowls. In Predynastic times as in the later times of united Egypt, when the pharaohs wore the red cap and the white mitre combined into one, there was a temporary unification of Egypt. In the symbol of the united land, the papyrus and the lotus were knotted together. The union of the two lands, probably with the people of the Delta as conquerors, did not endure, and it broke apart and fought north against south. Finally, the kings of Upper Egypt conquered the Delta, and the two Egypts remained permanently united.

To Predynastic times, probably early Semainian, belongs a painted brick tomb (? or chamber) found at Hierakonpolis which exhibits a transition from the naturalistic pottery painting to the skillful developed art of Dynastic Egypt. Here the style resembles that of the decorated vases. The walls and mud mortar were covered with an ochre yellow wash. Against

this were shown a trapping scene in the foreground, boats with cabins in the middle ground, and a hunting scene in the background. Human figures, including crouching captives threatened with a mace, gazelles, antelopes and goats were included. Figures were in reddish brown or red ocher, crudely and awkwardly drawn, others being solid silhouettes in red. Boats were white with a wash of malachite green above; white was also used for garments and details. Below the decoration ran a dado in blue-black, while a red-ocher line was above.

Though critics have stressed the ability of the Predynastic Egyptians to adapt design to the available surfaces, as exhibited in this tomb, in general the skill of the artist of the day was not equal to that of the far earlier cave man. There was incipient ability to handle the arrangement of figures in groups; but perspective, as we understand it, was unknown, this problem being handled by division of the surface into parts or registers. The people themselves lived in a tribal state, often in areas of damp mud and undrained marshes; and many have been found with indications of suffering from rheumatoid arthritis. A peculiar fact is that in some cemeteries the women mostly have their left forearms broken; whether this resulted from the blows of the males, we are unable to say. The lot of the people as a whole may perhaps be contrasted with that of a developing lordly class able to afford tombs of such comparative richness as that of Hierakonpolis just described. And there are evidences that even kingship was developing, as we shall soon see.

At Alishar Hüyük in eastern Anatolia the gray, black and brownish Chalcolithic pots described previously were replaced in the Alishar I period (possibly 3100 - 2400) by the pottery wares of the Early Anatolians, a "mesocephalic" people (neither long- nor round-headed) with heads low heads but high narrow noses set in a narrow face. Their shallow bowls, often red-slipped, and small jars with a single handle were mainly of unpainted, often highly burnished, Red-ware. The pots were still built up by hand out of coils of clay bands. There were also large vessels for storage of grain and water, and crude funerary urns used for burying the dead. More will be said of the burials in connection with a later Alishar culture. The ceramics were rarely ornamented; and in this and some other characteristics the culture was behind the contemporary civilizations of Mesopotamia and Egypt. There was some decoration by fluting, grooving or raised concentric rings. Some of the red pots were produced with black top and interior, securing a pleasing contrast (as in Egypt, Cyprus and Mersin). At Ahlatlibel near Ankara, where culture elements of both eastern and western Anatolia were combined, hemispherical burnished red bowls with black rim and interior have also been found. Pottery wares were also used in the spindle whorls of a textile industry and in crude human "idols". The excavator regarded the latter little figurines as female fertility idols, which "fulfilled their purpose as well, or as poorly, as the more elaborate Ishtars of Mesopotamia." Copper and even bronze implements (in the later phases) were in use alongside of bone awls and stone objects such as mace heads used as weapons; and the culture rapidly developed into a true Copper Age. In the last half of the period, black ware became rarer and painted wares and gray ware occurred along with Red-ware. Some spirals were present in the decoration along with checkers, zigzags and lattice patterns. The heavy stone slabs which covered the mouths of mortuary urns were interpreted by the excavator as proving, as is generally believed for many other cultures, that these people were afraid of their dead and wanted them to stay where they had gone.

During the period after the middle of the fourth millennium B. C. the artistically

important island of Crete, which may be considered a stepping stone to Europe from both Asia (Anatolia) and Africa (Egypt), was still, till around the end of the milleniurn, with a Neolithic type of culture. Its ground axes of greenstone, serpentine, diorite, green jadeite and red hematite resembled in shape those of Anatolia; and there were other evidences that Crete was an outlying province of the Anatolian culture-area. Clay figurines, mostly of seated female figures, are thought to represent the Anatolian Mother Goddess. There were also clay figures of oxen. The incised and rippled-surface pottery wares tended to die out; but the plain ware became highly burnished and was sometimes painted with a black glaze slip. Incised designs of the Cretan Neolithic often were filled in with white.

Sometime in this period, perhaps by 3300 B.C. or even earlier, Near-Eastern civilization had at last reached European soil. But the peasant-village cultures which spread from Greece to the Danube basin, though they received elements from Western Anatolia, the nearest part of Asia, had not much in common with such Western Anatolian townships as the first city of Troy, with its acropolis, stone wall and chieftain's palace. Their connections were more probably with the more distant Central Anatolian Chalcolithic (as of Alishar); and Troy may have served rather to bar close contacts with the following Copper Age of the central plateau of Anatolia. But though the European peasants added distinct features peculiarly their own, many of the Eastern cultural arts, especially those of metallurgy, became rather impoverished in course of transmission to Europe; and the early European cultures have in consequence long been known, if somewhat inaccurately, as Neolithic cultures. We shall accordingly treat of them in a separate section.

At the very end of the fourth millennium, as has been mentioned, polychromy on pottery was widespread in the Indus valley and Baluchistan, as well as at Anau (stratum II). This technique was rare in the pottery of the Harappa culture. Painted wares, including polychrome ones, were also characteristic of several Asiatic cultures in the early centuries of the following millenium, with the most common decoration in black on a polished red ground.

The pottery found at Amri in southern Sind (India) was decorated with red or brown bands and with geometrical patterns in black or chocolate color on a mat cream, pink or pale buff slip over a red body. This preceded by some time the black-painted ware of the Harappa or Indus culture which will be met later, overlapping at one site where apparently the peaceful Harappa traders allowed the Amri-culture folk to live among them. Common motifs of the Amri culture pottery were the rhomb (lozenge or diamond), the four-petalled rosette and the loop. The rhomb was common in Sumer and Elam, but not in the Harappa culture.

There were two movements out of the Buff-ware area of southwest Iran, an early extension which brought the Ubaid culture to Mesopotamia, and a later one to the east. When the Buff-ware culture was ended, around 3500 or 3400 B.C. by the Plain-ware people of the red and gray wares, it probably was displaced from Iran and drifted to Baluchistan, Sind and the Indus valley. The eastern cultures at first remained in a barbaric, simple village state, unlike the western ones. The displacement was a slow process, and there were red wares with the buff ones, painted exactly like the latter.

Interesting cultures have been found in northern Baluchistan, in the Zhob region and in the stratified site of Rana Ghundai, excavated by a British general who died in the World War. At the lastnamed site the Zhob culture is represented by levels II and III, the former of these constituting what is known as the "Bull Period," an extension of the earlier Hissar

culture of northeast Iran. The older "Pre-Bull Period" (I) pottery was a handmade coarse plain ware, with orange-buff core and almost cream-colored surface. It was that of a people practicing a rude agriculture who had domesticated the Indian ox, the horse, the sheep and the ass, but with little constructional ability and perhaps no knowledge of metal and no potter's wheel. Their occupation was a long one. The Bull Period (II A) is so-called because of the characteristic stylized representations of the Indian humped domestic cattle in friezes painted on the striking, artistic, and technically excellent bowls. The usual color of these was a lusterless thin opaque brownish black painted on a pale pinkish terra-cotta or buff-colored surface with or without a darker slip, with both body and slip varying from dark terra-cotta to a finer pale pinkish buff or grayish yellow. On certain sherds, two colors were blended; the lower part was darker, the upper part, on which the bull frieze was painted, being lighter. The rim was generally painted black inside and out. Some bowls had the animal frieze replaced by a beautifully drawn scroll or geometric designs, while in others the animals were portrayed in a style neither strictly naturalistic nor conventionalized. Often halfway between the shoulder and the base, where a narrow black band might be found, was another such band, with a wider black one (or two) at the angle of the shoulder sometimes ornamented with stylized flowers, and all connected by groups of four or five parallel lines. The origin of the culture which included this fine ware is unknown. It may have come from the east, developing in India. It was that of an artistic people possessing the pottery wheel and more technical skill than their forerunners.

At Periano Ghundai on the Zhob river in British Makran (southern Baluchistan) were found goblets similar to those of the Indus culture yet to be described; but no Bull period was in evidence. Here the naturalistic motifs included the "feathered tree," while rows of stylized goats were also found. On the surface at this site the finds were similar to those typical of the Rana Ghundai stratum III D, to be later described.

Moving our survey westward, we come in the late centuries of the fourth millennium B.C to the "III" stratum of Shah Tepe in Iran near the southeast end of the Caspian Sea. Here the tombs contained painted Red-ware alongside plain gray pottery, while outside the graves was a black-on-red ware. This culture seems to be a development of Hissar II. The black-on-red ware was found also at the lowest but somewhat later level at Turang Tepe nearby along with unburnished gray ware.

When, in the fourth millennium, the infiltration of a folk possibly from the Turkoman steppes (but apparently no battle), had pushed the Hissar people westward toward Giyan and eastward into Zhob, a new era supervened at Tepe Hissar. The II A stratum contained plain dark-gray footed bowls, jars and goblets with stems along with a painted ware with schematized design; but painted ware was slowly displaced. Characteristic of the wheel-made pots were flat bases and everted and modeled rims and feet and unusually highstemmed feet. Copper objects were improved and lead objects and silver ornaments appeared. In the II B level, dating early in the third millennium, the gray-ware people apparently invaded in force.

The Uruk period, with its recently distinguished Warka variant in the south and Gawra variant in the north of Mesopotamia, was followed by a culture which again has been divided into variants. Formerly, the culture of the period about 3050 to 2800 B.C. was called the Jemdet Nasr, from a site near Ash where it was first characterized. Again the time spreads of the two variants differ; the southern one, called "Protoliterate," begins near the middle of the

north's Gawra period (overlapping late Gawra with its phases a and b and approximately runs on parallel to the north's Ninevite period (approximately the d phase of Protoliterate). Both late Protoliterate and Ninevite periods end about 2800 B.C.

Protoliterate "a" includes levels VIII-VI of the Eanna precinct, of the ziggurat and Mosaic Temple I at Erech; part of the Painted Temple period at Uqair, and contemporary levels at Eridu, Tell el-Ubaid, Ur, Lagash and Jemdet Nasr. Protoliterate "b" was found at slightly later dates in the same sites, including levels V and IV at Erech's Eanna. Protoliterate "c" is approximately a transition to the old Jemdet Nasr period and includes "Sin Temples" I to III at Khafaje, a site close to modern Baghdad.

In Erech level VIII, the most common pottery was an unpainted light ware; but Red-ware, now with brick-red color, flourished. Gray ware was also common; it included gray-slipped, burnished ware and a gray-washed fabric with fingernail or combed impressions. (A wash is a cheap substitute for a slip; the wash is applied after firing, while a slip is always fired.) The unpainted light ware and the gray wares continued in VII, along with some highly polished black-slip ware. In VI there were both fine and coarse varieties of the light ware, and four varieties of Red-ware: (1) with thin light-red slip; (2) with darker slip, better smoothed.; (3) with red wash; and (4) with plum-red slip. The plum-red slip has long been regarded as characteristic of the Jemdet Nasr period, so level VI cannot long precede that period. Gray ware still flourished in two varieties: (1) slipped and burnished, and (2) washed and combed, using the word "wash" in the sense indicated above. Red slipped and gray-slipped wares were also found at Eridu and Lagash and at other sites. At Ur, Ubaid ware was mixed with burnished, unpainted Red-ware, gray wares and reserved-slip wares; and a common form was a splay-foot chalice in drab or red clay. Erech level V (at Eanna) was poor in pottery. Level IV contained less of the red, gray and light wares; and here the "Glockentopf" ended. Some pottery from Jemdet Nasr, which may be of Protoliterate date, will be discussed in connection with the period of that name; so also the pottery from a chapel at Uqair.

To the Protoliterate "d" phase, not exactly but roughly coincident with the last half of the old Jemdet Nasr period and with the Ninevite period, belongs some of the pottery and other objects of Jemdet Nasr itself, the Eanna III level at Erech, a so-called "Jemdet Nasr cemetery" and part of the "Archaic III-IV" strata at Ur, part of the "Jemdet Nasr chapel" at Tell Uqair, the Sin IV and Sin V temples at Khafaje and much of level I at Tell Farah, a site not far north of Erech.

At Jemdet Nasr were unearthed stone sculpturing, fine vases of porphyry, granite, aragonite and alabaster; and narrow, angular-shaped pots decorated with polychrome painting. The clay was of several sorts. One burning light red served for polychrome pottery; a soft light gray and a very much drab-colored clay were also in use. A burnished slip, white, cream-color or red, was employed on polychrome ware. In some cases the lower portion had a red slip, and the upper a cream one, on which a monochrome design was painted. Wet-smoothing sometimes took the place of slip; but decoration was usually with paint. One style employed plain bands or other geometric designs in bright or purplish red (a "plum red") and a dull "greasy" or purplish black. The ground was sometimes yellow; otherwise the clay surface itself or a neutral slip served as ground. The design appeared only on the shoulder, the rest of the body being painted red or left bare. Polychromy was confined to pear-shaped jars, squat carinate jars and carinate hole-mouthed jars. The most popular vessels bore spouts. The

designs were simple and few in number: checkers, lozenges, cross-hatched triangles, blocks of cross-hatching, diaper pattern, zigzags and truncated zigzags, hourglass or butterfly patterns. Representational motifs included a scorpion, a goat with kid, birds and fish. Composition was almost always in metopes or panels, separated by plain bands of paint. Execution was usually rather coarse and often crude; esthetically the Jemdet Nasr ware could not be compared successfully with the pottery of Halaf or Susa, though it held much color interest. The pottery was now wheel-made. Besides the polychromes there was a greenish Ubaid-like ware and one painted with chocolate-color designs on a buff or cream ground.

Very similar to the Jemdet Nasr pottery was the ware found in and below the chapel at Tell Uqair, for this reason called the "Jemdet Nasr chapel." Carinate hole-mouth jars and carinate jars with beveled rims were decorated with polychromy. Most of the vessels were of light buff to red clay with a greenish or creamy slip painted with designs in bright brown, or with plum-red burnished slip and polychrome designs. There were also greenish overfired vessels with designs in black to dark brown. Again simple motifs and panel arrangement were the style. At Khafaje, vessels were plain, incised or painted, or with reserved-slip decoration (with remaining slip darker than exposed clay). Painting was either monochrome, or polychrome in Jemdet Nasr style, the hourglass or butterfly motif being prominent. At Farah I were found both red and gray ware.

At Erech in level III two walls connected with the temple terrace were decorated with niches which bore cone mosaic, smaller ones in a black-and-white zigzag pattern, and larger ones in a black, white and red lozenge pattern. In this level was the Labyrinth, a curious building with some rooms accessible only through roundabout passages. One room had walls decorated in a lozenge pattern with whitewashed clay plaster painted black, white, red and yellow. A "great gateway" was decorated with an all-red mosaic and a black-and-white mosaic. In this level the excavators found what is known as the "Kleinfunde Horde" (literally, small-discovery horde), an assembly of small objects for temple furnishing: seals, animal figurines, barrel-shaped beads of red carnelian, violet amethyst and blue lapis lazuli, copper nails and fragments of copper tools, and pieces of silver and sheets of gold.

At Jemdet Nasr were found a great number of clay tablets inscribed in a semi-pictograph script somewhat advanced over that of the Uruk period, conventionalized but not yet entirely abstract, with symbols having phonetic as well as word values. They were associated with painted pottery and seals with drill-hole designs. Both stamp and cylinder seals were in use. A seal showing long-horned antelopes running in file exhibited a very notable feeling for rhythm. In the period, the art of seal-engraving continued to advance. Small stone amulets carried on the old traditions. Stone vases inlaid with shell, and inlay designs executed with shells and bituminous limestone foreshadowed the inlays of the succeeding culture-period. Bas-reliefs and other stone sculpturing were notable, as was an alabaster head found at Brak. Good examples of both inlay and sculpturing were revealed at Khafaje in the five temples of the period probably dedicated to the Moon God, Sin, whose beard was ultramarine blue in color.

The Ninevite period of northern Mesopotamia parallels the latter part of the Jemdet Nasr period and includes most of Ninevah level 5, levels 6 and 7 at Tell Billa (between Ninevah and Tepe Gawra), levels VIII A and VII at Gawra, levels 5 and 4 at Chagar Bazar, level VII at Nuzu (a considerable distance southeast of Ninevah), level I at Grai Resh and the latest Eye Temple at Brak, which has already been described.

The painted pottery of Ninevite 5 was a monochrome ware with designs usually in dark purple or purplish black to brown, sometimes bright red or even green, on a light-colored (buff or greenish) clay, wet-smoothed, frequently containing chopped straw or grits (as temper). Practically the whole surface of the vessel was crowded with motifs arranged into zones or panels, sometimes vertical and horizontal panels being combined. The profusion of motifs leads to a feeling of "heavyness and over-elaborateness" in the pottery, with "too much paint and too little background" to be pleasing. Furthermore, there was little feeling for the shape of the vessel, and the drawing was crude. There was much use of long-necked goats and other animals, squat birds and fish. There were also plain or incised vessels in a new fabric, usually burnished and light gray but sometimes light cream or greenish. The incised ware generally utilized geometric motifs, and often cut away portions of the clay so that bands and panels were left in relief. Among forms, chalices (drinking cups) and pointed bases were common.

In Gawra VII, the wet-smoothed clay was generally buff in color, sometimes greenish or (burnished) dark bluish gray. Cream-colored, pink and brown slips were also used, and the simple geometric motifs were generally painted on. At Tell Billa nearby, painting was common in level 7 but rare in 6 (where it was replaced by incised pottery), the clay fabric being mostly bluish or greenish gray. Otherwise the pottery was very similar to that of Ninevite 5. This was true also at Chagar Bazar in this period, where the clay was usually light-colored. In the latter's level 5 there were both plain and incised gray burnished wares. At Grai Resh, the Ninevite 5 type of buff ware was found. It is fairly probable that the Ninevite 5 type of pottery styles came from Tepe Hissar in Iran, which in its II (and later, III) level had gray ware and chalice forms very similar to those of the period under discussion in Mesopotamia. But at Hissar there was no elaborate incision; and the style of painting was quite different.

It was probably during the Jemdet Nasr period that the important cities of Kish, Shuruppak (modern Tell Farah) and Eshnunna (Tell Asmar) were founded, Shuruppak possibly a little earlier. It is believed that they were built by foreigners who invaded the land. One of the discoveries which indicate this probability is a crematorium in which the invaders burned their dead. This custom contrasts with the burial customs of the earlier peoples of Mesopotamia. The civilization of the short polychrome-ware people, who wore their hair in pigtails, was ended by a double catastrophe. For the invaders had their houses "fired about their ears"; and at Erech and Shuruppak are evidences of a great flood, which is not to be confused with at least two earlier ones, one of which inundated Ur, or a later one at Kish. Shuruppak was the traditional home of Ziusuddu, the Babylonian (Sumerian) Noah, whose story was borrowed by the Hebrews and told in Genesis. Only Ziusuddu and his family survived the Deluge, after being warned to build a boat by the wind-god Enki. The storm raged six days and seven nights, during which time Ziusuddu sent out a dove, a swallow, and a raven, who did not return. But after the lamentations of the Mother Goddess, who said that she would no more forget these days of sorrow to her people than the "sapphires of her neck," after Ziusuddu set out seven and seven flagons of savory drink, about which the gods gathered together like flies, and after the entreaties of Enki, the chief god Enlil relented of punishing the whole civilization for the sins of the few, and the ark finally landed on a mountain peak.

One of the floods (or in legend all of them combined) may be that referred to in the Sumerian King List, written by a scribe not later than the twentieth century B.C. According to this list, Shuruppak was the seat of the last of the ten kings who ruled before the Great

Flood, while Kish was the seat of the first Sumerian dynasty after the flood (about 2800 B.C.-?). In a later form of the list, which ascribes reigns of impossible length to the kings, and which is known from the writings of Berossus, a priest of Babylon about 270 B.C., the flood hero is called Xisouthros. The ten Ante-diluvian kings have been connected by a writer with the ten Hebrew patriarchs, also of impossible ages, from Adam to Noah. The Early Dynastic period, which followed the Jemdet Nasr period, and will be described later, was marked by wars of Ur and Erech to control the south, and by Kish and other cities to control the country farther north.

Contemporary with the Jemdet Nasr period was the stratum IV at Siyalk, marked by pins with double-spiral and double-loop heads, by peculiar triangular beads, by pottery with many Mesopotamian motifs, and by inscribed tablets in a script called "Proto-Elamite." Elam was the mountainous region around Susa. In the upper part of the culture level were found polychrome jars in the Jemdet Nasr tradition.

In texts written before 1942, "Susa II" was the common designation of the "second city" of Susa and the excavation levels supposed belonging to it. The marks of the new civilization were animal-shaped and compartment vases, button seals along with cylinder seals, use of a pictograph script, and pottery decorated with paint as before. But red was used along with the usual black; and the style had undergone a marked change: realistic reproduction of every detail had replaced the former stylized or abstract decoration. The two styles and other differences caused a famous archaeologist to call the cultures of Susa I and Susa II "Highland" and "Lowland" wares, respectively (indicating supposed regions of origin), while another explained the two as due to two waves of immigration into Susa, both starting from a common center at different periods. In an important work on the stratigraphy of early Iran published in 1942, the term "Susa II" was dropped and Susa I was called Susa A; Susa in the Uruk period, which has been partially described, was designated "Susa B." "C" was used to designate the level contemporary with the Jemdet Nasr period, and "D" the following one. In the B level were found Red-ware pots with twisted handles, pins with animal and spiral-wire heads; and in children's graves, small clay "toys." In level C occurred more Proto-Elamite tablets, tombs, and a jar decorated with painted bands. The Susa pots were not polychrome except in level D, where they were not in the Jemdet Nasr style; and many of the so-called "Susa II" pots had monochrome design and were of a later period (2600 B.C.) The culture was a mixed one, with Jemdet Nasr, Sumerian and even Indian influences.

According to the excavator of Tepe Gawra, its stratum VII was that of a new race, but whose occupation was brief; for pursuers caught up with them and destroyed them. This was a period of violent shifts of population, for it was near the boundary of the Chalcolithic and Early Bronze ages (as well as of pre-history and history), when access to the limited deposits of copper ores, was vital. The development of metallurgy produced industrial revolutions, for it involved operation of mines, transportation of ores and metal, exchange of products through trade, and better utilization of tools and implements employed in making these products, with consequent speeding up of the tempo of civilization.

At Mersin, stratum XIII was transitional, containing Uruk gray pottery as well as Jemdet Nasr ware. In this level and XII, was found black ware of Alishar and also some elegant black burnished vases decorated with white flowing lines, a type of pottery found also at Kusura, on the southernmost of the east-to-west routes across Anatolia. In this level there

was ceramic evidence of contact with Neolithic Macedonia, thus connecting prehistoric Babylonia with the prehistoric Balkan country of Europe. The Early Anatolian culture of Alishar in central Anatolia has been described, as well as the culture revealed at Kum Tepe, in the northeast. Near here at about 3100 B.C. was founded the first city of Troy, made famous by the poems of Homer. This was a city of monumental architecture and an imposing township stone wall which was located at a key position on the Hellespont, commanding sea-traffic up the straits as well as a main crossing to Europe. The picture of the civilization of early Troy is supplemented by excavations in a cemetery at Yortan, a hundred miles to the east, and in the first three townships of Thermi on the island of Lesbos. The towns were made up of long rectangular two-roomed houses clustering along crooked, narrow streets, with doors pivoting on stone sockets and sometimes with low-domed clay ovens. The economy included cultivation of varieties of wheat, barley, millet and presumably vegetables, vines and fruit-trees, breeding of cattle, sheep, goats and pigs, and fishing. Weapons included stone battle-axes with cylindrical butts, arrowheads made of bone splinters, sling-stones, flat-tanged daggers, and maces with spheroid stone heads. In Thermi I and II, other items were bone implements, stone tools and simple idols; and in III terra-cotta figurines. Copper and a few bronze pins and trinkets and even large metal implements were common by the time of Thermi III (near the middle of the third millenium). In III houses were many pits (bothroi) to drain water from the foundations in wet weather. There was considerable commerce with Asia and with the islands of the Aegean Sea. Numerous spindle whorls attest the importance of spinning and weaving. The Thermi I-II pots were handsome black ones and reddish ones, while the pots of Troy I were of a burnished self-colored ware varying from a deep "smoked" black to red, predominantly dark faced, sometimes (later and at Yortan) ornamented with simple linear designs in white paint. But pottery production was not sufficiently industrialized for the use of the potter's wheel. The pot forms often copied gourd or leather forms and were provided with either simple lugs or genuine handles many had angular profiles. In Thermi III, the ends of tubular lugs on bowls were expanded to "horned lugs," and in the same period tripod legs became models of human feet. Decoration was with bosses, ribs, burnished grooves and incisions. Distinctive western Anatolian forms were bowls with lugs growing from inverted rims, jugs with cut-away necks, tripod vessels, and collared pyxides with string-hole lugs and lids.

Kusura, previously mentioned, developed a Chalcolithic culture, designated as Kusura A, in a period beginning near the start of the third millennium B.C. Our knowledge of it comes chiefly from a cemetery put inside the town, containing bodies in a contracted position, both in cist-graves and in brownish pithoi (large casklike pottery vessels). Other pottery of the culture was a burnished ware, usually black or brown, but sometimes red; also sometimes slipped and sometimes decorated with incised and with white-painted linear patterns. This western Anatolian culture developed into the more interesting Kusura B culture which will be considered later.

The Yortan culture of Mysia (western Asia Minor, southeast of Troy), which was roughly contemporary with Troy I, is known only from burials in jars in cemeteries outside the settlements. Of these cemeteries, the one at Baba Kgy, north of Yortan was most scientifically excavated. The bodies were interred in large pithoi which were usually red, although the small vessels were generally black. Perhaps this was an example of the ubiquitous belief in the life-giving qualities of red substances; the belief which also led to

burials in red ocher or of the pots painting the bones red. The simple decoration, when present, was by incision or with white paint.

In stratum XII at Judeideh, metal was fairly common and copper figurines or statuettes of men and women were among the culture objects recovered, which also included pear-shaped mace-heads and seals such as those found at Jemdet Nasr. Some of the simple pottery wares were also similar to those of Jemdet Nasr, but they were wheelmade. They included reserved-slip wares, multiple-brush wares, reed-impressed and incised wavy-banded wares, simple platters, and so called "cooking pots," obviously made to withstand fire and temperature changes. At Qal'at er-Rus, strata XIV to XI belonged to the period now under discussion. Here the pottery included cooking pots, burnished and unburnished "light ware," burnished "stone ware," white-washed ware and unburnished "natural" ware, the nature of the last of which has already been defined. The "light ware" had a "grayish cream" or "yellow cream" slip over a buff, reddish buff, light red, gray, greenish gray, oyster-white or cream-colored body clay. The "stone ware," similar to that called "metallic" at Jericho and Megiddo, was a hand-made, very hard fabric of pink, orange-red, brick red, dark red or gray color with gray-to-red mottling and burnished areas. The white-washed ware was coated with a thin matt white or creamy wash.

Turning to Palestine, the period under discussion is there known conventionally as "Early Bronze I," but though bronze was known, we now know that Palestine actually possessed then a Copper Age culture. The four phases of the Early Bronze period lasted until nearly the end of the third millenium. The "E. B. I" pottery included in general crude and heavy-appearing pots, with several forms of ledge-handles conspicuous; and the period was that in which the potter's wheel was introduced. New forms were also gradually introduced. The type of handle mentioned previously in connection with Megiddo under the influence of Egypt was replaced by wavy ledge handles. Broadly considered, decoration was often painted on in bands, parallel and wavy lines or in simple cross-hatched designs. In the north of Palestine, the use of dark gray burnished pottery continued along with much "band-slip" (or "grain-wash") ware, with bands of colored slip, either parallel or latticed on the surface clay or on a light slip, the paint colors being brown, red, orange or "creamy brown." This ware was found in Beth-Shean XV-XIV and at Megiddo, but not in the south. Further south in Palestine, in Jericho VII-VI, and at Gezer, Ai and Mt. Ophel in Jerusalem, painted ware, rare in the north, was decorated with bands of parallel or wavy lines in red or brown, either on the light red clay or on a cream slip. The Early Bronze I cultures of Palestine and Syria were notably similar, though pottery shapes indicated a break with the Chalcolithic cultures. It has been suggested that the new cultures came from the north. In the E.B. pottery of Palestine, a feature was the ledge handles, known from Egyptian Gerzean times. A Gerzean slate palette was also found in Jericho VII. Cylinder-seal impressions were of the type found with the Mesopotamian Uruk and Jemdet Nasr cultures.

To repeat, in order to emphasize the point, it must be noted that the conventional name "Early Bronze" culture and period lends a false appearance of early cultural development in Palestine and Syria. Actually, the period possessed a Chalcolithic or Copper Age culture.

The city wall of level XVIII of Megiddo was doubled in thickness from its previous three meters, indicating that the period was one of disturbances. The pottery included the dark gray burnished ware (mainly in levels XVII-XVI) and metallic bowls with inturned rims and decoration by burnishing in definite patterns; also flat high-sided platters, with a tendency to decorate

with burnished red washes, continued in XVII-XV.

In the neighborhood of 2850 B.C., the Neolithic culture of the island of Crete, at least in its eastern end, under the influence of "a quickening impulse from the Nile," developed into the first Early Minoan culture. This was named after Minos, the legendary king of Crete. This was the start of what is technically known as the "Early Bronze Age" of Crete, though at the start it was perhaps more accurately a Chalcolithic age. The excavators indeed thought that the change was due to actual migration to Crete of refugees from the Nile Delta fleeing from the might of the warrior who united the two kingdoms of Egypt. Stone vases, traded for obsidian and emery; precious stones, religious customs such as the wearing of certain amulets, stone unguent palettes, copper depilatory tweezers and other culture-objects reflect an Egyptian source; but metallurgy, the famous cult of the Double-Axe (of which we shall hear more), pot forms and the technique of glaze paint show Asiatic influence, the last-named two items specifically from Tell Halaf. The pottery was, however, a development from the old black ware into what is known as "bucchero ware," decorated with incised or impressed patterns or polished. There were also stemmed goblets, Anatolian-like jugs and fine light-brown wares. The pots were of reddish clay, often covered with a red slip, and later a buff one. Designs were of the simplest linear geometric sort. The makers lived in square one-roomed stone dwellings.

In the Cycladic islands of the Aegean Sea, stepping stones from Asia to Europe by way of Greece and the Balkans, there were differences from the larger island Crete, the pottery, for example being of the Anatolian plain-ware type, unburnished or burnished black or red. Other Early Cycladic items were marble idols of Mother-Goddess type, also with Asiatic relatives. The Cycladic folk used copper, tin, lead and silver, and engaged in the trade of their obsidian, marble and emery, if indeed they did not indulge in a little piracy. The marble idols appeared in Thermi I-III; and other evidences of trade with the European mainland, Crete and Egypt are known. The frequent portrayal of boats on the vases was natural to a maritime people. Naturally also there were some differences between the northern and southern groups of Cycladic islands. An object characteristic of the former was a decorated bone tube for holding pigments.

Turning to the Greek mainland about 2700 B.C., we find there the beginnings of the culture known as Early Helladic (I). The term Helladic is used to apply to the Pre-Hellenic culture of Greece south of Thessaly. This country was not thickly populated during the Neolithic period; and the Early Helladic people infiltrated among the older inhabitants gradually and peacefully. Apparently they came from Anatolia by way of the Cyclades islands to the south of Greece and by way of Troy and Macedonia to central Greece. Although the settlements depended on farming, and cultivation of the grape was now indicated, the economy was urban and commercial. Copper, tin, lead, gold and silver were mined or imported and worked. The people lived in long rectangular or apsidal two-roomed houses or in agglomerations of small chambers, some settlements being enclosed with walls. Trade was carried on with Crete, Egypt, the Cyclades and the nearer ports of Asia. Marble figurines of Cycladic type may indicate a Mother-Goddess cult, while clay "thorns of consecration" may indicate religious rites practiced in Crete and Anatolia.

Most of what we know of the whole period comes from a few sites excavated within the last two or three decades: Korakou, Zygouries, Asine, Prosymna, Asea, Orchomenos, Eutresis and Corinth. E. H. I pottery was mostly a self-colored, dark ware, with red, black or buff

surface, burnished and often decorated with incised or impressed designs. The forms were "leathery bodied" and provided with spouts, as in Early Cycladic ware. There is no evidence of the use of the potter's wheel; and in consequence the forms were not well rounded or symmetrical. Rather elliptic "round" saucers and shallow bowls were common. Sometimes a smoother surface was produced by the use of a thin, hard slip. At certain sites, the E.H. ware was found mixed with Neolithic pottery, in others it was found alone; and in still other sites of central and southern Greece it was not present, showing that the true Neolithic culture lasted on until the next stage (II) of the Early Helladic.

We last left Egypt rounding out more than a thousand years of Predynastic cultures following still earlier ones which have been described. It was about 2900 B.C. that the two kingdoms of lower and Upper Egypt were at last able, after only temporary previous union, to succeed in uniting under one conquering ruler who thereafter wore both the Red and the White crowns. A part of this story we have already told. At this time there were at least five different peoples in Egypt, three in the north in Lower Egypt (near the Delta, the branched mouth of the Nile). The capitals of Lower Egypt were at Behdet and Buto, and later Heliopolis; the capitals of Upper Egypt were Ombos near Nagadeh and Nekheb, while there was also a royal residence at Hierakonpolis. In the Delta from Middle Predynastic times there had been a group of grain-growers, ultimately from north Syria or Anatolia, worshiping Osiris, who personified the Nile and growing vegetation, his wife and sister Isis, and their son Horus (the Less). These people domesticated cattle, developed the arts of spinning, weaving and metallurgy, cultivated flax, inscribed pictographs, made wavy-handled pots, and had the papyrus and the bee as their symbols. Their kings wore a red cap or wickerwork diadem high at the back and decorated in front by a spiral (the uraeus, later the sacred asp). This was a talisman inhabited by a serpent goddess, who was supposed to strike terror in the hearts of the king's enemies. The grain growers were driven southward to Middle Egypt, between Cairo and Assiut, where they had a capital at Aphroditopolis, by the Tehennu, a nomadic steppe-folk from Libya, who settled at the western margin of the Delta. The Tehennu cultivated the olive and tamed the ass, probably made black incised pottery, and worshipped Neith, the vulture goddess of Sais and mother of the Sun-god. In Late Predynastic times, another group of nomads settled in the eastern part of the Delta, coming from the hills of Judaea or beyond. They were the worshippers of the Sun-god Re, and may have made the white cross-lined pots.

In southern or Upper Egypt, between Assiut and Abydos, was a group of worshippers of Seth, the pig, and the hippopotamus. Seth was the brother and enemy of Osiris. He was called Typhon by the Greeks; and the region was called Typhonia. The kings of Upper Egypt wore a tall white helmet or mitre and their emblems were the lotus and the lily. The stone-bowl makers from the Arabian desert or the shores of the Red Sea beyond had settled farther south, between Abydos and Assuan, in Middle Predynastic times. Still farther south was Nubia, the Land of the Bow. The stone-bowl folk worshipped Horus (the Great), whose center was at Edfu, and who personified the winged solar disk in heaven. His emblem was the falcon. These people used Asiatic mace-heads and cylinder seals; and among them was found a carved knife handle bearing typically Sumerian motifs. They wore pigtails like the folk of Susa. In Late Predynastic times, one of their kings was called Ro. He was followed by one called the Scorpion, who conquered Middle Egypt; and in turn by Aha (also called Menes),

who defeated the Tehennu and brought Lower Egypt under his rule, thus uniting the two kingdoms, and by Narmer (Athothis I). Henceforth the kings wore the doubled red and white crown.

This account of the various peoples of early dynastic and predynastic Egypt is partly speculative in character, and is essentially that given in some of the literature of two decades ago. At least the attribution of the various culture elements to specific groups is somewhat speculative. But the general account appears to be fairly accurate in the light of later research in Egypt and surrounding lands.

According to the Turin Papyrus and the historian Manetho, Egyptian dynasties ruled by gods were followed by ones headed by Lower Egyptian kings, and next by a family ruling over both kingdoms, called the followers of Horus; and finally came Aha, Narmer and the historical First Dynasty. The kings had, besides their personal names, so-called Horus-names as representatives on earth of the god Horus. The tomb of the first king of the first dynasty, of Horus title Aha (personal name Nenes according to the tradition preserved by Manetho), was reported found at Sakkara. In the tomb were potsherds inscribed in a cursive hieroglyphic text in black ink. Figured monuments and schist palettes in the Predynastic graves did not portray gods as protectors, but rather as fetishes or totems: a scorpion, a falcon, a vulture, a solar disk, crossed arrows or a jackal. In Dynastic times these became more animate, wielding weapons and leading men to the chase and war. The emblems had become the centers about which gathered communities, clans and later districts or "nomes." After the union of the two kingdoms, the followers of the god Horus imposed his cult on all Egypt, and the king became the living incarnation of the falcon Horus. The new capital of the early kings was at Thinis in Middle Egypt; and the first two dynasties are called Thinite or Proto-dynastic.

The First Dynasty ushered in a period of rapid progress. It was due rather to increased cultural influence from Asia than to an invasion of Asiatics, since there was little change in language, script or religion. But cylinder seals, recessed brick buildings and new artistic motifs mark the change. An important relic of the time is the slate shield-shaped palette of the warrior-king Narmer, shown on the two sides wearing the Red and the White crowns. It is like those long used by Egyptians for grinding green and black eye-paint.

On the one side the god Horus, incarnate as a falcon, brings captives before the king, who wields a white pear-shaped stone mace and grasps the hair of a conquered enemy. On the other side, the entwined necks of two animals form a circle. In this circular area no doubt was mixed the paint used to adorn the face of the divine statue of the god, the palette itself being perhaps a votive offering to commemorate a victory. During the first two dynasties, the rulers were buried in the royal tombs at Abydos near Thinis and at Sakkara. At Abydos the jewelry of a queen was decorated with gold, blue ultramarine, carnelian, amethyst and turquoise or blue glaze. Besides the mummies, other contents of the tombs not plundered by robbers included stone and copper vessels. During Dynasty II, earlier central wooden chambers in the tombs were replaced by brick vaults which were elaborated into the "mastabas," with great flat tops, sloping sides, recesses and platforms for votive offerings. During the period both paintings and animal-figured reliefs were treated as outlines of saturated red or other color filled in with "solid colors." In relief, the effect of modeling was often lost by the use of the saturated color outlines, without regard for light and shade; thus it was a flat drawing raised above the background, which was cut away from the painted outline. The earliest reliefs represented

animals, often in processions.

In these and in the palettes we may see that the later Egyptian art conventions were already in making: the composite "memory picture" of the human form, with the eye in front view in a profile face, the shoulders turned forward, while the limbs are in profile, by a curious twist of the waist-line; the composition by division into registers, one above the other. But there is also seen vivid action in running figures, advance in anatomical treatment and the power of imagination in the design of the long-necked animals.

According to tradition, there were eight kings in the second dynasty, which began somewhere around 2750 B.C., but the names of only six or seven of them are known. There have been suggestions that the grain growers of the Middle Nile, originally from north Syria or Anatolia, were in the ascendancy at this time, and that later the worshippers of Seth took the throne temporarily. During the time of the dynasty, there was some falling off in art, at least in the lapidary's technique, from the fine and delicate work of Dynasty I, although in the following dynasty there was again rapid progress.

Roughly contemporary with the Early Minoan I and Early Helladic I cultures was Early Cypriot I, which introduced the long Bronze Age of Cyprus. At first the metal in common use was copper, with bronze (containing 10% or more of tin) still rare. But gradually the latter replaced copper, which however was probably mined in Cyprus in E.C. I. Our knowledge of the period comes not from stratified sites but from the objects left with the deceased in graves. Of particular interest is a great cemetery at Vounous in the north of the island. This contained chambers cut in the soft rock, approached by an entrance or open forecourt, connected to the chamber by a narrow passage. Around the body was usually found a mass of pottery, probably originally containing offerings and food. The other surrounding objects, metal knives, maces, axes, "Cypriot daggers" with hooked tang, whetstones and spinning whorls, were those which permitted continuation of the everyday occupations of the deceased.

The most common pottery of the period was a burnished ware with a rather thin red slip. Two variations of this ware were common. Smaller bowls and flasks usually had a black top, and interior, larger vessels only a black lower interior. Another ware, a "bichrome reserved-slip" ware, was made from the burnished red-slip pots by wiping off bands of red slip to reveal the buff surface underneath. The effect was then almost that of painted red-on-buff ware. Some of the shapes were distinctive, as in tulip-bowls and jugs with cut-away spouts; and many of the larger vessels had short flat stump-bases. Decoration was commonly by incision; but appliqué relief was also employed. This included even plastic snakes "wriggling up the necks to peer over the spout." Many shapes are believed to have magical or cult significance, and the incised decoration symbolical. Solar disks were included; and human figures masked as animals were used in conjunction with symbols believed to be rain symbols.

Turning eastward, we may recall the polychrome pottery of Amri, which is in India between the Indus river and the frontier of Baluchistan (Pakistan). A somewhat similar ware was found elsewhere in the Indus valley and at Nal in Baluchistan. In the Indus area it lay in a stratum below a ware characteristic of the Harappa or Indus culture about to be described, and is therefore older than the latter. Since both the Highland ware of Iran and the Harappa ware were found also at sites in Baluchistan, while in some places the two

wares seemed to be mixed, it seems natural to suppose that the two great prehistoric civilizations met and blended in the country between. A different explanation, however, is preferred by the eminent pre-historian, V. Gordon Childe. According to him, the Baluchi wares were merely "barbarized or undeveloped variants on the tradition which culminated in the Indus style."

On this theory, the polychrome ware of Amri represented an older stage of the civilization of a people who entered India by way of Baluchistan, leaving a portion of their race behind them who later produced the various wares found in Baluchistan; and finally developed the high culture of the Indus valley. The fine polychrome of Nal is thought to have developed independently from the Highland ware of the west. The other western folk would have founded Amri, only to be driven out by the people of the Indus (Harappa) culture. This would explain the late date of the polychrome ware in the Indus sites. But this theory is rather complex, and fails to take into account the proved unwarlike nature of the Indus people; so in the present state of our knowledge, it would be wise to suspend judgment.

In order to understand the great Indus valley or Harappa civilization, it is necessary to digress somewhat into the later history of India. Not many years ago nearly all that was known of early India came from the great Indian religious works, the Vedas, which began with a time not far from 1500 B.C. when a people from Europe, speaking the Aryan language of the Indo-European group, invaded India and subdued the aboriginal inhabitants after cruel and unceasing warfare. The invaders had fair complexions, blond hair, long narrow skulls, large bones, tall stature and prominent, narrow noses, features much like those of modern Nordics. They contrasted strongly with the "Dasyus" whom they conquered, as did the two sets of customs; and it is because of these contrasts that we may believe that the Aryan masters' unflattering descriptions of the early Indians appear to be quite prejudiced. The latter were described as small, dark-skinned, flat-faced, "hostile-talking" (speaking a non-Aryan tongue), and worshipping rather than sacrificing animals. They were malignant demons (who hated the invaders who enslaved or exterminated them). But they were said to have lived in great and wealthy cities and to have been skilled in various arts; and by their magic they could raise the dead. When they traded with the Aryans, they cheated them at every opportunity; so said the simple, honest but probably prejudiced Aryans, so-called from their own word for "noble." The dark people's religion disgusted the invaders; it included, they thought, obscene ceremonies and indecent emblems. The Aryans were "generous to bards, bold to smite their enemies, lovers of strong drink, dicing and horse-racing." Their wealth was in cattle and horses, their vehicle the horse-drawn chariot, their weapons the bow, the mace and the spear; and they were much more warlike in spirit than the Dasyus. They had strongholds, but not temples nor rich cities. Their dead were generally cremated, the ashes interred under a barrow.

Scholars were not ready to believe that, before the coming of the Aryans, India possessed fabulously rich cities or a civilization including developed and magical arts. They identified the Dasyus of Sanskrit tradition with the modern Dravidian-speaking peoples of India (a blend of Mediterranean, Australoid and Melanesian types). Though it was known from a study of their language that the pre-Aryan Dravidians possessed cities, temples, kings, metal instruments and written books, only stone implements and pottery were found as material remains.

But soon after the First World War, square, oblong or button-shaped seals, pierced for

suspension, were found at sites in Sind. They were decorated with splendid designs, apparently of a religious character and indicating that the makers were animal worshippers. The animals pictured were the aurochs-bull, the humped or Brahman bull, the buffalo, the Indian rhinoceros and elephant, the tiger and the cobra; also monsters (a man with horns and tail, and composite animals) and a sacred pipal or bo tree, with animal heads growing from its trunk. But in an outstanding account of the Harappa culture, written by the archaeologist Sir John Marshall, the designs were said to be "distinguished by a breadth of treatment and a feeling for line and plastic form that has rarely been surpassed in glyptic art." The script which usually accompanied the pictures was an unknown picture-writing, like cuneiform, but one in which conventionalization had gone only so far as to permit recognition of the objects. Some of these seals were soon recognized as belonging to an earlier culture than any yet known in India. Two typical Indus seals were found in Iraq at levels dating before 2300° B.C.; others found at Kish and Ur dated near the end of the third millenium.

The material remains of the Indus culture have been found at Harappa in the Punjab province of India on one of its "Five Streams," at Mohenjo-Daro on the Indus in Sind to the southwest (not very far from Nal in Baluchistan), and at Chanhudaro, 80 miles away from Mohenjo. (Daro means "place" in the Sindhi language.) The culture extended far to the north in the Simla hills, and was found also in Hyderabad to the southeast, thus covering a great area. In these places were found by excavators many gaily colored toys, red-ocher face paint and pottery with designs in glossy black on a highly burnished red ground, with motives including intersecting circles and peacocks in file. The people were revealed as traders remarkably gifted and ingenious, rich in material wealth, and incomparably more civilized than the invading Aryans, but definitely unwarlike. They did not have the armor, the horse or the worked iron possessed by the Aryans, though they knew the secret of bronze. The hatred of these people and the Aryans for each other was the basis of India's caste system, her curse today. The Sanskrit (Aryan) word for "caste" means "color"; and the original caste distinction was no doubt between the dark-skinned Dasyus and their masters, the blond Aryans.

Harappa was a great brick-built city. As to the similarly built city of Mohenjo-Daro, its streets, though unpaved, ran in parallels east to west and north to south, intersecting strictly at right-angles, instead of "meandering vaguely, intersecting where the spirit moved them, beginning in caprice and ending in confusion," (P. Carleton, *Buried Empires*, 1939) as many much later cities did. Such evidence of planning and good organization would have been remarkable even for a European city several thousand years later. But there was much more. Below most of the streets ran a main drain provided with sumps and inspection traps and covered with brick or stone. Individual houses, each with its sump-pit, had drains opening into the main drains. On the ground floor of the homes was a bathroom and a lavatory, something unknown even in Babylonia. Here the ancient Indians could sluice themselves with water from the large pottery jars, and oil and scrape their bodies as did the athletes of Greece. Pottery scrapers have been found. Some houses had rubbish-chutes, down which rubbish could be slid to brick ashbins in the street. Although no temples were found, there was a Great Bath, a sacred bathing place in a large building; it was a swimming pool provided with a cloister flanked by small bathrooms. Certain buildings at street corners were identified as restaurants. Other finds made it probable that here the men sat and gossiped or gambled while the women gossiped on the brick benches about the numerous public wells. The architecture was plain and

of a utilitarian character and built for endurance. There were none of the colored washes, beautiful cone mosaics nor rich wall-inlays of Babylonia.

Besides the seals, the art included some statuettes. A remarkable one of a nude male in red stone from Harappa was so naturalistically and beautifully done that the excavator could at first hardly believe that it had been done by an ancient artist. It was unequalled in the ancient world until the days of the Greeks Phidias and Praxiteles. Another masterpiece was the bronze figure of a dancing girl treated in impressionistic style. Rough terracotta figures showed the female fashions, including long skirts and elaborate hooped headdresses. Two limestone heads showed the men of the ruling class to have low foreheads, short straight noses, slightly receding chins and thick protruding lips. The straight hair was either clipped or worn very long, braided, wrapped round the skull and knotted into a chignon or big bun at the back of the head. This way of dressing the hair was also found in Babylon.

In metallurgy, the ancient Indians were ahead of their contemporaries in Babylonia, for they produced vessels of cast and beaten bronze and molten bronze statuettes, while the Sumerians produced only unalloyed copper objects. In the arts and crafts generally, the former were at least the equals of the latter. Pottery models showed that the Indus civilization had wheeled vehicles. But nothing found at Mohenjo-Daro rivals the beauty and delicacy of the gold and copper objects of Ur; and the Indus culture did not include the fine socketed tools and weapons of Sumeria. Swords and daggers were rare. Other items of the culture included beads of semi-precious stones, frit, gold, silver, gilt bronze and turquoise; stone and bronze figures of animals; little glazed figures of squatting monkeys; carvings in ivory; gold, silver and copper earrings and finger-rings; nose studs of blue glaze; bracelets of metal and shell and inscribed pottery; metal hairpins; razors in three shapes; dice and game-boards as in Babylonia, and apparently even miniature sets of ninepins.

The pottery of the culture consisted chiefly of very fine wheel-made wares. They were of five types: (1) black-painted ware with a fine coating of red slip on which geometric and animal designs were painted in glossy black, a favorite design being of intersecting circles, some painted with almost mathematical precision over the whole body of the vase; (2) black-slip ware, of gray clay coated with a thick polished black slip; (3) reserved-slip ware, produced by the technique already described in a way to form a pattern of contrasting dark and light bands; (4) plain ware, usually red, more rarely buff or gray, with or without a fine red or gray slip; and (5) rarer polychrome ware, chiefly small vases decorated with geometric patterns in red, black and green, more rarely white and yellow, with early and intermediate levels at Mohenjo using a creamy white slip. Designs were about two-thirds "repetition" motifs and one-third vegetation motifs. An example of the latter was the "feathered tree" design. A circle with six skirts inside was also common. Some of the plain ware was decorated with rows of knobs. Imported Indian vessels found at Eshnunna in Mesopotamia were of this class. Some of the black-painted geometric vases recall the Highland ware of Iran and Iraq, while the black-slip and reserved-slip wares recall the much earlier Uruk pottery.

At Chanhu-Darn, besides the bathrooms and drains found at other sites, there were many other interesting items; a bronze toy cart with a pent roof, for example, this vehicle being common. There were many stone palettes, probably for face-paint or cosmetics. A remarkable number of toys was found. Toy vehicles were made of pottery, mounted on two or four wheels and drawn by humped oxen. Every child must have had a toy cart. Pottery model rams had the

fleece indicated in red paint. Marbles of pottery and stone and brightly colored pottery rattles were abundant. There were also a number of Mother-Goddess figurines, and model doves with outstretched wings (worshipped with the goddess in Crete, Sardinia, Mesopotamia, etc.). On the pottery, a motif often used at

Chanhu, but rarely at Mohenjo, was a scene of peacocks in file, generally on large jars. But quite small vessels were ornamented with paint, even if only with a few bands of red around the shoulder. Certain small vessels seem to have been supplied by shop-keepers to purchasers of small quantities of cooking oil and the like, as at present. Other small jars with very narrow mouths once contained eye paints; which cosmetic was used by men and women alike. There was also recovered a rectangular slip of red ocher with beveled end; this was probably used as a face paint or lipstick.

Similarities of pottery wares in India and Mesopotamia have been mentioned, including the ones with the unusual reserved-slip technique. But other items than the pottery styles indicate connections across Asia. Lapis lazuli (natural ultramarine blue) and red carnelian beads with a white design were apparently imported from Ur and copied in Sind. They were also copied in steatite, with the red ground being burnished hematite. A peculiar bead with rhomboidal section was also found at Ur and Kish. A copper blade at Mohenjo was exactly like one from Kish. Cubical dice, tetrahedral gamesmen, and pottery rings thought to belong to a game, were found in both India and Sumeria. The Greek cross and the swastika were found both areas. In a lower level of Mohenjo was found a fragment of a vase, of the same greenish gray steatite and of exactly the same intricate and very unusual pattern as one on a double vase of "Susa II." In a 1931-33 trip across Asia, Sir Aurel Stein found links of the Copper Age civilization of Baluchistan (traced by him in 1926-28) on the one hand with the Harappa culture, and on the other with that of ancient western Asia. Some of the connections have been mentioned. Among the figurines of animals found in the Royal Tombs at Ur, to be soon described, was one of a squatting monkey precisely similar to glazed-frit figures found at Mohenjo, though the monkey has always been unknown in Iraq. The similar hair styles have also been mentioned.

We have departed considerably from the chronological sequence in order to discuss the Indus culture as a whole, although its earliest beginnings at Amri and possibly Harappa may have gone back into the fourth millennium. According to the excavator of Rana Ghundai, writing recently, nine building levels at Mohenjo were parallel to strata in Iraq dated at about 2600 to as late as 1900 B.C. This author and another recent one disagree on the relative chronology of Mohenjo and Chanhu-Daro and much more so on the date of the Zhob culture of Nal. It was stated that the pottery here was similar to the Indus polychrome. It employed a light buff slip over a red body-clay and was painted with conventionalized animals and geometric designs in brownish black and filled in with either plain dark red or a combination of red with white, yellow, green or blue. At Kulli in Baluchistan, just east of southern Sind, were also buff or red-surfaced wares, but with more "Indian" motifs. The Zhob culture was continued also at Rana Ghundai in its "III B" stratum. The finer pottery of the III levels, which underwent a long and slow evolution (through III D at about 1900 B.C.), was normally painted with black or with a concentrated ocher red on a terra-cotta ground, the level starting with some of the earliest black paint being replaced by red. Pink and brown and white bands were also used in the decoration. Nearly always a terra-cotta to almost plum-colored slip was used on the pinkish or

buffish clay. The painting was rarely "solid," being more often accomplished by fine shading with close lines for darker areas, with alternate thin red and black lines, the checker pattern and the "carrying net" motif common.

A paper by Childe published in 1933 elaborated his theories, touched on above, of the relations between the painted wares of India, Baluchistan, Iran and Iraq; but they will be best understood after we have discussed the pottery found at Shahi Tump, dating probably as late as 1900 B.C.

Stratum II at Shah Tepe in northeast Iran, dating around the middle of the third millennium, and a contemporary one at Turang Tepe were marked by burnished gray ware, in the latter site mixed with plain Red-ware. Gray and red clay figurines also were found here. Level III at Tepe Hissar, which began somewhat earlier (2800 B.C.), also contained gray ware, the typical pot form being the bottle pitcher. Small sculpturings and other objects in copper, silver, gold, alabaster, onyx, chalcedony and serpentine reflected the fine artistic sense of the bearers of this culture. Vessels of silver, lead and copper were found in the graves of the wealthy, while a curious copper rod with bulbous base was always present. Remains of the people, some with Mongoloid features but mainly Caucasian, were found in communal pit burials. Metal weapons and tools were very fine. The Hissar III cylinder seals were in the Jemdet Nasr tradition. Numerous signs of contact with Mesopotamia were found; but this is not surprising, for Hissar lay on the road east along which came the lapis lazuli (natural ultramarine blue) commonly used about 2500 B.C.

Stratum III at Anau is marked by a shift of the settlement from the site of the north to that of the south kurgan there. Gray ware was found here too at the bottom, but the main pottery was a buff ware with greenish tinge, similar to a ware found in Ninevite III. There were, also burnished wares with gray or red slip, the former with incised decoration, displacing buff ware increasingly toward the top. Light ware occurred in forms typical of gray ware, and conversely. There was also a painted brown ware, and a buff, creamcolored or brick-red ware with black designs on greenish buff or white, with or without slip. The unusual use of bands or geometrical elements with denticulated edges shows connections of this pottery with certain painted wares of Baluchistan and Sistan (on the Persian-Afghan border). At Anau the pottery was wheel-made and fired in a kiln; copper was abundant, sometimes with a low percentage of tin (but not as in standard bronze). The houses were built of sun-dried bricks and their doors had pivotal hinges. Curiously, the people buried their children in a contracted position under the floors of their houses, a custom we have met before.

Tepe Gawra in the period reached its stratum VI, marked by technically excellent pottery, with the smooth firmness of stone but not commonly decorated with paint. The city was then highly industrialized; wealth had accumulated, and everything was of metal: knives, sickles, lance butts, spear heads, axes, bowls and frying pans, delicate vanity sets, hair ornaments, bracelets, anklets, and pins and needles. Figurines were of terra-cotta; and one was of a horse, until this discovery thought unknown until several centuries later. Clay models of a "covered wagon" and chariots were also among the objects of the stratum. Architecture was solid but unattractive, sun-dried brick was in use, houses were small, streets narrow and the drainage system inadequate.

It was during this general period that Ashur, which took its name from a national god and gave it to a great (Assyrian) empire, was founded, perhaps as early as 2700 B.C. It was

strategically placed on a bluff on the bank of the Tigris. The city began to rise in importance during the next two centuries, a period in which Semitic "Akkadians" were filtering into Babylonia from the northwest. But the earliest literary references to Ashur date about 2300, when this folk was in the ascendancy, and it did not become a great city until nearly 1700 B.C.

Further to the west, on the Euphrates, was another important city, Mari, which has been excavated since 1933. It was the center of an Akkadian state. There were found here some twenty thousand clay tablets, the archives of a tremendous palace (of later date) which contained royal apartments, administrative offices and a school for scribes. Other buildings were a ziggurat and a temple of Ishtar. Statuettes found here, dedicated to Ishtar, the Mother Goddess worshipped under many names, were representations of humble worshippers. Under the temple were stone-cut tombs. In one were bronze vessels, and breast plates and frontals of gold, as well as painted polychrome pottery of a type known as "scarlet ware." This ware in the region of the Diyala river (which joins the Tigris near Baghdad) was characteristic of the period of Iraq known as "Early Dynastic I," the period of the earliest dynasties traditionally following the Deluge of Babylonia. The earliest polychrome ware from Susa (level D) was also in this style; likewise the ware from sites near Tepe Musyan, northwest of Susa. Most other pottery of the period was drab in color.

It has been mentioned that Kish was the seat of the first postdiluvian diluvian dynasty, as recorded in the Sumerian King List. According to this, 35 kings reigned 26,820 years at Kish and Erech (Uruk). It is now believed that not only were the early reigns greatly exaggerated in length, but that many of the dynasties, as Kish Dyn. I and Erech Dyn. I ruled simultaneously or at least overlapped. A legend has it that Etana, a king of Kish, seeking the "plant of birth" to help his wife in labor, tried unsuccessfully to fly to heaven on the back of an eagle. The dynasty of Erech was said to center at the temple-precinct of E-Anna, where later Erech was built by the son of the first king, who may have ruled not long after Etana. The next three kings were gods, the last being Gilgamesh, hero of a great epic, "the Iliad or Nibelungenlied of cuneiform literature." But our available space and scope do not permit the telling of this extremely interesting tale. Gilgamesh made an expedition to the Forest of Cedars to the west, and an earlier king fought in the west, probably against Semitic Akkadians. While the Gilgamesh epic poem was a Semitic literary creation, it goes back in parts to Sumerian sources. A recent translation of one of the Sumerian source tales (S. N. Kramer; AJA 53, 1; 1949) makes it clear that Gilgamesh, the fifth king of Erech, was contemporary with the last King, Agga, of Kish; and it records the peculiar encounter of these two kings. Incidentally, it mentions the two oldest political assemblies known to us. According to this short poem, "Gilgamesh and Agga," there were two parliamentary houses, upper and lower, at Erech. One was that of the elders, the other that of the arms-bearing males. Gilgamesh first consulted the elders concerning war with Kish, hoping for their consent. They, however, voted for peace even at the cost of submission to Agga. Not satisfied, Gilgamesh took the matter to the assembly of "men," who decided for war and independence, as he wished. Gilgamesh must have been an orator as well as a restless, adventurous hero. For after Agga promptly besieged Erech, in spite of the confidence of its warriors, and two emissaries to Agga failed to swerve him from his purposes, Gilgamesh, in a speech from the walls, prevailed upon Agga to take a more friendly attitude and probably lift the siege. And near the end we find Gilgamesh thanking Agga for his kindness. As a color note, we may remark that the beard of

Gilgamesh or his emissary is described as dark blue or "of lapis lazuli" (ultramarine).

Under the Ur Dynasty I, the Sumerian craftsmen could beat up metal into cups and other vessels and fabricate fine jewelry. They could make openwork filigree patterns, and solder their wire patterns onto heavy backplates, as on a fine gold-dagger scabbard from Ur. They were the first known to make examples of "granulation," that is, arrangements of a number of small beads or grains of gold or other metal, into a pattern. The process was improved by Egyptian goldsmiths around 1900 B.C.

It was mentioned that the Sumerians may have filtered into Mesopotamia during the late fourth millennium B.C., and that they entered in force at the time of the first dynasty of Erech. One authority attributes the Uruk culture to them, saying that they came from the land between the Black and the Caspian Seas. These questions have never been settled. There is no doubt, however, that their civilization dominated Babylonia for many a century. Some of the characteristics of their culture-complex have already been noted from time to time. They invented a pictographic script later conventionalized into cuneiform writing, used the sexagesimal system of numbering, and spoke an agglutinating type of language. They drew up and carefully preserved inventories of property. Their chief pottery was unpainted; and they had no great artistic feeling. They worked copper and gold, used socketed metal weapons and wheeled vehicles drawn by oxen and asses or horses. They used cylinder seals, carved stone sculptures and were fond of mother-of-pearl inlays. They laid buildings out with their corners toward the four points of the compass, using plano-convex shaped bricks and vertical recesses to decorate the walls. They were polytheistic and built "high-places" (ziggurats or storied towers) and great temples in which to worship their many gods, customarily stripping themselves naked to perform religious ceremonies. In their early periods they used stone foundations for buildings, wore sheep-skin clothing and practiced the custom of human sacrifice. They practiced irrigation and intensive agriculture, rotating their crops; and they domesticated animals. The Sumerians themselves, who will be described later, dressed in sheepskin or linen, wearing a loose robe like a petticoat, while their bearded gods, borrowed in part from the Semites, dressed in wool and were shown standing on mountains. Both may have come from the wooded highlands of Iran or from Turkestan beyond; but their origin is still a subject of lively debate.

The Early Dynastic period of Babylonia, which includes the "Royal Tombs" of Ur, famous for the richness of their contents, extends over the 28th to 25th centuries B.C. There has been controversy over the date of the tombs of Ur; and it is probable that they extended over a long period. We shall accept Professor Albright's date, the 25th century. In the earlier part of the period fell historical dynasties at Kish, Erech, Ur, Awan and again at Kish. Outstanding figures of the time were Mesilim of Kish Dyn. II and Ur-Nanshe or Ur-Nina, who ruled at Lagash. According to the king lists, the sovereignty passed successively from one of these cities to another, then to Hamazi, Erech Dyn. II, Ur Dyn. II, Adab, Mari, Kish Dyn. III, Akshak (Opis), Kish Dyn. IV and Erech Dyn. III; but as we have already noted, these dynasties probably overlapped considerably. There were again important rulers at Lagash, including Eannatum, who overthrew Ur Dyn. I and defeated Elam, and his nephew Entemena. The period was illuminated by cuneiform clay tablets found at Ur and at Tell Farah (Shuruppak). To the middle of the period belongs also the temple of Abu at Tell Asmar (Eshnunna). Beneath a floor here were found stone statues of this god of plant fertility and of his wife, the Mother

Goddess, and votive offerings, all of high artistic merit. Another figure was that of a worshipper. It was made of white gypsum, the beard and wavy hair being done in black pitch, while the eyeballs were of yellow "paste" set in bitumen. It was a naturalistic portrait of one of the not very handsome "blackheaded folk," as the Sumerians called themselves. The people so pictured were most likely of the "Armenoid" variety of round-headed Alpine race, a type which has a low forehead, slightly receding chin and large prominent hooked nose, which gives the face a bird-like appearance. But in Sumerian sculpturings were seen also another racial type, of the Mediterranean race, with very long narrow head, strongly projecting occiput, finely cut oval face, straight narrow nose and fine lips, this feature and others being rather delicate. The latter type was bearded, while the Armenoid type and another possible round-headed (later?) type with prominent cheek-bones and oblique eyes shaved the head and face. The composite Sumerian people had a thick-set frame and short stature.

To a date early in the period belongs the reconstruction of a ziggurat or stage-tower of the Moon-God Nannar at Ur, originally built in the Uruk period. At least in later times its terraces were emphasized by zones of color. The colors of the stages were black, red, white and blue. It has been suggested that these had a mystical or symbolic significance, representing the underworld, the habitable world, the sun and the heavens.

The building of the Tower of Babel (of Babylon), described in Genesis XI, has been illustrated in the Book of Hours made for John, Duke of Berry, in France in 1423. It is an anachronism, for the artist introduced the machinery of his own day, pulleys and compasses and mason's hammers, and stone instead of the bricks described in the Bible. The building was also depicted, more realistically, by J. J. Tissot, famous Biblical painter already mentioned. The confusion of languages (babel) which occurred, was portrayed in paint by Jean Hippolyte Flandrin, 19th-century French religious and historical painter, and by Gerard de Jode, previously mentioned.

Late in the period was a great palace in "Mound A" at Kish, where the walls of a chamber opening onto a portico were decorated with friezes of carved slate and slate plaques inlaid with white limestone, showing contrasting scenes of peace and war. At Lagash, a mace-head of white limestone, inscribed by Mesilim, was carved with a frieze of lions. A lapis lazuli (natural ultramarine blue) cylinder-seal of the life of the first king of Ur, who probably overthrew Kish Dyn. I, was carved with combats between men and animals. His son, who called himself a god, built a richly decorated temple, dedicated to the goddess Ninharsag, at Tell el-Ubaid near Ur. Here were found lions and bulls of copper and copper friezes; a mosaic in mother-of-pearl, black shale and red limestone, and a facade enriched by clay flower rosettes with inlaid petals of red, white and black.

Greater evidence of the advanced state of Sumerian culture is found in the multitude of objects found in the Royal Cemetery, whose date has been variously given as just before, at the time of, or just after that of Ur Dyn. I. These graves represent the climax of Early Dynastic culture and are remarkable for their fabulous treasures of gold, the great skill displayed in all forms of metal-working, the immense wealth of the people in imported metal and the unequivocal evidence of the sacrifice of animals and humans. Some of the graves were the "private" graves of commoners; others were the great "deathpits," containing the sacrifices no doubt made to honor the deceased rulers. From the private graves came golden bracelets, earrings, forehead bandlets, necklaces, similar jewelry of silver and copper; red

carnelian and blue lapis lazuli beads; conical metal vanity cases, very modern looking; and copper and silver axe-heads showing great skill in casting. From the Royal Cemetery came the earliest known examples of metal inlay, especially of gold, wedged into incised lines by means of punch and hammer, in order to produce color contrasts on the metal surface.

In the death-pits or Royal Tombs, one containing as many as 74 human victims, the riches were even greater. The golden helmet in the form of a wig, belonging to a prince, came from the richest non-royal grave. But the golden dagger of Ur, with hilt of lapis blue decorated with gold studs, "the ram caught in a thicket," and the elaborate headdress of Queen Shub-ad, and the red, blue and yellow decorated lyre, which have been so often pictured that they are well known, came from the royal death-pits. The "Standard of Ur" was of wood, inlaid on both sides with scenes of a battle and a feast in polychrome mosaic. It was composed of figures silhouetted in shell with details engraved which were set in a blue background of lapis lazuli, relieved here and there with red. The royal family, clad in sheepskin, was listening to a musician playing a harp. The harp was a constant feature of the royal graves. In the largest death-pit were four such lyres. One magnificent one had its sounding-box bordered with a broad edging of mosaic in red limestone, yellowish white shell and blue lapis, along with gold and silver. On the uprights for the strings were red stone and blue lapis in zones separated by bands of gold, while the head of a bearded bull projected in front. In one pit was a wooden sledge chariot decorated with a red, white and blue mosaic and golden heads of lions with manes of blue lapis and shell, while close by was a gaming board. Four such boards, along with dice and "men" or "pieces" were found in the graves. We do not know how the game was played, but from our general knowledge of the times we may guess that there were lucky and unlucky squares. Decoration was again with red limestone and blue lapis, including red and blue rosettes, and with little disks of shell with red and blue centers, the disks being set in bitumen. In other graves, wooden four-wheeled wagons, each drawn by three oxen, with the grooms nearby and the drivers in the wagons, were found along with engraved shell plaques with grotesque scenes of animals playing the parts of men, indicating a sense of humor rare in ancient art; also a gold and blue ram standing on its hind legs on a silver plate, decorated with a mosaic in pink and white, its front legs bound to a golden tree or bush ("thicket") with silver chains. In thinking of the lapis decoration, it must be remembered that it was not found in Mesopotamia naturally. It was probably imported through Iran (Persia) from the Pamir mountains, to be worked by the craftsmen of Ur. In later and less prosperous times, a "reconditioned lapis lazuli" was common. It was re-used waste material from the cut stone, powdered and mixed with some binder to form a paste which when dry yielded a good color but a mat surface.

Queen Shub-ad, whose name is known from a blue lapis cylinder seal, lay on a bier with her gold cup near her hand for use, the upper part of her body entirely covered with beads of gold, silver, lapis, carnelian, agate and chalcedony. Her headdress was an elaborate one whose basis was a broad gold ribbon festooned in loops around the hair (a wig); over this were wreaths of pendants, leaves and gold flowers whose petals were of blue and white inlay, all surmounted by a "Spanish comb." Near the body was a second headdress, with a background of minute blue beads on white leather, on which were golden animals, and clusters of pomegranates. Women attendants crouched against the bier. Vessels of gold, silver and copper and clay jars for food in the afterworld were strewn all about the chamber

along with silver tables for offerings and many large cockle shells containing green paint. This was the normal color of the cosmetic; in other graves the pigment was white, black or red. Some 25 persons accompanied the queen to her death-chamber. In the tomb of a king were the bodies of six men and 68 women, all well composed in regular order, with no signs of violence, terror or death struggle. It was supposed by the excavator that the attendants so honored walked to their places, took opium or hashish, were neatly arranged by workmen and the pit sealed up. The women were arrayed in gala garments of bright crimson wool, colored beads and hair-ribbons of gold and silver. One girl, probably late for the ceremony, had her silver hair-ribbon coiled up in her pocket! colored beads and hair-ribbons of gold and silver. One woman, probably late for the ceremony, had her silver hair-ribbon in her pocket!

The late graves probably date in the 25th century; but Sumerian art and technology was perhaps at its best some centuries before. There was a slightly garish element in Sumerian art, and the beauty of pure line took precedence over color. But skill of hand was combined with a very lively imagination; there was good draughtsmanship, a good sense of composition and balance, and harmony with the structure of the objects decorated. In architecture, the vault, the arch and the dome were already in use; and we have spoken of the advanced state of metallurgy. But convention already fixed at the time of Ur I and Ur-Nanshe of Lagash tended gradually to crush originality, and the slim figures on the earlier seals were replaced by human figures exhibiting "squat lifelessness," with bizarre arrangements replacing symmetrical groups. One author calls a mottled granite tablet of the time of Ur-Nanshe "the ugliest piece of sculpture in the world." In the following (Akkadian) period, art again surged forward.

The art of the Early Dynastic period was marked by profuse use of metals (copper, gold and silver), and of polychrome inlay work. The latter was used for mural decoration, for cult objects and for furniture. The commonness of metal led to a decline in the pottery, which except for the Scarlet Ware, was mostly drab in color. The metal weapons and utensils of the Royal Tombs were typically Sumerian. Closed mold casting was in use, as well as the cire-perdue process. The latter involves forming a mold around a wax statue or other object, melting the wax to let it run out, then replacing it by metal. The processes of brazing and soldering were also known, and even a few pieces of iron have been found with the culture assemblage. A characteristic feature of the period in the south was the very common use of plano-convex bricks (one side "pillow-shaped"), replacing the small rectangular bricks of the Jemdet Nasr period.

The Stela of the vultures, a gravestone now in the Louvre, is carved with the history of the time of Eannatun, grandson of Ur-Nanshe. We see here his metal-helmeted soldiers in the military formation called the phalanx, made famous two millenia later by Alexander the Great. The chariots of the time were wooden and four-wheeled, with a high dashboard on which was slung a quiver of arrows or javelins, and drawn by the "ass of the mountains" (the horse). The figures here were "crude and blockish," but the work as a whole was a good piece of art.

Kings of Erech Dyn. II, of the time of the brother and nephew of Eannatum, conquered Kish, Ur and Lagash, the last-named falling from its former greatness. The next dynasty, that of Ur II, consisted of four kings of unknown names, perhaps buried in the latest of the Royal Tombs. Then came dynasties at Adab, Mari, Kish (III), Akshak (Opis) and again Kish (IV). These doubtless overlapped considerably and were more or less contemporary with Erech II and Ur II. Kish III consisted of a single ruler, the adventuress Ku-Bau, a "wine-seller." Her son,

who had a Semitic name, was the first king of Kish IV.

About 2296 B.C. the ruler of Lagash was a great reformer, Urukagina, who curbed the excesses and corruption of officials, the abuses of the priesthood and the great rations of foodstuffs carried with the deceased to the graves. Urukagina was a "true father of his people, a man noble enough to see and hate a wrong, intelligent enough to devise the means of righting it, and strong enough to enforce the means he had devised." (P. Carleton, *Buried Empires*, 1939). But evidently he was not a great warrior, for he was overthrown by Lugalzagesi of Umma, whose reign of 25 years constituted the dynasty Erech III. The latter ruler was quite a conqueror; but he in turn met a greater one. This was Sargon, who rose from humble beginnings, having been set out, like Moses, by his mother in an ark of bulrushes, to become the gardener and cup-bearer of a king of Kish, and then to seize its throne and found his own capital at Agade. He precipitated the quarrel with Lugalzagesi, in Oriental style, by seizing the latter's wife for his harem. We shall return to Sargon and the Akkadian dynasty which he founded somewhat later.

Tall Chagar Bazar in northwest Mesopotamia reached its stratum early in the third millennium B.C.; in it were found below the houses graves containing bronze daggers and other objects showing connections with Babylonia, and finely incised black and gray pottery with panelled decoration. The date of this level was given by two different authorities so widely separated as late Jemdet Nasr (2900) and the time of the Akkadian dynasty (2300); a third compromised on the time of the Royal Tombs of Ur (after 2500), and in fact there was some resemblance of the culture objects to those of the Ur tombs. Perhaps now a date around 2900 B.C. may not be far wrong. At Hama on the Orontes river in Syria, level K contained an early bronze culture, terra-cotta figurines and a burnished pottery with brilliant red or yellowish polish (a variety of the "Khirbet Kerak ware" to be soon described).

The second city of Troy, which was encircled by a strengthened stone wall, was a rich city thriving on a monopoly of the trade in the Hellespont. It originated about 2500 B.C. It was able to pay easily for imports of blue lapis lazuli from Iran, yellow amber from the European Baltic region far away, and tin with which to make bronze, which became common. The tin for the bronze may have come from Bohemia and the copper from Bulgaria: Gold, silver, lead and obsidian were also imported. Well trained jewelers and artisans plied their trades, and towards the end of the period potters introduced the potter's wheel. New pot forms were animal-shaped lids and jars ("face-urns"), which showed eyes, ears, mouth, nose, nipples and navel. They have been regarded as crude representations of the Mother Goddess and enough like those of early Sumerian funerary jars to indicate a connection. Other forms were jugs with flaring mouths and curious two-handled goblets also found as imports in Alishar in central Anatolia. Profiles of the pots were less angular than in Troy I. To preserve the appearance of the old-self-colored wares, the potters made a "red-wash" ware by covering the surface with an iron-containing wash that turned red on firing. This was a device also popular at Alishar. But the black ware of Troy I continued alongside red wares and a drab colored ware. Pottery indicated some connections with the Cyclades islands and Cyprus, while jewelry, pins, weapons and other items indicated trade with or influences from Sumeria, Egypt, Iran, Anau, India, the Mediterranean islands and even centers in Europe. But strangely, the Trojan merchants and officials carried on their business without the aid of writing, although the richness of the city has been commented upon, and excavation has revealed

many treasures of gold, silver and copper vessels, jewelry and ceremonial axe-hammers of stone. Battle-axes and the fertility cult carried on the traditions of Troy I. The houses of the settlement were built with long narrow groups of rooms. The settlement was ended by a catastrophe about 2300 B.C. Parallel to Troy II were part of Thermi IV and Thermi V. The settlements here were rebuilt and expanded on more like a town plan with intersecting streets divided into blocks. The towns were fortified and prosperous.

Turning to Syria, stratum XI of Judeideh was of a date somewhat but not much earlier than those cultures we have just been considering, for it contained late Jemdet Nasr seals at the start, along with painted pottery, and Early Dynastic cylinder seals toward the end. It contained few "cooking pots" or simple wares, but did include the brittle, red-cored wares found at Qaltat er-Rus. Also characteristic was a highly burnished beautiful red or black slipped pottery, often ribbed or fluted, called "Khirbet Kerak ware" in Palestine, where it was found in 26th and 25th century strata, while it dates from the 28th through the 25th century B.C. in Syria. This ware appeared suddenly in level XII of Beth-Shean.

At Hama, on the Orontes river in Syria, level K (about 2900 - 2400) contained an Early-Bronze culture, terra-cotta stamp seals and figurines of rams and bulls, some faience cylinder seals, stone sculpture, metal objects and at least three types of pottery wares. The first was a painted ware (as in level L), vases now being decorated with wavy red lines or with linear, straight or wavy, black ornament. More common was a pattern-burnished slipped ware with red, brown or black surface. Alternatively, decoration was by uniform overall burnishing to produce a brilliant red or yellowish polish, a variety of the "Khirbet Kerak ware." A most interesting feature of the stratum was the occurrence of burials of adults and children in tightly contracted position in large reddish jars ("pithoi"). Pithos burials are also known in Byblos, Carchemish (probably later), and Kusura in Anatolia. The houses of the period either continued the rectangular plan of level L, or were circular (as in Arpachiyah and Khirrokitia), or 'Tapsidal, as in some Palestinian sites, that is, rectangular with rounded end.

At Qual'at er-Rus, levels X to VI extended over the period from 2800 to 2400 B.C. This was a period when the pots were characterized by "stump bases." In this period, the previously described burnished "stone ware" continued in use. Another ware was decorated with parallel furrows as though made with a comb. These were wide or narrow and deep or shallow. The "comb" was a toothed stick or flint, first found at Abados in Egypt. The combing at various times was either "pattern combing," with varying all-over combinations of multiple lines, horizontal or vertical; or (later) "band combing," in which areas of plain surface were left between horizontal or wavy lines. The self-colors were buff, a very greenish buff, and (as a slip) cream-colored or light golden brown. A third style of pottery was known as "miniature light ware," small unburnished wheel-made pots, white, greenish or grayish buff in color. Cooking pots were also numerous in level X. Parallel to levels VIII-VI were levels VII and VI at Tell Sukas in the same region, where the same types of pottery wares were found.

At Ras el Ain near Jerusalem, the Early Bronze pots were all fired to a good red color and good ocher was used for a slip. The wares included shallow burnished Red-ware bowls, red-slipped inside and out, and others light brown with conical rounded base; combed deep Red-ware bowls; reddish buff ware with red slip; burnished "teapots" with narrow spouts and red to brown slip; miniature jugs of cream-colored ware painted in red with a lattice pattern; and

finally large store-jars of reddish ware with a pink surface, decorated with two bands of relief decoration. Palestinian Early Bronze II and III wares (to 2300 B.C.) in general included burnished red-slip pots with inverted rims and flat bases. Stump bases, pattern combing and burnishing were common in Palestine. Painted decoration was commonly in bands, parallel and wavy lines and simple cross-hatched designs. The new pot shapes indicate influences coming into Palestine from Syria. E.B. II-III was marked by the brilliantly burnished red or black slipped Ithirbet Kerak ware, already described, which was current in Syria from 2800 to 2400, and in Palestine from 2600 to 2400 B.C. These cultures included strata IV, III and "Tomb A" at Jericho; XVII and XVI (stages III-I of the eastern slope of the mound) at Megiddo; XIII to XI B of Beth-Shean, and certain temples at Ai. Jugs found at Abydos in Egypt, painted in red with curvilinear designs on a cream or buff slip, were probably Syrian.

The Early Minoan period of Crete extended from 2550 to 2250 B.C., during which period there was not much advance over the earlier period (E. M. I). It was an "Early Bronze" period, more exactly still a Chalcolithic one, copper knives, daggers and tools and stone axes being common. But gold objects and jewelry were not uncommon. Family or communal tombs of beehive shape ("tholoi") contained vast quantities of human bones. On the pots the designs were geometric in dark, somewhat lustrous paint on a light ground. Others were gray, and some, of chalice shape, had grained decoration and were copied from wooden models. Incised linear decoration was frequent, and patterns of parallel lines boldly applied were characteristic. The dull red varnish on the pots was somewhat similar to the dark red paint of E. M. I; but the decoration included hatched triangles, often with the apexes joined to produce the "double-axe" or "butterfly" motif, as well as lattice-work and semicircle patterns. The culture items also included figurines and stone vases in green, black and gray steatite. At Vasiliki in eastern Crete, mottled red and black surfaces, deliberately produced by reducing the red ferruginous wash in spots by means of the reducing action of the glowing charcoal, were hand polished. Late in the period the mottling was copied elsewhere in Crete (and was used at the time in Cyprus and Anatolia too) and was even copied in paint; and then and in the next period, the lustrous mottled surface was used as a ground for a design in white. Incised linear decoration was frequent, and patterns of parallel lines boldly applied were characteristic. At Vasiliki in eastern Crete, mottled red and black surfaces, deliberately produced by reducing the red ferruginous wash in spots by means of the reducing action of the glowing charcoal, were hand-polished. Toward the end of the period, the lustrous mottled surface was sometimes used as the ground for a design in white.

Turning to the Greek mainland, we find that about the middle of the third millenium the Early Helladic culture reached its E.H. II stage. The characteristic pottery of this stage, first found at Orchomenos, was the so-called "Urfirnis ware," a buff ware covered with a thin, semi-lustrous red or red-brown to black glaze paint to reproduce more conveniently the effects of the old burnished ware. There was also a matt-painted ware with black designs on white clay. The shapes included "sauce-boats," hour-glass tankards, askoi and globular water-jugs.

In the following Early Helladic III period, beginning perhaps at about 2300 B.C., the dark glaze paint was used, in central Greece as a ground for rectilinear patterns in white and in the Peloponnese for black patterns on a buff or light ground.

Egypt at about 2650 B.C., or more likely 2600, began its Pyramid Age and Old Kingdom with its Dynasty III. The prime minister of the first king was Imhotep, the Leonardo da Vinci of the ancient world, for he was priest, magician, author of wise maxims, physician, scientist and architect. For his king Zoser or Djoser he built the great step-pyramid at Sakkara, a terraced monument 190 feet high; and thenceforth for 1500 years all the kings were to be buried in pyramids. The greatest one, that of Khufu (Cheops), a king of the Dynasty IV, was built at Giza; and a second one was built there by Khafre (Chephren), a successor. The father of Cheops, Snefru, built the Rhomboidal (Bent, or Humped) Pyramid at Dahshur. Here, under the wall of a descending corridor, excavators recently found a wooden box containing a little mummy. This proved to be only a packet of bandages artistically interlaced and covered with a dull red varnish. The interior, submitted to examination by a college professor, was found to contain the remains of an owl and seven bats!

The Fifth Dynasty (about 2450 to nearly 2300), also considered a part of the Pyramid Age and founded by a priest of the sun-god Re at Heliopolis, is chiefly famous for the maxims of the sage Ptahhotep, chief minister of a pharaoh of the dynasty. His sayings were the first formulation of a system of righteous conduct in any literature. During this time Egypt was mostly at peace, and the copper or turquoise mines of Sinai were worked intensively. The Palermo Stone, a piece of black diorite covered with hieroglyphic inscriptions, refers to the building of ships and the bringing of forty shiploads of cedar wood, probably from Lebanon, to Egypt. It will be remembered that already in late Predynastic times and early Dynastic times, there were evidences of trade or cultural contacts with Mesopotamia. The erection of a double palace with double name by pharaoh Snefru recalls the union of the red and the white crowns of Egypt, though this occurred nearly five centuries earlier.

The Third Dynasty, compared with the Second, showed a rapid rise in prosperity and art and the introduction of stone for building instead of brick. Moreover, after Djoser kings and ordinary mortals were no longer buried in the same fashion. An illustrated catalog of the objects in use at this time is furnished by the paintings in the tomb of Hesi-Re at Sakkara, for probably Hesi himself supervised their execution during his lifetime, although they gave a list of the tomb furniture to be supplied on the funeral day. Rectangular niches adorning the piers and recesses of a long corridor were painted with geometrical patterns in a color scheme of black, red, yellow, green and white, practically the same as that of the earlier painting at Hierakonpolis. Wall hangings, even the rope loops and the wooden weighting pole at the bottom, were realistically copied. On the opposite wall were pictured many ordinary objects and a human figure, probably Hesi's. There was much advance over the earlier painting in composition and in ability to draw the human figure, which was less crude. But the artist was greatly embarrassed by the problem of perspective. Later Egyptian artists, although they had to accept more or less rigid conventions, had at least been taught where the four legs of a chair or a bed ought to be. Hesi's artist drew the regular shapes later found in these items of furniture, but he did not know what to do with the third and fourth legs.

By the end of the Third Dynasty, Egypt had emerged from its archaic period, though even the First Dynasty was artistically greatly ahead of contemporary Mesopotamia (which, to be sure, had suffered artistic relapse from the days of the Uruk and Jemdet Nasr periods). During the next dynasty there developed the custom of making portrait statues of the deceased owner of the tomb, so that if anything should happen to his body when his "Ka," the

perpetuated spiritual portion of him, when it was out in quest of food, there should be a likeness to which the spirit could return. The Ka (which took other names, such as mana, manitou, etc., among other peoples) was supposed to be a shadow-like, vaporous "double" or image of the living person. During sleep it left the body temporarily and went rapidly from place to place. Death was simply its final departure to a distant place. It had to be fed, clothed, attended and served after the death of its corporeal frame to prevent its dying again. Instead of the Sumerian royal custom, or the Hindu "suttee;" burial of a man's wives and slaves to attend to his needs in the afterworld, the Egyptians used substitutes: sculptured statuettes, carved bas-reliefs and pictures. This was a wise precaution, for a man's descendants might become neglectful, as time went on, for reasons of laziness or economy. The Ka was assured long life not only by this means, but by burial of the body in a sarcophagus of hard stone and the extremely meticulous process of embalming and mummification which was described by Herodotus.

In the case of the pharaohs, the pyramids were an additional precaution. The Fourth Dynasty bas-relief on the stela of Rahotep shows the dead prince enjoying a meal. It pictures and lists the items of food, drink, linen, perfumes and other requisites. Other pictures went much further, depicting bread being baked, fields being ploughed, and many other scenes of daily life. This was an advance and elaboration from the earlier portrayal merely of jars of milk, beer or wine, or vegetables, fat oxen or legs of beef. An interesting custom was that of depicting the deceased, in large size, at the beginning of each set of scenes, just as capital letters are used in this book to indicate the start of a new sentence.

The Fourth Dynasty statue of a king, Khafre, sculptured out of the very hard stone diorite, was apparently once covered with fine stucco and painted. The statue of a princess of the same dynasty, from the Earl of Carnarvon's collection, rendered her vivacious and charming in large part because of an atmosphere of gaiety due to the use of lifelike but bright colors to paint the statue. Instead of carving the eyebrows, necklace and ornaments of the headband in the stone, they were painted on. A warm yellowish flesh tone was used because the secluded life of the women made their skin paler than that of the men, who were generally depicted with a terra-cotta or dark red color. The lips were red, the necklace red and blue, the hair and brows black. The lifelike expression was in part due to the eyes, which were rock crystal set in the stone.

These statues exemplified a formal, aristocratic and somewhat abstract class of work. Contrasting with them was a more informal, intimate and friendly class typified by the Louvre statue of a Seated Scribe, a shrewd man clearly with a sense of humor.

The symmetrical composition of geese from the mastaba of Nefermat at Meidum employed blue, green and brown colors true to nature. The heavy gait of the geese, the arch of their necks and their placid natures were well represented. Green plants suggested landscape and relieved the monotony of the background, which was gray, a common ground for Old Kingdom painting. The Egyptian love of vivid color is seen in the widely reproduced portrait of Princess Nefert. Here the hair was blue-black, the skin yellow, the collar and headband red, white, green, blue (now dulled) and black. These color masses were outlined in red and black. Polychromy was widely prevalent at this time.

In the tomb of Ti, he and his wife were shown against a background of yellow and green rushes and reeds. Ti's flesh was a terracotta red, his wife's yellow. Jewelry was

green, blue and yellow; other details and hair were black, while garments were white. Ti was shown several times the size of his wife, a conventional mode of portraying him in his rightful way as master.

Early in the Fifth Dynasty was pictured a victory over the Libyans, whose tattooed, long-haired chiefs, girt with fabrics of variegated wool and decked with polychrome necklaces, were led into captivity. The kings of the Pyramid Age set up a system of defense against the nomad Libyans and Nubians and the Asiatics. A warrior's tomb painting of the dynasty for the first time showed the siege of a city (in Syria). Asiatic influence was strong at this time and may have been responsible for the growth of sun-worship. Pharaohs' names included, besides a Horus name, a "solar" name.

From the Fifth Dynasty the best known tombs were those of kings buried at Abusir, where they built temples to the sun-god. Skill and vigor was shown in the modeling of reliefs. On one ceiling was the commonly used decoration of golden stars on a "midnight blue" ground, an excellent contrast. But we see here that painting was still mainly a complement to architecture, serving to enhance and beautify the latter. As time went on, larger proportions of the tomb-wall space were used, and the designs were put in registers one above another, with little regard for wall structure. Landscape was conventionally conceived. Usually the Nile appeared at the bottom, and everything was depicted as it appeared to the artist standing there, looking inland, placing the various levels on top one another up to the desert. The outline drawings were filled in with red, black, white, green, blue and yellow, at least at first in a purely conventional way. The walls of the pyramid of the last king of the dynasty were covered with carved and painted magical spells and hymns (the "Pyramid Texts") to be used by the king's spirit as it ascended to heaven to be united with the sun-god.

Before closing this section we may add a color-note of a different sort. The red and lighter (yellow and white) coloring used to distinguish the two Egyptian sexes has been mentioned. In pigmentation, the Egyptians were usually brunet white; the hair was black or dark brown, the eyes brown. But one queen, the daughter of Khufu (Cheops), was clearly blond. In the colored bas-reliefs her skin was white, her hair bright yellow stippled with fine red horizontal lines. She may have been Libyan or of other foreign extraction, for they have Nordic coloring and features, and the Libyans penetrated the Delta very early, and later they and sea peoples from the Mediterranean were pictured with light skins.

Chapter 4 European Neolithic and Copper-Age

In our color drama we have been trying to portray the actors in the order in which they appear on the stage, though when the action is rapid and complex (and sometimes obscure) this becomes quite difficult. Paradoxically, also when we move very slowly, crossing from one extreme wing of the stage to another, it becomes almost impossible to adhere to the method of grouping all temporally adjacent scenes into a few acts labelled Neolithic, Chalcolithic, Copper-Age, etc. Color. For the right and left wings do not reach a given development stage simultaneously.

As we have already said, it took many a century for the Neolithic invaders of Europe to travel across that continent from the Near East. Most of their journey fell in the warm, wet climatic period called "Atlantic." But in the case of the eastern Baltic area and Scandinavia, the Neolithic fell in the drier "Sub-Boreal," after about 2500 B.C. The Neolithic invasion was more complex than the Mesolithic one and took several routes, meeting various reactions; and these reactions were late in the extreme Western wings. The invading people on the whole were "Mediterraneans" of the generalized Galley Hill - Combe Capelle stock; but in the west they were blended with a larger proportion of round-heads, surviving from the earlier population, than in the south and north.

A very rough outline of the time-table of the westward trek is somewhat as follows: Starting from Egypt, Syria, Mesopotamia and parts of Iran at roundly 4000 B.C., the southern shores of the Black Sea, Anatolia, Greece and the southern Balkan area, Crete and the nearer parts of northern Africa may have been reached by 3500 B.C. (by peoples and cultures present in force, of course); southern Russia, the Danube region, the rest of northern Africa, southern Italy, the larger Mediterranean islands and Iberia (Spain and Portugal) by 3000 B.C.; central western Russia, Germany, Switzerland, France, Belgium, Holland and southern Britain by 2500 B.C.; and finally northern Russia and extreme northern and western Europe not until about 2000 B.C.

The routes and peoples travelling them, broadly considered, were as follows. One Mediterranean branch was short of stature and smaller headed and not quite so long-headed as the second one, to be described, A sub-group, the Western Neolithic one, were farmers and swineherds who went quite early from Egypt along the northern African coast into Spain, thence into France, Switzerland and southern Britain. A second sub-group, like the ancient Egyptians, had very high heads and higher nasal indices than the western branch; they were called the Danubians, and were largely peasant farmers in their new home, but the exact course of their migration is not known. It may have been from north of the Black Sea (or even north or south of the Caspian), then through the steppes of southern Russia into the Polish and German plains and the Danube valley; or from Anatolia by way of the Bosphorus into the Balkans, up the Vardar river and down the Morava into the Danube region, or by way of Crete and the Aegean islands to Greece and Italy and from Greece into Macedonia and along the Balkan and Danubian route.

A second general branch was the tall and very long-headed sort of the "Basic-White" Mediterranean type (as in Mesopotamia, Iran and East Africa); they had long faces and narrow noses. A sub-group, the third, of slender build and copper-using, the so-called "Megalithic"

(large-stone-monument-builder) type, probably travelled late by sea from the eastern Mediterranean to Gibraltar, around Spain and up the coast of France to Britain and Scandinavia. The fourth (late) subgroup, the Battle-axe or Corded folk who made pottery decorated with cord impressions, had very high heads and very long noses and faces, and went from the plains of southern Russia and Poland into central and western Europe, Germany and Scandinavia. They became traders and warriors.

It has been mentioned that Anatolia and Egypt were rooted in a Plain-pottery tradition, while Syria, Assyria and Mesopotamia developed painted potteries, but that one exception comprised the Gerzean painted ware with reddish brown designs on a pale ground. Further that painted pottery was adopted in Palestine (and Syria) under the influence of the Tell Halaf and related traditions; and it extended also to Cyprus and Cilicia, where it appeared alongside of Red-ware.

Perhaps as early as 3500 B.G., more likely by 3200 or 3100, the same situation began to develop in Greece, especially in Thessaly to the north, where the culture so marked is known variously as the Sesklo, First Grecian Neolithic A or First Thessalian culture, its earliest site being Sesklo. Here the Red-ware was a fine, hand-made, burnished bright red ware, often burnished in light and dark stripes, but also decorated with white lines or simple linear patterns in dull white paint. The shapes were apparently adapted from metal prototypes, and indeed some pots possessed flat bosses imitating the rivets of metal originals. Along with these Red-wares appeared the more characteristic but variable Red-on-White wares, with bright red painted basketry designs on a white-slip ground.

The peasants bred cattle, sheep or goats and pigs, and cultivated barley, and probably also vegetables and fruit trees. Stone mortars and pestles were used to prepare food. A textile industry is attested by fist whorls and spools. The houses were generally rectangular huts, but at least one had a gabled roof. Little if any copper was in use, and the only weapons found were sling-stones. Obsidian was an object of commerce, and shaving razors were made from this material. As ornaments or charms, bracelets of stone or Spondylus shells were worn along with stone nose-plugs, while female fertility-cult figurines were modeled in clay. The Thessalians devised stone and pottery stamps or dies, called "pintaderas," wherewith to color their bodies. The origin of the Sesklo folk may have been in northern Syria or in central Anatolia; and Cilicia or the Red-on-White pottery of Cyprus may link Greece to the Tell Halaf area. But whatever the source, the Asiatic culture was filtered and impoverished in Europe, probably losing first the knowledge of metallurgy.

In the Peloponnesos, the southern peninsula of Greece, which a few centuries later was to develop a series of cultures known as "Helladic," the density of population was still rather sparse; and the Neolithic culture was primarily an extension of that of Thessaly. The Early Neolithic of southern and central Greece, which may go back to the early part of the fourth millenium, was marked by variegated wares, mostly monochrome black or red, along with some simple painted wares. They are best known from Corinth and Orchomenos. The shapes were hemispherical or globular, the fabric poor, the decoration of simple linear type, as parallel lines, zigzags or chevrons. Some of the earliest Sesklo types were rather similar, some being red or brown, others a "smoked" black or dark gray, still others yellowish or creamy. The variations seem to be the accidental result of uncontrolled firing. In the center and south of Greece, parallel with the Sesklo culture, say from about 3150 to 2800 B.C., we may distinguish a Middle

Neolithic culture. The older carboniferous or smoky black or dark gray ware was imitated by a coat of lustrous glaze paint over the old red wares, producing a pottery type known as "Neolithic Urfirnis." There were also steel and silver gray wares and painted pottery. The glaze wash varied in color from brownish black to reddish. The chief difference between the north and the south was in the use of the glaze paint. A peculiarity of the decoration was that the designs were obliquely oriented, as in the interiors of open bowls. The chief decorative motif the painted wares was a group of parallel lines, sometimes widened into fairly broad bands.

They were often broken to form zigzags or chevrons or diamond (lozenge) shaped checkers. The step pattern, a variant of the zigzag, and hatching and cross-hatching was also frequently used. Black and gray wares continued in use into the following period.

The Neolithic or Sub-Neolithic period contemporaneous with Sesklo and the Grecian Mid-Neolithic was not well developed on the Cyclades islands, being well known from only one site on the island of Naxos.

At Servia in western Macedonia was an outpost of the Grecian Neolithic which was a late offshoot of the Sesklo culture. It may date as early as 2900 B.C. Here the red and painted Sesklo potteries were replaced by black polished wares, decorated by fluting, striped, burnishing, incision or white paint with geometric patterns including spirals. This new culture spread all over Macedonia and up the Vardar river toward the Balkan mountains, then further northward down the Morava river toward the Danube country. The resulting development is known as the Vardar-Morava culture. It began to take form not long after the beginning of the third millennium B.C., perhaps at 2800 B.C.; it may indeed be even older, starting before the first city of Troy. The typical sites were at Vinca, on the Danube below Belgrade, Tordos in western Rumania and Olynthus in Greece. Here the peasants lived in pit-dwellings half sunk into the soil and in wattle-and-daub houses. Their typical tools were certain polished stone hoes. The pottery was extremely varied; (1) "Rusticated" or "barbotine" coarse brownish ware, made by roughening the surface, usually covered with a thick slip, by pinching with the fingers to make it hummocky or by brushing; (2) gray and black to red wares, polished or incised, pedestalled and carinated bowls, lugs imitating animal heads, with designs of punctuated ribbons including spirals and meanders; (3) anthropomorphic (animal-shaped) or "face-urn" hollow lids, molded and incised in the form of an owl-like human face (found also in the second city of Troy); (4) red-slipped wares, often black inside and around the rim; and (5) wares painted with spiral designs in black and white on a red ground (in Greece and the middle Danube area). The ground was tilled by the culture-folk with piano-convex hoes along with beveled adzes, called "shoe-last celts," human and animal statuettes were carved, and red cinnabar and other materials were traded. The Vinca or Vardar-Morava culture shows many traits which probably may be attributed to the central Anatolian Chalcolithic influenced by elements from the region of Troy and some from the surviving European Mesolithic folk. The Vardar-Morava complex as a whole may have occupied several centuries of the third millennium.

At about the same time as the period of Vinca, in a group of sites farther north in the middle Danube country of southeast Hungary, called the Körös-river group, the incised pottery ornament included much "spiral-meander" pattern, a form of decoration which we shall see is of great importance in later contexts. In an upper level at Tordos, under the influence of Thessaly, there developed a Buff-ware painted with red or brown designs. At Vinca and at Prokuplje on the Morava River, painted ware appeared, colored black on red and sepia color on

red. At sites in western Rumania (2600), brown and black paint was used, for the clay fired darker (brown or red) here, and contrast was aimed at. At Starcevo in this region the colors ran from black and red to brown and buff and even to white, with angular and criss-cross patterns as well as spirals.

Related to the Starcevo-Körös complex was the "West Bulgarian Painted"-ware culture, developing in the indicated area. According to a recent author (J. H. Gaul; *The Neolithic Period in Bulgaria*; 1948), this was an extension of the First Thessalian or Sesklo culture. Its beginnings probably may be dated about the start of the third millenium or somewhat later. At roughly the same time (in a broader view including probably the somewhat earlier Middle Neolithic period of Greece and Crete), the culture of the people of the Danube and Marica valleys of Bulgaria was an independent one related not to the West Bulgarian but to the Boian A culture (with "crusted ware") which we shall describe presently. This country includes the eastern lowlands, while the Western Bulgarian Painted ware was that of the western highlands.

Parallel to the European Neolithic cultures so far considered arose the widespread civilization of the Danubians. Though occupied by the early mammoth and reindeer hunters, the loess lands north of the Serbian Danube and the Save rivers were only sparsely populated by Mesolithic survivors in the early third Millennium. But to Neolithic farmers practicing a simple agriculture, these broad plains were quite attractive. They were free enough from forest, well watered and fertile. The Danubians lived here a "slow-motion nomadic" life, shifting to fresh ground every few years as rapidly as the soil in any place became exhausted. They cultivated small plots with stone hoes. They knew barley and einkorn and perhaps emmer wheats; beans, peas and lentils. They kept small herds of sheep, oxen and pigs. They did no hunting and had few weapons. The stone "shoe-last colts," mounted on shafts, served as hoes or adzes, or if perforated, as axes and hammers. Knives and sickles were made of flint. There is no evidence that they had a textile industry. There was some commercial intercourse with distant communities in order to secure good materials for their simple economy. According to Professor Childe, they "were democratic and perhaps even communistic; there were no hints of chiefs concentrating the communities' wealth." "Nor did deities fulfill that function." There were almost no ritual objects, as at Vinca and in Macedonia. They lived in complex pit-dwellings and built rectangular granaries. Bracelets and beads came from a *Spondylus*-species shell from the Mediterranean sea. An important stratified site of the culture will be described later.

Their pots were hemispherical bowls and globular bottles with lugs, shapes derived from and acting as substitutes for gourds. The resemblance is enhanced by the frequent zigzag incised lines reproducing the slings in which gourds are carried. Some coarser pottery was a finger or wart-ornamented ware related to the rusticated ware of Vinca or the Körös group. But the outstanding and characteristic development of the Danubians was incision in spiral and meander linearly "ribbons" running freely over the hard, dark slate-gray to almost black surface.

Venturesome mariners travelling west from eastern Mediterranean ports seem to have reached the island of Malta early in the third Millennium. The Maltese Neolithic was marked by polished gray ware, "studded" pottery (with applied clay disks) and a ware painted with matt red geometric designs on a buff ground, as well as other types. Influences from the Balkans led to enrichment of the pottery ornamentation, including spiral motifs (found in relief in the

temples), and even to colored inlay to imitate painting. But the outstanding characteristic of this most interesting Neolithic civilization was the great "temples," built of gigantic stones, as at Hal Tarxien and at Gigantea on the satellite island Gozo. These were essentially like enlarged rock-cut tombs, and had labyrinthine burial vaults carved out of the rock. Today village church at Musta in Malta has a dome larger than that of St. Paul's Cathedral. The design and contents of the temples indicate the practice of a complex religious cult; and Malta has been called a Sacred Isle. Many features of this culture reveal an origin in the Near East: the forms of the temples, animal figures in bas-relief, stone phalli, corpulent statuettes of the Mother Goddess; animal sacrifices, votive offerings, ritual hearths, stone altars and oracular chambers; and finally the pottery. The farmers here carried on little trade, and no trace of metal was found with the culture. The culture was ended by an invasion of unknown date or a religious revolution; which it was, is not known.

Another area reached early (by 2700 B.C.) by the mariners was southeast Sicily. Here Stentinello, Megara and Matrensa, fortified villages with cobbled streets, comprised the Neolithic culture known by the first of these three names. The animal-breeding and pastoral inhabitants made burnished, incised, gray or red-slipped pots as well as a rarer polychrome ware (perhaps imported) with rectilinear patterns in red and black on a buff ground. The well made pots were often decorated with geometric patterns made with the finger-nails, a sharp-pointed implement or a shell edge. The incised and stamp-impressed designs usually had a white filling.

At Akropotamos in eastern Macedonia, excavated only a decade ago but dating back to the first half of the third millennium, several varieties of painted ware were found: (1) elaborate curvilinear and rectilinear designs (rhomboids, trapezoids, spiriliform) painted in black to brown on a polished red surface; (2) arcs, arranged serially or alternately along a line, filled with solid color and placed in a zonal and metope-like arrangement, or spirals, applied in black to brown paint on a creamy white slip; (3) a less common polychrome ware with curvilinear decoration in red outlined with black on a buff ground; (4) a coarse, poorly fired ware, with curvilinear and spiral decoration painted in black, often matt, on the red or buff ground, but with (5) the ornamentation careless and less elaborate; and a black polished ware, with rectilinear decoration as a rule and painted in a brilliant black to brown paint on a creamy buff polished surface, technically good and characteristic of the lowest level (of a north terrace). Bone pins and needles, and clay amulets and figurines were also found here. A unique object was a clay representation of a human foot, with a suspension hole to use the model as an amulet, and covered with curvilinear decoration in bright brown to black.

At this time the Forest folk in the great northern belt of forest east of the Baltic and in northern Scandinavia, were barely emerging from their food-gathering state into the Neolithic. They had discovered the trading value of the magical yellow amber, but they only much later adopted the rudiments of agriculture and stock-breeding. In this later period their ovoid pots were decorated with pits and comb-impressions. They buried their long-headed dead on the camp sites, extended and often sprinkled with red ocher.

The mariners or travellers along the North African coast, continuing westward, perhaps around 2700 B.C. reached a site called El Garcel near the coast of southeast Spain. They settled here and lived in round or oval huts on the hills near fertile valleys, bred stock and cultivated cereals, fruit-trees and olives. The grain was cut with toothed flint sickles, stored in silos and

ground on saddle-querns. Hunters still used transverse arrowheads and carpenters employed ground-stone axes, adzes and gouges. Their pottery was plain and undecorated, and included vases of the so-called "red-bag ware," which imitated vessels in tensile leather made from an animal's scrotum. These were like those of the pre-dynastic Egyptian Fayum and Merimidian cultures, while jars with pointed bases were similar to Gerzean ones, and other forms recall North Africa. Vases had no true handles but were provided with perforated lugs. The whole coastal province of Almeria was settled by the Mediterranean folk from Africa, who mixed with survivors of the Mesolithic to become the ancestors of the Spanish and the Portuguese. The leathery sac-like pots continued in use by these Almerians in a culture extending to the end of the millennium, and were found in a second phase at a site called Tres Cabezos. Copper slag has been found with the El Garcel culture, but there were no objects to indicate that the civilization was other than essentially Neolithic.

But parallel to the Almerian culture was another of Spain, the Cave Culture of its southeast, developed by descendants of the Paleolithic hunters; and these people painted on their cave walls conventionalized animal pictures and scenes like the more naturalistic ones of the Upper Paleolithic painters of the southeast Spanish group. There were pictures of domestic and wild animals, scenes of the chase, pastoral scenes, an agricultural deity wielding a sickle, sledges and even wheeled carts (farther north somewhat). This culture continued into the Copper Age which followed and most of the settlements belong to that age. The pottery quite unlike that of the Almerians, was richly incised; wares like it were found over a large area from northwest Africa through Iberia to Italy and Sardinia. In caves of Valencia, Barcelona and Portugal, black to reddish pots with patterns executed with the edge or back of a shell ("cardial style"); ladder patterns were frequent too. Though the poor and backward folk of the caves relied on hunting and stock breeding, they served to transmit to the megalith-builders of the Copper Age artistic traditions inherited from the Old Stone Age.

The Sicilian culture was continued on the Italian mainland in Apulia at sites called Molfetta and Natera. Here it met a culture-stream coming across the Otranto Straits from the Balkans, so that fine painted ware was mixed with incised pottery. The angular and spiral and meander designs were painted with blacks or black and red, on a buff ground. Shell-edge decoration was also used, and pots frequently were provided with cylinder-lug handles, horizontal clay tubes expanding like trumpets towards the ends.

In Europe considered broadly progress was slow; but the cultures of Greece, the Balkan countries and the lower Danube region were developing, stimulated by contacts with the Near East. In northeast Hungary and Slovakia about 2600 B.C., the Bükk culture included, along with Danubian husbandry, hunting and fishing; potters used not only gourd models but also leather ones, and the people lived in caves in the winter. Their pottery ornament was based on the Danubian spiral, but they executed it with thin elegant vases having bands of finely cut lines, using also volute, arcade, meander and zigzag patterns, and filled in incisions often with white or red inlay. Archaeologists distinguish three stages (to about 2100 B.C.) based on the decoration. Especially in the late stage, incision was supplemented by painting on dark red or white bands. There were also gray and buff wares with spiral designs in black paint applied before firing.

This method contrasted with that of the contemporary Bulgarian "Boian A" culture, where the Dots were "crusted," painted on after firing. Here emphasis was on spiral, meander

and chevron patterns with white inlay used to bring out the design on the red-brown or other dark ground. Incision, fluting, rustication (roughening by pinching or brushing), and in a late stage even "negative" painting with graphite were used to decorate the vessels. These were in forms influenced by wooden models, and the wood-carver's technique of excision was also used for decoration. A characteristic form was a cylindrical peg-footed box. Copper was known but used for only small ornaments. The culture arose on a Lower Danube island, and the typical sites were Glina and Vidra near Bucharest.

In the Danubian region, the culture-complex was best revealed in the excavation of Köln-Lindenthal near Cologne, whose four stratigraphic levels extended from about 2500 to 2200 B.C. In the first there prevailed the purely linear "ribbon" style of ornament of the pottery, called often by the German name "Bandkeramik." The people here and at the type-site of Flomborn near Mainz, where African ivory has been found, dotted the land with their little hamlets and the large oblong barns in which they stored their crops. In the second stage, about 2350 B.C., the old linear style was greatly influenced by the style of a people who used "stroke-ornamented ware," in which the incisions were not continuous but formed by discontinuous rows of strokes made with a sharp tool. The style is thought to be due to Mesolithic survivors, recalling the form of the string carrying-slugs for pots and involving a planned design instead of a rambling free style. In Moravia and Austria, a music-stave effect with "note head" dimples appeared and developed into special styles. In Lindenthal III, after an abrupt break, about 2300 B.C., the stroke ornament became dominant; and after a fire, city IV was a larger, more populous and richer settlement. In central Germany, the mixed culture of the Danubians and Mesolithic survivors, strongly influenced by that of the Forest folk, developed into the Rössen culture. The pottery was a special form of the stroke ware decorated with rectilinear patterns imitating basketry and executed in a "stab-and-drag" technique. This was applied on hemispherical or globular pots, often provided with stand-rings, and was a method of ornamenting with semi-continuous lines formed by jabbing a painted implement into the soft clay, then drawing it backwards a short distance and repeating this steadily. The incisions were finally filled in with white inlay. The Rössen folk decorated themselves with ornaments of various sorts: marble bracelets and buttons, disk-beads of shell, bored tusks and deers' teeth.

The Danubian culture itself lived on in a region extending from the river Drave through Lower Bavaria, central Germany, Silesia and Galicia. Several of its aspects may be grouped together as "Danubian II." In Moravia, the earliest pots were decorated with spirals, meanders and basketry motifs, incised and "crusted" on (painted after firing) in white, red and yellow. In a late phase, white paint alone was used on a fine burnished red ware, but some of this was covered with a white slip and painted in red before burnishing and firing, as in Thessaly. Later still, colored decoration went out of fashion.

A contemporary culture, dating at 2400 to 2000 B.C., was the Tisza culture centering in southeast Hungary, called from the river of that name. This arose from fusion of the Körös and Büük traditions with the linear style of decoration. The pottery included incisions in a thick slip supplemented by "crusting" in red, yellow and white.

The designs, grouped in vertical panels, included conventionalized faces, concentric circles and meanders, but no spirals. Sites of the culture included the important cemetery of Lengyel west of the Danube, Vinca II, Polgar in Hungary (where Red-ware, crusted black-polished ware, and red and white designs, occurred); and at Butmir in Bosnia, where the

ornament was incised, hatched, or pointillé, in angular ribbons, checkers and running spirals. A bewildering number of other special styles, many of "mixed" type, developed from those already described; but these do not have special color interest (Munsingen, Zseliz, Goldberg, Aichbühl, Wolfsbach, Münchshofen, Ottitz, Wetterau, Plaidt, Hinkelstein, etc., styles.)

East of the angle of the Carpathian mountains and south of the Ukraine and South Russia are the plains of the districts Wallachia and Moldavia. Their rich soil has made them famous as the "Black-Earth" lands, which early attracted Neolithic peasant settlers. Their earliest known settlement was in stratum I at Izvoare in Moldavia. The pottery there had resemblances to the style of Vinca, Körös and even Boian A. It was a monochrome ware with incised designs, including some crosshatched ribbon lines with white filling. Similar pottery is known from across the Dniester river, where we shall soon meet it in a phase preceding that with painted ware.

The Neolithic culture of central and southern Greece, which we have described, overlapped, in about the 28th century B.C., that which has long been known by the name "Helladic." This name has been applied to the Pre-Hellenic cultures of the mainland south of Thessaly. Most of the sites of the culture have been excavated within the last three decades. The period is divided into Early, Middle and Late main divisions, corresponding to those of Crete; and these are again subdivided.

Early Helladic I is known from only a few sites, with copper or bronze present but rare, so that the culture may perhaps be best characterized as Chalcolithic. It took its beginnings about 2800 or 2700 B.C. It appears to have been due to a penetration from Anatolia coming by way of the Cyclades islands to the southern peninsula of Greece, and by way of Troy and Macedonia to central Greece. The advent of the new people was not a sudden conquest; rather a gradual and peaceful infiltration, with invader and native living for some time side by side. Early Helladic I pottery was a self-colored, hand-made, often dark ware, burnished and decorated also with incised and impressed designs related to those of the Cyclades. The colors were buff, brick red or black. Helladic shapes included "leathery-bodied" ovoid and spouted forms, as in Early Cycladic wares. The E. H. I ware is well illustrated by the pottery from Korakou near Corinth.

In Thessaly, the old Sesklo culture was replaced, about 2650 or 2600 B.C., by one named from Dimini, a site on the Gulf of Volo fortified with multiple ring walls. These and simultaneous fortifications at nearby Sesklo were the earliest of Greece. In both citadels, houses of the "megaron" type, with porch and central hearth, were built. The culture had many similarities to that of the Painted-pottery peoples beyond the Danube river; and the pottery resembled that of Bulgaria, Rumania and Russia. Though often termed Neolithic B or Late Neolithic, the people of the culture imported copper for flat axes and gold for ornaments; but there is no evidence of a real metallurgical industry. The bevelled adze was replaced for the first time by axes. The culture assembly included at least two painted potteries. One was an intrusive monochrome-painted ware, probably due to Danubian invaders or at least Danubian influence. It was hand-made, thick, in few and primitive shapes, but well fired. Both forms and decoration showed the influence of basketry. The dark brown ornament was applied to a light-colored slip. Motifs included hatched bands in meander or step patterns, checkers, the lattice pattern and spirals. Another ware in was a Trichrome ware decorated with somewhat similar style but more ribbon-like, lines filled with white or red paint outlined with black, on a red or white ground. Among

Dimini forms, the high-pedestalled bowl or "fruit stand" was a new one.

In western Thessaly, the break was less abrupt, though everywhere bevelled adzes were replaced by axes. Due to Danubian influence there appeared black or gray "carboniferous" pedestalled bowls decorated with spirals, thin white paint or in various other ways. In the south of Greece, simulation of the black surface was accomplished with the lustrous glaze paint which yielded the Neolithic Urfirnis ware already described. In the areas not reached by the northern invaders, the native Thessalian potteries continued, though the Red-on-White type became a Linear Monochrome ware, with simply dull black or brown decoration on a red or buff ground. Combination with black led to a so-called Linear Trichrome style. Near the end of the period (about 2250), both native and Dimini wares died out and were replaced in Boeotia and even in more northern sites by Early Helladic III plain varnish ware. Thessaly then became no longer an independent area, merging into the extending Helladic area, with the most northern parts merging with the Macedonian culture field.

The term "Western Neolithic" is used to group together the cultures which are thought to have originated in Egypt and to have come to Europe by way of North Africa, Gibraltar and Spain. The Stentinello, El Garcel and Almerian cultures were parts of this civilization. In Sardinia it was found in early levels of caves marked by pottery, partly plain, partly decorated with incised ladder designs, found also in Western Sicily and with the South Spanish cave culture; also with concentric semicircles. It comprised dark, round-bottomed baggy or carinated vessels. In the cave of Bize in southern France, over a Mesolithic stratum in a level dating about 2500 B.C., were found primitive plain pottery and leaf-shaped and other flint arrowheads. Ornaments were still of shell, bone and stone. The culture was found also beyond the Rhone caves in the Ligurian Alps, where the pottery was found (as elsewhere as far back as Merimdeh) in association with clay spoons or ladles. The Western folk went up the Rhone valley too, to central France, where their pottery was found at the fortified site Camp de Chassey and in other caves along with the ladles. In a site called Le Campigny near the mouth of the Seine, they were found to have fused with the Mesolithic survivors. Such a fusion is thought to have been responsible for the earliest of the famous "pile-dwellings" civilization of the western Alpine lakes, those of Chambéry in Savoie and at Lake Chalain in the French Jura. These led to the culture found in Switzerland at Lake Neuchatel called the Cortaillod (2100 B.C.). Here barley, emmer wheat and perhaps bread wheat, peas, beans and lentils were cultivated and cider was brewed from apples and plums. Horned cattle, pigs, sheep and goats were bred. The farmers lived in clusters of rectangular houses raised above the waters on piles along the shore. Linen was made but probably skins were still worn. The pots were smooth dark bowls, open bag-shaped, carinated or bottle-shaped, with no handles except perforated lugs, an undecorated lustrous monochrome ware. The people were round-headed descendants of the Mesolithic folk, with short bodies and faces, low or broad noses and low eye orbits, along with the small Mediterranean-race invaders who were higher and narrower in the face, orbit and nose form.

North of Greece in the Balkan mountains, the Early Macedonian culture was introduced by colonists from Anatolia. In this case, the connection and direction of travel has been irreversibly established by the pottery. Besides a gray ware ornamented with grooves, in Macedonia the bowls had fully formed "horned" tubular lugs (turned up at the ends) on the rims; the latter appeared first in Thermi III after developing out of simpler tubular lugs of

Thermi I on the island of Lesbos near Troy. In other respects, the latter ware was like the pottery described for Troy II's early phase. In Europe, the culture appeared poorer than in Anatolia, for the early settlements of Troy and Thermi employed copper and even bronze for tools and weapons, while the Early Macedonian settlements were rustic villages with but little metal, and the economy was that of a peasant community. Along with the Trojan-type pottery, some Corded ware has been found; and this and the finding of horses' bones indicate contact with the Battle-axe or Corded folk of the northern plains.

The earliest Northern Neolithic developed in southern Scandinavia and northwestern Germany at a date roughly about 2300 B.C. This and related cultures were a complex civilization composed of a "bewildering variety of individualized Neolithic cultures." But they are often lumped together under the term "Nordic," which should be restricted to the designation of race and may be inaccurate in the present context. There were several known elements in the population: Danubians who had reached the Baltic coasts, and "Battle-axe folk"; megalith-builders and other groups of Western peoples, and survivors from Mesolithic times. The first signs of a change from the Mesolithic Ertebölle culture were in the pottery. The former coarse bag-bodied splay-rimmed pottery was replaced, in the refuse of shell mounds and certain "dwelling places," by pots with ornamentation not only with stabblings and shell-edge marks but impressions of a twisted or whipped cord, curled round the thumb or applied in straight lengths. It was arranged when straight in parallel vertical forms, which also appeared as grooving. The people who made this pottery are known as the Corded or Battle-axe folk, the latter term being due to the fact that they have been usually found as contracted skeletons buried under barrows (mounds) accompanied by their battle-axes. These people are believed to have come from the southeast, and in the earliest period used flint pointed-butt axes. An interesting statement of the significance of the megaliths in the civilization of the northwest is given in the following quotation from C.F.C.Hawkes' "The Prehistoric Foundations of Europe" (Methuen, 1940; p. 211) : "We have said that the Northern dolmen was due to a 'conversion to the megalithic religion', by which is meant the acceptance, in the coast-lands of Denmark and North Germany where these tombs are found, of the magic power of the religion brought by the Atlantic voyagers, especially in its concern with the dead. Belief in a disbodied spirit meant belief in a ghost's potency for good or evil to the living, and magic proclaimed by dark strangers who could sail the whole Western sea in winged ships -- for sailing may well have been an unknown mystery to the Northern paddle boatmen -- would take a natural hold among a people already careful of funeral custom."

In the period beginning about 2200 B.C., the typical grave was the megalithic (large-stone) "dolmen" or "dyss" a small chamber with four uprights supporting a single large capstone. The flint axes were then thin-buttended and polygonal, and obviously copying axes of copper, whose glossy, smooth surface must have been attractive to the imitators; but the people of the culture had themselves no real metallurgical industry. The vases were either plain or decorated with cord impressions, always in vertical patterns. The forms included collared flasks, funnel-necked beakers and amphorae. No paint or color was involved; and indeed it has been found difficult to observe and record any color notes pertinent to the northern and many of the western cultures. It has been necessary, however, to introduce these actors in order to get on with the play, for they enter in later acts too. We shall, however, make little attempt to describe these interesting peoples, "colorful" in the broad figurative sense in which we often

use this term, but leaving few if any permanent remains by which we may know to what extent color entered into their lives.

The Battle-axe or Corded folk, it will be remembered, were described as of the tall basic-white Mediterranean stock, with very long and high skulls and a very long nose and face. They came, it was said, from somewhere around the Black Sea, most likely from southern Russia. We may add that the head was narrow, the forehead steep, the nose narrow. The browridges and muscular markings were stronger than those of the Mediterraneans of Egypt, Spain and the Danube. The frame was heavier and more rugged, as befits warriors, than the smaller Mediterranean types. A very similar people were the later blond Nordics; but similar also were the people of Ur and the plateau of Iran, who probably were brunet.

Graves containing the vase forms and axes just mentioned, along with yellow amber beads, were found in a great area extending from Denmark across eastern Germany and Poland to the upper Vistula river. In Poland the Battle-axe folk were mixed with a larger proportion of Danubians than in the regions farther west. In the so-called Dwelling-place or Forest cultures extending across the vast forest tracts of Russia, the cord decoration was largely replaced by ornamentation produced with a serrated comb-stamp. This decoration seems most at home in southern Russia, south of the forest belt. Further northwestward and toward the dunes of Galicia, Poland, East Prussia and the Baltic coasts, combed pottery was found along with shell-edge decoration; and it appears that the early folk could understand the latter simple technique, but replaced by combing the cord-impressions that they understood less, not having the textile materials to execute them.

The influences from the urban Oriental civilization which went by way of the Armenian and Persian highlands and the Caucasus region into and across Europe south of the forest belt to the North Sea were borne largely by the battle-axe-wielding Corded folk; and ten or a dozen well-distinguishable "Battle-axe cultures" illustrate these human vehicles of transmission. Their cultures are on the borderline of Neolithic and Chalcolithic, for though they certainly knew copper, they were organized for its importation or production only in special localities, localities, generally near amber deposits (East Prussia and Denmark), salt (the Saale valley) or metal ores (the Caucasus.). And in Denmark and Finland the graves contained only Neolithic goods.

Of these cultures we shall mention first a Caucasian one, that was called the Kuban (2400 B.C.) ; and here we can again record color notes. In a cemetery containing over 110 extended burials at Mariupol in southern Russia and at Nalchik in the central Caucasus between the Kuban and Terek rivers, under a mound with 130 contracted burials, the bodies were reddened with ocher, an old custom we have often mentioned, in this case one which has caused the people or their descendants to be called by some the Ocher-grave folk. (Burials are "contracted when the knees are drawn up towards the chin so as to make an acute angle with the spinal column; "flexed" or "extended" when the angle is greater than a right angle.) Red ocher was used too in the very early triple burial at Maikop in the Kuban region. A chieftain's body laid under a canopy decked with gold and silver lions and bulls. Reddened male and female bodies were in the other compartments. Blue lapis and greenish blue turquoise beads probably came from Anatolia; and the chief's transverse and straight axes from Mesopotamia. A gold flasks with silver neck ring, squat jars with reduced gray pottery, and silver vases engraved with mountain scenes and animals (including a horse) were among the grave

furniture. In such 'Royal tombs' there is no evidence that the mound builders themselves exploited the natural resources; archaeologists believe that the chiefs gained the wealth exhibited in their tombs by plunder or as tribute due to their ability to control the metal lodes.

Commoner's graves of the Early Kuban period were found further north in the steppes. These pit-graves each contained a contracted skeleton covered with red ocher. It has been suggested that the unusual absence of domestic-animal bones in the grave goods was due to communal ownership of the flocks and herds, which represented capital. Thus early did collectivis begin in Russia. At Novosvodobnaya (generally but incorrectly called Tsarevskaya), a dead prince wore a linen garment dyed red and purple, and cloak of camel's wool covered with a black hide and sprinkled with red ocher.

The Western Neolithic, which we found to have settled on Mediterranean coasts, bringing a pastoral and agricultural culture and its plain round-bottomed pottery, moved northward, especially up the Rhone valley into central France; and in different places separated into various groups which differed somewhat from one another according to the proportion of the old Mesolithic folk and culture which they assimilated. The colonists crossed France to Brittany, where were found their "Long Barrows," oblong mounds strengthened with stone walling and forming a collective covering for the burials of many people in little cists, each under a pile of stones.

All routes to the west, by land or sea, led to the British Isles, which were attractive to settlers because of the excellent flint and the copper, gold and tin found there; and as judged from the similarity of the graves, these routes included that through Brittany. The Western Neolithic entered southern Britain not long after 2500 B.C. when, because of subsidence of the Atlantic ocean, crossing from the Continent was easier. At the same time a Forest folk from the Baltic regions settled in the east. There were thus established two cultures, "Neolithic A" and "B." The "A" people, responsible for the famous fortified site at Windmill Hill, Wiltshire, settled in "causewayed" camps on hill-tops on the chalk Downs, cultivated bread-wheat and bred cattle and other animals. The yellowish brown vases of Neolithic A were the Western round-bottomed ones. The pots of the Neolithic B, modeled on baskets, at its site Peterborough had everted rims and were decorated with impressions of twisted or whipped cords ("maggots") and bird bones. Though the A folk tended to keep to the Highlands and the B to the Lowlands, after a time the two peoples mingled in the areas of contact. They also exploited the flint mines of Grimes Graves in West Norfolk, using deer-antler picks, blade-bone shovels and chalk-cup laps; a famous flint mine was also located at Spiennes in Belgium.

In Yorkshire, instead of causwayed camps there have been found long ditchlike pit-dwellings burnt-out and full of bones and charred matter due to the custom of setting fire to the hut of the deceased to have it serve as his tomb. This rite is thought to have come, along with the people bringing the carinated bowl forms, from the so-called Michelsberg culture-area of Belgium, the Rhine country and Switzerland (2150 B.C). But the typical form of burial in Neolithic Britain was the Long Barrow mentioned above. These barrows came from the south by sea, probably from Brittany. Stone cists in the west of France and on the seacoasts of Spain indicate a route to Brittany. How the burial customs of these people were modified by those of the Mesolithic folk and the later megalith-builders, is an interesting story, but one which it is not our function to narrate here.

After the destruction of the Cortaillod settlements by flood, their place was taken by the

partially overlapping Western Neolithic culture named from the hill-top camp at Michelsberg in Baden. Its people came southeast from France and spread to pile-villages on Swiss lakes, log-raft villages on lakeside peat, moor villages north of the Rhine, and the flint mines of Spienne. It was nearly a century ago, in a period of drought, that the houses erected on piles in the shallow waters of lakes and marshes were discovered. The culture was much like the Cortaillod, but with advances. Of the various pottery shapes, distinctive ones were flat circular plates for baking cakes and "tulip beakers," supposed, like the ones of Tasian times, to imitate leather bags made from animal scrota. At the late end this culture again overlapped another one, called Horgen, of the Swiss lake area. Their poor pottery and middle Neolithic culture, dating around 2000 B.C. and their well built dwellings built on piles, constituted a cultural regression. This may have been due to a resurgence of Mesolithic peoples; and in a later phase are evidences of the inroads of warriors wielding battle-axes.

The earliest Lake Dwellers were round-heads with low faces and orbits, broad noses and short stature, probably Mesolithic survivors. With these were mixed different varieties of the small Mediterranean long-heads, representing a grafting ultimately of the North African agricultural and animal-breeding folk, in the persons of the Western Neolithic bearers, with a larger proportion of Danubians in eastern Switzerland. Late in the Neolithic, the Corded or Battle-axe folk were a further addition.

Just within the elbow of the Carpathian mountains is the country known as Transylvania, rich in gold and copper. At its southwest end, east of Vinca and south of Tordos, is the great gorge through the mountains called the Iron Gate. Farther east is another break through which flows the Upper Alt river. Farther west is the Tisza river, into which empties the Maros, the two together joining the Danube not far from Vinca. In the Alt basin there developed, at a disputed date which we shall set down as 2300 B.C., the rich culture known from the site of Erösd (Ariusd), just within the mountain elbow in Transylvania. It appears to have developed out of the West Rumanian painted-pottery culture. A contemporary and closely related culture was that of the second stratum of Izvoare; but this was part of a larger complex which will be described presently.

Erösd itself was a fortified settlement on a plateau, some of whose houses, after some simpler ones burned by fire in early periods, were built on the Homeric "megaron" plan but with hearths in the porch as well as in the main room. The Chalcolithic economy was one of agriculture, animal husbandry and fishing, without much industrial specialization, though copper was used for small objects. Adzes were mounted in antler sleeves. Bone spatulas were in use, as in the Morava and Koros cultures. Clay stamp seals were decorated with spirals.

Ornaments included metal bracelets, rings and beads, shell necklaces, limestone beads and bored animals' teeth. Ritual objects included female figurines and animal motifs. The splendid vases were hand-made in numerous family kilns. The designs were angular or curvilinear but included especially S-spirals and meanders. They were executed in white and red or in red on a pale slip, often outlined in black, a polychrome style found at Dimini. But parti-colored reddish pots with black blotches were also produced. The forms included the pedestalled bowls and cups without handles, tubular supports like Early Sumerian "stands," biconical jars with lugs, and ladles.

Two related Copper-Age painted-pottery cultures, called the Tripolje and the Cucuteni cultures, were developed in five phases whose earliest was contemporary with or somewhat

earlier than Erösd. This would put the beginnings of the cultures near 2350 B.C. They developed to the northeast of the Erösd culture in the Black Earth lands of the Russian Ukraine as far as the Dnieper river and into Kiev province. The people of the cultures were farmers using the shoe-last celt (hoe) and breeding pigs and sheep and especially cattle. Bulls and bulls' heads were shown in relief and painted on vases; and the bones of horses, wild or domesticated, were found at several sites. The villages were composed of about thirty dwellings, which were of two kinds. One type was composed of oval houses excavated in the earth. The houses of the other type were known as "ploshchadki," and consisted of layers of baked clay mixed with straw. These bore on one surface impressions of leaves and branches, and on the other showed traces of white paint. Cucuteni in Moldavia was settled on a high point protected by water and was also fortified by a ditch. Most equipment was of stone, bone or antler; but flat axes and pickaxes with shaftholes have been found in the culture assemblage, along with some molds for casting copper. An important item were steatopygous female figurines, which were covered with incised spirals. These, and probably models of stools, huts and animals served ritual purposes.

The pottery was technically excellent and varied, including painted wares; and the vases were often large and lavishly decorated. There was much regional variation, with incision dominant in Moldavia and Bessarabia, and painting on the Dnieper river in Russia. The use of paint along with an abstract style, inspired little by the old basketry or "textile" sources, makes the cultures now before us on our color-stage of great interest to our drama. The earliest phase is represented by only two or three sites, with repeated spirals the chief pottery decoration, so the following remarks apply chiefly to the middle stages, especially those often labelled as "A" or "B." In the Ukraine, incision was the dominant ornament, wide grooves and spirals being employed. In the last phase, when battle-axes and other marks of the presence of chieftains were present, little painted ware remained. In the Cucuteni A period, which was followed by "B," the dominant decoration was polychrome painting in brownish red or warm yellow-browns outlined with black on a white slip; or, more frequently, in red or brown, black and white direct on the reddish-clay ground. Black edging of white designs was sometimes used. At certain sites, painting was combined with incision. The chief motif was a long S-spiral, usually in white on the polychrome field, in a spontaneous, graceful and balanced but rather abstract style. The forms were similar to those of Erösd. Interesting ones included pedestalled feet, "fruit stands," and hollow "supports."

At Tripolje near Kiev in Russia, there was considerable monochrome painted ware, employing black paint on the orange or brick red ground, or on a light-colored slip. Monochrome ware was also decorated with incised linear and punctuate ornament, both rectilinear and in simple broad spirals. Incisions were sometimes so wide as to almost constitute channelling. In early levels, pots were decorated by fluting. Polychrome ware of Tripolje was painted with red and black on a white slip (or with white on the red ground clay). An interesting form was the double stand or "binocular vase," looking superficially like modern opera glasses. Corded ware occurred at Cucuteni; and in some Russian sites cord decoration was preponderant over true Tripolje.

Early vase-forms of the two cultures included piriform jars, and pedestalled bowls and hollow stands as at Erösd. Kraters and stumpy-necked jars appeared in middle levels. Binocular vases were later, as were handles and tripod and polypod bowls.

The cultures seem basically Danubian, influenced strongly by Aegean contacts, somewhat too by contact with the Forest folk of the Eurasian north, as indicated by the presence of comb-decorated pots and antler axes and adzes. Striking resemblances to the vase painting of the Yang Shao culture of western China (2200 B.C.), to be described later, are not enough to derive the western pottery from that source. Its inspiration instead came from the southwest, with original additions by the Danubians.

All the sites of the culture were destroyed, probably by Aryan Nordic (Indo-European) invaders about 2100 B.C. (the "Steppe-Warrior cultures"); but the painting of pottery was resumed again during the period of the middle levels. We shall therefore later meet the Tripolje and Cucuteni culture actors again.

Also approximately contemporary with the Erösd, Tripolje A, Cucuteni A and Izvoare II cultures was another farther south in Wallachia west of the Alt river, and in Bulgaria. There at Vodastra the incised and chip-cut pots found along with Corded ware, were decorated with spiral and fret motifs filled in with white inlay; while also in Wallachia and Bulgaria emerged the Copper-Age Gumelnitza culture. This was based on an economy essentially that of the Boian A culture, but with the use of antler harpoons to spear fish and more industrial specialization and commercial trade. On the pottery, graphite painting was still in use, but now the "positive" style replaced the earlier "negative" style. White paint was sometimes applied before firing, and rustication was also used as a method of decoration. An interesting item was a painted clay model of a head found at a site called Vidra. Various clay and bone figurines, including seated humans, were produced; and clay phalli, marble idols and other models used for ritual purposes were quite numerous.

A culture related to the Gumelnitza, recently named the Bulgarian Mound Culture, spread over Bulgaria. It represented either a Late Neolithic period, starting in the first half of the third millenium, or more properly a Chalcolithic one, for implements of copper as well as flint, polished stone, bone and horn, were in use. The mound settlements consisted of closely packed, gabled-roofed, wattle-and-daub houses on pole frames. Graphite painting in both positive and negative styles was characteristic. There were trade relations with Erösd, Tripolje and the South Russian painted-ware complex; and cultural contacts with Early Bronze Age Aegean lands, Thermi and the Hittite country of Asia Minor. The mounds of Vodastra in northeast Bulgaria contained Corded ware and perforated axes, which have been thought (by a recent author: Gaul) to be evidence of the Aryan invasion of Greece around 2000 B.C. It was believed that the invaders destroyed the Mound Culture as well as the "Early Helladic" settlements of Greece, which we shall view presently. But the anthropological evidence for this theory is as scant as the archaeological. Sixteen measureable crania indicate a basically long-headed "Danubian" (variety-of-Mediterranean) stock, replaced somewhat by a round-headed one about 2000.

It was once thought that there was a definite evolutionary sequence, followed by degeneration, in the Megalithic monuments or large slab-built tombs. In Scandinavia, the sequence dolmen, "passage grave" and "long stone cist" does indeed hold. But in Iberia, an early center of great megalithic expansion, this simple series is not found in temporal sequence; and here and elsewhere there were many modified forms of tombs showing the fusion of various traditions. It has been suggested that the dolmens arrived in the north from Sardinia and Iberia by a short route along the Pyrenees mountains and the west coast of France (the

"Pyrenean route"), while the (later) passage graves came by the longer sea-route around Portugal and Spain. The final phase was said to be in large part a North-European development, with smaller influence from the south. It is not our function to describe in any detail the various types of Megaliths, so important to archaeology and prehistory. It is generally believed that their spread was due to the extension of religious ideas expressed in a funerary ritual. The Megaliths served everywhere except in Egypt as collective sepulchers or family vaults. They cannot be ascribed wholly to any one of the conventional "Ages." Metal was abundant in the earliest tombs of Egypt, Cyprus and the Aegean, and is not uncommon in the early ones of Sicily and Sardinia; in Spain, Portugal and southern France they belonged to the Copper Age. In Brittany, metal was rarer; and in Gt. Britain and northwest Europe the tombs were Neolithic and went out with the incoming of bronze.

Simple chambered dolmens appeared in Iberia 2150 - 2200 B.C. and in Denmark by perhaps 2200 B.C. In the period 2150 - 2000 B.C. the dolmens and the long mounds of Brittany, Ireland, Scotland and Denmark (in that order) were succeeded by "passage dolmens," passage graves, the tombs being often of polygonal or bottle shape, or "gallery dolmens." The passage graves had a chamber entered by a distinct passage lower and narrower than the chamber. In the Iberian Copper Age (2300 B.C.) appeared corbelled vaults, with or without a passage. A circular corbelled passage grave is often called a "beehive", or "tholos." In the long stone cist or gallery grave, chamber and passage were not fully differentiated; and in an area from the Paris basin and Brittany through Germany to Sweden, upright stones supported the lintels and a long narrow rectangular chamber was preceded by a short porch as wide as the chamber. In all the various areas of contact of the Megalithic folk with the Mesolithic natives and with the Western Neolithic people, various special types of tombs have been found filled with sundry items of grave goods (pots, idols, beads and other ornaments, etc.)

Often "beakers," drinking vessels used most often for beer, were found in the tombs; but the association was general only in relatively late periods, and the "Beaker Folk," traders whom we will meet again, were not the original bearers of the Megalithic culture. Beakers of bell shape ("Bell beakers") appeared in Iberia by 2100 B.C. and were distributed over much of western Europe by 1900 B.C. The "classical" beaker with burnished slip was red to black in color and was decorated with zones of "rouletted" hatchings alternating with plain zones, the rouletted decoration being executed with a short-tooth comb. The funnel-necked beakers and the axes of the northern dolmens have been mentioned. In the south the dolmen pots were of simple form with little decoration, geometrical ornament following later. The first bell beakers appeared in the passage graves, and became more general in the corbelled vaults of the Copper Age. Here were found also votive axes, daggers, ornaments such as *Petrunculus* shells or bored teeth, marble ritual adze-models, ivory objects, idols carved by incisions in slate palettes and alabaster amulets; reddish yellow amber, the green turquoise-like stone callais, and black jet, as well as decorated or painted animal bone phalanges.

On the pottery and idols in the western Megaliths, concentric-circle and eye patterns frequently appeared and have been used to trace derivations. Very often the related oculi or twin-eye patterns were applied in a grooved or channelled technique. These were found along the paths of Megalithic dispersion in Malta, Sardinia, the Almerian Copper Age and the caves of Granada, in the caves of southern France and northwest across France to Brittany, in Scotland and in northwest Europe.

The cave cultures of France were introduced with the first stratum of Bize and Camp de Chassey; and related cultures were also mentioned. With Bize II and corresponding settlements elsewhere, a Chalcolithic and Megalithic period was reached. Most of the southern French and Spanish collective tombs were gallery graves. The Beaker period was also Chalcolithic. The adoption, by a French population largely Mesolithic, of the Megalithic religion led to what is known as the Seine-Oise-Marne ("SOM") culture. Its tombs are often marked by carved or charcoal-sketched representations of a funerary goddess holding an axe. The population was a warlike one living by stockbreeding, hunting and agriculture, using copper and some bronze. The pottery was like that of the Horgen culture.

In eastern Sicily, a Chalcolithic culture, Siculan I, included pedestalled bowls and "hour-glass" tankards with high handles, plain or painted in black on a reddish ground with geometric designs. In some late examples, the black was outlined with white. In northwestern Sicily were pit-caves with oval-mouthed amphorae, mugs or carinated cups and double-vases in black or red-wash ware sometimes decorated with stripes of thin white paint. In south Italy the vases of the period were decorated with only "cordoned" ornament, applied strips of clay in relief. In upper Italy, the Copper Age (2100 B.C.) civilization was that of the Remedello culture of the Po valley. Extensive cemeteries of contracted or flexed skeletons revealed substantial communities with farming, hunting and fishing economy combined with rudimentary trade and copper-smithing. This culture was that of the Aegean region with contributions from Bell-beaker and Battle-axe folk and others. In Sardinia, at Angeli Ruju, was a cemetery of Copper Age date (2200 B.C.), in which bulls' heads and high-prowed ships were carved in low relief and traces of red ochre were left on floors. The pottery included carinated cups and vases, cylindrical pyxides. Bell-beakers, tripod bowls and vessels decorated with semicircles or other patterns formed by either incised hatched ribbons or "stab-and drag" lines.

In the third period of the Northern cultures (2050 - 1800 B.C.) , the collective tombs (in Denmark, etc.) were the passage graves, family sepulchers which might contain over a hundred bodies; and thickbutted axes gradually replaced thin-butted ones. Trade was sufficiently developed to bring some metal tools and ornaments, for which the northern people probably bartered the magical yellow amber. Weapons were stone battle-axes imitating Aegean metal ones, flint daggers and arrowheads and disk-shaped mace-heads. These were used in an attempt to halt an invasion of the Battle-axe folk during the period. But if not the latter warriors, at least their culture was triumphant. Pots were decorated with whipped or braided cords, arranged vertically or in panels. Outside influence is seen in angular vases imitating basketry in form, first in a "Grand Style" having decoration with deep stabs alone, then in a "Refined Style" with also finer shell notchings. Later oculi motifs, as in the Almerian Copper Age, were combined with the basketry patterns. In a middle phase, Danubian II socketed ladles and pedestalled bowls appeared. These were found in northwest Germany and Holland in what are popularly known as "Huns' Beds," representing the archaeologists' "Elbe Weser culture." But in the period near the start of the second millennium the Northern Neolithic was split up into several divergent groups: Walternienburg, Bernburg, Havel, Globular-Amphorae, etc. cultures, by an invasion coming down the Elbe river, of a warlike people who buried their dead in "Single (or Separate) Graves." The Globular Amphorae, which were decorated with fillets hanging over the shoulder, were made by a nomadic people who roamed far and wide in small groups. These groups, in part Mesolithic survivors, came into frequent contact with Battle-axe folk and

Danubians making stroke-ornamented pottery.

The pit-graves of the south Russian steppes, contemporary with the "Royal Tombs" of the warriors of the Kuban, have been mentioned. In the park lands of central Europe west of the steppes, Battle-axe cultures emerged late in the third millennium. One of these was the Złota culture of Poland, marked by extensive cemeteries of contracted skeletons. Ritual burials of cattle, pigs and horses indicate the importance of stock breeding. The pottery included beakers, amphorae (as in the next culture to be mentioned), funnel-neck beakers, globular amphorae, and so-called "flower-pots."

The Saxo-Thuringian culture (1150 – 1400 B. C.) was named from the indicated provinces of Germany, but extended over Bohemia and southwest Germany, and is the most important culture of the Battle-Axe group. Faceted battle axes and spheroid mace-heads were used as weapons. The pots were amphorae and beakers, decorated at first with cord impressions (often forming triangles) and later with herringbone incisions. The expansion of the descendants of the Corded folk from a Saxo-Thuringian center, in contact with Bell-beaker settlers, led to the formation of the Złota culture, a similar Silesian group and the "Single-grave" culture of Denmark, in the last case with contributions, as mentioned, from Mesolithic survivors. In east Germany on the lower Oder river and in Poland, there developed an Oder Corded-ware culture whose beakers were like the Saxo-Thuringian ones; but there were also cylindrical vases. Similar cylindrical vases occurred in the Marschwitz culture of Silesia and Moravia, accompanied by pouched jugs with cord impressions, the culture having more Danubian and bell-beaker influence. Farther north developed the Fatyanovo Battle-Axe culture of central Russia. This is known from cemeteries containing contracted skeletons, often under barrows and sometimes reddened with ochre, as also in the Oder group. The most common pots of the culture were globular and decorated with hanging fillets of herringbone incisions or lozenges.

In Denmark were Mesolithic peoples pushed from the coasts by Megalithic folk who settled there. They were further displaced by the people of the Single or Separate graves. The oldest graves, from 2000 B.C., contained fine battle axes, often metallic-looking, and beakers with an S-shaped profile. The next or Ground Graves (1800 B.C.) had poorer axes and beakers decorated with incised herringbone patterns. The later Upper Graves (1600 B.C.) contained degenerate axes, flint daggers (as in Megalithic tombs) and flower-pot vases decorated with rouletted zigzags. In southern Sweden was a Boat-axe culture of the warriors, so-called because the axes were boat-shaped. These were later adopted generally from southern Russia to the Baltic. Union between the Single-grave people and the Megalithic folk led to the formation of the Germanic peoples of later days.

In all the Battle-axe cultures, the individual warrior was glorified by mound-burial with his corded ware, his battle-axe and his drinking-beaker, and often with red ochre. His attitude to life was expressed in the heroic epics of later times. It was the warriors who interrupted the course of the northern Neolithic and destroyed the Painted-pottery cultures of the southeast. As we shall see, these were renewed again around 2000 B.C.

Meanwhile, the warriors mixed with the people of the Northern Neolithic and the Danubians in Bohemia, Moravia and Galicia. The Saxo-Thuringian Battle-axe wielders were merely an outstanding group of the Corded people who had adopted cord impressions on pottery before developing their warrior culture. As a result of further contacts there arose the

Baden culture (2100 B.C.). This developed long zigzag and furrowed pottery patterns along with the Northern funnelbeakers and fluted body-ornament. High-handled forms of Aegean or Anatolian inspiration became characteristic; and in general the pottery complex made up a new group which is called "Danordic." Such Danordic culture was typified at Nosswitz in Silesia, while the related Baalberg culture farther west, between the Elbe river and the Harz mountains, had plain forms of jar and flask. In western Rumania and nearby lands, the invaders were responsible for the Cotofeni culture, with corded ware combined with crusted and handled pottery. It will be remembered that this method of painting after firing the clay was first met in the Boian A culture of Bulgaria, then later, with white, red and yellow paint, in Moravia and on the Tisza in Hungary. In Rumania and in Hungary burial under barrows was practiced, with the contracted skeletons often stained red with ocher. In the Cucuteni and Gumelnitza culture areas, the interruption of Painted-pottery cultures by the invaders led to a so-called Schneckenberg culture with handled and corded pottery.

We have seen previously that the painting of pottery in the Black-Earth lands was interrupted by the destruction of the settlements by Indo-European (Aryan) invaders, whose civilization is known as that of the Steppe-Warrior cultures. In Moldavia, the invasion period (about 2100 - 2000 B.C.) was succeeded by the renewed Painted pottery culture usually known as Cucuteni "B" (though sometimes the five phases of the culture are known by numbered levels). Here the pottery patterns were in black on a whitish or (less often) a reddish slip ground; and they were more compact and sophisticated than before. With the cultures were female figurines, some ornamented with painted designs. Description of some of the other cultural elements has already been given in connection with the earlier levels of Cucuteni and Tripolje. Around 2000 B.C., a related culture in Galicia had pots with black, debased-spiral designs on a white slip along with white and red panels and red hatching. The Tripolje culture of the Ukraine too was at about the same time renewed as Tripolje "B." Its pottery, primarily black on an orange or brick-red ground, included angular forms and two-color painting in which spirals were reduced to circle-and-tangent patterns along with stylized animal figures. In these B, copper was still rare; but there must have been intercourse not only with the Aegean country but also with Turkestan, for the skull of a camel was found in a B settlement.

We have previously described the Southeast Spanish or Almerian Cave culture, which carried on the cave-art traditions of the Paleolithic hunters, but reacted also to the stimulus of the Megalithic religion and to influences from the Western Neolithic. We stated that the settlements of the culture included both those of purely Neolithic times and those which were of Copper Age date. It was after the middle of the third millenium B.C. that the influence of the Megalithic religion began to be felt in the western Mediterranean area, and by 2000 B.C. the Almerian Copper Age was well established. At Los Millares and at Almizaraque arose great trading posts side by side with cemeteries of corbelled tombs, essentially combinations of the Cretan tholoi with the Cycladic and Mediterranean rock-cut tombs. Partial remains indicate that outside the artificially built caves were broad circles making a sort of sacred forecourt for ritual or dance. And the Megalith builders were not above combining the Aegean religion with commercial exploitation. For they had discovered the great metal resources of Iberia; and that the magic hold and awe of the symbols of their religion swayed the superstitious simple westerners and led to mercantile success, begun probably with material trinkets.

The twin-eye or oculi motif incised on some Los Millares pottery was no doubt part of a

mystic ritual. And it has been indicated that the related shell-edge (or channelled) semicircles on vases extended in an arc from Northwest Africa through Iberia to France and Liguria (Italy).

Slags attest the extraction of copper and lead from their ores, and thick perforated clay arcs were thought to be parts of a reverberatory furnace for cupellation to refine noble metals. Silver was smelted from local ores at Almizaraque, and even the gold found with burials was from native river-washings; while from argentiferous copper-ores both silver and copper were extracted. Commerce was highly developed and extensive, including Dentalium shells from the far-off Red Sea, ostrich-eggshell beads, African hippopotamus ivory, white alabaster, blue turquoise, green callais and black jet. Axe-amulets were worn as charms; and ritual objects included schist plaque-idols and owl-eyed female figurines made by painting the knuckle bone of an ox. These were simplified versions of the Aegean type of figurines. Bone and ivory combs were worn; and thick clay plaques, perforated at the four corners, may have been either the loom weights of a textile industry or the wrist-guards whose purpose is given below. Carved unguent flasks were of ivory or white limnestone. Clothing was fastened with shanked stone buttons, conical and prismatic ones with V-perforation and Anatolian grooved bone toggles. The pottery carried on the traditions of Almeria; but some vases were decorated by incision with oculi motifs, including the twin-eye. Some were even painted. Considerable copper was used for flat axes, adzes, awls and even saws, as well as daggers. But flint was still used for fine axe-heads, daggers, halbard blades, knives, sickle-teeth and several types of arrowheads.

Township settlements similar to the two mentioned sites grew up across Spain to Portugal, while cemeteries of collective tombs have been found on the plateau of Granada with oculi vases, flat stone idols, phalange-idols of the knuckle-bone type, and some beakers. In a cemetery at Alcalá in Southern Portugal were beads of amber, callais, and jet, a marble paint-pot, fine flint arrowheads, copper awls and saws, flat adzes, one of two current types of daggers, and "birds'-nest" and other undecorated types of Almerian vases, but not beakers. Quite similar was the almella culture centering about a great cemetery of rock-cut tombs near the mouth of the Tagus river. Here again the grave goods included fine flint work, marble ritual adze-models, curious tanged copper arrow-points, phalange-idols and richly decorated incised schist idol-plaques and ivory objects. There were also cylinders ornamented with patterns in hatched triangles, zigzags, curves and eye-designs said to have magic significance. Here the pottery, along with plain round-bottomed and carinated vessels, included beakers of both the "classical" type previously described and an earlier Iberian type with sharply incised or stamped lines.

According to Childe, "the owl-face engraved on plaques and vases or painted on phalanges and caves belongs to the same goddess whom the Sumerians depicted on the handles of funerary jars and the Trojans on a stele and on face-urns." Moreover, ivory and ostrich eggs came from African coasts, some Millares pot forms and a segmented stone bead from Palmella had parallels in Early Minoan ossuaries of Crete, stone figurines were like Cycladic and Anatolian ones, the plaque idols resembled Egyptian block figures and their Minoan derivatives and clay arcs and a toggle from Almizaraque had forerunners in Anatolia. And the idea of the artificial collective tomb came from the eastern Mediterranean and was translated into corbelled vaults in Crete and the Cyclades. Thus it is easy to believe that the formation of a secondary center of eastern Neolithic and Chalcolithic civilization was effected by colonists from some not exactly known eastern Mediterranean center, or possibly from

several such.

The Beaker culture began to take form in Iberia about 2150 B.C. and was fully developed by 2000 B. C. in Iberia, Sicily and Sardinia, reaching France a little later (except earlier in Brittany, which was closely connected with Iberia by sea) and the Alpine and Rhine regions in the twentieth century B.C. The Chalcolithic culture of France, with beakers in its second phase, extended from perhaps 2250 till early in the first the millenium; in Iberia it began more or less simultaneously but was replaced by a Bronze Age civilization much earlier. In Iberia the Beaker culture mixed with the native Chalcolithic one which was already a fusion of the several elements we have described.

It was the Beaker folk, known by their distinctive weapons, ornaments, pottery and graves, who as traders established commercial relations over regular trade-routes in western and central Europe and diffused the art of metallurgy. They appeared everywhere as bands of smiths and armed merchants trading copper, gold, amber, callais and ornaments. The distinctive weapon was the short flat tanged "West European" dagger; the tang was often flanged, the hilt was never riveted to the blade but was hollowed at the base, as was done in Predynastic Egypt. Archers wore a concave stone plague perforated at the four corners as a "wrist-guard" for protection against the bowstring recoil. Distinctive too were buttons of stone, amber or jet with V-perforations. The Beaker folk, found in cemeteries never very large, were always round-heads. They were very tall, robust and muscular; with large, high heads, long narrow faces, prominent narrow noses, large jaws and square chins. They are often regarded as a hybrid of Alpines with some long-headed (perhaps Nordic) type. The earliest Beaker folk may have been more purely Alpine round-heads, for it is known that they formed hybrid cultures out of contacts with Battle-axe and other peoples.

East of the middle Danube in Hungary, the Tisza and Danubian II cultures were replaced about 2100 B.C. by the Bodrogkeresztur Copper Age, known from cemeteries at a site of that name and at another of equally long name (Pusztáistvánháza). This resulted from the impact on the Tisza culture of the Schneckenberg culture, with a transitional late Tisza site at Tiszaug. In the blended culture early division of society into economic classes is suggested by double graves, with one body buried with rich furniture, the other with none. Interesting too is the fact that of the contracted skeletons, the men lay on their right side, the women on their left. And even the peaceful but now modified Danubians had by that time acquired battle-axes and other weapons. But the pottery, wholly unpainted (and hence of little interest here) carried on Danubian traditions, with high-pedestalled bowls. Other forms were two-handled tankards, a globular pyxis, a long-necked milk jug, and a tall hollow-pedestal pot. Surfaces were plain and polished, with some incision. Weapons, tools and implements were all freely produced from copper, and copper double-spiral ornaments were also popular. This culture belongs to the third general Danubian period; two others of this period were the Baden, already mentioned, and the Jordansmühl cultures, which developed in the Middle and Upper Danube in Czechoslovakia, Galicia and Silesia. The Baden culture arose out of an invasion of the Danubian culture area by the Single-Grave warriors of the Corded or Battle-Axe group. In western Rumania, the invaders were made evident, in the Cotofeni culture, by the association of corded ware with handled pottery "crusted" with paint. East of this area and north of the Danube, the related Schneckenberg culture was marked also with handled and corded pottery. As mentioned more than once, battle axes were often found in graves along with bodies stained

with red ocher.

In this section we have seen that survivors from Mesolithic times, Western Neolithic folk, Danubians, Megalithic builders, various Battle-axe folk (Corded type, Single-grave type, etc.), Beaker folk and others were mixing with each other all over Europe. The first two named peoples we have seen to be those responsible for the Neolithic cultures of Britain which we left during a Yorkshire phase around 2050 B.C. In Britain, elements of the Megalithic culture were superimposed on the Western Neolithic culture; and then in turn came a Beaker invasion into the Lowlands. In the general sense the cultural sequences in Britain: - Western Neolithic, Megalithic, Beaker, - was like that of Iberia, Brittany and the rest of France.

The Megaliths included segmented cists, like those of the Pyrenees region, under long barrows in north Ireland and southwest Scotland, and passage graves with chambers under round barrows on the Boyne river and in central Ireland. Their stones were covered with carved designs, including spirals and conventionalized boats, very similar to those of Spanish Copper Age paintings and Portuguese plaque-idols. In north Scotland and Orkney are tombs which may mark the Megalithic route to Denmark. Special styles of pottery were left in the graves: "Becharra ware" in the cists, decorated with concentric semicircles and other patterns arranged in panels and executed by channeling (as in France) or with twisted-cord impressions (as in Denmark) ; and "Unstan ware" in Orkney, wide carinated bowls decorated with alternating triangles composed of hatched heavy incisions or stab-and-drag lines. These Neolithic developments were Neolithic in type; but the Megalith-builders facilitated trade and exploited the Irish copper and the Cornish tin. The most important market for Irish metal products was provided by the round-headed Beaker invaders.

The Beakers of these people were deposited in individual graves under round barrows by two groups of invaders. A smaller and earlier group coming to southern England from Brittany and the Rhineland brought so-called "B beakers," with reddish surface, S-profile and simple zoned patterns, rouletted or impressed, West European daggers, tanged-and-barbed arrowheads and stone wrist-guards. Others came from Holland and the Pyrenees to Scotland and Yorkshire. The larger but later group, from the Rhineland by way of Holland, brought tall "A Beakers," with profiles like corded beakers and patterns arranged in metopic style, round-keeled riveted daggers and stone Battle-axes. The latter were a tall hybrid stock with a culture blending Bell-Beaker and Battle-axe traditions. The dates of these invasions have been given as about 1900 and 1800 B.C., respectively.

We shall jump to the other end of the Old World to conclude this section by a discussion of the earliest cultures of China, which has not entered our story since the time of Peking man. Chinese traditions began with a period of six and a half centuries of legendary rulers reputed to have reigned from 2852 B.C., although it is known that lapis lazuli had reached Ur and Predynastic Egypt in the fourth millennium B.C. over what later became the great 5000-mile long silk route from China to the west. After a period when people were like beasts," but clad in skins and feeding on raw flesh, the first of the Celestial Emperors, Fu Hsi and his queen taught them music, writing, painting, the use of nets in fishing, domestication of animals, cultivation of silk worms, and also marriage, for before that time men "knew their mothers but not their fathers." The next emperor, Shen Nung, taught the people agriculture, invented the wooden plow, established trade and developed medicine. Huang-ti introduced the wheel and the magnet, built an astronomical observatory and the first brick structures and corrected the

calendar. The fourth legendary emperor, Yao, who wore a yellow cap and a dark tunic and rode in red chariot drawn by white horses, was so virtuous that his radiance was like a shining cloud and he was as brilliant as the sun. Next Shun standardized weights and measures. His sister Lei, presumably forgetting Fu Hsi, again "invented" painting. Shun's aid, the great engineer Yü, who controlled the floods of the great rivers, banished the newly discovered rice wine, and established the legendary Hsia dynasty in Shansi province, whose people were perhaps a ruling class in later cultures. The region is the eastern end of the "corridor of the steppes," a great route of Asiatic transcontinental migration. The dynasty was said to end with an emperor who amused his wife by compelling 3000 Chinese to jump to a doubtfully pleasant death in a lake of wine.

Historians believe that in fact the early cultures of China, numbering about a half dozen in various provinces, began to take form about 2500 B.C. These have been called chiefly by regional names. But they differed not only in their regions of development but in various cultural traits; and they belonged also to peoples of varying racial stock and language. The people of the Northern culture were Tungusic ("Mongol") and Ugrian; the Southern folk were Tai-speaking; the Western folk were Turkic; the Southwestern folk were Tangut or Tibetan; the Li were Austroasiatic, and the Coastal-culture people, living in the region of greatest density of population, were largely Indonesian.

Our available space and our subject do not permit description of the early cultures separately, with their contributions to the later ones, and we must be content with a rather sketchy generalized account. In the Neolithic period, beginning in the third millenium and ending only in the first half of the second Millenium B.C., the people were pastoral nomads only in the south and west, in general being sedentary agriculturalists cultivating millet and rice with digging-stick, hoe, mattock and sickle. The only domestic animals were the dog and the pig, with perhaps cattle and (late) the horse in the west. The people lived in pit dwellings or earth lodges, roughly circular and entered from the top, which they deserted for tree "nests" in warm, wet weather. They wore furs, skin clothing and bark cloth, and in the Coastal-culture area tattooed themselves and stained their teeth black. The economy, organization of society (patriarchal, matriarchal, etc.) and forms of religion varied considerably in the various regions. Animism, ancestor worship, worship of heavenly bodies, serpent worship, a dragon-mother, tree worship, animal and human (including maiden) sacrifice, agrarian religion, ritual cannibalism, river-bathing ceremonies and the orgiastic rites of a fertility cult, all were practiced at some period and area in China. The people were not warlike and built no fortifications. As soon as the soil in any locality was exhausted, they moved their villages to new, more fertile areas.

The pottery in the north included a coarse, poorly fired, gray ware, hand-made, often by a coiling process. It was ornamented by incision or impressed, punctate or applied decoration. There was also a finer ware, made on a rudimentary potter's wheel, in different shapes. As a rule it was highly burnished and from light buff to dark reddish brown in color. In the south, the pottery was undecorated. Here were pile dwellings and other differences from the north.

About 2200 B.C. arose the Yang Shao culture, named from a site in Honan province. It was a painted-pottery culture of the late Neolithic, although at sites in Kansu in the northwest it occurred along with copper or bronze trinkets. This culture received contributions from the Northern, the Southern and the Western, and possibly from the Southwestern cultures. The

painted ware showed a buff or red-brown ground, on which were geometric designs painted in black, red or white. Later, naturalistic motifs were included, at least in the northwest. This painted ware was found at various sites along the transcontinental migration route; and the Chinese pottery has been thought by many to be related to the Western ones, especially the potteries of South Russia (Tripolje A), as we have mentioned.

Contemporary with the Yang Sheo culture, or only a little later, was the Lung Shan or Northeastern culture, another late Neolithic one, marked by smooth black earthenware of fine texture and high finish. The center of development was in Shantung. The Northern-culture elements were stronger in this one than in Yang Shao, though southern elements contributed too. The Northeastern culture in turn contributed in turn to the Bronze Age Shang culture, to be described. It knew domestic cattle and sheep and perhaps horses, the potter's wheel and other features long known in the Near East, but new in China. In northern and central China, a Chalcolithic culture developed, but did not apparently reach the south until late in the second millenium.

Chapter 5 Bronze Age Color

After a short "dark age" in China, rebellion against the wicked emperor was led by one T'ang, who initiated the Shang-Yin dynasty about 1523 B.C. (1766 by tradition). With this dynasty was reached a Bronze Age and an historical one. The people were organized on a tribal basis under patriarchal rule. The provinces were governed by nobles in a sort of feudal system. The Chinese Bronze Age began more than a millenium after that of the Near East and ended five or six centuries later than the Near East. It had the first well developed system of writing; it knew about the same food plants as the Near East (wheat from western Asia; millet, which was sacred, and perhaps rice). China did not have the ox-drawn plow, but it knew wheeled vehicles and animal traction. The domestic horse was definitely known, but the Eastern Asiatic wild pony and wild ass were never domesticated. Horses were not ridden; they were used to draw chariots. Chariots were used here, as in the Near East, not only for war but for pageantry, ceremonial and hunting. Cattle were eaten, sacrificed, had their hides made into leather, drew carts and carried packs; but there was no milk nor dairy economy. Swine and domestic fowl were bred; also sheep and goats, but no wool was spun nor woven. Hemp and silk were woven, but no linen from flax. Matting and basketry were also woven.

Although China had no knowledge of metals before about 1800 B.C., by 1450 or earlier the Bronze Age was fully developed, and bronze working, including cast ritual vessels for ancestor worship, was technically and esthetically of a high order. The designs, some of which were thought to have magical power, for example over the weather, were never purely decorative. They included a highly conventionalized animal art and a geometric art akin to the Neolithic art of southeastern Asia.

Painted pottery had disappeared; but the coarse gray ware continued all over northern China, with the Potter's wheel being used. There was also limited use of a glaze and a fine white ware, incised or impressed with the same designs as on the bronze vessels, rather than painted or glazed. There was carving of stone and ivory, and much jade carving, believed of magical virtue. Bronze and bone objects were inlaid with blue turquoise or mother-of-pearl.

During this period the great feudal lords, especially the Duke of Chou, had to maintain large armies to keep off the Tatar-hordes at the northwest. Weapons were of bronze, but swords appeared only at the end of the Shang dynasty. Socketed spears and two types of battleaxes were also in use. Many plundering border raids were undertaken by the Shangs, obtaining salt, jade from central Asia, and metals from the Yangtze valley.

In the latter half of the second millenium, a semi-pictographic writing was highly developed and inscribed or scratched on animal oracle bones and tortoise shells, often appearing as oracular inquiries and answers. These have been long known from a site near An Yang in northern Honan, a Shang center, and help to make the dynasty an historical one.

Although T'ang was a sportsman and a firm and wise ruler, he was succeeded by 27 descendants of whom one was known as an atheist who blasphemed the Spirit of Heaven, ordered a courtier to play chess for and this Spirit against him, and dedicated to it a leather bag filled with blood which he used as a target for his arrows. Another was Chou-sin, who brought to his harem a beautiful captive who led him to become so cruel and lustful that again rebellion arose, this time under a prince of Chou and his son, the latter deposing Chou-sin and initiating the Chou dynasty in 1028 B.C.

Moving west to India, we should recall that Chanhudaro was discussed along with Harappa and Mohenjo-Daro, though presumably later than these, because Chanhudaro was occupied by the Harappa people. Not long after it was in its turn abandoned, it was reoccupied, probably in the 22nd century B.C., by a people whose pottery, mostly poor polychrome ware, was also found below dark gray ware at a site called Jhukar. The Jhukar pottery was quite unlike the polychrome ware made at the end of the Harappa period. It was wheel-made, was found mainly as fragments of pans and stems of offering-stands, and painted with black, violet-black or deep purple and with red linear designs on a thick cream-colored, orange-red to cherry red or pink slip. Some had two slips, cream and red. At Chanhudaro, as at Tell Halaf and Tell Chagar Bazar two thousand years earlier, broad horizontal bands of red were used to separate the registers. This was often edged with black. In all these sites too, red and black were alternated in a common chevron pattern. Sometimes dark red and light red appeared together. The Jhukar designs were either geometric or very conventionalized, boldly painted plant designs, often in purple on cream or pink. Other motifs included a leaf or bud form with long curved stem arranged in parallel rows, also a "ball and stem" motif. Chevrons often had the down stroke in one color and the up stroke in another. A sherd with the black and red chevron design was found at Zayak in Baluchistan; and it has been thought that the Jhukar folk came by very slow stages from western Asia through that country. They lived probably in houses of matting or mud which have perished except for remains of floors and fireplaces, the latter unknown to the Harappa people, who used open hearths. Though apparently poverty-stricken, the Jhukar people had a well developed culture. They used copper, head-rests, elaborate headdresses and seal-amulets and amulets made of faience, but the seal-amulets were mostly of pottery and free from inscriptions, the round and lentoid shapes and the ornament being quite unlike the square and rectangular shapes of Harappa seals. Some striking analogies between the Jhukar Pottery and the very much earlier Tel Halaf pottery are still unexplained.

Of approximately the same date as the middle of the Chanhudaro occupation was the funerary pottery found at Shahi-tump in Baluchistan, already mentioned. This was probably due to people of the Highland culture who migrated eastward. But this trip too must have been by very slow stages, for the connections of Shahi-tump were with Susa I, dated at least 1200 years earlier. The connections are evident in pottery forms and in such motifs as the Maltese square decorating the centers of dishes. The pottery colors exhibit a shading-off from the black-on-red through the buff wares of Baluchistan and through Sistan on the Persian-Afghan border to yellowish wares in Persia (Iran) and to the greenish tinge seen at al Ubaid.

Rana Ghundei reached its "III C" stratum perhaps as early as 2400 B.C. The evolution which the pottery of level III underwent has already been mentioned in connection with level III B. In C, transitional black and red paint was still used, as in B, but there were not many painted sherds. Many were unpainted but of a pinkish body and often still red-slipped. In sub-level D, early in the 20th century B.C., the hard pink, fine undecorated ware of level C was still common. The decorated ware, though still somewhat like that of C, was that characteristic of all the ancient sites in this region. As in D, vessels had expanded rims, pale interior slips (or self-slips) and a darker band below the rim. In general, the color of material end slip was as before, but the normal red had become a denser, opaque red-orange. Tall narrow vessels, which may have been cinerary urns, became common. Red decoration was scarce. Instead there was bolder ornament in broad black bands of various geometric, waved and festooned types, mixed with

geometric figures in plain solid black. Sometimes there was very dark red between black bands, on a slip so dark that the red made little contrast. The broad black bands, especially the festoon type, were connected by suspensory brush strokes. Following this level, the red pottery with black decoration came to an end. The level has been dated at the start of the second millenium B.C. , roughly contemporary with the Jhukar ware and that of Nal and slightly before Shahitump and the middle range of Chanhu Daro.

We left Iraq, at the end of the short third dynasty of Erech, with the advent of Sargon, the great king .-chse humble origin was mentioned. The dynasty and empire which he founded was predominantly a Semitic one. The Semitic-speaking folk of Babylonia were a blend of Mediterranean stock with the Armenoid variety of Alpine stock; presumably they came from Syria originally. Some kings of the first dynasty of Kish had borne Semitic names, and we heard of Semites attacking the first dynasty of Erech and ruling at Mari, while both Semitic-speaking Amorites and Akkadians have, been mentioned. The latter name is related to that of Sargon's new capital, Agade, and to that of Akki the irrigator, who, after he rescued the baby Sargon from the river in an ark of bulrushes, reared him, to become the Near East's first great conqueror. His empire extended from Elam across Mesopotamia and Syria to the Mediterranean sea. His people the Semites, though politically and linguistically dominant over the Sumerians, adopted in great part the culture of the Sumerians, including their gods. What the Semitic-speakers looked like, we know from Babylonian and Assyrian sculpturings. They had an abundant profusion of beard and wavy or curly head hair; the eyebrows met over the highly arched Armenoid (so-called "Hittite" or "Jewish") nose; lips were full, bodies thick-set and heavily muscled.

The Semitic gods included of course the Mother Goddess (Ishtar, Ashtoreth or Astarte); also Shamash the sun (whence Samson), while the name of the moon-god Zuen (or Enzu), with ultramarine-blue beard, was changed to Sin; adopted from among hundreds of Sumerian gods were An, god of heaven (who became Anum), Enlil, lord of the storm (Illil, Bel or Baal), and Enki, lord of the underworld (Ea, who in a later, neo-Assyrian, epic was the father of the savior of mankind from catastrophe).

The Akkadian dynasty lasted less than two centuries, about 2360 to 2180 B.C. It reached its greatest extent under Sargon's grandson, Naram-Sin, extending to the Cedar Forest, near the angle made by the coasts of Syria and Asia Minor. This forest he stated in an extant inscription to be at the northwestern end of Subartu. This is the land whence many slaves were imported into Babylonia and Assyria. This use of Subarian slaves probably gave rise to the Sumerian word *subur*, meaning slave, in a way similar to that in which the Latin term for the Slavs, from whom slaves were often taken, led to our term. The Subarians were described as namru (light-colored or fair-skinned). Although a famous Semitic scholar, writing in 1930, translated namru as "shining" or "bright" as in a combination meaning a "bright child" (and in a derived sense, good), another, writing in 1944, translated it as light-colored, as earlier authors had done.

Many writers have praised and reproduced the yellow limestone Victory Stela of Naram-Sin, sculptured in medium relief. It shows him leading his troops in a victory over a marauding folk from the western mountains, able to retreat easily into an exceedingly difficult terrain, the stela showing attack on a mountain peak. There is little doubt that the art of the period, due to the fresh and vigorous blood of the Semitic-speakers, retrieved the degenerating, heavy art of the Sumerians and succeeded to a position not far behind that of contemporary Egypt. At least

this is true of the Akkadian sculpturing, which has been called "the best criterion of a nation's decadence or vigor." In another stela at Istanbul, the king is shown dressed in a toga of some ripple-striped, flounced material. Naram-Sin built a great palace at Tell Brak. After the death of his son or nephew, who succeeded him on the throne, the empire fell to pieces in a period of anarchy.

An important city of the Akkadian period was Gasur, which after the coming of the Hurrians in force from the north about 1900 B.C. , was called Nuzu. The Hurrians were the Biblical Horites, a people of "Armenoid" Alpine round-head type perhaps ultimately from the region of the Caucasus or nearby. Excavations at Nuzu conducted through the cooperation of a number of institutions have yielded thousands of tablets which reveal the life of the Akkadians and Hurrians here in intimate detail. They include business documents, marriage contracts and even the records of the trial and impeachment of a corrupt mayor. An inscribed clay map found here was probably the oldest map ever discovered. Light has been thrown by the tablets on many events and customs of the Bible. They are written in Akkadian, but with frequent Hurrian words interjected; and at Ras Shamrah were found documents in Hurrian with lists of Sumerian words and phrases and their Hurrian equivalents in syllabic characters. Incised and painted pottery, some of "Susa II" type, found in mounds near the site of Nuzu, which is ten miles southwest of modern Kirkuk, carries the history of the city back at least to the Ubaid period. But the characteristic so-called Hurrian pottery, which has designs painted in white on a dark ground, dates as late as 1500 - 1200 B.C., long after the general period we are now discussing. It will be described later. In a "northern temple" of the Gasur period was found a statue of Ishtar modeled in clay, partly covered with a green glaze and partly with a thin sheathing of gold, while a couchant pair of clay lions painted red with spots of yellow glazing and a standing pair was glazed green, as were a sheep's head and a boar's head. In Nuzu proper, which was more an acropolis than a city, an audience room in the temple area was found with the lower part of the walls and a dais painted bright red. Painted friezes included the typical twisted-rope motif, a conventionalized sacred tree, and a broad female face with cow's ears and an Egyptian coiffure. On the lower walls of other rooms remained traces of broad painted black and gray stripes.

During the period of civil strife in the Akkadian empire at the start of the 22nd century B.C., the Gutians, a savage Caucasian people from the eastern mountains overran Babylonia and ruled it for over a century (2180 - 2070 B.C.). This was a dark age; and we know little about the Gutian period (2190 - 2065) or people. But toward the end, in the period of decline of their power, Sumerian culture was revived in the south under Gudea, viceroy of Lagash under the late Gutian kings. His statues show him with clean-shaven, grave, intelligent and kindly face. In one of his long inscriptions he stated of his lowly origin that "I have no mother.... and I have no father. " In a dream he saw a warrior with a blue lapis-lazuli tablet, the god Ningirsu, who wished Gudea to restore his temple, and the god's companion, a black storm-bird. The temples were, it is to be remembered, the very focus of Sumerian life, combining all the functions which we today house in our various public buildings. Two inscribed terracotta cylinders tell how assiduously Gudea went about his job of rebuilding the temple, with help from many sources far and wide. He said that the glitter of metal, when the work was completed (due to copper animals guarding the gates ?), could be seen at Kish, 115 miles away. He went on to other building and ruled his people wisely and well. Some Louvre statues of Gudea are of green

diorite. A vase he dedicated is in a dark green steatite carved with dragons and serpents. The surprising flowering of Sumerian art exhibited in the sculptures in a period of political bondage may have resulted from merely the increased leisure of men not busy at war as usual, but more likely was due to the real artistic genius already seen to reside in the Akkadian blood.

Hama in Syria in this period reached its stratum J (2200 - 1900 B.C.), marked by terracotta figurines, pottery models of fourwheeled carts and models of chariots, goblets, four phases of a pottery ware; quartz, red carnelian and greenstone beads, piriform maceheads, metal fishhooks and chisels, coil-headed and toggle pins (the latter with swollen or semi-globular heads) , cast bronze figurines, mud-brick houses, oval hearths and circular bothroi. The chariot models showed that two types were in use, one box-shaped with a rear step, the other open-bodied. At the time of this level occurred the so-called "Caliciform" (calyx or bell-shaped) pottery ware, which dominated the Middle Bronze I period of Palestine, Syria's neighbor, but arrived there (about 2100) from Syria. It was current in Syria throughout the period of level J, this time lag between the initial dates in Syria and Palestine being frequently revealed in the archaeological evidence. At Hama, the Caliciform ware passed through four different phases. Its typical shape was the flat-based goblet.

The oldest Caliciform type was a gray ware with a continuous spiral scratched around the upper body. Bowls were also found in this ware along with grayish green cups. Next the goblets were decorated with white in either of two ways: the horizontal spiral line was painted in white on a black, brown or red body, or the upper part of the vase was covered with white and the spiral incised in this paint. The white-painted spiral line was also applied to other forms than the goblets. The third goblet type was like the preceding two in other respects, but was decorated in black or red on a grey body. The spiral line was incised in the paint on the upper portion of the base, and above this belt was a black band. The fourth type, with more elegant shape, was decorated usually with parallel horizontal bands of black, red or green paint, often with horizontal incised wavy lines between. Associated with the earlier types were ovoid and elongated jars whose surface was covered with a brown, gray or greenish wash, potter's identifying marks often being incised on the necks. Small jars or beakers had spiral-line or parallel horizontal lines painted in red on the yellowish ware; some had the spiral line in black paint. Associated with the last two goblet types were other vessels on which were used brown-black, black or yellow-paint. The goblet trace fell off steadily in amount southward through Syria and Palestine and into Transjordan. It was absent in Ras Shamrah, which seems to have been unoccupied for a thousand years; but the ware was abundant in the great hypogeum (stone-built tomb) of Til-Barsib in Syria. Both Hama K and Hama J levels, it may be noted, were followed by those layers of ashes which usually betoken violent destructions.

Besides the Gutians, the Amorites were exerting considerable pressure on Babylonia; and during the period of Hama J were flooding Mesopotamia. Apparently the late kings of Gutium were given to slave-raiding; and about 2077 B.C. Utukhegal, ruler of Erech, rebelled and overthrew the Gutian rule there, establishing the seven-year, one king, fifth dynasty of Erech. This was during the reign of Tirigan over the Gutians. But the viceroy at Ur in turn rebelled, and the Third Dynasty at Ur was established, soon to become an "empire" under him and his son and to last for a century. The new ruler, Zur-Nammu or Urengur, called himself king of Sumer and Akhad. He rebuilt temples and zigurats and a colossal city rampart, and deepened the canals to admit seagoing craft from the Persian Gulf. He is best known for the great ziggurat of

the Moon-god at Ur finished by his son Dungi or Shulgi and restored by Nabonidus in the sixth century B.C. though this is not as famous as the ziggurat at Babylon (the "Tower of Babylons"). On the stele describing the construction, the king prays while above are flying angels with vases out of which flow streams of life. These were probably the earliest known representations of angels in art.

The pottery of the period was the undistinguished Sumerian ware, of drab color. Tablets of the time give the names of women weavers and the allotments of wool to them in a weaving mill at Ur. The 47-year reign of Shulgi, who was worshipped as a god, was in general a peaceful one, though in his old age he had to fight to hold his enlarged empire. In the north of Mesopotamia, Amorite mercenaries and others took part in the usual wars. In a room off the court of Shulgi's vast mortuary temple and sepulcher, the wall decoration was in gold and blue lapis.

At Ashur, later the seat of the Assyrian empire, a viceroy under Shulgi's son inscribed a gypsum tablet to his overlord. Only three earlier Assyrian rulers are known by name.

The end of the great Dyn. III of Ur came about 1960 B.C. when Ur was sacked by a combination of Elamites and Amorites under a prince of Mari. The latter set up a capital at Isin near Tippur, beginning a dynasty there, while another adventurer began one at Larsa, between Erech and Ur. The period 1960 to 1830 B.C., when Babylon was founded, is known as the Isin-Larsa period or that of the Elamite-Amorite invasions. The pottery was still the usual drab ware.

The Copper-Age culture of central Anatolia at Alishar, which came to a sudden end in the 24th century B.C., was followed somewhat later by an Early Bronze culture. The period toward the end of the millenium or a century later, saw the first rise of the Hittites, who may have entered Anatolia from the north. Under their rule, an Indo-European dialect ("Nasili") was in official use along with Near Eastern tongues. The Hittites included a moderately round-headed, low-vaulted type of tall stature ("Dinaric"), followed by the "Cappadocian" variety of Mediterranean long-heads, also low-vaulted, and hawk-nosed. The culture of the stratum continued much the same as in the preceding level. The way of life, the houses, some pot forms, metal pins and contracted burials were as before. But the new people, called on a the Khatti, Hatti or Proto-Hattians, settled only on a citadel mound, living side by side with the Copper-Age folk, who occupied the hill and city terrace. Besides the Hatti, other peoples have been called "Hittite." The Indo-European so-called Kanisians, Nasians or Tesians were called "Hittite" by their neighbors. The Assyrians applied the name to sea-faring invaders of northern Syria who conquered a part of the Hittite empire. Biblical references apply the name to Hurrians in Palestinian hill country prior to the conquest by Joshua.

Alishar III, rather than its "II" stratum, was that which followed the Copper Age Alishar I; and it was followed by Alishar II. This unusual numbering was due to initial failure of the excavators to establish the stratification correctly. The III level was marked by the sudden intrusion of the so-called Cappadocian Painted ware, which replaced the red ware. This arrived in the 24th century, and the stratum lasted until about 1800 B.C. The pots were painted with pleasing though relatively elaborate geometrical designs in two or three colors. The chief patterns were painted in gray or black, sometimes brown, usually on a buff or light brown clay ground. Red-brown lines or fillings were also often applied. The vessels were handmade ones, often in rather clumsy shapes. The cultural features of level III resembled in many respects those of stratum I, but the excavators state that the skulls of the people of III were "like those

of Period II," namely, round rather than long, rugged, and high, the face being broad. But the heads of both the Hittite round-headed Dinars and long-headed Cappadocian Mediterraneans were low-vaulted. Perhaps the people with painted ware referred to by the excavators preceded by two or three centuries the people of the earliest records, who no doubt were the people of stratum II.

At Kusura, a considerable distance west and somewhat south of Alishar, the old "A" culture developed into that called Kusura B, which occupied most of the second half of the third millennium B.C. The houses of this culture-period were made up of rectilinear rooms, the walls being of mud brick or packed clay shaped between boards, on stone foundations. Here were used a number of different varieties of pottery. Some pots with bodies of red clay, buff clay or black clay were covered with slips of the same color as the body. But buff clay was also treated with a brownish gray slip, with a red slip and smoothed, with a red slip and the surface mottled with brown-black ("Mottled ware"), and with a bright red slip and reserved band made to expose the buff surface ("reserved-slip ware"). The burnished red slip was sometimes a brilliant red, and often a dark red. There were also pots with gray body and red to silver-gray or black slip, and

coarse surface-smoothed wares of red, gray and black color. Most of the pots were well burnished. Decoration consisted of ribbing and grooving or of applied plastic knobs, ridges and similar devices. Handles were often twisted to imitate ropes. The most common shape was the "Kusura bowl" with horizontal ribbing. The culture just described has been found also at several sites south of Kusura, and had connections in the direction of Ankara (northwest).

There was a transition level between Kusura B and Kusura C dating about the 20th century B.C., in which the tournette or slow potter's wheel was introduced. A common ware of this period had a buff body covered with a matt red wash or a burnished or unburnished red slip. Many bowls had the interior up-slipped, but with a red cross painted on the buff interior. "Red-cross ware," we shall see, occurred also in the contemporary culture of Troy V.

The wealthy Second City of Troy was destroyed about 2300 B.C., and was followed by the economically poor cities III, IV and V in the period ending about 1900 B.C. Face-urns and two-handled goblets were still being made in red-wash ware, while III and IV imported Early Helladic pottery. But in V the color was sometimes painted only as a cross on the insides of shallow bowls, as we have just seen in Kusura; and in V began the production of another fabric which continued into the next two settlements. This was the fine silver-gray "Minyan ware," which owed its color to reduction of iron oxides in the clay by controlled chemical reduction. The gray wares varied in color from light to very dark gray, and were accompanied by an oxidized red variant. More will be said about the Minyan and Middle Helladic cultures when we turn to Greece.

The Trojan red-wash ware was a fine pottery common in various strata. It was executed mainly in bowls or basins with a large loop handle. The wash was lustrous and varied in thickness and in color from a bright to a dark red, often with a purplish tinge. It sometimes covered the whole vase, inside and out, sometimes only the outside. Sometimes the inside was decorated with two broad bands crossing in the center.

On the southern side of Asia Minor, at a site in the Tarsus region, were found sherds of a black-slip ware like a similar one of Cyprus not so very far away. This pottery was characteristic of the end of the Early Bronze and of the Middle Bronze periods, dating in the general period

about 2400 to 1800 B.C. Still in this general region, but turning inland and east, we come again to Tell Brak in Syria. Here the great palace of Naram-Sin, excavated a decade ago, survived until about the end of the millenium. Many cuneiform tablets, of a period beginning a century later, were found here along with early examples of the important "Khabur ware" (named from the region of the Habur or Khabur river) and goblets on which were drawings of birds and geometric designs in white on a black or red ground.

The Khabur ware had a very long life and may have flowered first in the 19th century, when there were disturbances and decline in prosperity on the Khabur. The destruction, abandonment and rebuilding of settlements were probably due to infiltration in force of the Amorites. The Khabur pottery had designs painted in matt red, reddish brown or black on a light (greenish gray or cream to buff) surface; in Egypt, sometimes on red or orange. These designs were simple geometric ones, almost entirely rectilinear, often merely annular lines. Similarities with earlier pottery from western Iran, especially from Tepe Giyan, suggest that the Khabur ware may have derived from a tradition which in the foothills of the Zagros mountains (between Iraq and Iran) went back several centuries. A painted pottery like that of the Khabur region was employed in Syria in Hama level J, dating perhaps at 2200-1900 B.C. But the main period of flowering of the Khabur ware was from 1800 to after 1600 (later in Syria than in northern Mesopotamia), though very late Khabur ware was found in Hama stratum G after 1550. It was extensively used in Chagar Bazar level IA toward the end of the lath century. In spite of the known movements of peoples in the north and in Syria, and the similarities of the Khabur ware to some of Iran's, it is more likely that the former was due to strong culture-contact influences than to a migrating people. For in the period after the weakening of the strong empire of the Third Dynasty of Ur the only important known elements of population mixed with the predominant Semitic Akkadians were the Semitic Amorites from the west and the Hurrians from the north. The route by which the influences travelled from Iran to the Khabur seems to have been by way of the region in Kurdistan southwest of Lake Urumiyeh (Urmia), for here there was found a pottery almost identical with the painted Khabur ware. The changes may have occurred with accelerated tempo after the fall of Ibi-Sin, son of Gimil-Sin, god-king of Ur III, under the combined blows of Elamites from Iran and Amorites from the west, just after the middle of the 20th century B.C. It was an Amorite prince of Mari, Ishbi-Irra, who set up a new capital at the city of Isin, in what is known as the Sea-Country, and founded a dynasty there which lasted until about 1734. This Sea-Country or Sealand was an alluvial strip of land along the Persian Gulf. From here came one of the earliest law-codes known to us, two centuries earlier than that of the great conqueror and law-giver Hammurabi, a code long thought to be the oldest.

At Judeideh in Syria in its tenth to sixth strata, dating roughly 2100 to 1200 B.C., a hard light buff simple pottery series ran throughout this very long period, with comb decoration frequent; also a painted series. At Qal'at er-Rus, following the previously described stump-base and burnished red-slip period, level-V pottery included painted buff wares, plain wares, miniature light ware, burnished, stone-ware and "scrabbled ware." The last-named pottery had the light brown to dark red surface covered with a light wash or slip accentuating the decoration, which consisted of one, two or three wavy lines separately "scrabbled" through the slip into the darker body clay around the shoulder of the vase. The date of this level was around 2400 B.C., while level IV followed after a gap at about 1900 with similar pottery except for the

scrabbled ware.

Palestine reached its Early Bronze IV period about 2300 B.C., the period extending to about 2100 or 2050 B.C. Its pottery was a "rather sickly" red, brownish red or light gray ware, always poorly levigated and decorated with alternating painted wavy and straight lines. In the Middle Bronze I period which followed, extending to 1900 B.C. or later, one which was actually a Bronze age while the "Early Bronze" periods were really Chalcolithic, the pottery paste had a pink or buff color and was finely levigated, sometimes with a yellowish or greenish tinge and mixed with white grits. When pink, the ware was sometimes covered with a grayish buff slip to imitate buff mares. The vases were often caliciform and had "envelope" handles, unlike the "pushed-up scalloped" handles of the previous period. Types of handles depended in part upon custom and in part upon usage of the pottery, heavy ledge types, for example, being used for lifting large vessels while more graceful high-looped types were used for tableware.

Though the term is somewhat indefinite, most of the Age beginning with Abraham and preceding Moses, which is called Patriarchal, fell within the Middle Bronze Age of Palestine. A well-reasoned study of the chronology of the period from Abraham to Moses and Joshua may be found in Jack Finegan's "Light from the Ancient Past" (Princeton University Press, 1947), whose arguments are based on Biblical accounts, archeological findings, and the chronological findings of Professor Albright of Johns Hopkins University. According to Finegan, Abraham migrated from Ur to Canaan in 1935 B.C., Jacob went into Egypt in 1720, the Exodus from Egypt under Moses occurred in 1290, and the Israelites were conquering eastern Palestine about 1250 and western Palestine about 1230.

In the twelfth chapter of Genesis, the history of the Hebrews began with Abraham's call to migrate to Canaan. A picture of the patriarch, with his wife Sarah and his nephew Lot drawing near to Sichem in Canaan, was painted by Johann Wilhelm Schirmer, 19th-century German painter of many Biblical landscapes. Abraham's blessing by a kindred spirit, Melchizedek, King of Salem and "priest of the most high God" (Genesis XIV), has been painted by Hippolyte Flandrin, French painter previously mentioned. E. M. Lilien has drawn Abraham counting the stars, for in Genesis XV he has been told by the Lord that his descendants will be as multitudinous as the stars. Abraham welcoming three angels (Genesis XVIII) was painted by Karl P. Brulov, 19th-century Russian painter.

A well-excavated and studied city of southern Palestine was Debir, earlier known as Kiriath-sepher, taken by Caleb's nephew or by Joshua, according to two different Biblical narratives. "his city, southwest of Hebron, has been identified as the mound now known as Tell Beit Mirsim. Its earliest stratum, level J, was laid down in the 23rd and 22nd centuries B.C. , hence falls near the end of the Early Bronze period. The outstanding pottery type of this period was a large jar with "wavy-ledge" handle, flat base, slightly flaring mouth ("hole mouth"), nearly always painted in reddish brown with a "net" or vertical-band ornament. This ware was nearly identical with one called "Canaanite" at Jericho. The vertical band painting was very common and closely related to vertical-band-slip ware of Bethyrah and other sites in Galilee and southern Syria. The wavy-ledge handles were a combination, during the period of transition from Ghassulian to Early Bronze, of simple knobs or projections native to Palestine with a wavy treatment of the corresponding Egyptian handles. At Jericho, the large jars of Canaanite ware were often decorated with "rope-molding" around the shoulders or neck. At Tell Beit Mirsim, hereafter abbreviated T.B.M., decoration was also by combing, either plain or pattern-combing.

All over Palestine, and in Transjordan and parts of Syria were smaller bowls with inverted (turned-in) rims nearly always smeared with a thick red-ocher (hematitic) slip which was continuously burnished, producing a dark red surface with numerous cracks, varying to brown. There were also cooking pots and jars with a closely meshed net design in reddish brown paint. Here bowls were equipped with a "beak" form of sidespout, and elsewhere in Palestine with a "pipe" form, related to "teapot" spouts of Anatolia of a somewhat later period and probably coming earlier from Egypt. Vessels of various forms appeared also with buff color and with the potters' identifying marks on them.

In level I, at the transition to the Middle Bronze period around the end of the third millennium, the typical decoration was combing, in horizontal and wavy bands, together with rows of notches. The band-combed caliciform vases of Jericho, where the pottery was called "Late Canaanite," and of T.B.M. were cream-colored or gray. A sherd of the period had a serpent with scales indicated by punctures probably filled with shiny organic substances. Serpents molded in relief on the surfaces of vessels, always used for cult purposes, were extremely common in ancient Palestine, and they were also known in the cult-vases of northern Mesopotamia. "Envelope" or "folded wavy ledge" handles were characteristic, as were the paste colors, namely grayish buff, yellowish gray (pale drab), and gray with a greenish tinge. Level H (20th century B.C.) was similar to level I, but with some new pot forms, the colors being variations on buff, light and grayish. Bowls and cups were caliciform in shape, while jugs became wide-mouthed, with pinched lip. From this level (or the next) came a juglet, vertically burnished on a reddish buff slip, which was the forerunner of a black type, a well-known one to be described later, the Tell el-Yahudiyyeh juglet. In stratum IV of Megiddo from the 21st through the 19th century B.C., the architecture was massive, and three buildings were of the megaron type, remarkable for this early date in Palestine. The pottery was mostly a well-fired, wheel-made red burnished ware; but there was also a hand-made ware with the envelope ledge handles typical of the first Middle Bronze age, and buff in color. At 'Ai or et-Tell, north of Jerusalem, in three caves of a necropolis were found some 200 hand-made pots painted with geometric designs in purple. These were of the period of transition from Early to Middle Bronze Age. Slightly later, of Middle Bronze age, near the end of the third millennium, was the pottery of Tell Umm Hamad in the Jordan valley near the junction of the Jordan and Jabboq rivers. This was a brownish-gray or light creamy-gray ware covered with a wash of the latter color and having envelope ledge handles.

When Moses promised his people a land of milk and honey, he also described it (Deuteronomy 8, 7-9) as a land "lacking nothing, whose stones are iron, and out of whose hills thou canst dig copper." As a matter of fact, the rich copper and iron deposits of the Wadi Arabah, at the border of Palestine and Transjordan (ancient Edom), have been rediscovered by Nelson Glueck, who described them in his book, "The Other Side of the Jordan" (1940). Following up the discovery of a single fragment of pottery, he located many walled sites in Transjordan of the period 2300 to 2000 B.C. as well as the copper mines of the time and district. It is recorded in the Bible that the fortified sites were conquered, one by one, by Eastern kings led by Chedorlaomer (1625-1610 B.C.). The ruined walled sites lay along the King's Highway, ancient (and modern) road across Transjordan to the northern end of the Gulf of Aqabah, which extends north from the Red Sea toward the Dead Sea, with the Wadi el Arabah between them. War was waged between the Israelites (and Judaeans) and the Edomites for about 200 years for

possession of the copper region. At one site, Khirbet Nahas, Arabic for "Copper Ruin," the area was found black with copper slag and covered with ruined furnaces for smelting. The Bible tells us that Tubal-Cain, a Kenite, was the first forger of copper and iron instruments (Genesis 4, 22); and that the Kenizzites, related to the Kenites and the Edomites, lived in the Valley of Smiths (I Chron. 4, 12-14). The Kenites and Kenizzites were professional wandering smiths; and possibly Moses, whose wife was a Kenite, learned from them how to make a copper serpent (Numbers 21, 9). The home of the Kenites was Edom and the Wadi Arabah, which is believed to be the Valley of Smiths, while the City of Copper was on the site of Khirbet Nahas. We shall see later that Solomon, in addition to being a merchant prince middleman trader between Egypt, the Hittite country and Arabia, a horse-dealer, shipping magnate and great builder, was also a copper king, developing and trading the Arabah copper.

In the Early Bronze Age period of Transjordan (23rd to 20th century B.C.), the people were an agricultural one, living in disunited feudal citystates and making excellent, though coarse, handmade pottery. The land was "flowing with milk and honey," rich in grain and metal, and replete with wine. The people frequently erected megalithic monuments and built dolmens. Then and in the 13th century they developed stable kingdoms in Edom and Moab farther north, near the Dead Sea. The messengers of Moses, when he led his people across Sinai, promised the kings of Edom and Moab that the Israelites would stick to the King's Highway, turning neither to right nor to left and would pay for food and water.

Had the Exodus through southern Transjordan taken place before the 13th century (and after 1900 B.C.) the followers of Moses would have found no well-organized and fortified kingdoms to bar their path. For about 1900 B.C. the entire civilization of Transjordan was utterly destroyed, only a few places continuing to exist till about 1750. Possibly the destruction was due to the same movements which brought the Hyksos invaders into Egypt, an invasion which we shall soon meet. This civilization was renewed again only in the 13th century, a gap of 700 years intervening. Whether or not there is any connection of these events with the destruction of Sodom and Gomorrah (Genesis 19, 24-28), we cannot definitely say. A survey of the evidence, made in 1942-43, however, led to the conclusion that these cities were in an area now submerged beneath the rising waters of the Southern Dead Sea, and that their destruction was effected by a great earthquake accompanied by lightning, ignition of natural gas, and general conflagration.

Belonging to the Middle Bronze I period as the site of Tell el 'Ajjul (the Mound of the Little Calf), four miles southwest of the Philistine city Gaza on the Mediterranean coasts of southern Palestine. It was here that, as we shall soon see, we learn of the work of a person who may be regarded as the first painter of definite individual personality. The site, excavated by Sir Flinders Petrie, dates back to a Chalcolithic period, at which time the rock-cut tombs contained copper daggers and pottery. According to Petrie, of a series of palaces at the site, the first was erected by a people who introduced bronze from northern Syria and whose invasion of Egypt founded its Dyn. VIII (21st century B.C.). The second palace was built by the founders of Dyn. XII (1991 B.C.); a third and fourth by the Hyksos (after 1700). In the tombs, humans, asses and horses were buried together. The "great horses," imported for riding, were buried with great care. The pottery was of a flat-bottomed, non-Egyptian type. Its paste had the distinctive colors (light grayish-buff, yellowish-gray or greenish gray) already mentioned for Middle Bronze ware of T.B.M., especially the light yellowish gray or "pale drab." (Professor W.F. Albright thought

Petrie's date, 3300 B.C., for the "Copper Age" tombs much too high and reduced it to 2350 B.C.; later still much more. The pottery in the three types of tombs of a necropolis contained ovate large jars with vestigial ledge handles, as well as caliciform cups. In a "Courtyard Cemetery" there of the first half of the 18th century B.C., were found carinated bowls with flat or dish bases, grooved rims and reddish slip.

Egypt began its Dynasty VI some time around 2300 B.C. with Teti as its first king; but the outstanding figures were two pharaohs named Pepi (I and II), who between them reigned nearly a century and a half. The kings were priests of Re. During much of the reign of Pepi II, whose accession occurred when he was six, Egypt was prosperous; but before he reached the age of one hundred, foreign enemies menaced the borders and great nobles within had usurped much of the power. A general of Pepi I, using desert Libyans and Sudan negro troops, had thrashed the Heriu-Sha ("those who dwell upon the sands," Asiatic Amorites, etc.), outflanking them by going by sea up to Mt. Carmel. After the second Pepi's death, there was a king a year for three years. The Cairo museum has a life-size beaten-copper statue of Pepi I and of his son. The iris of the eye is made of rock crystal with a flake of ebony behind it to give a lifelike-sparkle, and the white eyeball is modelled in ivory. Useful agents of the pharaoh were the princes of Elephantine. They recruited negroes and Nubians as soldiers, police and laborers, collected tribute of gold, wood, gums, resins and granite, secured the trade routes to the south (to Kush, or Kash, which was Nubia and Ethiopia), and even made adventurous trips to bring back ebony, aromatic roots, elephant ivory and other prizes. One prince boasted on the wall of his tomb at Assuan of bringing back a dwarf. The king, hearing of this, wrote with impatient eagerness to request all possible care for the safety of the dwarf, whom he would rather see "than all the treasures that are brought from the land of Punt (south of the Red Sea)." Other princes had great power in the land; their tombs became increasingly rich, while the pyramids housing the kings' remains showed a falling off.

In the tombs, as at Sakkara, there was a greater variety of painted scenes than before, more freedom from conventions and good drawing of birds and animals, but perhaps less artistic quality. In these tombs were found examples of faience, dominantly green and blue, glazed decorative earthenware rivalling the products of this sort of the medieval Latin countries. A change in burial customs occurred; in place of portrait statues there appeared little figures of servants busy in domestic work. Perhaps the "Ka" was no longer thought to need a body for security; because of greater freedom and permanence, it needed not only food but servants to prepare it. The new statues were in painted limestone.

The breakup of the dynasty occurred about 2120 B.C. It was followed by the dark age called the "First Intermediate Period," with Dyn. VII and Dyn. VIII continuing a weak rule at Memphis and Dyn. IX and Dyn. X at Herakleopolis in Middle Egypt. It was a period of civil war, Asiatic invasions, setting up of local councils in the Delta cities, and general anarchy. Petrie believed that the IX. Dynasty were invaders from the Lybian desert, and that Nubians, "People of the Bow," previously hired to defend the southern frontier, established a principality in Upper Egypt (and left tombs at Qua). The Egyptian sage Ipuwer complained that "The troops which we recruited for ourselves are become a people of the Bow, and have come to destroy." He said that "they that possessed clothes are in rags; he that wove not for himself now possesseth fine linen." And that gold and lapis lazuli, silver and malachite, carnelian and bronze were fastened on the necks of female slaves, but that housewives would like to have something

to eat. The lamentations of Ipuwer in his "Admonitions," a translated papyrus, sound as if a revolution had given former servants and slaves power over the nobles. It was a time of gloomy pessimism when men went to the crocodiles at their own accord. In such a period it was hardly to be expected that art would flourish; and nobles were no longer able to afford rich tombs on whose walls could be painted colorful scenes of the day.

But at length, after princes of Thebes (Nubians, according to Petrie) had defended the Hieracleopolite kingdom from invasion, the ruling prince of Thebes proclaimed himself first king of the Eleventh Dynasty and reestablished order in Egypt. In the Intermediate Period the place of the Ka statues had been taken by wooden groups, many crudely painted, taking parts in scenes of daily life. Some are still brightly colored and charming, and give information, for example, about the art of spinning and weaving of the time. It was during this period too that the insides of coffins were painted with pictures of food, clothes, flowers, jewelry and religious texts, the latter the beginning of the Coffin Texts of the next period. Their magic comforted the Egyptian with the belief that his daily wants in the next world would be provided for.

The burials of the period were colorful affairs. The body was carefully mummified and meticulously linen-wrapped; the head, on a wooden or alabaster pillow, was turned so as to look through a painted false door, to more easily read the magical texts around the coffin. Outside the door were two painted eyes, representing the deceased looking out on the world. These sacred eyes had a double symbolic meaning, connected with the eye of Horus, which, having been offered to his father Osiris as the magical food to effect his resurrection, became a religious substitute for the food of offering. Some coffins were enclosed in an outer wooden case on which the double eye was repeated. In the burial chamber were four "canopic jars," at first plain stone ones; in the present period representing a jackal, a monkey, a bird and a human. The period was marked by an extension of kingly prerogatives to the nobles, but at the same time a growing sense of social justice. The Dyn. XI kings were mostly called Intef (or Antef) and Mentuhotep. The third of the latter name started a new royal custom in being buried not in a pyramid, but in a tomb-chamber in a deep tunnel in the cliffs at Deir el-Bahri near Thebes along with a small pyramid in his funerary temple outside. Behind the temple were the tombs of five women, each of whom styled herself "the only royal favorite."

With Amenemhet I at about 1991 B.C. began Egypt's Dynasty XII, constituting the Middle Empire, one of Egypt's greatest ages. This pharaoh was a reformer and able ruler who curbed the power of the nobles and hereditary judges and brought prosperity to the land. The local god Amun of Thebes was made the chief deity; but to appease the sun-worshippers of Heliopolis, he was identified with Re as Amun-Re. This was an age when literature, sculpture, painting, mathematics, medicine, wood-carving and the fabrication of jewelry reached their greatest heights in Egyptian history, and bronze came into general use. Copper was mined in the eastern desert and in Sinai, and the turquoise mines were reopened by the third king of the dynasty, while gold and spices were imported from Nubia. Under several pharaohs named Amenemhet (or Amenemhes) and Senusret (or Sesotris), in long reigns, peace and order prevailed for over two centuries. Instead of building great stone structures for the glorification of the rulers, public labor was applied to drainage, connecting the Nile with the Red Sea by canal, the development of the Faiyum and a wall to defend the Isthmus of Suez against Asiatic Semites. But the nobles still retained great power.

In some boxes of jewelry which escaped robbers in small brick pyramids at Dahshur,

were some necklaces and pectorals of great beauty. A pectoral of Senusret III (1879-41) was made from blue lapis lazuli, red carnelian, turquoise or blue glaze and fine gold cloisonne. The well-known tombs of Beni Hasan, dating in the first decade of the 19th century B.C., contained many interesting but badly preserved wall paintings, but must have been once "gorgeous with color" and covered with pictures of daily life. Here a semi-nomadic chieftain, of the Semitic name Absha, is shown leading 37 of his Amorite clansmen into Middle Egypt. It is said that their asses are bearing stibium, a black pigment, from central Transjordan to the court of the monarch of a district of Middle Egypt. This may be one form of the "eye paint" referred to in many inscriptions. The Asiatics were dressed in manycolored woolen tunics and even the saddle-cloths of the asses were dyed in gay colors. The women wore longer tunics than the men, whose tunics stopped at the knee. Some of the men were in white. Most of them wore sandals, while the women wore low leather shoes. The men were armed with composite bows, throwing-sticks and javelins or darts; one of them carried an eight-stringed lyre. Probably these people were a band of itinerant smiths or tinkers; and the stibium may have been a gift to aid in securing good treatment in the land of the pharaoh. Other tombs exhibited scenes of daily life, battle scenes, sieges of cities, and even landscape, along with a more formal style. One of the 39 tombs depicts scenes of fowling and fishing in the marshes in a decorative, balanced composition, well spaced with fine symmetry, but withal crowded and "a good example of the golden mediocrity of Egyptian painting " (Mary H. Swindler's "Ancient Painting"; 1929), since prepared in advance commercially, like tombstones today. The flat colors were terra-cotta red, yellow, green, brown and white. A cat seen against green, red and black papyrus was done in black, yellow and brown with touches of white and red. On the water were blue ducks with red wings and heads. Various plumage was red, blue, yellow, white and black. Clearly there was little literal realism here. Wrestling scenes from another tomb showed both rhythmic action and supple line. In the various wrestling positions, the artist has shown one contestant in a clear red, the other in a reddish brown silhouette, the two together achieving clarity along with good contrast.

At Kahun, a whole provincial Dyn. XII town has been found. Here the walls of houses were sometimes painted in gay red and yellow. On the whole, the art of the period was a conservative, academic one without the dignity of earlier painting and notable chiefly for the variety of its subject matter. The Egyptian story of the adventures of Sinhue, a fugitive in the 20th century B.C., who was pardoned and reinstated in royal favor after many years in Syria, gives us a good picture of the life of the times. The story has become a famous one in literature. As the chief benefaction of Sinuhe's old age, the pharaoh promises a great funeral with the courtiers following his coffin, which "shall be in a gilded case, the wood painted with blue."

Turning to the island of Cyprus, we find there, about 2500 - 2250 B.C., the Early Cypriot II period, in the process of development of the full Early Bronze Age prosperity the island was soon to enjoy. Changes from E.C.I were small, the chief one being replacement of the rather thin irregularly burnished light-red slip on the pottery with a thick, regularly and highly burnished dark-red one. Shapes changed little, especially in the larger vessels, but there was growth of a new panel style of incised decoration and of formalization. The proportion of small pots to large ones deposited in the graves increased, and also multiple burials in one grave became more common.

Early Cypriot III, about 2250 - 1930, was the most prosperous and densely populated

period of the Early Bronze Age, with apparently greater concentration of former agriculturalists in the towns. This change was no doubt connected with an increase in copper mining, as shown by the increase in quantity and quality of the metal objects deposited in the graves. The famous Cypriot daggers with hooked tang continued, but with the hilt changing to a heart-shaped rather than the straighttopped form. Pins and knives showed development, and tweezers and tanged razors appeared along with chisels and awls hafted in bone handles. Gold was still rare, but silver appeared alloyed with lead. Turning to the pottery, we find the culmination of tendencies observable in E.C.II, but with a continuance of the older traditions. Red burnished, Black burnished and Black-topped wares continued in use, with the quality of the first-named ware decreasing during the period, while a variety of it appeared with the surface mottled with black patches surrounded by buff or brown areas. The bichrome Reserved-slip ware did not develop further, but a new "White Painted I" fabric appeared. This ware had a thick sticky red painted decoration on a buff slip, which later became white. There were changes also in pot forms, with greater variety and new shapes appearing in the smaller pots. A very common form was a gourd-shaped flask without handle or juglet with handle, usually with everted rim and incised decoration. This type of ornament became completely stereotyped. Common designs were imitations of a carrying-net, concentric circles linked by groups of parallel lines, and continuous zigzag lines in bands outlined with straight lines.

The information on E.C.III so far recorded came chiefly from the great north-coast Cyprian cemeteries at Vounous and Vrysi tou Baba near Lapithos. But at many other sites regional variants and pottery types developed: a White-polished ware, with a burnished buff to cream slip replacing the usual red; at another site, elaborate use of heavy relief ornament; and elsewhere the White-painted ware. This last was closely related to the Dark-on-Light pottery of Phylakopi on the Cycladic island Melos and of the island of Rhodes.

The everyday life of early Cyprus has gradually become known, in part through the aid of the Cypriot potter's flair for the modeling of scenes of daily life. The graves give few hints of undue concentration of wealth or power, or stratification of society with social distinctions, village life being much as it is today. Extended burial in a dorsal position was now more common than the old contracted attitude. The tombs had become family sepulchers. Religion may have been naturalistic, featuring a chthonic snake-god and perhaps bulls. The detailed model of a shrine in a circular enclosure indicates the prevalence of esoteric festivals; and love scenes, perhaps religious in character, were also revealed. Apart from the copper mining, communities were mainly engaged in cattle-raising and dairy-farming.

Oxen were yoked to a primitive wooden plough. A fine basketry was made from plant fibers, and the spinning whorls of a textile industry have been recovered. Garments were fastened with a pin on each shoulder, and conical hats were worn. Earrings and hair-rings were also worn. Daggers with wooden sheaths covered with decorated leather were slung near the hip of the men. The skeleton of a horse from Vrysi tou Baba marks the first known appearance of this animal in Cyprus. Donkeys and mules, and possibly camels, were also in use. A single excavated house of the period was L-shaped, with two rectangular rooms and a walled court. Contacts with Crete and the Phoenician coast are indicated by excavation finds, and doubtless there were also contacts with the nearby Syrian or Cilician coasts.

We left Crete about 2250 B.C. with a description of the Vasiliki pottery. At about this time the Early Minoan III period began, lasting until about 2000 B.C. In this period, pottery was

less frequently painted, though there was some white-on-dark ware, with some incised ornament taking the place of painting, possibly due to Cycladic influence. Spiral decoration and long-beaked spouts were characteristic. Connections with Egypt were at a minimum, but the presence of "double axes," which became not only symbols of authority but cult objects, indicates connections with Mesopotamia by way of the coast of Asia Minor. At about the time of the last part of Dyn. XI of Egypt, Middle Minoan I, which was a more strictly Bronze-Age period than before, began with renewal of Egyptian trade and a shifting of population from the eastern end to the center of the island. The chief port for Egyptian trade was Komos, that for Troy was Candia, while important centers were at Phaistos in the southern plain of Mesara, Knossos in the north; and the island of Mochlos, Gournia and Palaikastro in the east. The period was one of growing wealth. The pottery was commonly decorated in dark brown on a buff ground, often on jugs with handles, with a design called the "butterfly" pattern but which may have been the Double-axe. Some of the pottery was a very thin ware called "egg-shell ware," with white designs on a black glazed slip and unified design over the whole vase.

This developed into a polychrome ware of Middle Minoan II, named from the site of Kamares, where it was first found. Fishes, birds, goats, foliage or flowers were represented with white and vermilion on a dark ground, white, orange and vermilion on a glazed black ground, or in some of these colors on a pale buff or glazed deep red ground. There was also decoration in relief, sometimes with a fantastic character. Some of the vase shapes indicated a desire to copy metal models, even rivet-heads being sometimes imitated. A silver vase has been discovered, the metal probably coming from Troy; and many cups imitating metal were of the so-called Kantharos type, with high handles, long common at Troy. Probably increased knowledge of the casting of bronze came also from Troy. Ivory semi-cylindrical seals and three-sided seals, often steatite, were in use. Figurines give us an idea of the costume of the time. Men wore a waist-cloth, into which was thrust a short dagger, and sometimes a small disc-like cap. Women wore a skirt and girdle, with a bodice open at the breast and rising in the rear into a high "Medici" collar. Their hats had rims expanding in front.

After the rise of Dyn. XII in Egypt, the merchant princes of Crete grew rich on the Egyptian trade and began to erect palaces, of which those at Phaistos, Knossos and Mallia are the most famous. Seals show the beginning of a pictographic script or a form of picture writing. In Crete, the rubble or brick buildings were often faced with lime stucco; and quite early this was often given a wash of a red color; later, horizontal stripes of red and white were used. In Middle Minoan I, decorative designs in red, black and white were apparently stenciled on the plaster. In the Middle Minoan period, painters made use of a preliminary sketch, using dark red, sometimes yellow, then quickly completed the work on the wet plaster. The surface was then smoothed while moist to produce a brilliant finish. Later, heavy black contour lines were common. The yellow and red pigments were ochers; the blue and green, "Egyptian blue" and its greener variant produced when the temperature of formation is outside the limits of 800° to 900°C. But the yellow-green for foliage was produced from mixed yellow and blue pigments, while the blacks and grays were from shale, slate or carbonaceous matter, which on mixture gave browns.

With increasing abundance and quality of copper and bronze, the obsidian of the island of Naxos grew less in demand, and so the Cycladic culture waned. The dark (red, brown or black) Early Cycladic III pottery was often incised and burnished. In cemetery graves were

"sauce-boats," jugs with cut-away necks and other vessels decorated with lustrous glaze paint in the manner of the Helladic culture of mainland Greece, soon to be described. Tweezers, marble idols, stone amulets and vases and palettes (more trough-like than the Egyptian and Minoan ones) were other Cycladic items, while pot forms included "frying pans" and pyxides with lids. At this time and for five or six centuries later, big group-pots or kernoi and bowls were made with red-painted interiors and dark-stripe designs, on a buff exterior; also "stands" with tops painted to imitate a rosette of flowers. Characteristic of Cycladic ware, unlike that of Crete in any period, was the representation of the human form on the vases. Some white designs were painted on black or red surfaces, often burnished; and the opposite technique of matt black designs on a white clay was also employed. During Middle Cycladic I a change occurred, with fortresses being erected on some islands. The pottery was matt-painted, replacing the earlier glaze medium, and enough like that of Early Bronze Age or Cappadocian ware of Alishar in Anatolia to indicate connection with that region. A common culture item from the northern Cyclades was a decorated bone tube used to carry pigments; similar ones were found in Troy IV and V, dating around the 21st and 20th centuries B.C., and at Byblos in Syria. But connections with Crete were shown by imported Middle Minoan polychrome pottery.

Turning now to Asia Minor, at Kanesh (modern Kültepe) in Cappadocia (central Anatolia), the early culture resembled that of Alishar I, with the handmade polychrome "Cappadocian Painted ware" well represented. Excavation of the city mound has been renewed since 1918 and has obtained most interesting results, illuminating the early Hittite period. This is particularly true of an Assyrian trading colony established there as a suburb (the "Karum"), whose business correspondence covered three generations, roughly the 19th century B.C. The tablets recovered from the site in all numbered over 1500, many of them still in their clay "envelopes" with the impressions of cylinder seals on them. This trading colony, which included market places, storage buildings, and a town hall, was in direct contact with Ashur. But the culture was Hittite, little affected by the presence of the Assyrian merchants, who adopted Hittite customs and lived on good terms with them. Gold, silver, copper and gems were exported from Kanesh, and tin, perfumes, and cloth were imported. Stratum IV of the main city may have begun as early as 2050 B.C. or a little later. It contained chiefly red and brown slipped, wheel-made, monochrome pottery in typical "Hittite" shapes; also some of the Cappadocian Painted ware, but not in great quantity.

Stratum III was that of the Assyrian trading post. The "Hittite" pottery, finely burnished and technically superior to the later Hittite wares, continued; but the painted ware was rarer. A type derived from the latter, or a late variant of it, had geometric and bird patterns in red or brown on a creamy buff slip. In the house of a great merchant, named Adad-Zululi, was found Hittite ware, including a red slipped pedestalled offering bowl and a black-slipped bowl with spout in the form of an animal's head. The merchant's archives numbered nearly a thousand tablets. In them the Hittite king Pitkhana was mentioned. The houses of this level were destroyed by fire, as were those of the next level.

In stratum II were found the houses of at least five more merchants whose names were revealed, and tablets stored in pottery jars, some referring to the Assyrian king Erishum I (1874-35). These houses, of two to four rooms centered on an open courtyard, were built in two stories with mud-brick walls on stone foundations, and were equipped with horseshoe-shaped hearths and domed ovens. The inhabitants, male and female, were often buried under the

floors. The fact that the bodies were either in contracted or extended postures, with in two cases traces of purification ceremonies by fire, indicates that there was here a mingling of customs. In this stratum the funerary gifts of pottery, bronze, gold, silver, lead, electrum and bone were especially rich. The typically "Hittite" pot shapes included beak-spouted "teapots," sometimes with the spouts in the form of animal heads; jugs with long cut-away spouts (and often carinated bodies), a pinchedspout jug and a pedestalled bowl with carinated body and four handles. The late variety of painted ware was more common than in level III.

Stratum I probably began early in the 18th century. The buildings here were large ones on heavy foundations. Their techniques and plans indicated that they were the prototypes of the monumental buildings of the New Hittite Empire (1425 - 1200 B.C.) Here the monochrome vessels included a Hittite teapot, a two-handled stemmed goblet with quatrefoil rim found also among Middle Minoan II ware of Crete, and vases modelled as human and animal heads. The seals and other products of the representational art of the period, such as a cosmetic box with bulls' heads in the round and a lion in semi-relief, show us the beginnings of Hittite art. The work at Kültepe (Kanesh) proves what has long been believed, that monochrome Hittite pottery was certainly in use in the 20th century B.C., and probably in the 21st. Pot forms long considered typical of the whole Hittite period were found here in an early stratum. It is interesting that none of the pots had pointed bases (which may have begun in a later period), disk- and ring-bases being the rule. The use of horizontal grooving in the decoration of the vessels should also be noted.

In about the last third of the 20th century began the Middle Cypriot (I) period, which evolved from E.C.III but is distinguished from the "Early" periods by the greater prevalence of painted pottery, but without a sharp break. The period was much shorter than the Early Cypriot periods, ending about 1850 B.C. The history of the whole M.C. period is not yet too well known. Metal became common, the Cypriot dagger became narrower and the knife with flat tang was replaced by a "leaf-shaped" type with narrowing top and three rivets. An early use of the horse is evidenced by the finding of its bones in a tomb of M.C.I date along with those of a dog and with a shaft-hole axe. The Red-burnished pottery continued in a degenerate form with a red to brown wash and fine relief or incised decoration. The White-painted ware developed to a type with lustrous red to brown paint on a burnished buff slip. Pot decoration was usually linear, arranged in horizontal or vertical panels. Pots became smaller, with more rounded profiles, the cut-away spout, somewhat out of favor in E.C. II-III, coming back into favor.

In Middle Cypriot II (about 1850 - 1750 B.C.), there was an increase in foreign commerce probably connected with accelerated activity in the copper-producing central and western portions of Cyprus, with the north-coast cemeteries going out of use, indicating decrease in population there. The evolution of the Middle Bronze Age was complete. The great archives found at Mari, soon to be mentioned in more detail, reveal that Cyprian copper was reaching the Euphrates. On the other hand, imported mainland monochrome pottery greatly increased in quantity, as did globular "paste" beads (of strass, a brilliant lead-silicate glass), ultimately at least of Egyptian inspiration. Mushroom-head pins, found as far off as Transjordan, also became common. Some cups in White-painted ware closely resembled "Hittite" shapes, showing Anatolian influence travelling through Cilicia.

M.C.II pot fabrics were well baked and thin-walled. White-painted ware employed a thinner and less highly burnished slip, with matt red paint which often turned black on firing.

The decoration, which tended to cover the whole pot, included bands of checkers and hatched lozenges, and triangles, with animal figurines in this ware appearing later. Black-slip ware, which began earlier, having a lustrous or matt black imitated wash, became more common. It imitated the older Black-burnished ware and the still earlier dark surface of leather vessels. Red-burnished ware was in its final phase. There was also a Red-on-black ware, with matt red painted decoration on a lustrous black wash which sometimes fired partly red.

Middle Cypriot III was nearly contemporary with the Hyksos period of Egypt but was rather longer (1750 - 1550 B.C.) than the great Middle Minoan III period. No new pottery types appeared in the M. M. III period, but old types underwent further modification. Most common was the Red-on-black ware. A Red-on-red ware, with the black replaced by a red wash, has been considered a variant of the red-on-black pottery. Two more varieties of the so-called White-Painted ware appeared (W.P. IV and V); these were usually non-slipped, with decoration formed by broad lines flanked by wavy lines and lattice panels in matt red or black paint. A form of the Black-slip ware continued, as well as a red-slip ware. Although wheel-made mainland pottery wares were increasingly imported, the potters of Cyprus continued hand-made vases. The period, however, represents the height of the Middle Bronze Age of Cyprus. At Nitovikla near the northeastern corner of the island was a fortress, part of an extensive fortified area. Some of its architectural features were of mainland type; and the pottery found on the site suggested to one authority that the Hyksos had become established there. At the end of the period, the fortress was destroyed.

In Syria, Hama between 1900 and 1700 B.C. reached its level H, marked by sun-dried brick-built cylindrical silos. Our information on this stratum comes not only from the citadel mound but also from several graves in the town cut into the rock. In one some distance away, the body was interred along with 150 vases. Storage jars of the level were in a Red-ware with horizontal comb decoration. Others were in a harder red, gray or greenish ware. Medium-sized jars and bowls were in a gray ware and large basins in a dark red. In this dark red ware were also the characteristic tubular offering-stands or incense-burners provided with apertures. Model chariot wheels were found in this level, as in level J; and animal figurines included horses, one with a rider. Shallow tripod bowls in basalt first appeared. Beads were produced from greenish "paste," rock crystal and faience decorated, with black spirals.

The Middle Helladic period began about 2000 B.C. with the destruction of the Early Helladic settlements by a warlike people having close connections with Troy or with Anatolia farther east. The older population was not exterminated but was dominated by the warrior group. The new people and their pottery are called "Minyan," after the clan name of a dynasty of rulers really much later, according to Greek tradition, than the excavated site (Orchomenos) to the culture of which the name was applied. The outstanding Minyan pottery was a "reduced" silver-gray ware, varying from light to very dark gray and probably imitating the color of Trojan silverware. It was made on the potter's wheel, appearing for the first time in Greece, was angular-bodied, and represented in ring-stemmed goblets, high-handled cups, kraters and amphorae. In the south of Greece, the Minyan ware was imitated (in M.H. II-III) with an inferior yellow-buff ware, though technically good, the ware being known as Yellow Minyan. There was also a coarse, often handmade, imitation, called Argive Minyan, which attempted to match the lustrous gray color by means of a pigment applied on the surface, afterwards polishing with a fatty substance. The clay of this ware was not darkened all through, like the true Minyan

produced by the reducing process, but had a buff to reddish brown core. There were also hand-made wares of similar forms in polished brown or black and glazed red wares. In a later period, long-beaked pitchers and spouted water-jars and a type of low-bellied pithos with pierced suspension handles were painted with matt black, brown or dark paint in cross-hatched triangles, swastikas and other geometric designs on a buff, yellow-green or greenish gray ground ("Matt Malerei" or Matt-Painted ware). This handmade ware, which may have been of Cycladic origin, in turn influenced by pottery from Anatolia and Syria, was succeeded by a finer, usually wheel-made, ware with slip of the same color as the clay. The decoration was in a purplish black, with Minoan motifs including the first representation of birds and animals. A third but rarer class of Matt-Painted ware had a polychrome decoration: linear patterns in red with black edging, triangles and lozenges filled with red and outlined in black, or wavy lines of red edged with white and purple.

The Minyan or Middle Helladic houses were rectangular rather than oval, some of them of megaron type; and burials were contracted ones in stone-cist graves. These contained bronze weapons, knives, daggers and socketed spear-heads, while perforated stone battle-axes also appeared. These suggested to one authority that the invaders came from north of the Balkans, with the Minyans constituting the first Indo-European or Aryan speakers coming into Greece. But others have regarded them as having come from Anatolia beyond Troy.

We left Crete in the Middle Minoan I period, when the great palaces had been built, with their colonnades, stone stairways, remarkable drainage systems and paved and frescoed halls. But the Kamares or eggshell polychrome ware of M. M. II was also described. Indeed, the pottery of M. M. I lasted down in the eastern end of the island to the time of M. M. III (1700 - 1580), for that of the second middle period was a palace product known only from the palaces of Knossos and Phaestos. M. M. II in the central portion of the island (1850 - 1700) was a period of great advances in culture, art and the handicrafts. Examples were the introduction of the vehicle wheel from Asia and the quick potter's wheel (the tournette or slow wheel having appeared in M.M.I) and the construction of stone-paved roads, the first of Europe. Trade expansion brought increased prosperity. M. M. II pottery sherds were found at Lahun in Egypt in a settlement of workmen, and contacts with Egyptian Dynasty XII were close. Other finds indicate contacts with Babylonia, Ras Shamrah and Tell Atshana in Syria, Phylakopi on the island of Melos, Cyprus and mainland Greece.

The end of M. M. II was marked by the destruction of the palaces of Knossos and Phaestos and of many other Cretan sites, probably by an earthquake. Following the catastrophe, a new dynasty arose in M. M. III, and Minoan civilization reached its highest level, while Cretan maritime power was established around the eastern Mediterranean Sea. During this period, which was contemporary with most of the Hyksos period of Egypt, splendid new palaces were built on the old sites at Knossos and Phaestos, and took the forms they still had when excavated; also a royal villa and houses of nobles at Hagia Triada. The cities were without walls and the palaces were unfortified. But though the Cretans were a peaceful and a happy people, they had bronze armor and weapons, including bronze arrowheads; and they probably placed much reliance on their ships to defend the island. The metal was now the "standard" bronze, containing ten percent tin. The royal magazines were filled with great jars for storing grain, oil, honey and wine. Disturbed conditions cut off the trade with Egypt, but the Cretan rulers took advantage of the opportunity to increase the trade with the Cyclades islands and

the Greek mainland. The size and elegance of the palaces gave evidence of the Cretan commercial success.

On the forerunners of the Kamares ware, the designs (in M. M. I) had been geometric and rather stiff; then the Kamares polychrome ware (in the last phase of M. M. I and the first phase of M. M.; III) developed and came alive, employing radiating and revolving designs derived from plant and animal sources. In the last phase of M. M. II, this brilliant polychromy declined and conventionalization increased. M. M. III was an age not only of marked industrial advance but also of artistic development. Many experiments were tried in pottery production and ornamentation. Naturalistic decoration of vases and seals, fresco painting, relief work in faience, and the work of the goldsmith were at a peak of perfection. A linear script ("Linear A") was developed with less than one hundred signs, derived partly from the earlier hieroglyphs and partly from Hittite writing. At first it developed along with the pictographs, then replaced them. This script was found on multitudes of clay tablets in Minoan ruins. Such a script was not suitable for inscribing seal-stones, and they became of less practical utility.

M. M. III vases may be recognized by their use of dull purple slip and powdery white paint, with the purple approaching a black. The use of polychrome declined and the eggshell ware and fine black glaze ground of N.M. II was gone. The dull white was used in this period for the main design, though not for details, on the dark ground. A common motif was the spiral. Designs were applied, especially at the end of the period, with almost absolute freedom in a purely naturalistic style, the motifs of this style being plants, reeds and grasses. These were probably adaptations from contemporary frescoes. Some fine small jars from the palace at Knossos were decorated with lilies painted in white on a dull violet-brown glaze ground. Our knowledge of Minoan art in this period comes not only from frescoes and vases, but also from painted terracotta figurines and statuettes, reliefs and vases in faience from the temple repositories of the Knossos palace and appurtenances of the shrine of the Cretan Serpent Goddess, found with her votaries. The goddess wore a high tiara of purplish brown round which coiled a snake. Also found were some brilliantly painted seashells. The painted designs of these objects were often similar to those of the pots, but were also in some cases Egyptian (lily and crocus motifs). Also included were the shield and double-axe, sacral motifs. An interesting find was the Phaistos disk, a disk of clay with inscriptions on both sides running spirally from the circumference to the center. Some of the symbols resembled those of the Minoan hieroglyphs, but others were non-Minoan: a bow was Asiatic, a plumed headdress resembled those of the Peoples of the Sea (whom we shall meet presently), and the architecture was nearer to Lycian than Minoan.

The new style of pottery decoration constituted a marked break with the older one and contrasted also with contemporary Greek mainland vase painting. The painters were no longer interested in gay ornamentation. They did not want to stylize the human or animal body until it became decorative, or to distort it on a curved surface; so they gave up representation of figures. They found other objects to fill the field decoratively: grasses, branches, ivy, marine plants, lotus flowers, sea-weeds, reeds; but also the cuttlefish, the nautilus, the starfish, the sea-anemone and snails and corals, swimming in a cool-colored surround. The vase painting was a miniature "extract" from mural painting. This was a fresh and vigorous art, yet as decorative as before. But the fine naturalism lasted for only a short period and then degenerated into schematism and convention, as though the work of a gifted painter had died

out with the passing of the artist himself.

A charming fresco of the period is a lily fresco from Knossos, in which white lilies with orange anthers and green foliage are seen on a red ground. A fresco at Hagia Triada showed a brown cat stalking a red pheasant. The crouching cat well represents feline stealth. The flowers were henna-colored, sepia brown and yellow against a buff ground. The Flying Fish fresco, found at Phylakopi on the island of Melos, thought to have been painted by a Cretan painter of the period, had the color arbitrarily used to accomplish a beautiful result. The backs of the fishes were light blue, their bellies yellow or white, their wings usually blue with some white or yellow. They were seen against a yellowish cream-colored background. Brown rocks and sponges were dotted with black, and bubbles and spray were blue. The painter's brush glided "along with the smoothness and facility of the skimming fishes." Similar in subject and spirit was the Dolphin Fresco from the Queen's Megaron at Knossos. Below there was a dado of Venetian red; above this, done in a sooty brown, were shown rocks, sponges and coral growths. The dolphins exhibited the strongly contrasting scheme of rich blue with pale orange stripes, and creamy white bellies. These were seen on a creamy white ground. Some smaller fishes were pink or yellow with rose-colored markings.

The Early Macedonians about 2250 to 2200 B.C. filtered southward into Thessaly, there forming a Neolithic culture with "crusted ware" which used to be called Thessalian III by some, but has been incorporated with the Early Helladic culture of Greece. Here spirals and other motifs were painted on the pots after firing. This culture remained essentially Macedonian. Amphorae, tankards and bowls were ornamented with Middle Helladic matt-painted technique.

About 1900 there developed a Middle Macedonian culture, ending about 1700, with Minyan ware not made on the wheel, but with distinctive "wishbone" handles (of the indicated shape); also two handled-tankards. Instead of the figurines so popular in Anatolia, peculiar clay anchor-shaped ornaments served magical purposes. Also about 1900 B.C. began what used to be distinguished as Thessalian IV, with Minyan and Matt-painted potteries. The names Thessalian III and IV were still used by an important authority in 1947.

During the second Middle Helladic period (1850 to 1700 B.C.), Macedonians at Lianokladhi in the Spercheios valley (just south of Thessaly) painted amphorae, tankards and bowls with wishbone handles, with Macedonian patterns including spirals, but in the Matt-painting technique of the central Greeks.

In M. H. III (1700 - 1575 B.C.), the earlier pottery types continued in use, along with coarse plain ware, but renewed Cretan influence led also to the imitation of Middle Minoan vases, with vases decorated with white designs. Similar motifs were reproduced in the Matt-painted technique. As judged by the offerings in the graves, and especially in comparison with the following period, M. H. III was not too prosperous.

The Gumelnitza culture of Vidra and other Rumanian and Bulgarian sites reached its second phase about 1950 B.C. and its third in the 19th century, during which a metal economy only very slowly replaced that based on stone implements. "Positive" graphite painting was applied to the pottery, sometimes supplemented by white paint added before firing, while "rusticated" designs continued to be used. Impression of a split reed on the soft clay, producing the so-called "bracket" ornament, was common, while among forms a "foot-base" type replaced the older peg-footed box. Various ritual or religious objects attributable to the culture have been recovered: clay sitting male and female figurines, phalli, "horns of

consecration," and model altars, thrones, houses and animals. At one site, 22 contracted skeletons proved the people of the culture to be long-headed Mediterraneans.

The activities of the Bell-beaker traders during the last centuries of the third millennium, stimulated by the demands of rich warrior chiefs, gradually led to the development of the Early Bronze Age of the Central European Danubian region. The economy of this region and period began to take form about 1850 B.C. From the Baltic area were brought such products as salt and gold, and especially the magical reddish yellow amber (which could be easily electrified to exhibit its magic) from Denmark and East Prussia, while from Egypt or the Aegean segmented or cruciform beads of greenish blue faience were carried north. Amber routes went down the Saale valley through Bohemia and across the Brenner Pass into Italy, with variants in other directions. Meanwhile metallurgists trained in the East were exploiting the copper and gold of the Balkans, Transylvania and Slovakia. The small amount of tin necessary to convert copper to the harder bronze (which also yields non-blistering castings) was found in the region from Bohemia to Middle Germany; also near the site of the ancient shrine of Apollo at Delphi (for whose popularity it may have been partly responsible). The ore was easily recognized by the typical brown spots of the tin-stone.

While the activities of the Beaker traders and merchants slowly developed a single type of economic system across much of Europe, there was no semblance of political unity. We must consider the age a backward one, especially when compared with the contemporary Near East. There were no cities, as in the east, no writing, no potter's wheel till 1000 B.C. But bronze did infiltrate, creeping first up the Danube and along the Mediterranean shores; it reached Hungary by 1800 B.C., Czechoslovakia and Central Germany a century later, western Europe in still another century, and the Baltic shores and Scandinavia not until 1500. When bronze ornaments, implements and weapons did reach the European lands, they no doubt came first into the hands of the Vegalithic chiefs or their descendants, enabling them to better perpetuate their hegemony.

The Early Bronze and full Bronze Ages, while very important in the formative stage of European pre-history, left as remains little or no items of special color interest, so may be skipped over rather lightly in our unfolding color drama. Distinct Bronze Age cultures grew up at many important sites: Perjamos on the Maros river in Rumania (1800-1600 B.C.), Toszeg on the Tisza in Hungary (1800-1350), Straubing in Lower Bavaria, and especially Aunjetitz in Bohemia (1800-1750); and around 1600 the Monteoru and Otomani cultures developed in Rumania. One nearly universal culture-item was a weapon, the round-heeled copper or bronze knife-dagger. Halberds, which may have evolved from cross-hilted long daggers in Spain and Ireland, were used in Germany and Lower Austria. "Ingot-torques," neck-rings of thick wire with hammered ends rolled back into small rings (also a convenient form for transporting bulk metal) and basket-shaped earrings of gold wire were common ornaments, while knot-headed racquet-shaped pins were used for fastening the dress. At Perjamos, hour-glass shaped mugs and jugs, slipped and burnished, were black, red or mottled in color. At Toszeg, early handled jugs were in a fine brownish ware. Aunjetitz pottery has been analyzed into Bell-Beaker and Corded-ware (Battle-axe warrior) components, along with influences from the Metallurgists of the southeast. The people who developed the Aunjetitz culture are known to be of the "Nordic" type of blend of Neolithic Danubians with the Corded (Battle-axe) warriors and a modicum of Bell-Beaker folk (a "Dinaric" or Balkan type). Their culture absorbed several others on their

borders not strictly of Aunjetitz or Toszeg stamp.

In western Europe, the successor to the Eastern Spanish Copper Age was the Bronze Age culture named from the type station El Argar (1600-1400 B.C.). Its people lived in groups of rectangular rooms on stone foundations in fortified hill-top citadels. Pottery forms carried on Copper Age traditions, but the smoothed clay was dark; red, black or mottled, much like Anatolian or late Danubian wares. Though much trade with northern Europe had been lost because of the expansion of the Danube-Brenner Pass route, eastern influences indicating some residual wealth were still evident in the pottery, in the Anatolian practice of burial in cists or urns among the houses, in faience beads and in Aegean "horns of consecration." Beads were also made of callais.

Much of France remained in a rather backward state of development, but along the Rhone river a Bronze-Age culture developed (1650). It was due to blending of western megalithic folk with cist-burial folk of Mediterranean type whose cemeteries were found at Chamblandes, in southwest Switzerland (1950). The trefoil-headed pins and bronze-hilted triangular daggers by which these people are known were also found in the single graves and round barrows of Corded warriors to the north of the Rhone-culture area. Likewise in the barrows of the Bronze Age of Brittany from two to eight triangular bronze daggers were found, along with barbed-and-tanged flint arrowheads and bronze axes. In some cases the daggers were ornamented with hundreds of tiny gold nails, forming a pointillé pattern of very rich effect. The invasion of the dagger-armed warriors took place about 1650 B.C.

In Wessex (England), spreading out from Christchurch near the mouths of the Stour and Avon rivers, was a series of rich graves under round barrows. The graves contained triangular bronze daggers like the Breton ones (date, 1650); they were the graves of invaders from Brittany who established themselves as an aristocratic minority over the natives. For their pleasure, luxury goods were brought from great distances: amber from the Baltic, gold and bronze from Ireland, ornaments from central Europe and gay blue faience beads from Egypt. In the ornaments and improved weapons of the Wessex chiefs, influences from Greece have been discerned.

North of the Thames river in England and Scotland and in Ireland, a fusion of the Peterborough and Beaker folks, with strong influences from the metallurgical and commercial interests of the Passage-grave people, developed what is known as the Food-Vessel culture, so-called from the distinctive pottery (1600 B.C.) The most interesting products of this culture were elaborate necklets of glossy black Yorkshire jet worn by the women. These were crescent-shaped and built up from threaded beads and engraved plaques. In Ireland this necklace developed into a sumptuous gold gorget chased with designs imitating the layout of the jet plaques. These gorgets, known as "lunulae," were exported to Denmark, Germany and France. Food-Vessel traders in England and Scotland served as middlemen to share the profits of the Irish bronze- and gold-smiths, as Ireland became one of the chief Bronze-Age mining and industrial centers.

We return now to the East, specifically to Mesopotamia, which we left during the period of the Elamite-Amorite invasions, that of the ascendancy of Isin and Larsa. It was near the start of this unsettled period that Abraham, the first Hebrew, migrated from Ur and Haran to Canaan, about 1935 B. C. or a little later. Less than a century later and within the same period, one of the oldest law codes, of which we have any knowledge, was compiled. This was the code

of Lipit-Ishtar, fifth king of Isin (1868-57), who ascended the throne a century after the dynasty was founded by Ishbi-Irra of Mari. He was probably the king who emancipated the people of Nippur, Ur and Isin from the conquerors who caused the downfall of Ur III. Though he was an Amorite (West Semite), the four tablet fragments found at Nippur were inscribed with the law code in the Sumerian language in 1200 lines of text. More than a century later Rim-Sin of Larsa conquered Isin. Still later Larsa in turn gave way to Babylon, whose great conquering king, Hammurabi (1728-1686), was also long regarded as the promulgator of the first well-codified set of laws. Two copies of still another law code, from Eshnunna, have recently been found; the date is roughly the same as that of Lipit-Ishtar's code. It includes clauses fixing the prices of basic commodities, such as grain and oil! Passages of the code of Hammurabi gave the fees and penalties for surgeons operating successfully or unsuccessfully on eye abscesses.

At Mari were found, in the great 250-room palace of its last king, over 20'000 tablets representing his diplomatic correspondence with his various officials and with Hammurabi; also the names of thousands of craftsmen belonging to different guilds. We may note that the cylinder seals of the period were usually made of hematite, the red or black iron-oxide mineral; but more important to our color drama is the fact that the great palace, which covered more than 15 acres, was decorated with mural paintings, a portion of which is still preserved. Many of these were scenes of sacrifice or religious ceremonies, the investiture of a king, and realistic scenes of date-gathering and fishing. In the investiture scene, the king was represented, receiving from the goddess Ishtar the staff and ring which were the emblems of his authority. The well appointed palace was equipped with bathrooms having two bathtubs and with pottery water drains beneath the foundations which worked perfectly when excavated after 3600 years.

We have seen that northwest Mesopotamia was more and more dominated by the Amorites between 2100 and 1800 B.C., while in Babylonia and in Assyria proper the native Akkadians were still in the majority. But east of the Tigris and to the north, the population was dominantly Hurrian. Physically this important but only recently known people were of the round-headed type of the present-day Armenians, and in linguistically related to the "Urartians" of Iron-Age Armenia and perhaps to the peoples of the Caucasus region. After the Gutian conquest of Akkad, the Hurrians came down from the Kurdish mountains into northern Mesopotamia and Syria. They adopted the gods, heroes and myths of the Sumero-Akkadians and brought the latter's culture to the Hittites; and they played a major role in southwest Asia from 2300 to 1200 B.C. The ethnic relations and culture of northern Mesopotamia and Asia-Minor have been illuminated by several thousand so-called Cappadocian tablets, business documents and letters of an Assyrian merchant colony at Kanish (modern Kül-tepe) previously described. These tablets (dating in the 19th and 18th centuries, those from Mari, the Codes and archives of Hammurabi and Lipit-Ishtar, and certain Hurrian tablets from Nuzu of a somewhat later date, all serve to make the pre-history of the Near East, in the general period we are discussing pretty well known to us. The empire of Hammurabi's successors experienced troubles not only with the chiefs of the Sea-Country to the south, but with Kassites from the hills to the north who had introduced the horse into Babylonia. Finally, a lightning raid by the Hittites led to the sack of Babylon and its great weakening, so that somewhat over a century later (1651 B.C.) the Kassites under Gandash established their rule over the whole country.

At Alishar on the high plateau in eastern Anatolia, stratum II, which due to originally

misunderstood chronology followed both levels I and III, was that primarily of a round-headed people, probably the Dinaric type of Hittite which we have previously described. The stratum includes the period of both the Old and the New Hittite Empires (about 1600 - 1480 and 1425 - 1200, respectively), though Hittite rulers are known going back the 19th century. In level II, new features of their culture were the use of the potter's wheel as well as the wheel in general, much employment of lead along with copper and bronze, which were used, for example in needles; sickles, pear-shaped mace-heads and glazing in beads and pottery. Many elaborate symbols, such as the double-headed eagle and the griffin, were brought to the area by the new people. The Hittite pottery wares, though made on the potter's wheel, went back to the earlier monochrome tradition of eastern Anatolia; but many shapes were new, and often angular, and apparently derived from metal prototypes. The finely made pottery of the Alishar II culture surpassed those of the other levels in beauty and variety of form. Many vessels were light yellowish brown to grayish brown in color and had powdered mica present in a surface wash, which produced a silvery or golden luster. Some vessels had a red-brown surface; many had a red or buff wash or slip, usually burnished. There were also a few painted wares, including some with colored relief decoration. The Cappadocian Painted ware of Alishar III apparently was not violently dispossessed. The "Hittite" pottery itself had its beginnings earlier than the historical Hittite kingdoms, and was foreshadowed by some of the pottery traits of the end of Alishar I. One of the excavators regarded the monochrome buff wares as coming by way of Armenia from farther north or east, and argued that wares transitional between Alishar I and II were rare. Many now think, however, that the "I" and "II" cultures had similarities of significant degree.

Brown pottery was employed to model human forms looking like hooded Ku Klux Klan members; but male figurines and a fertility goddess were molded of gray lead, and statuettes were comparatively rare in the period. A model of a shoe in pottery showed the typical upturned toe of the Hittites which survives today. Pottery "stamps" were possibly used for body painting. Stamp seals were common in the Hittite area and were used in the production of clay bullae. Small bronze objects were common, but gold and cult-objects were rare. Both at Alishar and at the Hittite capital, Bogaz Köy, a fortified citadel was set apart from the lower town. The urban life of these great cities and Kanesh contrasted with the rural economy of the surrounding country, which was based on the possession of herds of a number of domestic animals, including horses and donkeys as well as sheep and cattle.

The art of the Hittite period is best known from its sculpturing, especially that of the New Hittite Empire, including the famous processional figures found at Yazili Kaya, south of Alaca Hüyük and northwest of Alishar. To this period also belong most of the Hittite hieroglyphs. Understanding of these and the sculptures is linked with our knowledge of the art of the Hittite seals, as those from the capital city.

In the Hittite levels at Alaca Hüyük in Anatolia (in the general region of Alishar and the modern Ankara farther west), the "monochrome" pottery had the natural clay color or had a polished black slip or pale yellow slip. There were also gray ware, painted bowls partly covered with colored slip, and lentoid vessels with white slip and red ornamented strokes.

The Sixth City of Troy, founded about 1900 B.C., was a real city of four acres enclosed by a new stone wall. Here the dead were cremated and their ashes put in urns of Minyan ware. At the start of Troy VI (Middle Bronze Age) red and buff pottery wares were more common than

gray; then various Minyan fabrics followed, with gray ware predominant. At the very end, "Red" ware assumed a characteristic orangered color; and this was found along with gray Minyan, imported Greek Matt-painted and Late Helladic wares. But the whole period has been described as one of "sober monochromy" in pottery. Troy VI was long thought to be the city of Homer's Iliad, but recent work has shown the date of its destruction by an earthquake to have been over a century before the Trojan War. The Homeric city was Troy VII (a).

Besides those of the Minoans and the Cycladic traders, another maritime civilization was that of the Phoenicians, which developed on the Mediterranean coast north of Palestine. The population was "Semitic" and Canaanite; its cities were Byblos, Tyre and Sidon, among about twenty formed into a loose confederation. Their culture, as early as the 18th century B.C., was a Middle bronze (II) one, with influences from Sumeria, Egypt and Crete. We have already mentioned the specialty, Royal or Tyrian Purple, which Tyre brought to trade. Earlier than this, Sidon had improved upon the Egyptians' manufacture of glass, and enjoyed a monopoly of transparent glass, both white and chromatic. Egyptian glass was opaque and colored in the mass until Roman times. Some authors have taken the view that the murals of Beni Hasan (early 19th century) portrayed glass-blowers at work; but according to later views, the pictured technicians were iron-workers; and no glass vessel has been found earlier than the Eighteenth Dynasty (1570 B.C.). It was stated by Professor H. Frankfort that the earliest known fragment of clear glass was found at Tell Asmar (2600); this was of a pale bluegreen color. Glass beads were found in a cemetery of Ur III (2070 - 1960). Glazes having compositions similar to glass, but commonly applied to the surface of ceramics, steatite or similar materials, were produced quite early, in Egypt from Badarian times (4500) onward, and in Mesopotamia from the start of the third millennium B.C. The former are older than glazed faience, which dates, however, from Predynastic times (in the fourth millennium). Glazed seals and beads were found at Mohenjodaro, Harappa, Kish and Ur. Two specimens of black glaze, one on Tell Halaf pottery from Arpachiyah, the other on Ubaid ware from ancient Ninevah, contained magnetic oxide of iron (F_3O_4) as pigment. The ancient Hebrew word for glaze has only recently been understood; and the Authorized Version of the Bible (Proverbs XXVI, 23) translated as "Burning lips and a wicked heart are like a potsherd covered with silver dross," what is now translatable as "Like glaze crusted over pottery are smooth lips and an evil heart."

The Canaanites, whom we have stated were not called Phoenicians until the 12th century B.C., excelled in textile production, dyeing woolen cloth bright red and blue with Murex dyes. As is well known, the Phoenicians are also generally credited with the invention of the alphabet. The Canaanites of the Late Bronze Age (after 1550 B.C.) wrote their language at different times in four or five systems of writing: (1) Accadian or Mesopotamian cuneiform; (2) Egyptian hieroglyphic; (3) the linear "Phoenician" alphabet from which our own ultimately descended, through, the Greek; (4) the cuneiform alphabet of Ras Shamrah; and (5) the syllabic script of Byblos. The so-called "Proto-Sinaitic" inscriptions, found less than 50 miles from the traditional site of Mt. Sinai and dating in the 15th century, are of the last-named type and form the oldest body of documents in our own ancestral alphabet, though three very short ones from Palestine are older. They were made by captive or slave miners in the copper and turquoise mines, and are in the Canaanite linear script. It was recognized in 1906 that there must be a genetic relationship between the Sinaitic script and the Hebrew-Greek alphabet, though separated in time by nearly a thousand years. In 1924 were found inscriptions from the

tomb of Hiram, king of Byblos (963-33 B.C.) and friend of King Solomon. The oldest dated text previously known was 250 years later; but between 1930 and 1936, earlier alphabetical inscriptions were found in Palestine and Byblos (back to 1800). The oldest dated text previously known was 250 years later, but between 1930 and 1926, earlier alphabetical inscriptions were found in Palestine and Byblos (back to 1800). The oldest (Middle Bronze) ones were still hieroglyphiform, and had not yet reached the simplified linear outlines of the Late Bronze Age inscriptions. The Egyptian conquest of Palestine near 1550 ushered in the Late Bronze Age. During this period writing, with its acceleration of the tempo of civilization, came more and more into use. Since the names of the Greek letters, which are meaningless in Greek, are nearly all obviously derived from meaningful Hebrew-Phoenician names, and the letters follow the same order, it is evident that the Greeks borrowed their alphabet from the Phoenicians.

The Middle Bronze II period of Palestine (1900 - 1550 B.C.) corresponds to the Egyptian late XII and XIII dynasties and the Hyksos period, as is known from connections traced through pottery in tombs of Byblos (including a famous large "foundation jar"). To the period belong levels XIV - X of Megiddo, G - D at Tell Beit Mirsim, the third "city" of Jericho, two palaces at Tell el-'Ajjul, the Hyksos hegemony in Egypt and the last part of the Patriarchal Age in Palestine. In the first phase of the period, Egyptian power and culture dominated western Palestine, Phoenicia and southern Syria. Transjordan remained almost nomadic from 2000 to 1800 B.C. After the downfall of Dynasty XII of Egypt, the Asiatic provinces became independent except for a brief period. The Semites of Syria and Palestine developed economic and military strength, as we learn from the Mari tablets and the Execration Texts. Probably the forerunners of the Hyksos invasion came from Palestine well before the end of the 18th century. They had overrun Lower Egypt and perhaps Middle Egypt before the invasion by the Hyksos princes of Dynasty XV, early in the 17th century.

This period is still obscure, but Professor Albright believes that a great southward migration of Indo-Aryans and Hurrians occurred then; for by the 15th century their nobles were established almost everywhere. Probably they overwhelmed Palestine and Egypt with their swift horse-drawn war-chariots. Everywhere in the early Hyksos period were found great rectangular fortifications of beaten earth (terre pisé), well dated by pottery finds. The fortifications, as well as the great 18th century painted palace of Zimri-Lim at Mari, were equipped with a gate with two or three gateways, each flanked by a pair of uniformly sized piers all placed symmetrically.

The better pottery of this confused period was all wheel-made, gracefully shaped and beautifully proportioned; sharp carination indicates metallic prototypes, which were imitated in the clay vessels. The metallic illusion was heightened by thick coats of red or creamy slip, carefully burnished until it shone like copper or silver. For holding perfume were the ubiquitous one-handled piriform (pear-shaped) "Tell el-Yahudiyeh juglets," decorated with a vestigial rivet. These had highly burnished black surfaces, ornamented with simple geometric designs by means white chalk-filled punctuations. These are taken always to indicate Hyksos date.

Canaanite art in the 19th and 18th centuries B.C. depended greatly on Egyptian influences (imitating Egyptian scarabs, pectorals and vases); but in the Hyksos period (1720 - 1550) more originality was exhibited: carved metal work, as in toggle pins for fastening the garments, in ivory and in bone inlay. In the 17th century, Palestine was part of an empire controlled from the Hyksos capital at Avaris in the northeast part of the Nile Delta. This state

probably extended, under Apophis and Khayana., from the Euphrates river to southern Nubia. Palestine was then a highroad of trade between Africa and Asia; and the country knew a period of prosperity echoed in luxurious funerary appointments.

Egyptian history in the 18th and 17th centuries B.C. is still quite confused and obscure. The brilliant Dynasty XII came to an end under a queen in 1778 B.C. Then began the "Second Intermediate Period," from the 13th through the 17th dynasties. The first two of these, running concurrently, included a number of feeble kings; the last two named dynasties were the Hyksos princes. We have already seen that the invasion from Asia was by a complex group of peoples coming in successive waves and not a single event in time. According to the historian Maneto, a "blast of God" smote the Egyptians under a king Tutinaeus (or Dedemes), the 36th king of Dynasty XIII (accession about 1684). But this was probably the time when the Hyksos conquest was complete; they probably controlled the Delta and Lower Egypt from about 1730 B.C. They were a mixed stock, but probably the predominant element was Semitic. The Jewish historian Josephus identified them with the Hebrews; and probably at least the Hebrews were in Egypt in the time of the Hyksos. Manetho says that the foreigners chose a certain Salitis (1690 - 1677) as their king. He ruled from Memphis, but rebuilt a city Avaris (Tanis) which became the Hyksos capital.

A 19th century papyrus relates that King Apophis I (1645 - 1605) who followed Salitis, complained to Sekenenre, native prince of Thebes, who had a hippopotamus pool, that he could not get any sleep day or night because of the bellowing of the hippopotami. Actually, we know at least that war broke out between the native princes and the foreign rulers. The mummy of Sekenenre shows five terrible head wounds. His sons Kamose and Ahmose continued the war of liberation; and the latter took Avaris and pursued the invaders into Palestine. Kamose is one of the kings of the 17th dynasty, while Ahmose (Amosis) is generally considered as the first king of the 18th dynasty (1570 - 1349), while the Dynasty XVI, ruling in Thebes (Upper Egypt, 1675- 1640) was more or less contemporaneous with the Hyksos Dynasty XV. The Exodus of the Hebrews probably did not occur along with that of the Hyksos, the most probable date of the Exodus being about 1290 B.C. (though this date is still debated).

We have already mentioned Tell el-'Ajjul near the Philistine city Gaza, as well as the ceramic artist known as the "Tell el-'Ajjul" painter, the first personality to emerge from the general anonymity of the ancient world of art. The style of this vase painter of the 16th century B.C. was said to be "highly individual and slightly whimsical." It was reported in 1939, a year after attention was called to him, that he was represented also by at least one individual work at Tarsus. Here a pottery shard showing a bird was executed in the painter's two-color style with dull red and black, both with a slight "bloom." The clay was greenish-gray with a slightly creamier surface. The work was individual in departing somewhat from the usual conventional use of the colors. The sherd was of the time of Megiddo IX, that is, in the period 1550-1468 B.C.

This period was one in which pottery ware similar to that of the Ajjul painter, and called Bichrome ware, had reached its peak of production. This ware was present in Megiddo X, the colors being red and blue; more frequent in IX as a red and black combination and still in IX, present in VII executed as degenerate red lines. The ware was found in other Palestinian sites as well as in Syria, and was exported to Egypt and Cyprus, but was not found in Jericho or Tell Beit Mirisim, due to gaps in occupation there at the time. The Bichrome ware had a tendency to

be ornamented with friezes divided into panels as in architectural metopes, and to exhibit birds, fishes and trees. Megiddo X belongs to the end of the Middle Bronze II period and IX to the first phase of Late Bronze I. At Tell el-Hesi, Palestine, at this time the pots employed polychrome red and black decoration on buff slip. From the Middle Bronze period, some small vessels of bluish green or faience ware, common in Egypt at the time, were found in Palestine.

In Tell Beit Mirsim level E in the Hyksos period, carinated vases with "trumpet-foot" and other "metallic" forms, characteristic of the latter part of the Middle Bronze age, were of an "orange-brown" color, varying to dark brown and to buff, usually a burnished rich dark red slip, sometimes a cream-colored slip. The creamy slip was often used on the pots of stratum D, the colors of whose clay were variants of buff. Pottery "incense stand" had painted decoration of alternate red and dark blue bands on a white slip over reddish buff clay. Faience ointment-pots were in bluish green with brown lines. In a patrician's house, with great court and gate wide enough to admit a chariot, were found a little ivory die and a set of ten blue faience playing-pieces, perhaps used by charioteers while waiting for their masters. Fragments of the ivory inlay of the game board, some of them again inlaid with black ebony (yielding high contrast), were also found. An example of the independent Canaanite art of the 16th century, already mentioned, was a limestone stele of a serpent goddess. In relief a large snake coiled around the draped figure of a female fertility deity, the first serpent-goddess found in Palestine. Plastic coiled serpents were also used as decoration of pots of T.B.M. level E.

Hama level G (1525 - 1400 B.C.), following a long period when Hama was unoccupied, was marked by a characteristic gray pottery ware in distinctive, and sometimes very elegant forms, while a black-slipped jug carried on the typical bottle-shape of stratum H. Goblets continued popular along with ring-based bowls and jars. Cypriot "Whitepainted" bowls and Base-ring jugs decorated with white paint were imported along with Nuzu ware ornamented in white and violet, an unusual scheme. A gap in the archaeological record followed level G, as one preceded it.

We have made scattered references to the Hittites, and mentioned the several ethnological entities known by that name, the Proto-Hittites or Khatti (Hatti) peopled eastern Asia Minor while the later Indo-European-speaking Nasians were known to have settled in Cappadocia before 2000 B.C.; but we do not know how long before that in Asia Minor. A people speaking a related language occupied southern Asia Minor and ruled at Carchemish on the Euphrates in the 18th century B.C. The Hittite archives found at Bogaz Köy (Khattusas or Hattusas), their capital for a long period, and the Cappadocian tablets, made the Hittites and their wars and foreign relations known to us.

The names of three early Hittite kings are known to us. The first of these was Pitkhamas (Bitkhana or Bilkhamas), king of Kushshar, who is known from his defeat of local kings mentioned in recovered copies of an earlier document, and may be dated in the 19th century B.C. His son, Anitta (Anittash), is also known for his conquests in the region. According to one author, it was he who conquered Bogaz Köy (Hattusas) and made it his capital; but according to later authors this occurred much later. The ruler whom he defeated was named Biyustis. These events corresponded in time to stratum V at Bogaz Köy, a fortified settlement containing pottery of the type found in Alishar II, but with some resemblances to Alishar I ware. But the real founder of the Old Hittite Empire was Labarnas, about 1600, whose name, like Caesar's, was used as a royal title by his successors. He established his authority over many of the city

states of eastern Asia Minor. His son, Hattusilas (Khattusilis) I conquered most of this region; and his grandson, Mursilis I, invaded northern Syria, captured Aleppo and Carchemish, and sent a force all the way to Babylon. This city was destroyed by his troops about 1555 B.C., putting an end to its First Dynasty and permitting the Kassites to become rulers of Babylonia. The Hittites (Hatti) thus became a world power. But following these events there were a number of undistinguished kings, with the empire being weakened by internal dissension until it passed into obscurity early in the 15th century. Stratum IV at Bogaz Köy was that of the old Hittite empire, from Mursilis I (about 1560) to Telebinus (Telipinus, early 15th century). Hittite inscriptions indicate much hostility between them and the Hurrians. After Telebinus, the Hittite power declined, possibly due in part to Hurrian pressure. The New Hittite Empire was established under Tudhaliya (Tuthaliya) II, about 1420 B.C. Its career was somewhat checkered, for in the reign of Tudhaliya III, just before 1400, Bogaz Köy was sacked and burnt by the nomadic Gassites. But under his son, Subbiluliumas (1390-50), Hittite power again became great. The New Empire was destined to last to 1200. More will be said of the Hittites under Iron-Age Color.

Upon comparing the artistic skills evidenced in the 15th and 13th centuries in the sculptures found at Ras Shamrah and in Palestine, it is clear that there was considerable retrogression. Moreover, the civilization of Palestine in the Late Bronze Age was much poorer than that of Phoenicia and Syria, and to a large extent a barbaric one influenced greatly by Egypt. But this is not surprising in the light of the exacting rule of Palestine by Egypt. The Palestinian chiefs were too poor from satisfying the oppressive demands of Egyptian tax collectors to afford the time or price of rich works of art. This situation must have been in part a reaction of the Egyptians against the "Asiatics" broadly, of whom a part were their own former foreign masters, the Hyksos; and now the relation was reversed. But Late Bronze excavations at Ras Shamrah prove that Canaanite art was more highly developed than finds from Palestine had formerly led us to suppose. While the Palestinian and Canaanite city-states had some protection while Egypt was at peace with the powerful kingdoms to the north under Aryan-speaking rulers, Egyptian oppression led to constant rebellion of the Palestinian cities. Megiddo, Beth-Shean and Tell el-Hesi were each destroyed two or more times in the age now under consideration. But during this period temples were built and rebuilt at Megiddo, Beth-Shean and Lachish. The so-called Gezer High Place, long thought to be a sanctuary in the strict sense of the word, is now known to have been a mortuary shrine. Though built at the end of the Early Bronze, it was still in use in the Late Bronze Age.

In one of the Canaanite temples at Beth-Shean there were two altars: one for cult objects, the other for sacrifice. The method of carrying out the ritual was made clear to the excavators. The second altar had a channel to carry off the blood, a socket and peg for tethering the victim, and also a socket for the pole on which the carcass was dressed. Nearby was found a sacrificial dagger, the shoulder blade of a bull, and a bronze pendant for suspension on the neck of the victim.

The red burnished pottery of Megiddo XV has been mentioned. It began to appear early in the second millennium and was predominant in Megiddo XIV - XII. It was important in the T.B.M. level G and present in stratum H. It appeared also in Ras Shamrah, and indeed was fairly generally distributed over Palestine and Syria. In XIII, with a new and individual town plan and street layout, an important and distinctive pottery form was a jar with combed finish and white

matt wash on the upper shoulder, over which the decoration of blue, black and yellow was placed. In XII and XI appeared the previously described Tell elYahudiyah juglets, indicative of Hyksos times. Many of these were covered with a red wash. The serpent motif found on some vessels was common in the Middle Bronze II period. The Bichrome ware of Megiddo X - IX, in X as a red and blue combination, in IX as red and black, and degenerating in VII to red lines, has already been mentioned. This ware appeared in some form in Palestine, Syria, Cyprus and Egypt.

The pottery of Alishar levels I, III and II has been described (in that order). Level IV, of the New Hittite Empire, belongs to the Iron Age. At Mersin in the Middle Bronze Age (levels XI - VIII), the contacts were more with Syria than with the Hittites on the plateau of Asia Minor. In the Late Bronze Age or Hittite Empire period (levels VII - V), the fortress architecture was strictly of military type. In VII the pottery was polychrome; in VI and V, unpainted.

The land of Assyria, which took its name from its capital, and both in turn from their national god Ashur, occupied the northeast portion of the Fertile Crescent. Excavations there indicate that the site was occupied from not long after 3000 B.C., though the earliest mention is in documents dating not earlier than 2300. Three or four early kings, possibly Subarians, are known; and about the time of the First Dynasty of Babylon were followed among others by Puzur-Ashur I (1921-07), Ilushumma (1892-75) and Shamshi-Adad I (1748-16 B.C.).

Under the last-named king, whose reign overlapped that of Hammurabi, Assyria was independent and Ashur became a great city. He tried to control the great trade-routes joining Syria and Asia Minor to Babylon and Elam. Both Ashur and Ninevah were vassal cities under Hammurabi, but as the power of Babylon declined, that of Assyria rose. No rulers of special importance held the scepter at Ashur during the time of Labarnash to Telepinush of the Hittites, nor during the early part of the ascendancy of the Kassites at Babylon, when Assyria no doubt held little power. In the time of Subbiluliumas of the Hittites and of Amenhotep IV of Egypt, the Assyrian ruler was Ashur-Uballit I (1356-21 B.C.) He defeated the "widespread Subarians," and sent the Egyptian pharaoh a chariot with two white horses and a seal of beautiful blue lapis lazuli, asking blandly for gifts of much gold in return. The Assyrian events so far mentioned fall in the Old Assyrian and Middle Assyrian periods; the period of the "Assyrian Empire" did not begin until about the time of the ruler Tiglath-Pileser I (1114 - 1076 B.C.).

Meanwhile times were stormy in Mesopotamia to the south. The Babylonians under Hammurabi's son were having trouble with the Kassites led by horse-riding, Aryan-speaking chiefs, the first "chivalry" in the original sense of the word. But next, the Sumerian cities Ur, Erech and Isin revolted. Ur was sacked and burned and the others punished; but soon an independent dynasty, the Sealand rulers, was established by a Semite, Iluma-Ilum, on the Persian Gulf. This event may have been connected with unsettled conditions in Ashur, when there were six usurpers reigning in one year (1670). By the time (1582-62) of Ammi-Saduqa of Babylon, when certain astronomical observations were made which are very useful in trying to determine Babylonian historical dates, the power of the Sealand had been somewhat curtailed. Ammi-Saduqa was able to report a victory over the Manda hordes; but under his successor the dynasty came to an end (about 1555 B.C.) when the Hittites, under Mursilis I, invaded Babylonia and sacked Babylon. The Hittites did not stay; and an ephemeral dynasty, beginning with Gulkishar, ruled Babylon. But soon the Kassite power was established by Gandash, who proclaimed himself king of Babylon; and the Kassite dynasty was to last till nearly 1100 B.C.

All these disturbances were parts of the same great movement initiated by the Aryan-speaking overlords of the Kassites and Hittites, whose pressure displaced the Semitic-speaking peoples of Syria, the Hurrians and the Subarians, and at an earlier time was responsible for the Hyksos invasion of Palestine and Egypt. It was a period of international complications and repercussions. Even so early in history was a policy of "splendid isolation" found impossible. Like the barbarian Amorites and Gutians who had invaded Babylonia. before him, Gandash was brought under the spell of Babylonian culture, rebuilt temples at Babylon and Nippur, and carved inscriptions in Babylonian and Sumerian. The horse, which was a divine symbol to the Kassites, became common in Babylonia. But the Kassites continued to worship their own gods of wind and sky, while paying homage also to Babylonian gods, and changed the Sumerian system of dating documents by events to that based on years of the king's reign. The practical-minded Aryan Kassite rulers ruled according to the well ordered law of Hammurabi tempered by their own apparent common sense. The Sealand continued independently until a Kassite ruler, Burna-Buriash I, sent his son to overthrow it (in 1476) and rule there as viceroy of his father. One fortified town held out till the reign of the Kassite Agum III (1483-65), when Babylon became the recognized capitol of the whole land.

About 1500 B.C., when Telepinus ruled the Hittites, Ashur-Nerari I ruled the Assyrians, and either Agum II or Burna-Buriash I ruled at Babylon, a group of men ethnically similar to the rulers of the Kassites, welded the Hurrians (and possibly the Subarians) into a kingdom called Mitanni, whose capital was at Wassukanni, near the source of the Khabur river. This kingdom, in spite of few natural defenses, was, due to the capable but unscrupulous diplomacy of its kings, to play an important part in the affairs of western Asia for a century. It has been mentioned that three Mitanni princesses were married to Egyptian pharaohs (to Thutmose IV and to Amenhotep III and one to both Amenhotep III and Amenhotep IV). Tushratta, the king best known from the diplomatic correspondence with Egypt, called himself both king of Mitanni and king of the Hurrians. When the Hittite Subbiluliumas made a treaty with a contemporary claimant to the kingdom of the Hurrians, Tushratta rose in war against the Hittite. The latter plundered the capital Wassukanni, conquered northern Syrian towns which were probably parts of Tushratta's kingdom, and incorporated them in the Hittite empire.

The treaty relates that Tushratta was killed by an unnamed son of his, that the rival claimant to the throne "brought (back) to life his (own) dead son; and the whole of Mitanni went to ruin" and was divided between the Assyrians and another people. The rival put his son, Suttarna III, on the throne of Mitanni after plundering the land. Tushratta's son, Mattiwaza, appealed for help to the great Subbiluliumas and with the aid of the latter's son, whose sister he married, got back to the throne of Mitanni. Subbiluliumas, in a treaty with Mattiwaza, kept northern Syria; and the former's son added Carchemish to the Hittite domain. The state of Mitanni then disappeared from history; but several Assyrian kings, from 1300 to 670 B.C., tell of wars against "Hanigalbat," which is the Akkadian hauivalent of geographic Mitanni proper. k

In the period (from 1555) after the sack of Babylon by the Hittites, there had existed several independent, mainly Hurrian, kingdoms in addition to Mitanni and Hanigalbat. Others were Alshe on the upper Tigris river and Sangara in the Sinjar region (100 miles or more west of Ninevah). The Hurrian homeland was perhaps southwest of Lake Van, not far distant; but the ruling class in these kingdoms was probably already Indo-European (Nordic Aryan).

At several points in our historical digressions, introduced in order to recall, to readers

who do not have the time to dig out of various sources the details of a narrative which is not usually in a single textbook of history (or pre-history), the backgrounds of our main interest, we have mentioned the Aryan or Indo-European-speaking peoples, probably of Nordic type, or at least of the "Mediterranean" type which, when it becomes very blond, is called "Nordic." Peake and Fleure, in their interesting nine-volume series, "The Corridors of Time," state their belief that these nomadic pastoral peoples, having tamed the horse for riding and drawing war-chariots, left the grasslands of southern Russia and Turkestan about 2600 B.C. (a date which, according to more recent chronologies, must be greatly reduced) and spread in several directions. Among these they went through Bulgaria and Thessaly into Asia Minor and from there into Mesopotamia, appearing as the chiefs of the Gutians, Kassites, Hittites, Mitanni and Hurrians or Subarians. Peake and Fleure recall it in the first 75 years of the nineteenth century A.D., comparative philologists were working out the connections between most of the European languages and a few spoken in Asia, and were searching for the "Aryan homeland." Especially studied for similarities were the Vedas, the earliest books of the Hindu Brahmans, and the religious books of the Parsis, shown to be descendants of the ancient Persians or Iranians. It was found that the earliest works were nearly contemporary, and that the languages in which they were written were so similar that the peoples speaking them could not have been long separated. Similar resemblances were noted in religious views and practices and in some deities, although there were also differences. In the languages, the chief difference was that where the Aryans of India used an ṣ the Iranians used an h, a difference similar to one between Latin and Greek. Differences in religion were also mentioned by Peake and Fleure; and they believed that religious differences caused the Aryans to split into two groups, as will be detailed below. A prophet taught a monotheistic religion, such as that of Zoroaster, to the Iranians, while the remainder of the Aryans clung to the older pantheism. This schism may have occurred about 1500 B.C.

The Parsis' sacred law-book, a part of the "Avesta-u-Zend," believed by some to have been written by Zoroaster, stated that the undivided Aryans lived to the north, where the Power of Evil made the land icebound and uninhabitable. They moved toward Soghdiana, north of Bokhara, and the country around Bokhara and Merv. Because of a plague of locusts and hostile tribes they moved to the district around Balkh, in the south of Bokhara, then on to Misaya, identified by some with Nishapur, by others with Nisa, south of Askabad, which is near Anau in Turkestan. Here came the division, one group going to Herat (between Afghanistan and Khorasan), and the other to "the land of noxious shadows," believed to be Kabul (Afghanistan), near northwestern India, subsequently dividing into four tribes. The first group also subdivided into groups in the Punjab, the Helmand and at Arachosia (between Afghanistan and Baluchistan). The group which settled in the Punjab must have been there at least by 1400 B.C., probably earlier. A recent writer credits the Aryans with the capture and sack of Mohenjo-Daro sometime in the middle of the millenium.

The Aryans who went westward into Persia (Iran) developed many legends of kings and heroes which were collected into a great national epic, the Shahnama, by the poet Firdausi, born about A.D. 937. These legendary, mythical, but partly historical, tales deal with the wars between Iran and the Turanians, who were partly Mongolian tribes to the northeast. The most famous hero is Rustrum, made famous and familiar to English readers by Matthew Arnold in the tragedy of Rustrum and Sohrab. The Aryan invaders of India had a number of sacred books, of

which the oldest was the Rig-veda, whose oldest hymns were thought to have been compiled at the start of the "Vedic" period,' 1500 - 1000 B.C.

In India, following the Jhukar culture, whose metallurgy and drains were equal to that of the Harappa culture, but whose architecture was inferior, while writing had disappeared, was a little-known culture named after the site of Jhangar. This stage represents further retrogression. It began early in the second millenium (1950 B.C.?) and lasted till about 1700. Its pottery was first found at the village of Jhangar in Sind, 43 miles northwest of Chanhudaro; also at a later site, above the Jhukar ware. It was a light or dark gray ware with gritty feel made on the tournette (slow wheel), some of it burnished. The decoration was by incision with simple geometric motifs: triangles, chevrons and zigzags. The houses of the Jhangar folk had entirely disappeared when excavated, and may have been simple huts made of grass or reeds. The pottery has been attributed to a people known as the Bhils, hill tribes still flourishing in western India.

In southwestern Asia, the Aryans were chiefs usually ruling a mixed population, which during the period 2300 - 1200 B.C. contained as a major ingredient the Hurrians, who comprised peasants, soldiers and commoners. At first the Hurrians slowly filtered into Anatolia, Mesopotamia and northern Syria, but in the second millenium B.C. came in large numbers, halting mainly in central Syria. The descent of the Kassites on Babylonia around 1700 was probably due to these Hurrians, who drove the Kassites before them. In Mesopotamia, the important city of the Hurrians was Nuzu, previously mentioned. An earlier name for the city before it became Hurrian was Ga-sur. Many of the thousands of clay tablets found at Ga-sur or Nuzu throw light on the incidents and customs of the Bible, particularly the adoption and marriage laws. Adoption here at this time was quite frequent, childless couples wanting a son to care for them in their old age and bury them when they died. The law of the country specified that if, after the adoption, they had a son of their own, the adopted son would be legally displaced as chief heir by the natural son. Here we have the legal explanation for Genesis 15: 2-4, where the heir of the childless Abraham is expected to be his slave Eliezer, until he is promised a son of his own. The Nuzu marriage contracts obliged a childless wife to provide her husband with a handmaid who would bear children. This explains Genesis XVI, where Sarah gives Hagar to Abraham, and Genesis XXX: 1-3, where Rachel gives Bilhah to Jacob. In Nuzu law the child of the handmaid could not be driven out, showing that there was a legal basis for Abraham's apprehension over the jealous expulsion of Hagar and her child by Sarah (Genesis XXI: 11). A picture of Hagar and Ishmael being sent away has been painted by A. van der Werff, 18th-century painter. Hagar and Ishmael in the desert was portrayed by Jean Charles Cazin, 19th-century French painter. In a picture by Mme. Virginia Demont- Breton, Hagar gives drink to the lad who, according to both the Bible and Arab tradition, is destined to be the ancestor of the Arabs.

The story of Rachel and the teraphim (Genesis XXXI), and the relationship between Laban and Jacob (Genesis XXIX) becomes intelligible in the light of another Nuzu tablet. Here a man called Nashwi adopted a son Wullu and bestowed his daughter upon Wullu, just as Laban promised a daughter to Jacob. Wullu is to become the heir, but must share with any begotten son of Nashwi; and only the latter shall take Nashwi's gods. Evidently the possession of the household idols carried with it the headship of the family. Since Laban had sons of his own when Jacob left for Canaan, they alone had the right to have Laban's gods. The theft of the

Teraphim by Rachel was thus a serious offense. Laban searched Jacob's camp in vain for his stolen idols because Rachel had taken the teraphim and "put them in the camel's saddle and sat upon them." A sculptured relief found at Tell Halaf, dating in the eleventh century, gives us one of the earliest known representations of the camel. The pictured saddle looks like a square box, and is fastened with crosswise girths. In such a saddle Rachel could readily have hidden the household idols. A picture of the alliance of Jacob and Laban has been painted by the 17th-century painter Pietro Berrettini; and one of Laban accusing Jacob of stealing, by Murillo, of the same century.

The Nuzu tablets were most numerous in the 15th century B.C., just after the Middle Bronze Age. The gods worshipped by the Hurrians were Teshup, the Aryan thunderstorm god, and Ishtar, the Babylonian fertility goddess. A similar fusion of religious cults occurred among the Hittites. The temples of Gasur-Nuzu and the use of color in these temples, have already been mentioned.

The so-called Hurrian or Nuzu pottery was painted in white, most commonly on goblets on a dark surface, often bands of red or black paint; or, the contrast with a lighter element was obtained by means of the reserved light color of a wash on the pot. Designs included spirals, zigzags, lattices, wavy lines, rosettes, birds, and stylized plants and animals. It has been pointed out that this style of vasepainting has resemblances to the wall paintings at Mari. A free use of dots may be due to imitation of silver inlaid in niello, or to shell inlaid in stone. Niello inlay appeared in Syria in the 19th century B.C.; and an early circlet from Lagash had an inlaid scale and rosette design of blue and red in gold. Also, inlay was used very early in the Mari murals. The Hurrian ware overlapped in date the Khabur ware and replaced the latter. Apparently it was introduced by a migrating people (or the new elements in the design were so introduced), first into Mesopotamia, then into Syria. They could not have been the Hittites, who produced a polished monochrome ware and left no "fresco" paintings. There is some evidence which suggests that they were the ruling class of Mitanni. Nuzu under the Mitannians, Babylon under the Kassites, and Ashur all exhibited great skill in production of glazed-ware objects, especially the glazed cylinder seals of Nuzu; and these have been identified as Mitannian. Both the seals and the pottery exhibited a new interest in plant and animal designs.

At Tell Atchana (Alalakh) near Antioch in Syria, the 18th-century B.C. palace of the king, and the main temple of the city, have been excavated. The pottery found there is interesting. It was of almost eggshell thinness, most commonly forming tall goblets. The decoration most often was in horizontal bands, but sometimes the whole surface was covered with an elaborate design, such as that of the conventionalized papyrus plant into which was introduced the motif of the double-axe, reminiscent of Minoan Crete. The painting was nearly always in a creamy white on a black or red ground; but sometimes the reverse technique was used. This ware was common in the level (IV) dating at the 15th-14th century. It disappeared with the end of the town in a disaster. This white-painted ware also appeared in Judeideh level VI and at Nuzu. The preceding level (V) at Tell Atchana contained a drab or black burnished or incised ware. It was the first place to show all the cultural elements characteristic of the Hyksos, which soon spread southward into Egypt. The southward migration of the Indo-Aryans and Hurrians, which we have said was connected with the Hyksos movement in a broad sense, can be traced not only by pottery and other elements of culture, but also by many fortifications of beaten earth, usually rectangular in shape. The migrators were apparently held in check in Syria and Palestine

by the strong Dynasty XII of Egypt, but finally, shortly after 1700 B.C., succeeded in gaining the ascendancy there.

Turning to Palestine, we find in the late 15th century B.C. growing evidences of international contacts and influences, as may be observed, for example, in the pottery of stratum C of Tell Beit Mirsim. Here the native painted ware varied in color from a dark reddish brown that was almost purple to dull brick red on a buff or creamy buff surface; others were a light red on creamy gray slip. This ware, from the most flourishing age of Palestinian painted pottery, was exemplified by a reddish brown ibex-palm motif on buff clay with horizontal hand burnished cream-colored slip. The palm-tree motif was very common in this Late Bronze Age, while the ibex was frequently employed in a metopic frieze. Other motifs included a cross-line radial or spoke design, the "waggle" motif (a wavy line between two straight ones), the trellis or ladder pattern, and the double triangle. Large shallow bowls with inverted rims were popular. The colors included various other strong "value" contrasts, mostly on buff. A certain faience piece of level C was painted reddish brown on greenish blue with gilt dots. Imported wares included Cypro-Phoenician "base-ring" forms imitating metal work, generally black, dark brown or dark gray, which gave a metallic ring when struck. Some of these were large vases of the oenochoe or wine jug ("bilbil") class. Wishbone-handled bowls of a "white-slip ware" largely from Cyprus, had a creamy white slip (some late ware very bluish gray) over light gray or grayish buff clay. These were often decorated with bands of "links," a debased form of lozenges found earlier in Cyprus. Between 1400 and 1250 B.C. there was also considerable imported Late Mycenaean (Late Helladic III) pottery, a ware (and culture) to which we shall soon turn. The replacement of Minoan Cretan pottery by Mycenaean wares from Greece in the late 15th century was due, of course, to the overthrow of the Minoan empire by the chiefs of Mycenae, whose "heroic" style of warfare was too effective to be matched by the peaceful and religious Minoans. The Mycenaean vases were imitated not only in Palestine and on the Mediterranean coasts by local Canaanites, but also in Greece, where Minoan wares were produced, no doubt by Minoan captives working for Mycenaean masters. Some of these pottery forms, common in Palestine and Phoenicia, were squat two or three-handled vases, frequently decorated with the trellis or ladder pattern. Black bands were painted on a highly burnished red slip or dark red on unburnished reddish buff. It may be noted here that in all the local wares, the portrayal of the human form was rare.

Of the successive cities of Jericho, the second one, existing in the days of the Biblical patriarchs, fell about 1700. The third one, in Hyksos times, was larger and protected by great city walls, stone glacis and surrounding moat. It was violently destroyed about 1500 B.C. Very soon the fourth city was built and the fortifications rebuilt; it was smaller and crowded. A palace within the walls was destroyed during the 15th century, and the building which replaced it fell during the city's second destruction, in which the red bricks and stones of the city walls were badly jumbled, to be found centuries later among charred timbers and ashes by modern excavators. This catastrophe may be connected with the Biblical account in Joshua VI. It is possible that an earthquake may have been responsible either for the destruction of the city or for the temporary damming of the river Jordan, allowing the Israelites to cross. Such an event as the latter actually occurred as late as A.D. 1927. The evidences for the date of this fall of Jericho are conflicting. Fairly surely, it occurred between 1475 and 1300 B.C. Probably the Israelites came in successive waves, some as early as 1400, and Jericho's fall occurred in an

early wave, while Bethel, Lachish and Debir (Tell Beit Mirsim) fell only in the 13th century.

During Megiddo IX, the tribes of Syria and Palestine formed a strong defensive alliance against Egypt, which was trying to regain those provinces after evicting the Hyksos; and since there were strong commercial ties between Syria and Cyprus, Cyprian pottery forms naturally appeared in considerable number in Palestine as well as in Syria.

In Megiddo VIII, Bichrome ware was found along with Mycenaean ware and White-Painted, Base Ring and Wishbone-handled wares from Cyprus. There were also White-slip "milk-bowls," which ran unchanged from IX to VII. The defeat of the Syro-Palestinian coalition at Megiddo (Armageddon of the Bible) by Thutmose III of Egypt, already mentioned, may account for the rapid degeneration of the Bichrome ware in VIII. In Megiddo VII (1350 - 1170 B.C.), the chief pottery ware was decorated in red on a pink-buff wet-smoothed clay surface; an exception was a type of jug with palm-tree motif on a white slip. A typical jar type of VII, with flat shoulder and tapering body, was found also at Tell el-Amarna, where it was decorated in blue. This site in Egypt was the capital of the "heretic" (monotheistic) pharaoh Akhenaton (Amenhotep IV, 1377-60 B.C.). This king, the "Amarna Age," and the famous correspondence of the age will be discussed very soon.

That the Palestinians put much chromatic color on more than their pottery and items of personal adornment is attested by the remaining wall of a palace of the Megiddo kings. This palace, with additions, existed from stratum X to a late phase of stratum VII (1150 B.C.). The wall's mud-plaster surface had been painted in several colors. On excavation, the design could no longer be deciphered, but the colors recognized were blue, green, red, yellow, black and white.

The period we have just been reenacting, which extends from the time of Abraham to that of the "Song of Deborah," has been prolifically illustrated by the modern painters. We have mentioned some of those connected with the lives of Abraham, Lot, Hagar, Jacob and Joshua. It will perhaps be not out of place to devote a few more paragraphs to the paintings which reproduce the vivid drama enacted in the pages of the Bible in this period.

Returning to Abraham, we come first to the dramatic testing of his faith in the call to sacrifice his son. This event has been pictured by Rembrandt, by the 16th-century Italian, Andrea del Sarto, and by others, including the Indian voyager, Cosmas Indicopleustes, so early as the sixth century A.D. While del Sarto's picture is suffused with dramatic power, a treatment which is much more poignantly sympathetic is that of Fritz von Uhde, 19th-century German. The meeting of Rebekah and Eliezer was portrayed by Murillo, while her meeting with Isaac was drawn by Julius Schnorr, the 19th century German painter of Nibelungen Scenes in the Royal Palace of Munich and of many Biblical subjects. Esau seeking his father's blessing was depicted by Raphael assisted by his pupils Gianfrancesco Penni and Giulio Romano; the crafty way in which Esau was outdone by Jacob and Rebekah was painted by Murillo. Jacob's dream of the ladder reaching to heaven was done by Ferdinand Bol, 17th-century Dutch pupil of Rembrandt, by Raphael and by Lucas Cranach, 16th-century German friend of Luther. Jacob's meeting and ardent embrace with his cousin Rachel was done by Raphael, again assisted by Penni and Romeno, and by Palma Vecchio, 16th-century pupil of Titian. Jacob wrestling with the angel was painted by the 17th-century Italian, Salvatore Rosa, and by the 19th-century painters, E. M. Lilien, previously mentioned, Eduard von Gebhardt, Jacques Patisson and Paul Gauguin, who set the scene in Brittany with Breton women as audience. Jacob's receiving the blessing, in the

calm following the turbulence of the contest, was depicted by Rembrandt. His reconciliation with Esau was also done by Rembrandt, as well as by G. F. Watts, 19th-century English painter.

Another Englishman of the same period, Ford Madox Brown, pictured Jacob's partiality for his son Joseph, evidenced by his giving Joseph the "coat of many colors." Of Joseph's subsequent trials, his lowering into the pit by his brothers was portrayed by James Horthcote, pupil of Sir Joshua Reynolds. Joseph sold to the merchants was done by Flandrin, previously mentioned, in a picture marked by the rhythmic positioning of the many figures. This subject was done also by A. G. Decamps, Frenchman of the Romantic school. Joseph's interpretation of dreams in prison was a subject painted imaginatively by Thomas Stothard, a 19th-century painter. His interpretation of Pharaoh's dreams was done by Raphael and his pupils, by Harold Speed and by Peter von Cornelius, 19th-century painters. The glorification of Joseph by the pharaoh was portrayed by Tissot, painter of so many Biblical subjects which are now in the Brooklyn Art Museum and the New York Public Library. Jacob's dramatic planting of the silver cup in Benjamin's sack was painted by Francesco Bacchiacca, 16th-century Italian. In a painting by Peter von Cornelius, Joseph is shown making himself known to his brothers. Joseph's introduction of the old man Jacob to the Pharaoh was portrayed by Sir Edward J. Poynter, 19th-century English painter, while Jacob's blessing of Joseph's sons was reverentially painted by the great Rembrandt. Collectively, these paintings of the life of Joseph illustrate the greatest "success story" of ancient times.

We have described the completion of the expulsion of the Hyksos from Egypt by Ahmose; the first king of the brilliant Dynasty XVIII, which was destined to last for two and a half centuries. Ahmose was succeeded by Amenhotep I, who was followed by Thutmose I in 1525 B.C. The daughter of the latter was Hatshepsut, who was called by Professor Breasted "the first great woman in history." A son of Thutmose by a secondary wife married his half-sister Hatshepsut and ruled about four years as Thutmose II, and was followed by his son, a boy who ruled nominally as Thutmose III. But actually, the powerful Hatshepsut took control of the government. As a court official wrote in his biography: "The God's wife, Hatshepsut, settled the affairs of the Two Lands according to her own plans. Egypt was made to labor with bowed head for her." She proclaimed herself "king" and dressed in a king's costume with the white and red crowns of the Two Lands (two parts) of Egypt. The queen's favorite, Senenmut, put the Egyptians to work building her white limestone mortuary temple for her at Deir el Bahri, near Thebes and two great granite obelisks at Karnak. One of these, still standing, towers nearly a hundred feet high and weighs 350 tons.

At the northwestern end of the Upper Platform of the great temple, between the northern cliffs between the northern cliffs and a great wall forming the northern limit of the Inner Court, was a group of buildings decorated with much color in the Egyptian fashion. These included the Northwestern Hall of Offerings, the Altar Court with its Vestibule and the Chapel of Thutmose I. The Vestibule was approached by a door in a corner of the Inner Court and gave access to the Altar Court. Here was a small hypostyle hall whose ceiling was decorated with painted yellow stars on a blue ground. At one end of the eastern wall were five blocks with brightly colored signs and symbols. The south wall on the side of the Altar Court (not the walls of the Court itself) exhibited a sacred eye, a woman bearing a lotus flower, a fish and sketches of heads, all done in red. The Hall of Offerings also had a starred blue ceiling. A dado of red stripes was bordered and divided by black lines. The queen-mother of Thutmose I was pictured

in light yellowish brown or tan and almost grass green (a yellow-green), with her face the same yellowish brown. Thutmose's portrait showed the same green in the collar and belt, while a short skirt from belt to knees was almost white. The rest of the body was undraped and pictured in a terra-cotta red. In his hand the king carried a mace and a spear. The same colors were used in a niche in his chapel, where foods, pottery vessels and other objects were shown.

The ceiling of the Hypostyle Hall of the Northern Speos or Shrine of Anubis, on the northern half of the Middle Platform of the great temple, was painted blue and powdered with yellow stars. The architraves were also painted. Three chambers behind the shrine also had the ceiling done with yellow stars on blue, while the walls were elaborately painted. On one side of the door the Vulture of Upper Egypt was painted in orange-red or terra-cotta red, dull blue-green and tinges of yellow. On the other side, the Hawk of Lower Egypt was largely in greenish blue. The wings were tipped with reddish brown while the eye and claws were an ochery yellow, and the decorative border was in red, blue and yellow.

A statue of Senenmut shows him holding the queen's eldest daughter wrapped in his mantle. He had been entrusted with the child's education. Upon the death of the great queen in 1468 B.C., Thutmose III ruled alone. He expressed his resentment at the long suppression by his mother by chiselling out the figure and name of Hatshepsut wherever these were found on Egyptian monuments. He then went on to furious military activity. His grandfather, Thutmose I, had begun the subjection of the nearer parts of western Asia, but general revolt was current in the time of the grandson, the Canaanites and Hyksos expelled from Egypt having formed a confederation aimed at Egypt. Acting swiftly, Thutmose III surprised his enemies by going through a narrow pass in the Carrel ridge in Palestine, joining battle on the plain of Esdraelon. Soon the opponents fled headlong to the fortress of Megiddo, which they controlled, abandoning their horses and their chariots of gold and silver. Soon Megiddo too, which commanded the road from Egypt to the Euphrates, was besieged and captured.

In the next 18 summers, Thutmose III made 16 more campaigns, established Egyptian power as far as the Euphrates, and built a great empire. Returning from his campaigns each fall, Thutmose carried out large-scale building operations, which were supervised by his vizier, Rekhmire. The temple of Amun at Karnak was enlarged and beautified. On the walls of one of its corridors were inscribed the annals of Thutmose's 17 campaigns. He erected great obelisks, one of which can now be seen in New York City. The vizier Rekhmire was more than a prime minister, having powers like those ascribed to Joseph in the Bible. He is well known to us from scenes and inscriptions in his tomb giving his career.

On the left side of the wall of Rekhmire's tomb was a good representation of the products of the Sudan. Besides piles of ivory tusks and gold rings were animals: a bear, a baboon, an elephant and a giraffe with a monkey clinging to its long neck. There were prancing horses and chariots from Syria, fine vases, jewelry, and bows and arrows. In the inner part of the tomb were details of the funeral ceremonies, the banquet with guests wreathed in lotus flowers, and singers and dancers. In the tomb of Huy, a viceroy of the Sudan, was a drawing of Nubian women. The coloring was bright and crude, the skirts being striped with red, blue and yellow.

The great Thutmose III was followed, about 1436 B.C., by Amenhotep II, distinguished for his strength, his rowing, his horsemanship, his archery and his valor. When his mummy was found in the Valley of the Kings at Thebes, his famous bow, which he boasted no one but he

could draw, was found beside him. He was followed in turn by his son Thutmose IV. Dating in his reign was a wall painting in the tomb of Sebekhotep at Thebes. This portrayed bearded Semitic-looking ambassadors arriving at the Egyptian court with tribute. The foremost figures kneel and raise their hands in reverence to the pharaoh. All wore shawls wound around their bodies from the waist downward.

Thutmose IV was followed about 1406 B.C. by Amenhotep III, under whom the Eighteenth Dynasty reached its zenith of splendor and in its art. The Colossi of Memnon, each 70 feet high, were portrait-statues of this king. According to early tradition, the northern colossus in Roman times was believed to be a statue of Memnon, who greeted his mother Eos (Aurora), goddess of the dawn, with a sweet, plaintive note, when she appeared in the morning. The great colonnade of Amenhotep III at Luxor is famous among architectural monuments, while in painting a well-known scene is one of fowling among the marshes which was painted in the Theban tomb of Nebamun.

This age produced innumerable reliefs and wall paintings in temples, palaces and tombs. Most of the murals were found in the necropolis of the nobles at Thebes. Painting and relief were often combined. An example of this was found in Hatshepsut's temple in a scene representing rowers in a barge. Those in the foreground were carved in relief, while those in the rear were executed with flat painting to aid perspective.

The 18th-dynasty tomb of Nakht at Thebes has been often described. The colors are still brilliant. Terra-cotta red for flesh and black for hair predominate, with white for garments. The Nile is shown in muddy brown; trees and pools, green and blue. Grapes are in blue clusters with black dots, and yellow is also used. There were dancing and hunting scenes, and processions leading foreign captives. Nakht's pet cat was shown devouring a fish. Its coat was reddish yellow with black stripes, and its belly yellow and white. The lithe lines of the cat were well depicted. The scenes were the usual domestic and banquet ones and those of agriculture, with Nakht directing his servants and a fowling scene in which richly colored birds were caught in the net of a trap. The figure of a girl somersaulting, drawn on an ostrakon, or flake of limestone, showed the Egyptian advance in drawing over the Twelfth and earlier Dynasties. Now the drawing was freer, an attempt being made to draw the front and three-quarter view of the face, with varying success. Much trouble with representation of perspective was still encountered, but attempts were made to solve the problem. In a scene of inspection of cattle, now in the British Museum at London the artist has multiplied the outlines of the first bull and varied the color. In battle scenes, the marching lines were put one above the other; the figures in the same plane were merely juxtaposed, with height indicating depth. In landscapes, the realization of perspective was especially poor. But there was advance in realism and psychological characterization of the individuals in the figures, and advances in refinement and elegance.

In the fowling scene from the Theban tomb of Nebamun, this "scribe who keeps account of the grain" was shown standing in his boat with his wife and daughter, and with his boomerang drove the birds from the papyrus swamp. He held three birds that he had caught, while his hunting cat had caught two more in her claws and held the wings of a third with her teeth. Three herons were held as decoys among the lotuses and water-weeds. The water was indicated with the usual wave line. The main figure was drawn in long, firm strokes. Tradition was broken by drawing the profile correctly. The birds were painted with charming naturalism,

while delicately painted butterflies enhanced the gaiety of the scene.

At the time of Amenhotep III, Syrian influence was very great in Egypt. The tombs were full of pictures of beautiful objects of art from Syria and Crete. A change toward greater realism and the discarding of convention also occurred. These changes may have been due either to the pharaoh's wife, Queen Thyi, who has often been considered a foreigner, or to artists escaping from Crete, where (we shall soon see) disastrous events had just occurred.

When Amenhotep was in his old age and very ill, he associated his son Amenhotep IV with himself as co-regent. About 1377 B.C. the father died and the son became sole king. Revolt and invasion were already rife in Egypt's Asiatic provinces, but the young ruler did not, as his predecessors had done, undertake military campaigns to restore order. His thoughts and energies were devoted instead to philosophic contemplation and to religious reforms which amounted to a revolution. The young idealist and artist, with almost fanatic devotion, tried to replace the current religion of Egypt with a solar monotheism. The sun, always of paramount importance (along with the Nile) in Egypt, had been regarded as a god and identified with the eye of Horus, the falcon-god who represented the sky, with a scarabaeus rolling the solar globe across the sky, and with a calf, born each day to the cow-goddess, Hathor. The priests of Heliopolis, near Memphis, taught the worship of the sun under the name of Re, making this the keynote of the state religion in the Fifth Dynasty. But at Thebes, Amun (Amen), originally a ram-headed god of life or reproduction, became chief god. He too was connected with the sun and became identified with Re as the sun-god Amun-Re. His great temples at Karnak and Luxor were the center of the state religion. The identification of Amun and Re was theoretically a step toward monotheism; but in practice the religion of the people was a polytheism, with the other gods subordinate to the sun-god. The latter was represented in the form of several different animals. An important representation was as a man with a falcon head, on top of which appeared the solar disk. An old name of the sun disk was Aton. Amenhotep IV, in the hope of introducing a purer monotheism, with the sun freed from the old mythological connections, took several very bold steps. He changed his name Amenhotep, "Amen is satisfied," to Akhenaton, "He Who is Beneficial to Aton"; he ousted the powerful priesthood of Amon, suppressed Amon's public worship, and erased his name and those of the other gods from the monuments of the land. He then moved his capitol 300 miles southward to a new center of worship of Aton on the Nile. The new city was Akhetaton, "Horizon of Aton"; its site is now known as Tell el-Amarna.

But Akhenaton was not a practical politician, and Egypt was too steeped in the old traditions and too enthralled by its nobles, military leaders and priests of Amun, for the new ideas to be fully or quickly accepted. While the pharaoh was absorbed in religious matters, upheavals occurred at home and invasion came from without. The governor of Byblos wrote to Amenhotep III and to Akhenaten for help more than fifty times, and the governor of Jerusalem wrote repeatedly to Akhenaton to ask for Egyptian troops, stating that unless they were despatched to his aid the entire country would be lost to Egypt. Even a city in northern Syria wrote in the same vein. But all wrote in vain. These letters and others are known as the Tell el-Amarna tablets, for they were found accidentally by a peasant woman on the site of Akhenaton's Capitol. The clay tablets were written in cuneiform script in the Babylonian language. They contained largely diplomatic correspondence of the pharaohs with the kings of Babylon, Ashur, Mitanni and Hatti, and with Syrian and Palestinian vassals. In the letters, the

governor of Jerusalem mentions that "the Habiru are taking the cities of the king." The name Habiru is the same as that which appeared in Mesopotamia as early as the days of Rim-Sin (1758 - 1698 B.C.), who conquered Isin. It is phonetically similar to "Hebrew," so that a connection could exist. The letters showed that the foreign empire of Egypt was disintegrating. Akhenaton had no son of his own, so when he died (about 1360), his queen, the beautiful Nefretete, offered her hand and vacant throne to the Hittite king Subbiluliumas. He accepted both for his son. But the son died on the way to Egypt, and after a period of confusion, Akhenaton's son-in-law, Tutankhaton, took the throne. Not even Akhenaton's religious reformation was permanent, for Tutankhaton, after a period of early allegiance to Aton, changed his name to Tutankhamun and abandoned the new capitol and new religion and returned to Thebes and Amun worship.

But the influence of Akhenaton in art and literature remained. As we have shown, many foreign contacts and influences had already been felt in Egypt, and were accelerated under the two preceding pharaohs of the great 18th Dynasty. Akhenaton had himself allowed himself to be represented playing with his children and caressing a little daughter - he had seven - who sat on his lap. Instead of the stiff and formal attitudes of former kings, Akhenaton was pictured relaxed among his family. The new art was more natural, and "instinct with life" (Swindler). The emphasis is always on "truth," and to Akhenaton whatever was natural was truth. The realism of the period has been criticized as extreme but probably it was so novel in Egypt (or almost anywhere in the ancient world after Paleolithic times) that only the greatest artists succeeded in the new milieu while the others "fell into caricature." For some pictures of the king himself looked almost like modern caricatures. His artists represented him as a youth of gentle face and strangely long head. But he forbade the artists to make images of Aton, for the true god has no form; otherwise art was to be free. They showed him on ceremonial occasions with his beautiful queen beside him holding his hand.

The tombs of Akhenaton's courtiers at Tell el-Amarna, though mutilated by robbers after gold, exhibited many interesting and beautiful scenes. The coffin of the king was highly ornate and decorated with inlay of blue lapis-lazuli, red carnelian and blue glaze. Tutankhamun, the "King Tut" of the newspapers, who received so much belated publicity when his tomb was opened in 1922, ruled without distinction. He or the priests of Amun effaced the words Aton and Akhenaton from all the monuments; and the priests forbade the name of the heretic king to be spoken by any one. They also vented their spleen on the Hebrews. But they went further and ascribed to Amun the monotheistic position of Aton; and Amun never again regained his former importance. Subbiluliumas had annexed the whole region between the Euphrates and the Lebanon, at times invading the provinces of Syria and Palestine, which were still nominally at least Egyptian. Tutankhamun went forth to stem the Hittite tide. Fortunately, the Hittites in Palestine were decimated by a pestilence, which forced them to leave. Tutankhamun and his general Horemhab were thus able to claim an important victory. But the former's reign was not long; and he died at the age of about eighteen. Among the royal tombs in the Valley of the Kings, his was the first to be found unlooted. And the young king's tomb contained a variety of objects which may never have been equalled in richness and rarely excelled in beauty of design and workmanship. The earliest known welded joint was on an iron headrest from Tutankhamun's tomb.

Besides a great throne or chair of state, beautiful alabaster vases, a gold portrait mask

from the head of the king's mummy, with the headdress and collar inlaid with many-colored opaque glasses, there was a box, painted on the lid with a scene of the king hunting lions and (on the obverse) with a desert landscape, and on the sides with battle scenes. These all had a miniature-like fineness of execution. The wooden frame of the chair was covered with gold; on it in open-work gold were shown the intertwined lotus and papyrus, symbolical of the union of Upper and Lower Egypt. The arms were serpents which wore the double crown. The back panel exhibited a charming scene of brilliant color harmony. The king and his young queen, the daughter of Akhenaton, were seen in a room of the palace. She bent forward with tenderness to anoint him with perfume. Both were elaborately dressed; and the room was adorned with columns decorated with lotus and papyrus flowers and a deep border through which the sun shone, its rays terminating in hands that symbolized the god Aton. The panel was a brilliant bit of decoration.

Tutankhamun was followed briefly by Eye (called also Ai, Aye and Tiy), and then by the general Haremhab, who initiated Dynasty XIX. In this dynasty the glory of the Empire was continued. Haremhab was an able administrator, kind to foreigners as well as to Egyptians, and promulgated practical edicts for the abolition of various abuses. His tomb in the Valley of Kings had a unique sort of decoration in very bright color. He had no son and was succeeded by the son of one of his army officers. This man, already old, ruled briefly and was in turn succeeded, about 1319 B.C., by his son Sethi I. Sethi made a successful expedition into Syria and reestablished naval bases for the Egyptian fleet at certain coast towns. He made a difficult journey into the Sudan to increase the flow of gold to Egypt, making maps of the routes to the mines. One of these maps, in the Museum of Turin, is one of the oldest maps known. Sethi's funerary temple is at Gurneh. His temple at Abydos contains some of the finest and best-preserved decoration in Egypt. He built the great Hypostyle Hall at Karnak, or at least the columns and wall-reliefs there; but the work was completed by his son. The object of the wall decorations was to glorify Amun-Re and the rewards he bestowed on Sethi. In an expedition, Sethi occupied the town of Kadesh and the land of the Amorites, then coming to grips with the Hittites. He was successful in the resulting battle, the first contest between these two great military powers. The Hittite penetration beyond the Orontes river was halted, and the Egyptian protectorate was reestablished over Palestine and the Phoenician coasts.

Sethi's successor, Ramesses II, fought the "Asiatics" throughout the 67 years of his long reign (1301 - 1234 B.C.). On his accession, he was young, ambitious and warlike. He moved his capitol to Avaris to be nearer the Asiatic provinces. The Hittite ruler realized that a struggle with Egypt was imminent, and collected troops and raised levies from all parts of his domain. Among these were many barbarian mercenaries. These soldiers would hire themselves out to the highest bidder, be it Egypt, an Amorite prince or the Hittite. Their restless movements from their earlier homes were part of a general situation which was inimical to the Hittites. The Achaean invasion of the 15th century had replaced the Cretan civilization by that of the Myceneans. The warlike and maritime peoples of western Asia Minor (Phrygians, Mysians, Lydians, Carians and Lycians) yielded to impulses coming across the Hellespont, left their homes and migrated to the Aegean islands, to Cilicia in southern Asia Minor, to Phoenicia. and to Palestine. Even in the days of Akhenaton, the Amarna tablets spoke of "Danauana," "Shakalasha," and "Shardana" at Byblos and of Lycians in Syria. By 1300 B.C., what had before been a gradual infiltration, became a steady migration. Archives of the period reveal many

peoples of Asia Minor grouped round the Hittite army in Syria. Then appeared for the first time those names made famous by Homer's poems, such as the Dardanians (Dardanui), beside the Lycians and the Danaeans. These peoples from the Troad (the country around Troy) had emigrated towards the Fertile Crescent under the pressure of the Achaeans and Phrygians coming from across the Hellespont.

Wedged between the Egyptians and these peoples from the Troad, the position of the Hittites was awkward. But Subbiluliumas and the kings who followed him were clever politicians. With the strong Hittite army itself as a nucleus around which to gather them, the Hittite rulers bound the immigrants by contracts as mercenaries. The petty kings and princes of Syria and surrounding lands they bound by treaties. Thus the Hittite kings could array against Egypt a powerful coalition. Muwatallish (or Mutallu), contemporary of Ramesses II, wrote to the king of Aleppo to remind him of his treaty with Mutallu's father, and wrote in similar vein to others. But the Egyptians too had Shardana mercenaries in their army, armed with long iron swords, men who were fair of skin and tall of stature, unlike the Egyptians.

The campaign of Ramesses in his fifth year (1296) led to the battle of Kadesh, the first of the world's great battles of which we have a detailed account. The two armies met in the valley of the Orontes, close to Kadesh. Mutallu's strategy was clearly superior to that of Ramesses' advisors, but the latter's troops, because of better discipline and better defense, and because of the great personal valor of the pharaoh himself, at the end of a long day's fighting remained masters of the field. But Ramesses lost practically all of one of his four divisions, so that his victory was a Pyrrhic one. The Egyptian reliefs show Hittites being thrown into the river before the eyes of Mutallu, some being rescued by the garrison of Kadesh, and the prince the of Aleppo being held head down to rid his lungs of the water he had swallowed. But Kadesh was not taken, and Ramesses returned to Egypt to celebrate his "victory," and sacrifice some prisoners to Amun.

In the following years, Syria and Palestine again arose against Egypt. Ramesses II had to reconquer the western half of the Fertile Crescent step by step. A siege of Ascalon and of Dapur in the Amorite country was depicted on a bas-relief in the Ramasseum, the funerary temple of Ramesses at Thebes. These and other campaigns occupied sixteen years without coming to any definite conclusion.

While the Hittite-Egyptian rivalry occupied the center of the ancient world's stage in this period, another rivalry, that of Babylonia and Assyria was being played out on an eastern wing. Under Shalmaneser I (1272-43 B.C.), Assyria not only freed itself from the nominal suzerainty of Babylon, but conquered the Diarbekr copper region on the upper Tigris and crossed the Euphrates to take Carchemish. Thus the Hittite flank was attacked by a fresh and vigorous new enemy. Hittite diplomacy again was called on to retrieve a precarious situation. The current Hittite king, Hattusilish III, a brother of Mutallu, reminded the Kassite king of Babylon, Kadashman-Enlil II, of old Hittite alliances with Babylon; but he was unable to persuade the latter to proceed against Egypt. Hattusilish therefore "reversed his alliances" and (about 1282) drew up a peace treaty with Ramesses, based upon an equitable division of Syria. The Egyptian version of this important international treaty is engraved on the walls of Karnak and the Ramesseum. Excavation at Boghaz-Köy has revealed two copies of the Hittite version, written in Babylonian. The two kings not only agreed to non-aggression against each other, but concluded a defensive alliance against mutual enemies and arranged for extradition of political fugitives.

Hattusilish, whose autobiography shows his life story to have been a romantically interesting one, thus averted for a time the break-up of the Hittite empire, which did not come about until the end of the century, or somewhat later. In 1267 B.C., Ramesses married a daughter of Hattusilish, and the Hittite king took the extraordinary step of conducting his daughter in person to Egypt.

Ramesses II, apparently happy in the Hittite alliance, was fully alive to all its advantages. Knowing of the Hittite mines, he hoped to secure iron from the land of Kizwadna (Cilicia) in the Hittite country. The Asiatics, to whom the Achaeans and Dorians from Europe were bringing iron, and later, steel, hitherto almost unknown to the Asiatic people, also were well supplied. In answer to Ramesses' inquiry concerning iron, Hattusilish replied: "As for the pure iron about which thou writest to me, I have no pure iron in my magazines in Kizwadna. The moment is not opportune for the manufacture of iron. Nevertheless, I have written ordering the manufacture of pure iron. As yet it is not finished, but, as soon as it is, I shall send it thee. Today, I send thee only an iron dagger."

Under the son and grandson of Hattusilish, the Hittite possessions crumbled away, largely due to attacks by the Phrygians and the so-called "Sea Peoples," of whom the Philistines were the most important, so that the Hittite empire almost disappeared from history. Meanwhile the Assyrians under Tukulti-Ninurta I (1242-06 B.C.) crushed the Hittites' ally, the Kassite dynasty of Babylon, occupying this capitol for seven years, and began to restore the union of the Semitic peoples of Mesopotamia.

The attacks on the Near-Eastern countries, resulting from a great migration of Aryan-speaking people from the north (Achaeans and others from Europe) and of Peoples of the Sea, will be described after bringing the stories of Egypt, Crete and Greece down to the 12th century.

Continuing with Egypt for a time, we proceed from the reign of Ramesses II to that of Merenptah (1234-26), who was no longer young when he ascended the throne. He has sometimes been considered the pharaoh of the Exodus, though more likely this was Ramesses II. He defended Egypt against Libyans and peoples from around the Mediterranean Sea, who were pushing into the western Delta, and carried on campaigns in Palestine and Syria. His funerary temple was just behind that of Amenhotep III, which he ransacked to furnish his own. On a large black stela of the earlier ruler's, Merenptah carved the story of his victories. He stated here that "The people of Israel are laid waste and their seed is destroyed." This is said to be the only Egyptian inscription mentioning Israel. It shows at least that Israel was in western Palestine about 1230 B.C. Merenptah built a palace at Memphis whose columns showed a curious decoration of colored faience inlay. His reign is generally considered to mark a decadence in art, for what art gained in technical perfection, it lost in vigor and grandeur; but graceful lines and pleasing color at least were present in the period.

After Merenptah, a period of more definite decadence followed, during which various usurpers took the throne and the kings (Amenmose, Ramses-Siptah and Sethi II) were of little importance. Order was restored by Seth-nakht, who founded the Dynasty XX.

This may be a good point to review Egyptian uses of color which have not already been described. Perhaps we may begin with the three important decorative motifs employed in the embellishment of temples; these were the papyrus, the palm and the lotus. The last-named was very popular and was of two varieties, the blue lotus and the white lotus. Craftsmen used the

lotus form in cups and cosmetic boxes, wove it into textiles and incorporated it in glazed tiles, while architects and builders used it to decorate columns. The papyrus was employed as a bell-shaped mass of petals or as a cluster of buds. In sculpturing, the sense of power exhibited in the head of Amenemhet III, the psychological characterization in that of Akhenaton and the simple charm of the head of his queen, Nofretete, are worth comparing with earlier Egyptian portrait statues. In place of the grandeur or nobility of the earlier work, we see that the artist was now at pains to express the significant individuality of the subjects. In the case of Nofretete, we see a sensitive, aristocratic face and queenly bearing combined with simple, unaffected grace. The modelling is delicate and the color charming, - contrasting blues, browns, tans and reds, all in moderate saturations. The increased expression of emotion and the inner self, which was no doubt given additional impetus in the time of Akhenaton, was a change in Egyptian art, and may be seen also in the reliefs of the period and in the wall decorations. Composition was still good, and the color harmonious, but the bright colors were still laid on flat. Line was graceful and expressive; but there was very little modeling with light and shade. And painting was still an accessory to sculpturing and architecture.

In the minor arts, the use of glazing in beads, pendants, scarabs, amulets, figurines and vases, especially the deep, saturated blue attained by the use of copper, was noteworthy. A similar deep blue was obtained in glassware. The Metropolitan Museum of New York has a glass vase of dark blue with a "dragged" pattern in light blue, yellow and white. This zigzag pattern was formed from threads of colored glass dragged back and forth by a hooked instrument. Besides the colors named, others used were violet, green, orange and black. Segmented and perforated beads, which have a long history in Egypt and the Near East generally, especially of blue faience, reached a peak of production during the time of Dynasty XVIII. The bluish glaze color was found on a scarab of Amenhotep III, on segmented beads from Tell el-Amarna, and on similar beads dating 1200 - 1150 B.C. from Lachish in Palestine.

The pigments used by the Egyptians in the tempera process were a charcoal black, a lime white, "Egyptian blue" and its green variant (previously described) from quartz, alkali, lime and copper ore; and yellow, red and brown others. Gray was made from a pale yellowish earth with a little lampblack. Blue was used very little in the time of the early dynasties, but more when Egyptian blue came into more general use. The backgrounds in the early periods were often Nile mud; in the Old Kingdom, unburnt gypsum was used. In the New Kingdom, the ground was often violet. Lime plaster was used, but the process was not fresco painting.

In this period, painted stucco relief was developed, and is illustrated by the "Jewel Relief." Here a man's hand, dark red with white nails (the reverse of our modern female ones) toyed with a necklace of gold beads which is attached to some blue material. Belonging to this period, too, were the forerunners of the so-called "miniature frescoes." These showed crowds of spectators whose heads were outlined in black against wavy zones of yellow and blue. Here too belonged the earliest examples of architectural frescoes, depicting palace shrines or altars.

Some time around 1600 B.C. there was a sudden transference of the Minoan brilliance of the preceding century to the Greek mainland. This was probably in part connected with an earthquake disastrous to the MM III centers. Greece, already peopled by many Achaeans along with older peoples, was conquered by Minoan culture, though not by military conquest. The Cretan civilization spread even to Thessaly and Macedonia, as it already had around the Aegean world and in the West. Cretan traders too were dominant in the Cyclades and on the mainland.

The palaces at Knossos and Phaestos were rebuilt more magnificently; new palaces and villas were built at other sites, and the whole island enjoyed a period of prosperity. Linear writing became very common. By the end of the century Crete had probably reached its golden age. The number of rich cities and luxurious palaces shows that the island had not reached political unity; but the population centers were rivalling each other in prosperous competition. It was the age of the most splendid frescoes and painted reliefs in the palaces. Carving on steatite vases, ivory and gold statuettes, and bronze-working flourished. The period was marked by a great wealth of faience objects, including the segmented faience beads, which were exported to Egypt and elsewhere. It was marked, too, by a mature naturalism in art, contrasting with the younger vigor of Middle Minoan. But later, as too often happens, this gave way to conventional and stereotyped forms. There was a tendency toward an artificial arrangement of designs so as to achieve a frieze effect. A so-called Palace Style arose in which all art centered around the king and painted him as if endowed with divine attributes. This phase culminated in Late Minoan II, when art finally lost its spontaneity, and the decoration was overdone.

The subjects of LM I were mainly religious or processions probably ritualistic in character. The paintings were marked by animation, boldness, good composition and clear, vivid colors. The famous "Cupbearer" was shown against a contrasting background of alternating strips of yellow and bright blue. The same kind of ground, but red and yellow, was used for the painting called "The Chieftain." In other cases, red and blue were contrasted. The Cretans seemed to love these strong contrasts. The Cup-bearer's head was below wavy stripes of blue, black, red and yellow. His loin-cloth was richly embroidered in red and blue patterns on a reddish ground. The clear blue color predominated. The drawing was bad, and the eye was in front view in the profile face; but the ensemble was of considerable artistic merit and interest. The same was true of the portrait of a vivacious girl, sometimes called "La Parisienne," who wore a blue and white dress with black and red stripes. This may have been of MM II date. The Chieftain fresco had conventionalized. red lilies with blue stems and leaves. The color scheme was almost wholly red, blue and yellow, and was repeated in the feather headdress. The wavy zones of contrasting yellow and blue were present also in the frescoes of the "Corridor of the Procession," in the Western Court at Knossos. In the "Pillar Shrine" here was a gay orgy of color, with red predominant; along with this were blue, white, yellow and black. The "torreador" or "Cowboy" fresco from the same place was boldly executed; on a clear blue ground, a charging brown and white bull and an acrobat who has just landed, feet over head, on the bull, furnished swift and violent action. The rider was nude except for a yellow loin cloth. His flesh was painted deep red.

Any such examples might be multiplied; but enough have been given to gain a fairly true picture of the Cretan's love of color and contrast and the spirit of their art. In Cretan painting, the feeling is of vital animation and a people in love with life and gay activity. There was no perspective, chiaroscuro nor modelling of figures; the painting was entirely "flat" except for a few modest attempts at depicting the third dimension. Interesting features were the strongly contrasting colors, especially in wavy zones, and the convention of red for male flesh, and white for female. There was little of the formalism of Egyptian art, in spite of the many contacts with Egypt.

LM I vases exhibited advance in technique. Some were still painted in the style of the end of MM III with white designs on a dark ground. But more frequently they were executed in

the fully developed Mycenaean technique of dark brownish black glaze paint on the light ground of the clay. A combination of the light-on-dark and dark-on-light characterized a transition period. The eyes of spirals were commonly ornamented with a circle of white dots, and bands of dark paint were often used as the ground for rows of dots or leaf-like splashes of white. Pure naturalistic designs were frequent: grass patterns, the crocus, marguerites, foliate sprays, tendril patterns, ivy or heart-shaped leaf, the nymphaea, and marine designs (octopus, nautilus, Triton shell and seaweed). These graceful and decorative designs contrasted with the art of Egypt and Assyria of the time. But bold handling was characteristic of the period in Crete.

In Late Minoan II (1500 - 1400 B.C.), the palaces at Phaestos and Hagia Triada were destroyed and most of the sites other than Knossos declined in importance. Knossos became supreme under King Minos, after whom the Minoan civilization was named. The Minoan thalassocracy (rule of the sea), famous in Greek tradition, reached its zenith. The Cyclades and mainland Greece were conquered and forced to pay tribute to Knossos. Connected with this situation was the legend of the Minotaur and that of the hero Theseus and the fair-haired Ariadne.

The story goes that Minos had conquered the Athenians in a war of revenge for the murder of his son, and Athens had twice paid a tribute of seven youths and seven maidens to be fed to the Minotaur, terrible monster, half-bull, half-man, in the intricate building known as the Labyrinth, out of which it was practically impossible to find one's way. Theseus, son of the Athenian king Aegeus, asked to be chosen one of the third levy of youths when the time came due, in the hope of killing the monster and freeing his country from the horrible tribute. The sail of the tribute ship was black, symbolic of the gruesome mission. Theseus agreed with his father that if he killed the monster he would hoist a white sail on the return voyage. When he arrived at the Cretan court, his beauty and probable tragic fate so aroused Ariadne, the daughter of Minos, that she assisted Theseus to enter the Labyrinth with a sword with which he slew the monster. He then retraced his steps by means of a thread that she had given him with counsel as to its use. He then escaped with Ariadne and his companions. But in joy for their deliverance, he forgot to hoist the white sail. The old king, his father, peering from the cliffs over the sea, glimpsing the black sail with its supposed ominous message, cast himself into the sea. From his name, Aegeus, it was ever afterwards called the Aegean Sea. Theseus then became king of Athens. According to Homer, the poor Ariadne was slain by the goddess Artemis (Diana), but more commonly she was said to have been deserted by Theseus and found by Dionysus (Bacchus), who married her and placed the marriage crown he gave her among the stars. Pictures of her were painted by Guido Reni, by Jacob Jordaens, by Angelica Kaufmann, by Gaspard Duguet, brother-in-law and pupil of Poussin, and by the great Titian.

A limestone sarcophagus of the LM II period from Hagia Triada was painted with red, blue and yellow on a cream-colored ground. The main patterns along the side were framed by red, white and blue spirals. The animals represented in a scene were rendered in the "flying gallop" pose, familiar in Cretan art, but most inappropriate here. The frescoes of the Throne Room of Minos belong to this period or later. A hybrid animal here bore a red, white and blue spiral on the shoulder with a rosette center, while the background had the familiar division into waves of vivid red and yellow, against which couchant gryphons faced the throne in a conventional landscape.

The mural frescoes, as well as the seals, give us a good picture of the costumes of the

period. The men wore a simple loin-cloth, into which a short dagger was thrust, along with a short kilt; these were drawn in tightly at the waist, producing an athletic but almost wasplike effect on the figure. The ladies wore long, elaborately flounced skirts, tight at the waist and wide at the ankles. Their bodices were low in front, exposing the breasts, but behind the necks they rose like Medici collars. Both men and women wore wrist bracelets to which were attached engraved seal-stones.

LM II pottery exhibited no sharp break from that of the preceding period. Characteristic were large decorated amphorae and pithoi. There was a tendency toward a "close" and showy ("rococo") style and the use of quasi-architectonic devises (carved stone friezes from the wall of the Great Palace). The designs, while still naturalistic, became more conventional. An easily drawn leaf pattern and groups of three leaves occurred frequently, along with conventional flowers, lilies and palms. Spirals, which were used in LM I, continued in use; they were often enriched by a rosette within their volutes. Dots and festoons were also used. These features constituted the "Palace Style." The only color was plain lustrous red to black on the buff surface of the vase (the Mycenaean technique).

This style of art had a wide influence outside of Crete, especially in Greece, the Aegean islands, Cyprus and Troy. Most of the Grecian vases with this "varnish" surface were not imports but vases made by Cretan potters in Greece. But the rich Mycenaean chiefs in lofty citadels also ordered weapons, ornaments and precious vases from Crete, used them during life and buried them with the dead in their graves. Besides the potters, the Mycenaean lords also employed Cretan masons and painters. In Crete, when the palaces were again destroyed at the end of the period, the Palace style declined.

In the Late Minoan III period, the Mycenaean age, the Achaean or Mycenaean Greeks, long numerically predominant in Greece, became politically supreme. During the two preceding centuries they had been acquiring the Minoan civilization, and had learned from Crete how to make use of naval power. Powerful chiefs at Tiryns, Mycenae and other sites had built strong citadels, from which they sallied forth to rove the seas, at first practically as pirates, later as merchant princes. The Egyptian pharaohs, Amenhotep II and III, had begun to trade with the Achaean princes directly instead of through Cretan traders; and in some cases even established diplomatic relations with them. The leadership in Aegean civilization had steadily passed to the Achaeans. Unlike the Minoans, the Achaeans were a warlike race, and often imposed their civilization and trade by force of arms. They threw off the Minoan domination and refused to pay the hated tribute any longer.

Finally, about 1400 B.C., they took revenge on Crete, ruthlessly destroying the palace at Knossos and other cities. After that, Egyptian records were silent about Crete. A round-headed race became dominant there in place of the long-headed Minoans. Achaean place-names replaced some Minoan ones, and bearded Achaeans instead of the shaven Minoans appeared in art. Mycenaean "beehive" tombs and rock chambers and the Greek house with its megaron, or main hall of state, became the style in Crete. The old Minoan culture gradually declined, though it was by no means destroyed. Though the towns were rebuilt, their poverty contrasted with the magnificence of the earlier cities.

In the LM III or Late Mycenaean pottery, there was a falling off of quality in both clay and paint, and the style became more lifeless and uninteresting. It was marked by the frequency of a degenerate "octopus" motif. Purely naturalistic designs were obtained from

fishes, birds picking up worms or seeds; more conventionalized patterns came from flowers, the triton shell and the octopus, along with a "rock-work" pattern. The smooth yellowish clay of the vases took on a greenish tinge, while the previously brilliant glaze became a lusterless black, often burnt at too high a temperature. A tendency to use geometric forms for decoration and the taking over of figured scenes from wall painting, a borrowing to which the old Cretan potters were not prone, was probably due to Grecian influence. Wall painting borrowed from Cretan technique still flourished on the Greek mainland, though it was dying out in Crete.

Returning now to Greece, which we left with a brief mention of Middle Helladic II, we find that Minoan polychrome pottery was both imported and imitated in Greece, though the "MH II" culture was typified by gray and yellowish Minyan ware and the cist graves found all over Greece and as far as Thessaly and the Ionian Islands. Many authorities think that the "Minyans" were the first Indo-European speakers (Aryan "Hellenes") to reach Greece. Battle-axes and other weapons are thought to have a northern character, supposed to have come from beyond the Balkan mountains. But the question is not certainly settled, for battle-axes had long been common in Anatolia, and gray ware, as we have seen, was characteristic of early cultures of northern Iran.

Professor C. S. Coon ("The Races of Europe," Macmillan, 1939) summarized the racial history of Greece as follows. During the Neolithic, the people were of a Mediterranean type found also in North Africa. In the Chalcolithic Age, immigrants from the Cyclades, ultimately of Asia Minor origin, introduced copper and the Mother-Goddess cult and settled around the Isthmus of Corinth. Before 2000 B.C., Painted-Pottery people with a Danubian culture were driven from the north into Greece by the Corded (Battle-axe) people. Between 2500 and 2000, skulls indicated a Dinaric type, such as those of early Cyprus or the later Balkans, also present. Between 2000 and the period of Homer, there were more invasions. About 1900 B.C. came the Battle-axe folk themselves; either they or the Danubians brought the Danubian basis of the speech of the Hellenes. Between 1700 and 1400, in increasing numbers toward the latter date, came the Minoans from Crete, who founded the so-called "long genealogies," dynasties of rulers at Thebes, Athens, Mycenae and elsewhere. Finally came "divine-born" foreigners, such as Atreus, Pelops, etc., "who came across the Aegean in ships, learned Greek, usurped thrones, and married the daughters of the kings of Minoan ancestry." These "foreigners" were the ancestors of the Homeric heroes of the famous Trojan war. They seem to be mainly of Battle-axe Mediterranean or Nordic type. The post-Homeric and Iron-Age Dorians, according to Professor Myres, were not fresh invaders from the north, but "Greek speakers who had been isolated in the Mt. Olympus region by the warlike activities of the Thebans, and who had obtained iron from, Asia Minor." The crania dating to Middle-Hellad times support the idea that the bulk of the people of this period were Mediterraneans representing the Minoan conquerors from Crete.

It seems probable that the Hellenes of the Minyan pottery were the destroyers of the second city at the site of Orchomenos in Greece about 1900 B.C. The third city there was twice rebuilt; and the Hellenes extended their rule rapidly toward the south, overrunning Greece and even some of the neighboring islands. About 1650, the second city at Lianokladi was destroyed and a third one arose on its site. Before 1600 however, the merchant princes of Crete became dominant through most of Greece, where their influence had already been felt, and the Hellenic rule came to an end for a time.

It was once thought that a Cretan prince had established himself at the famous city of Mycenae and that members of his family had been found by the archaeologist Schliemann, interred in the so-called "Shaft-graves" there, which date in the 16th century. With the Shaft Graves began the Late Helladic or Mycenaean period (1575- 1025 B.C.) The latter name was applied because of the great wealth of jewelry, gold objects and pottery found at Mycenae. The rich accompaniment of the bodies in the graves included, in two cases, golden masks covering the faces of the deceased. One mask showed a beardless man, but the other had a beard, a feature unknown to the Cretans, suggesting that the wearer was of another race. This fact, the lack of a sharp break between the Middle and Late Helladic periods, and the persistence of important differences between the cultures of Greece and Crete, all indicate that the new rulers who peacefully established themselves on the mainland were not merely Cretan. But the period was unquestionably one of Minoan ascendancy. Henceforth, Mycenae was the center of a thriving trade between Europe and the Orient, trade of a magnitude greater than ever before. During the 16th and 15th centuries, mainland traders were replacing Cretans in the trade with Asia Minor and the Aegean region; and in the following two centuries the Greek mainland influence was paramount. In several of the Shaft Graves, fragments of the magical yellow amber were found, indicating trade relations with the Baltic region across Europe; and in one were spherical beads of faience.

The men who made the famous daggers from the Shaft Graves were skilled metal craftsmen. They clearly wanted to obtain contrasts both in color and relief (and shadow from the latter) in decorating their work. In the background of a scene with lions in relief on one dagger, are rocks inlaid in bands of gold, electrum and silver. On another showing cats, birds and flowers of inlaid gold, silver and copper, the background was of "niello" on a silver plate. Niello is a dark gray composition, generally of silver, copper, lead and sulfur.

In the pottery, the transition from Middle to Late Helladic is illustrated by wares from Prosymna. Here were two-handled jars, of a type common in Matt-Painted ware, of local clay and decorated with poorly drawn Middle Minoan III patterns, but not with the matt paint of M. H. times; instead, they were ornamented with a lustrous glaze. In this ware we see early signs of the growth of Minoan influences on mainland arts and culture which were to become such an important factor in the following two or more centuries. The common L.H. I pottery was decorated with a lustrous glaze, varying in color from black to red, applied on a slip of the same color as the clay, which varied from yellowish green to "pinkish buff." This ware was found in the form of goblets with stems, cups of the Vaphio shape presently to be described, hole-mouthed and handled jars and beaked jugs. An interesting form was the "alabastron," a squat variety of globular bowl, probably derived from a stone original. Alabastra were imported from Egypt and were copied in Late Minoan I. The patterns of the period were chiefly linear, including running spirals, festoons and groups of lines, straight or wavy. There was also some use of naturalistic (plant) motifs; and these and the spirals are thought due to Cretan influences.

The Shaft-grave epoch, as indicated, while dominated by Cretan products and the Cretan spirit, partook also of a warlike character not Minoan. Along with the several extended bodies in each of the graves (except one) was imported Minoan pottery as well as Helladic Minyan and matt-painted vases. Most weapons and ornaments were evidently produced by Cretan craftsmen. Men were shown in Minoan drawers and women in the Minoan flounced

skirt. Minoan signets and script were employed in business. The game of checkers was played in Greece, as in Crete. The transplanted cult of the Mother Goddess was associated here, as in Crete with the dove and the double-axe as symbols along with the sacred pillar and horns of consecration.

But stelae, which probably marked the graves, were carved in low relief (an art unknown to the Cretans) with battle scenes which show horse-drawn chariots for the first time in Greece. Spear-heads were also of mixed type. And the popularity of battle-scenes in art was itself foreign to the Minoan spirit. Apart from its magnificence, Mycenae was important as the meeting-place of East and West; and, though the roots of its civilization derived from Minoan soil, it was an essentially European culture.

It is probable that the lords of Mycenae, Tiryns and Orchomenos controlled the trade-routes from the south of Greece across the Isthmus of Corinth and the mountains northward into Europe; and that they controlled deposits of copper as well as the tin of Crisa, the ancient port of Delphi. Because of these strategic controls, they were strong enough to act as the Greek mainland partners of the Minoan commerce and power.

The Late Helladic or Mycenaean period is also that of the famous frescoes of Mycenae and Tiryns (in Argolis, Greece). Though it is difficult to date them exactly, an important authority considered those at Mycenae older and better executed than those of Tiryns. The paintings of the first-named site were mainly epic in character and pictured hunts and battle scenes. There was free arrangement of figures in the composition and vivid action, but the colors were "muddier" than those of Crete. The background was still not all of one color, but in some early work was in part dark or brownish yellow, in part grayish blue. In the latest frescoes, it was a uniform blue.

Paintings of women in the loggia of a shrine at Mycenae were inferior to similar ones in Crete. On a blue ground was an ocher yellow at the right, white above and red in architectural parts, all in al fresco technique on the moist stucco. Contours of figures were outlined in dark red, and this outline was filled in with white. Sleeves were done in yellow over the white of the arms. All black details were finally added.

Probably of LH I date, but of better quality than the paintings of Mycenae, is a group of fragments discovered in the "House of Kadmos" at Thebes, representing women in a procession. They are in a frieze, seen moving in different directions against a background of yellow, white and blue. A woman holding a polychrome vase is in a bodiced dress with flounces colored blue, red, yellow, black and white. Below is a baseboard in yellow, grayish blue and red, drawn to imitate marble panelling.

A fragment of a painting from the older palace, found in the forecourt of the megaron, or great hall, showed two hunters against a midnight-blue ground. One man wore a bluish white tunic with a black border; the other, a yellow one. The flesh of the men was in terracotta red. Black was used for details such as hair and eyelids. Eyeballs were in white. Faces were outlined in black. Two spears carried by each hunter were in red. The figures seem heavy and awkward, but with several Cretan features.

About 1500 B.C., the Shaft Graves of the rulers gave place to a stone-built type of developed chamber-tomb which was round in form and finished with a corbelled vault, and called a "beehive tomb" or "tholos." The period of these tombs is known as Late Helladic II. The people still clothed themselves with a slightly barbarized Minoan costume, the ladies wearing

open-breasted jackets, flounced skirts and gaudy earrings and hairpins. In the tombs at one site was a great wealth of the yellow amber beads, the beads and spacers being of the same form as were current in northwest Europe from Denmark to Bohemia. Many of the tholoi yielded pottery of the L.M. I-II styles, but others were Late Mycenaean (L.M. III or L.H. III). While the Palace Style flourished in Crete, the vases made (by Cretan artists) in Greece had the glossy "varnish" surfaces. As to the tombs themselves, their origin is not known, but forerunners of the type are known from Enkomi in Cyprus, and, with a square instead of rounded plan, from Megiddo in Palestine, both dating from around 1550 B.C., thus earlier than the Greek tholoi. Nine of the latter are known, including the late ones of the 14th century known as the "Treasury of Atreus" and the "Tomb of Clytemnestra." The beehive tombs were probably those of a new dynasty ruling during L.H. II and part of L.H. III.

Just as the break between Middle and Late Helladic times was not a sharp one, so also was the change to L.H. II gradual, though we suggest a conventional date from 1500 to 1425 B.C. for the period. The pottery continued much as before in fabric, slip and paint. The best representatives of the L.H. II pottery at one site were a cup, of the shape of the famous "Vaphio cups," decorated in brilliant brown black paint, and a jar with matt-painted curvilinear decoration. The Vaphio cups themselves came from a tholos-tomb from a place of that name in Laconia (Greece). They were exquisitely done golden cups with a wild-bull hunt embossed in relief. They were found along with yellow amber and violet amethyst beads. Some L.H. cups of the Vaphio shape, found at Eleusis, were decorated with spirals painted in lustrous black and touched with white. In the Argolid and Corinth regions of Greece the use of naturalistic decoration reached its apogee, remained at this pinnacle for a brief period, then became part of a style which was somewhat florid, and finally ended in a period of artistic decline. Cretan influence is seen in naturalistic floral patterns (lily, papyrus, crocus, palm, iris, ivy and daisy) and marine motifs (octopus, nautilus, seaweed and rock patterns). Deep low-stemmed, two-handled goblets were rendered in a fine pottery ware called Emphyrean, found at Korakou, which the excavator thought was the Ephrya of Homer. Towards the end of L.H. II a florid so-called "Palace Style" developed. In this style were large three-handled jars decorated with palm, lily, papyrus-flower and octopus motifs.

The fragment of a fresco from Mycenae, probably of L.H. II date, showed ass-headed demons carrying a long pole. They were seen against a greenish gray ground, their bodies painted in yellow with black contours and reddish brown details. Of the same period was a painted pinax representing two women in worship before the Cretan sky god. Blue is used for the ground, while the border is painted with bands of red, blue, yellow and black; figures are yellow, blue and white, and details are incised.

An effective LH II decoration was a frieze of shields from the older palace of Tiryns, notable because of the extensive use of green and gray, at least the former infrequent in most ancient art. The main, complicated, pattern, a series of spotted, oxblood, figure-eight shields, was done in brown, black and gray. It was placed on an elaborate decorated ground. Through the center ran a band of cream-colored spirals with red centers and gray spurs, bordered by a gray tooth pattern and set against a marbled ground in yellow, gray and red. Above and below were borders of running spirals in green, yellow and white, bordered in turn on either side by gray tooth patterns. The centers of the spirals were white, the spurs blue; complex indeed! A decoration similar in character was found on a contemporary stone ceiling at Orchomenos, with

spirals and lotus flowers.

The Late Mycenaean period, LH III, which is subdivided into three parts, extended from 1425 to 1025 B.C., its zenith being reached in the 14th century. Though art experienced decadence in the last two centuries of this period, the Mycenaean civilization underwent a period of expansion. This was at least in part imposed by piratical and militaristic Hellenic chiefs. Mycenaean products, including pottery, were exported to Egypt, Syria, Palestine and Asia Minor, northwards to Thessaly and Macedonia, and westwards to the Mediterranean islands and southern Italy; and on some coasts even Mycenaean colonies were founded. This Mycenaean dominance followed the assimilation of Cretan techniques and the Cretan industrial system, though always with Mainland flavor in the concoction; and it was followed by the destruction of Knossos and the assumption of Greek economic and political hegemony around the eastern Mediterranean.

While it is generally believed that the sack of Knossos and the fall of Minos can be attributed to the Mycenaean Greeks, this has not been proved. The tale of the slaying of the Minotaur by the hero Theseus, already told, symbolized the freeing of Greece from the oppressive tribute exacted by the Minoan imperialists, as well as the freeing of a European civilization, now at last able to stand on its own feet, from dominance by one nurtured in the Orient.

The Achaean civilization pictured by Homer was not identical with the Mycenaean, though closely similar in many culture items. The early Mycenaean age was that of the 16th and 15th centuries, reaching its zenith at the end of the latter century. These were the centuries of the shaft-graves and the tholoi, respectively; and, according to Greek tradition there were two dynasties at Mycenae, the Perseids and the Pelopids. The earliest mention of Achaeans is at about 1300 B.C.; and Atreus was thought to have ruled not before 1200. Mycenaean tombs have not been found in the kingdom of Peleus in the Spercheios valley. Mycenaean carried huge shields and wore no body armor. Some of Homer's Achaeans carried a round targe and wore breastplates. Mycenaean swords were used for thrusting only, but Homer described sword strokes which can be executed only with slashing swords. The Homeric poems mention more iron tools (but not weapons) than was proper to the Mycenaean Bronze Age which, to be sure, employed iron for ornaments. Mycenaean interment was in corbelled vaults or rock-cut chamber tombs, while the Achaeans practiced cremation. In the 14th century, there was a gradual change in Mycenaean decoration from a free style with naturalistic marine or plant motifs to a style employing metopic arrangement and human figures. This interest in man and the attempt at symmetry and balance by means of panels foreshadowed features of the classical Greek age. Iron, panel arrangement and possibly cremation were derived from Asia. Because of these differences, some authorities distinguish an "Achaean" transition period to the Homeric age.

But the evidence points toward a much impoverished period rather than to the wealth of the Homeric-epic kings; and with Crete tributary to Greece, its rebuilt towns were meaner. In the more pretentious and fortified palaces of Greece, the northern megaron type of structure was embellished by some of the finer characteristics of Minoan architecture and art. Achaeans dominated the Cyclades and Crete, expanded their influence to Rhodes and Cyprus, and bands of Greeks ("Danaans") settled on the coasts of Syria, Asia Minor and even Italy, Sicily and Spain, taking with them their art, religion and Greek dialects, their beehive tombs and rock chambers,

stirrup vases, carved ivories, glass-paste jewels and typical daggers and swords.

Frequently these elements of Greek civilization and trade were imposed by force of arms. An unsuccessful attack by these and other "Peoples of the Sea" was that against the Egyptian Delta repulsed by Ramesses III in the early 12th century B.C.; and indeed it was reported that earlier, about 1220, Libyans along with several of the Sea Peoples had attacked Egypt. About 1175 and 1172, Sea Peoples, including Danaan Greeks attacked the coasts of Syria, Palestine and Egypt; and a successful attack by Achaean Greeks was that followed by the siege of Troy, made famous in Homer's Iliad. We shall presently return to this Trojan war, which occurred in a decade some time between 1210 and 1180.

At Mycenae itself, well known Mycenaean features were the sculptured Lion Gate in the fortress wall, and the great tholos-tomb called the "Treasury of Atreus." At Tiryns, the stones of the citadel were so huge that Greek tradition regarded them as being put in place by the mythical giants called the Cyclopes. An interesting frieze from a vestibule at Tiryns had a palmette pattern carved on in alabaster combined with inlaid blue glass to make a very decorative composition. But art tended to decay in the growth of militarism and piracy.

Although the Greek cities were populous, there was nowhere the complexity of Cretan urban officialdom. Writing was quite rare. But Mycenaean pottery and other products were exported all around the Mediterranean. These products included thrusting and slashing swords, which had been evolved from daggers. Early Oriental and Mycenaean swords were designed for thrusting only. The slashing sword idea came originally from the Danube valley or farther north along with "fibulae" (safety-pins). Wholesale production of Achaean articles took the place of the Cretan finer artistry.

According to Homer, the scepter of the Achaeans, that of a loose Greek confederacy, was wrought by the god Hephaistos (Vulcan) and passed to the gods Zeus and Hermes, then to Pelops the charioteer, to Atreus the "shepherd of the host," to Thyestes, and finally to Agamemnon, the leader of the Greeks in the assault on Troy. The other peoples commanded by this leader in the siege of Troy lived in the western and southern portions of the Aegean region. In the eastern and northern parts of the region were the peoples who fought with Priam in Troy's defense. They included Phrygians, Mysians, Maeonians (of Lydia), Carians, Lycians and Dardanni, as well as people of the Troad, Crete and Thrace. Among the explanations for the cause of the war, besides the traditional one connected with the abduction of the fair Helen, was the strong competition between the Late Mycenaean and Trojan potters, as indicated by discoveries in the ruins of Troy; and one attributing the war to excessive tolls or denial by the Trojans of passage of Achaeans through the straits of the Hellespont. These straits gave access by way of the Black Sea to the rich grain fields of southern Russia and Rumania and a land-route crossing to Europe. The traditional date of the siege was from 1194 to 1181 B.C.; the date assigned by modern research, stated above, is very close to these. Every one knows the story of the wooden horse full of Greeks (the equivalent of a modern "fifth column"), about the duels between rival heroes, such as that between Hector and Ajax, about Achilles' refusal to fight after Agamemnon had taken the fair Briseis from him (until his friend Patroclus was killed), about Hector's flight from Achilles around the walls of Troy and his final stand and death, and perhaps how Agamemnon's daughter Iphigenia was sacrificed by him so that the Greeks might have favorable winds for their voyage to Troy. We learn about Iphigenia, queen Hecuba and some of the heroes in the great dramas of fifth-century Athens: about Iphigenia from Euripides;

about the sword given to Ajax, by his courteous enemy Hector, from Sophocles; and from Aeschylus about Agamemnon, returning to his home in Mycenae, laden with spoils, only to tread a crimson carpet to his death.

It was long believed that the Sixth City was the one sacked by Agamemnon's Achaeans. But in fact the evidence shows that this city was destroyed by earthquake and rebuilt. The reconstructed city, Troy VII (a), was shown by Mycenaean pottery to have flourished in the 13th century, and its date agrees well with the traditional one. According to tradition, the city was not destroyed at once, but remaining under the rule of Aeneas. That the destroyers may have come ultimately from central Europe, by way of Greece, was shown by finds in 12th century town VII (b) of socketed axes of Late Bronze-Age form, cast as executed in central Europe, and by fluted and wart-ornamented Danubian pots of a type embraced in the Lausitz culture, one we shall soon meet in central Europe. But with these were vases in Minyan technique, showing that the old population lived on with the conquerors.

Mycenaean ornaments included golden objects used as beads, often embellished with red and blue glass paste; other beads were made of the paste alone. Necklaces were often of gold. Along with violet amethyst, yellow amber and red carnelian. Mycenaean pottery in the early centuries of the Late Helladic period was simply Minoan Cretan ware, already described. Late Mycenaean wares imported into Palestine, were mentioned too. This sub-period is dated as beginning at 1400 B.C., but the influences which shaped it probably began earlier. Early discoveries of Mycenaean ware were reported from Ialysos in Rhodes and from Akhnaton's capitol, Tell el-Amarna. The center of production was in the Argolid (Greece). Pottery forms of the period were a new "champagne-glass" kalyx form, an askos (wineskin) form, and the "Bügelkanne" (meaning stirrup-jug) with spheroidal body, an arching handle and a spout as the only aperture. These forms were spread all around the Mediterranean Sea. Tendencies toward geometric motifs and the taking-over of figured scenes from murals, were non-Minoan. There was decline in technique and creative spirit, with the previously brilliant glaze color becoming a lusterless black on yellowish clay which assumed a green tinge. Decoration became looser in style, with more rectilinear patterns, emphasizing the shoulder of the vase, with little on the bottom half. Figured representations included geometrically treated animals. Among larger compositions was one with frieze effect on a large krater from Mycenae showing warriors leaving a battlefield. It is in a brownish varnish on a buff ground. At Hagios Kosmas were found deep bowls with black lustrous paint. Imported Mycenaean vases found in level C of Tell Beit Mirsim (Palestine) included a cup with light red and black lustrous paint on a buff slip, 3-handled piriform jugs or stirrup-vases with bands painted in light to dark red, a krater painted light red to sepia color with two red bands just inside the rim, a vessel with light red and black on a cream-color slip over pale buff clay. The decoration of these was with lustrous paint, commonly red to black on buff. In the 13th century, besides the standard LH III pottery and the "close style" ware, there developed a style with arrangement in panels. The first-named style was that already discussed and was found at Amarna and elsewhere. In Mycenae at its Lion Gate the first nine out of 11 levels contained this ware with a progressively increasing number of the panel style. Before the end of the century there had appeared in the tenth level a "granary style," named from its abundance on floors of the nearby granary, which was destroyed in the general catastrophe which wrecked Mycenaean commerce. The relative abundance of pottery in the first two styles and employment of tectonic and free-field

arrangements varied at different sites around the Mediterranean. The close style, based partly on the Cretan "palace" style and partly on contemporary wall paintings, lent itself to more individual treatment. The granary style current in the 12th century was a variety of the old standard style. In this style, the decoration was very simple, wavy or plain horizontal bands or spiral loops. Often the vases were completely covered with glaze paint, or the ornament was confined to a reserved zone. Loophandled bowls and stirrup-vases were common. The colors remained on the whole about as they were in LH III; differences will be noted when we come to Philistine pottery, which borrowed from all the Mycenaean Styles. In the 13th century, when both bronze and iron weapons were in use, decadence in ceramics was illustrated in various local "Sub-Mycenaean" styles in false-necked jars and stemmed goblets.

An important port for the reception of the earlier of these pottery wares in the Late Bronze Age was Tell Abu Hawam, near Haifa (Palestine), which was destroyed by Ramesses III in 1196 B.C. This was about the time of the Trojan war. The granary style followed these catastrophes. At Abu Hawam, after 12th-century Mycenaean pottery, whiteslip milk bowls, base-ring ware and plain bowls in a buff and drab ware, there followed a ware with red and black concentric-circle decoration. This continued in the 11th and 10th centuries, along with wares decorated with black circles on a bright red slip and with fine red and yellow slips.

In connection with the destruction of Troy and Mycenaean settlements, we referred above to a Danubian people having the Lausitz culture. This was the most conspicuous of two or three Urnfield cultures of the Late Bronze Age of central Europe, so-called because characterized by burials of remains in cinerary urns in extensive cemeteries, often under barrows. The name Lausitz came from a part of Saxony and western Silesia, where the culture was strongly represented. The Lausitz people were peasant farmers, but peasants advanced enough to settle where they could control trade routes and sources of ore, and to include bronze smiths among them. Their homes were in log cabins like those of American pioneers. They cremated their dead, placing the ashes in urns. Along with these in the graves were usually put a high-handled mug, an amphora, and a rough pot. Other Lausitz vases were usually smooth. At first their color was buff; later darker, with graphite being used to aid in the effect, and burnishing being often employed. A popular method of decoration was also with large conical knobs or warts, later replaced by flutings, either oblique or in the form of semicircles. A richer and more warlike Urnfield culture, which invaded the British Isles, developed in the northern Alpine region.

Between 1200 and 1000 B.C., the Lausitz folk may have been the bearers of Keltic speech. Their center was in east and southwest Germany, while other Urnfields groups held the plains north of the Carpathians from Silesia into the Ukraine, and developed there and in Poland and eastern Germany. Physically, they were the blend of Danubians and Battle-axe folk long called "Nordics," and descended from the people of the Aunjetitz culture. In the Balkans, where they absorbed Dinaric blood, they later became the people known as the Illyrians. A branch of the Urnfield people later spoke the Italic languages, which are related to that of the Illyrians and that of the Kelts.

The time of the rise of Urnfield cultures is given by one authority as early as 1500, but more recently by another as late as 1200 or 1150 B.C. But they agree on a date of about 1500 for the early development of the so-called Tumulus (Middle) Bronze Age, characterized also by barrows, in central and southwest Germany and the upper Danube region. The folk of this

culture were pastoral and semi-nomadic, hence few of their settlements are known; but their graves have been found, always marked by a barrow or "tumulus" of earth or stones. These usually covered only one or two internments, but sometimes more. Though the Tumulus folk cultivated grain, as we know from finds of their sickles, unlike the Aunjetitz folk they settled not in fertile lowlands but in poor hilly regions which were then parklands in the central European area west and south of the Lausitz area. They were warriors who armed themselves with an axe, a dagger, a spear or rapier and a round wooden or leather targe studded with bronze knobs. Physically, they were a blend of Battle-axe and Beaker folk formed on a substratum of aboriginal Western-culture folk. Their often-graceful but variable brown pottery was frequently decorated with a fretwork ("Kerbschnitt") composed of small excised triangles and lozenges (later circles) arranged in zones or radiating from the base. In other places, the pots were ornamented with incisions.

While northern Germany and southern Scandinavia were still occupied by the as yet undivided, and not fully differentiated Teutons, or Germanic peoples (the builders of the "Nordic" Bronze Age), eastern Germany, western Poland and Czecho-Slovakia was held by the Lausitz-Urnfield folk. About 1200 B.C., the latter were on the move westward and soon conquered all the lands of the Tumulus people, penetrating through France as far as Catalonia (Spain) and the whole Alpine territory, northeast Italy, Hungary, and finally penetrating to Macedonia and Troy. The Tumulus folk were absorbed by the Lausitz people, later to become the Kelts of history. The Tumulus folk proper, who have been called the Proto-Kelts, were the remainder left behind in their homes when the Italo-Kelts, about 2000 B.C., left to invade Italy, becoming the Italici.

The principal culture developed by the Italo-Kelts or Italici in the Middle Bronze Age (from 1600 B.C.) was known as the Terremare culture, whose center was in northern Italy, south of the Po river. A *terremara* is a low, oblong mound or tell formed by the settlement debris. The people of the settlements, called "terramaricoli," were prosperous farmers who cremated their dead, preserving the ashes in cinerary urns (though it has been claimed that this is not proved). Two cemeteries were usually attached to each *terramara*. The settlements were trapezoid in shape and surrounded by a moat. The area, a few up to 18 acres or more, was also protected by an earthen rampart supported by wooden logs. Excavation has revealed masses of piles which presumably supported lanes of huts; for this reason the *terremare* were formerly, but incorrectly, called "pile-dwellings on dry land." Sickles indicated an agricultural industry, spindle whorls and loom weights a weaving industry, stone molds a metallurgical industry; and cheek pieces from bits, the domestication of horses. The *terramaricoli* were skilled craftsmen and good traders. The *terremare* development may have been in part due to extension of the amber route to Mycenae and Knossos. Trade brought the yellow amber from the Baltic to the *terramare* along with glass beads from the eastern Mediterranean, as well as bronze and other metals. Trilobate pins proper to the Danubian fourth period were in use, and double-spiral pins (an Early Helladic and Cycladic type) were very popular. Warriors used flat triangular daggers as well as three types of swords or rapiers. *Terremara* pottery was burnished, but was characterized by horn-like projections extending from the vase handles. The chief decoration was by means of warts, pinched out of the wet clay and often encircled by incisions. The *terramaricoli* deposited their cinerary urns in urnfields; and it seems probable that a considerable portion of the Italici were of Urnfield extraction. The Italic language, like the

Keltic, split into P and Q branches, with Umbrian and Oscan in the P group, and Latin and Faliscan as Q. The Latin had additions from Etruscan, Greek and early Mediterranean language. Probably the terramaricoli spread over most of Italy during the 15th and 14th centuries, but did not exterminate the earlier Mediterraneans. Description of the cremating culture of the Umbrians, who were displaced from their homes by the Etruscans, will be reserved to a later section, since it falls mainly into Iron Age. This culture is called Villanovan.

Chapter 6 Iron-Age Color in the Near-East

We have seen, when being introduced to the Bronze Age, how difficult it is to give a single date for the beginnings of that period, because of the cultural "zoning" or falling-off from the earliest centers of bronze production to the more backward countries, remote from these centers. The uncertainty was increased by the continued use of inaccurate conventional terms such as "Early Bronze I" for culture periods actually still Chalcolithic or Copper Age. The same unsatisfactory situation holds for the beginnings of the Iron Age, and here the case is somewhat worse because of the slow trickle of knowledge of iron, man-made rather than meteoric, and its metallurgy, across Asia and Europe. As we begin with a general summary of the Iron Age, which we follow with a century-by-century portrayal of the age in more detail, we will see that some unavoidable repetition will occur. For the Greeks and Egyptians, for example, were still in the Bronze Age when they had many contacts with the other peoples in the Near East, especially the Hittites, whose cultures had progressed well into the Iron Age.

Sporadic finds of iron have been reported from various sites at dates beginning perhaps as early as 4400 B.C. A little rectangular chisel-like iron implement was reported with Halaf pottery at Samarra. Some iron beads from El Gerzah, 50 miles south of Cairo, have been dated in Predynastic times, by two different authors at 4000 and 3500 B.C. Some pieces of iron were found in the Royal Tombs of Ur (2550). These contained 11 % of nickel, which characterizes them as originating in the form of meteors. But in the period 3000 - 2500 B.C., pieces of man-made iron appeared in Mesopotamia (at Tell Asmar, Chagar Bazar and Mari) , in Asia Minor (at Alaca Höyük,) and possibly in Egypt too (a plate from the Great Pyramid of Cheops, about 2500, and a lump from Abydos of Dynasty VI, about 2200). The Egyptian murals of about 2000 B.C. used copper-red and yellow to represent bronze or copper weapons, but still were not using blue, as they did much later, to represent iron.

The use of blue may have been connected with the celestial origin of the rare early iron. In Egypt this was recognized by the epithet "from the sky" which was applied to distinguish meteoric iron after the 14th century, when smelted iron had been introduced (though not yet common). The period 1900 to 1400 B.C. witnessed the spread of iron ornaments and ceremonial weapons, which still remained as precious curiosities. In the tribute lists of the Egyptian 18th Dynasty (1570 - 1345), iron was still not even mentioned. But by 1500 (or, according to others, the time of Ramesses III, 1180 - 1149 B.C.), blue was used in murals to represent iron which, as we shall see, was soon to come into general use in some lands other than Egypt. From the 15th century onward iron objects were common enough to be exported from some cities of Asia Minor, northern Syria and northwest Mesopotamia.

Two Greek traditions may be cited in connection with the origin of iron. The Parian Marble gave 1432 B.C. as the traditional date when the legendary Dactyls, usually assigned to Mount Ida in the district around Troy, introduced iron working. The other tradition states that it was the Chalybes who invented iron in the mountains between the Taurus range in Asia Minor and the Black Sea. The tradition relates that the Chalybes worked naked in the mines and were brave soldiers, but were conquered by the fabulously rich king Croesus of Lydia. According to Professor Myres, Chalybes (steel) was the name of a tribe of northeast Asia Minor in the Alybe country beyond Pamphlagonia.

According to one authority, the "steeling" of iron was probably discovered in the same center as that of its discovery, about 1400. Another author referred to this center as the "Hittite uplands." This position gave the Hittites, who were politically dominant in the area, a monopoly of the manufacture of "true iron" for nearly two centuries. According to several writers, the earliest known steel object was a battle-axe (dated at 1400) found at Ras Shamrah. But a recent authority stated that this was actually of poor iron. Another regarded it as the oldest example of forged iron.

In the ensuing century, the 14th, iron began to be employed for weapons. It was this age that witnessed the substitution of cut-and-thrust swords for rapiers, and of round shields and body armor for long shields. One author, writing in 1936, stated that iron was brought by Asiatic tribes to Palestine in this century and the next. But a more recent author, an authority on that country's early history, dated this advent as probably the late 12th and 11th centuries; and the migrating Asiatics referred to by the earlier author, the Peoples of the Sea, are now assigned to later dates. Though Egypt was the last country in the Near East to receive iron in quantity, an iron knife or dagger blade was found in the tomb of King Tutankhamen (1351 - 42 B.C.) along with part of an iron amulet bracelet and a miniature head rest. A recent writer stated that the oldest known welded joint was on an iron bedstead from this rich tomb.

The use of iron finally became fairly general in Egypt about 1300 - 1200 B.C., and the carburizing, quenching and heat treatments became gradually known. But it was during this century that the pharaoh of the time, Ramesses II (1290-24), who warred against the Hittites, later wrote to their king to demand an iron dagger as a present. It was during the reign of this pharaoh that the painter Neb-re' flourished at the necropolis of Thebes. He was the first painter known to us by his own name, though "the 'Ajjul painter" was much earlier. During this century Cyprus and perhaps southeast Europe were reaching the Iron Age. The exploitation of the Asiatic iron industry permitted the Phrygian "divine-born" heroes of the Greek legends, who invaded the lands around the eastern Mediterranean and whose antecedents were Danubian (said Professor Myres), to replace their bronze leaf-shaped swords by iron ones in these areas. These swords had been developed about 1100 by the Danubians.

Though the Hittites prospered because of their dominance of the iron and steel sources (as well as their flair for unscrupulous diplomacy), by the middle of the 13th century they had encountered several powerful enemies. Egypt and the Phrygians have been already mentioned as such. According to the traditions of the Greeks, whose own hero Herakles (Hercules) fought in a war against the Amazons, the latter attacked the Phrygians about 1240; and some authors see in the Amazons a portion of the Hittites, among whom descent was in the female line. The Phrygians at this time were in the region of the Ascanian Lake, in that portion of Asia Minor later known as Bithynia. The Hittites also fought the "Assuwa coalition," made up of Lycians, Carians and others from Asia Minor. A decade later the Greek hero Atreus and the Pelopidae led the Achaeans in raids on the Hittite coasts of Asia Minor, while other seafaring Greeks, Lycians and others, with some of the first iron weapons, conquered Enkomi on Cyprus and ended the Mycenaean civilization there. It was indeed a period when everyone was fighting or interfering with the world and his brother. For about this time, according to Greek tradition, Minos of Crete had expelled the Carians from the Aegean islands, and only a decade before the hero Mopsus had led his forces over the Taurus range into Cilicia (southern Asia Minor), and the "divine-born foreigners" (Phrygians) had entered Greece, to add to the disturbances already

cited; and in the next three decades Mycenaean pottery ceased to be exported to the southeast (to Syria, Palestine and Egypt) , blocked in part at least by the Assuwa Coalition.

Almost simultaneously with the decline of Mycenaean and Achaeans power came that of the Hittites (about 1250 - 20 B.C.), culminating in the complete destruction of the Hittite Empire about the end of the century. Its disintegration left only small Hittite states centered around Carchemish, Hama and other cities in Syria, as a reminder of former Hittite greatness. It was about this time too, more exactly 1250 B.C., that the Israelites were destroying the cities of eastern Palestine (and those of the west about two decades later). To reach Palestine they had previously fought kings Sihon and Og in Transjordan, the latter of whom, like "King Tut," is known to have possessed an iron bedstead. In Egypt it was the pharaoh Merneptah who in 1219 repulsed a sea-raid on the Delta by Libyans, along with Peoples of the Sea (Achaeans, Etruscans, Shardana, Lycians, etc.). But this was not a part of the great migrations of the Sea Peoples, which occurred in the next century. It was primarily these Sea Peoples, and the Phrygian or Thrako-Phrygian peoples, who destroyed both the Mycenaean and Hittite empires. The Hittite monopoly of iron was of course then definitely broken, and knowledge of the carburizing and cementation processes for improving iron spread wider.

The period beginning about 1200 B.C. in the Near East may be reckoned as a Dark Age, perhaps darker, or at least of greater extent than those which had gone before in the Bronze Age. Besides the end of the empires just considered, the Kassite dynasty at Babylon came to an end around 1175 B.C. at the hands of Elamites, Assyrians and Aramaeans, while barbarian Aramaeans and Chaldaeans were filtering into Babylonia. A recent publication, whose contents we shall later discuss, states that there were two groups of migrating Aramaeans and tells us something of their origin. As to the Phrygians, they are thought by some to be a people originating in Europe and speaking an Armenoid or eastern form of the Indo-European languages (while the Greeks and Hittites spoke a western form of that language group).

About 1200 B.C., tools and hairpins of iron were deposited in Minoan graves in Cyprus, while iron knives and daggers were items of the culture period which followed. At this time iron was in general use in Thessaly, in the kingdoms of Moab, Edom and Ammon in Transjordan, and in the Syrian cities of Hama and Carchemish, where the Hittite hegemony continued until 1000, possibly later.

At Carchemish, two periods had passed before 1200. The first of these has been called the "champagne period" because of a "find" in the period of tall-stemmed pottery goblets like shallow wine glasses, which may have been really lamps. The third period of Carchemish, one marked by painted pottery and iron weapons, was that of the Moschi (Muski), who have been variously described as related to the Hittites, or an early part of their Phrygian conquerors. Here the reliefs of a building on a great public square were "picked out with color." The walls had a black basalt dado. The carved slabs on them were alternately of blue-black basalt contrasting with white limestone. Both were touched up with other bright colors, just as in Egypt the details of granite sculptures were enhanced with color. Near a staircase a pair of massive oxen had their eyes inlaid with bright colored stones or glass, yielding a livelier effect. In a small shrine or royal chapel behind a Long Wall near the square, the upper walls were in brick-work enamelled bright blue and decorated with white and yellow daisies. These brilliant color effects were combined with interesting sculptured reliefs, including eagle-headed demons, forerunners of the gryphon, animal-headed deities, winged lions and opposed bulls in a spirited battle.

This tendency to an interest in color in this early Iron Age may be seen in the palace of the kings of Megiddo in Palestine. This was built and rebuilt in the successive strata from X (1600 B.C.) through VII A, when it was finally destroyed (about 1150). A hoard of treasure was found buried beneath the floor to escape an enemy: blue lapis-lazuli beads and cylinder seals, an ivory wand, and gold beads, bowl, headband and rosettes; twin heads and cosmetic jars. Canaanite carved ivories appeared in VII A to add to those previously known (from the 14th to the 8th century) from Cyprus, Arslan Tash east of Carchemish, Samaria, Nimrud and Khorsabad. And finally, the mudplaster surface of a wall in the latest palace had been painted in blue, green, red, yellow, black and white.

In the period 1200 - 1000 B.C., in considerable part because the Sea Peoples and migrating land-raiders had become the masters of the Asiatic iron-workers, their two great raids on Egypt, opposed by Ramesses III, coming in 1175 and 1172 B.C., the use of iron was dispersed widely. In Iran, there was a trickle in Siyalk V (and more general use in VI, 1000 - 800); Syria and Transcaucasia were followed by Cyprus, central and southern Mesopotamia, the Caucasus region, Crete and the remainder of Anatolia, and from there through Thrace to the Danubian regions of Europe. In the 12th century, the best known of the Peoples of the Sea, the Peleste or Philistines, brought iron to Palestine, for example to Lachish, where the Israelites had destroyed an earlier city about 1230 B.C., and to Gerar (1150 - 1000). The Philistines can be traced by their characteristic pottery. A "pinkish buff" ware with a cream-colored or creamy-gray wash (applied after baking), painted with dull paint in red and black, and chevroned wings on birds as decoration, are typical of the ware. Sometimes a true slip replaced the wash and sometimes both were absent. Several details were characteristic: vertical stripes on the bodies of birds, throwing back of heads and drawing of heads in outline. The decoration of the vases, which included buff-colored wine kraters (two-handled bowls) and beer jugs, was in metope-like panels. The jugs were usually provided with strainer spouts, to strain out barley husks while drinking beer. Other ancient peoples used pipes or reeds for the same purpose. While this pottery owed a great deal to Mycenaean panel-style and other vases of the Late Bronze Age, and to influences from Cyprus and Rhodes, some of the elements of the Philistine ware were native, as were certain new forms, like the strainer jug. Other motifs included swans pluming themselves and geometric motifs such as concentric arches filled with loops. In connection with the strainer jugs, it is to be remembered that Samson drank neither wine nor beer, but the Philistines were fond of drinking bouts.

A typical pottery form unearthed at Tell Qasile (in modern Tel Aviv), where the 12th-century pottery had black designs on a white or creamy wash, was the so-called "beer bottle." The more ubiquitous and distinctive Philistine pottery has been analyzed, as just indicated, to show that it was an eclectic ware composed of elements from various sources, many of them native, so that no indication is afforded of the land whence came the Philistines. A recent author (Thomson), however, states that they were Lycians and Carians who came through Pamphylia and Cilicia in Asia Minor to Palestine, another that they were Aryan Illyrians. Strabo, a writer of the time west of Jesus, said that when the Carians came from Crete to southwest

Asia-Minor, the Pelasgi and Leleges, who played an important part in early Greek history and legend, were driven out. The Peleste, one of the Sea Peoples alleged to have been defeated by Ramesses III, were allowed by him to settle on the coastal plain north and west of the plateau of Judah, to become the Philistines who later so plagued the Israelites of Palestine.

Palestine took the name of the Peleste. Professor Myres apparently believed that the words Peleste, Palestine, Philistine, Pelops, Pelasgian and Peloponnese, the name of the southern peninsula of Greece were all related.

It is to be remembered that, as stated above, the general use of iron in Palestine began only in the late 12th century. No iron was found at Tell Qasile in the level containing the pottery above described, but most Philistine sites had iron weapons and ornaments; and we shall see that a later stratum of Qasile also had iron. The Israelites were hindered from obtaining iron weapons by the Philistine control of the ports of entry and the overland trade routes and thus possessed a virtual monopoly. The Israelites had been weakened by fighting the Bedouins (camel-riding Midianites, Moabites and Ammonites), the Syrian Aramaeans and even each other. They were a group of mutually jealous semi-nomadic tribesmen, only loosely organized politically, while the Philistines had formed a confederation of city-states, a "Pentapolis," including Ashdod, Ascalon, Ekron, Gath and Gaza, creating a united front. But Saul managed to throw off the Philistine yolk about 1020 B.C., as did David about 990, capturing Gath and defeating the Philistines twice.

By 1100 B.C., Assyria, which had become strong after defeating the Moschi, as well as Greece and the Aegean lands, had reached the Iron Age. Many authors have stated that the Dorians, who invaded Greece about 1104 (to use the traditional date), brought iron swords to Greece from the north, having learned their use from the people of the Lausitz culture of Germany; but Professor Myres, in his now classical book "Who Were the Greeks?", contended that the swords were an effect of the great migrations and dispersion of knowledge and control of ironworking, not the cause of the Dorian conquest. Elsewhere we shall give his ideas concerning the origin of the Dorians. Although Saul obtained some iron and threw off the Philistine yolk, the country suffered from a lack of trained smiths, and on Saul's death on Mount Gilboa, the yolk was renewed. Stratum 10 at Tell Qasile, which was of Saul's time, contained no Philistine pottery, instead having kraters with red and black spiral decoration and some surviving Philistine motifs. This center made use of color in a dyeing industry, and possessed as well oil-manufacturing and copper-refining industries and an export trade in oil, wine and grain; and in level X had iron. Goliath of Gath, one of the Pentapolis cities, was known to possess an iron spearhead. It was David (1000 - 960) who, as stated, though heading a young state still agricultural and pastoral, finally (990 - 980) broke the Philistine power. In the 10th century, iron was the principal metal used in Palestine for plow-tips and sickles as well as weapons; and in this and the next century Ezion-Geber became the "Pittsburgh of Palestine." Tell Beit Mirsim, and Beth-Shean in this period, and later Tell en Nasbeth and Lachish, became centers for the weaving and dyeing of woolen cloth; and the dyer's guilds were already flourishing. Color must have appealed to the Palestinians as to their neighbors, for in the period 900 - 600 B.C., ivories were inlaid with red and blue glass, coated with gold and carved in flat relief. Such ivories were found in the ruins of the palace at Samaria. This age was remarkable too for its high craftsmanship in gem cutting, for seals and other objects.

A few words need to be said about the actors on the colorful Iron-Age stage. Egyptian monuments represented the Philistines as nearly blond, straight-nosed, European-looking Mediterraneans. The Israelites were brunet Mediterraneans of several types (including the "Cappadocian") with some intermixture of round-headed Dinarics, as we shall see was the case with the Bronze-Age Phoenicians. They had long faces with convex nasal profiles. The

Samaritans, generally supposed to represent the original Israelites better than other Jewish groups, were tall brunet mesocephals with long narrow faces and narrow noses; a moderate proportion were blond. The Phoenicians or Canaanites were a brunet, moderately tall, very low vaulted, long-headed to mesocephalic folk, with moderately broad foreheads, short faces, high eye orbits and narrow, projecting noses. They were somewhat similar to the Megalithic variety of Mediterraneans, along with some of the round headed Dinaric type.

In Egypt's Bubasite period (late 10th century to 700 B.C.), iron finally came into general use there; and after 900 the Egyptians understood its hardening by quenching. In many textbooks and in the older literature it was said that the Iron Age of central Europe began about 1200 or 1000 B.C. with the culture called Hallstatt, from a great cemetery where it is best known; and that the Indo-European-speaking peoples were after 900 spreading the use of iron. Four stages, A to D, have been distinguished, with A, the earliest, now being dated about 1000 - 775 B.C. But it is now known that the stages A and B (1000 - 640) were really the final part of the Late Bronze Age of central Europe (Bronze Ages E and F of some authors), marked primarily by the Urnfield culture, Bronze Ages A and C being parts of the earlier Middle Bronze Age. Moreover, only Hallstatt C and D are found in the Hallstatt cemetery. The Iron Age in central Europe may therefore be said to begin only after the middle of the 7th century. Even after that for a time much of western and northern Europe, as Gt. Britain, Ireland and Scandinavia, were still in the Late Bronze Age.

In Assyria, Assurnasirpal II (883 - 59 B.C.), noted for his calculated cruelty, brought back iron as a tribute from the Hittite (Moschi) ruler of Carchemish, and boasted that with enemies' blood he "dyed the mountain red like red wool." The Assyrians got iron also from the Taurus mountains. In this century and the next, iron was made in Babylonia into tools, and utensils of every kind, and also made into the standard fighting equipment of armies. By 800 B.C., iron smelting had reached Persia (Iran), India, Egypt, Crete, Greece and central Europe; and Tiglath-Pileser III of Assyria, the "Pul" of the Bible who transferred the "lost ten tribes" of Israel to Media, took iron mines from the Armenians. The inscriptions of Sargon II of Assyria (721 - 705 B.C.) mention the mountain Lammum in eastern Asia Minor as a source of iron. He had in store 176 tons of "trading bars" or ingots of iron which resembled in their curious shape those which three centuries later entered Germany and France with the so-called La Tene culture. Sargon's palace of 700 rooms at Khorsabad covered a million square feet equipped with objects resplendent in color but applied in good taste. In due time we shall mention some of these in connection with Sargon's successors, Sennacherib, Esarhaddon and Ashurbanipal (the Greek Sardanapalus or Biblical Osnapper). The friezes of blue, white and yellow enamelled tiles and the brilliant painting of the palaces, walls and gateways, representing winged gods, animals, plants, rosettes and processions are, however, almost too well known to require description.

Modern research has shown that, although yellow is perceived as a "warm" color, the combination blue and yellow is felt as cool. This was the combination of which the Assyrians were most fond in their architectural decoration. The coolness of this contrasting but harmonizing pair of hues no doubt influenced the Assyrians; but the chief reason for its use was probably one of convenience. For these colors could be obtained in mineral pigments well adapted for enamelling and readily used in decorating glazed bricks and slabs of enamelled faience. On the other hand, reds and greens were preeminent in the dyeing of Assyrian rugs and carpets. The red enamels, probably from iron and copper oxides, were not as good as the

blues from ultramarine or copper oxides containing lead, or the yellows of the Naples yellow type from lead antimoniate or the oxides of tin and lead. The Assyrians seem to have understood that blue is a "receding" color, thus good for backgrounds. Their favorite triad was composed of yellow and white for the figures of animals and for decorative ornament shown on a blue ground which constituted the third color, though it is true that the reverse arrangement was also used. A combination found on some glazed bricks from Ninevah, Assurbanipal's capital, now in the British Museum, consisted of pale yellow, ocher red and black on an ultramarine-blue ground.

We shall have much more to say of Assyrian color when we reach the period of their florescence in its chronological order. In this general background picture of the Iron Age, we shall mention further in connection with the Assyrians only their fine use of color in embroidery and say a little about its employment in furniture. The prophet Nahum referred to the "pleasant furniture" of Ninevah. The Assyrian cabinet maker was "rich in inventive faculty, revelling in complex designs" (L. Spence). His pieces were inlaid with pale yellow African ivory, gold and semi-precious stones of several colors. The chairs of cedar were covered with brightly colored cushions, gracefully built in fine proportions and not enough over-decorated with metal or other ornament to destroy the simplicity of the design.

It was Sennacherib (704 - 681 B.C.) who claimed that he introduced into Assyria "trees bearing wool," that is, cotton. Since the wool dyes do not in general dye cotton well, the fabrics from cotton must have remained undyed or poorly dyed for a considerable period, until methods of mordanting cotton were discovered. Man-made synthetic dyes substantive to (directly dyeing) cotton were of course still in the far distant future.

From about 800 B.C. onward, the Chaldaeans, Semitic desert nomads from around the head of the Persian Gulf, were moving into Babylonia, and by the middle of the 8th century that country was largely Chaldaean by blood. In the 8th century B.C, the Scythians, first came into notice in in the northern Caucasus and the lands north of the Black Sea, and about 700 B.C. came from the northeast into southern Russia and penetrated Bulgaria and Hungary. Both of these peoples seem to have been great lovers of color; but we shall reserve discussion of the specific color employed until we reach the time of the Chaldaeans and Scythians in our century-by-century disclosure of the scenes of our color drama.

The end of the Bronze Age and the beginnings of the Iron Age had not yet been reached at this time (700 B.C.) in all the countries of Eurasia. For at its extremities, China, Gt. Britain and Scandinavia were still in the Bronze Age. And the New World, even as represented in the great Mayan civilization, was not to reach the Iron Age until the coming of Columbus many centuries later. To find the reasons of this lateness of iron working in some areas, textbooks of cultural anthropology may be consulted. In the early 7th century, iron came into use in China for hoes, plows, hatchets, needles and other domestic uses, but the first "magical" iron or steel swords were not recommended by a Chinese minister to his king until about 500 B.C.

Under the influence of the Etruscans and Greeks, who in the 8th century had brought to Italy the iron-using civilization of the eastern Mediterranean, a little after the middle of the 7th century (as already stated), central Europe reached the "C" stage found in the Hallstatt Iron-Age cemetery. This was the century in which Athens arose from relative obscurity, uniting all Attica under its leadership. At the end of the century, Hallstatt D began. At this time and in the 6th century B.C. may be dated the polychrome Italo-Corinthian vases, distinguished by an unusual

use of white and purple over a glaze background. They were of Etruscan origin, resembling the earliest Etruscan tomb paintings in their handling of animal figures, and related to the incised figures of Etruscan "bucchero" pottery, which will be described later, as we view the Etruscan tomb paintings. The color and painting of the important Greeks will of course be reviewed too. In these two centuries, vase painters revived the old Minoan custom of painting women white and men deep maroon or terra-cotta. Schools of painting were growing up at Corinth and Sikyon in Greece, as well as in Ionia.

At the end of the 7th century, the city of Tyre obtained "bright iron" (steel) from Tubal and Mesnech in southeast Asia Minor. Probably these were the same as the Tibal and Muski of the Assyrian annals and the Tibareni and Moschoi of the Greek geographers. Some time around 600 B.C., the Medes built a powerful Iranian empire east of the Tigris river. Its capital, Ecbatana, according to Herodotus, was surrounded by seven walls painted in several different colors. The first was white and surrounded an area as large as the city of Athens. The second was black, the third purple, the fourth blue, the fifth orange. The battlements of one of the innermost walls were plated with silver, the other with gold. If there be any truth in the story, the walls were probably of enamelled brick. The walls of the famous "Procession Street" of Babylon were covered with richly colored glazed tiles, and the city gate (the Ishtar Gate) was richly enamelled; a procession of lions included some white ones with yellow manes and tails, others yellow with red manes. Tiles from the palace were yellow, blue, white and black. Green was rare, while blue was used for backgrounds. We shall have more to say of the Chaldaean color of Babylon later on.

By 600 or perhaps 500 B.C., the Teutonic Iron Age of northern Germany and Scandinavia had begun; and, by way of contrast, Palestine had reached its third (and technically last) iron age, dated 550 -330. In the 6th century, Babylonian iron was obtained from eastern and northern Asia Minor; and a letter found at Boghaz Köy mentions storehouses of iron in Kizzuwadna (Cataonia-Cilicia in Asia Minor). It was claimed in a 1949 article (Absolon) that the oldest cast-iron object known was a 6th-century iron ring found in the funeral site of a Hallstatt chieftain in the Byci Skala cave in Moravia (Czecho-Slovakia). About 530 B.C., in Grecian vase painting, black silhouettes were replaced by reserved red figures on a black-glaze ground. The change occurred in Palestine after 500. These styles will be described in more detail later.

About this time Pythagoras taught that the color of an object is partly objective, partly subjective; its cause is to be sought in the properties of the number five, which was arrived at because of his studies of arithmetical, geometrical, harmonical and musical progressions. He held a "corpuscular" theory of the nature of light, believing that minute but material particles (images) are continually being cast off from all illuminated bodies, and of these, which flow in all directions, some enter the pupil of the eye; then the sensation of sight is caused by the bombardment of the observer's eye by these particles emitted by the illuminated objects. Pythagoras was the first to suspect the real function of the brain, though not specifically with respect to color.

About 530 - 470 B.C., Corinthian terra-cotta sculptures and architectural terra-cottas were popular, painters turning to larger products when the pottery-painting industry had dwindled. The colors were greenish gray, gray, yellow, cream, pink and red, while in various parts of Greece and the Aegean the colors varied and in Sicily there were light grays, dark reds and purples.

By 500 B.C., or somewhat later, iron ingots were coming into Germany and France; and in the 5th century occurred the beginnings of the British Iron Age. The first half of the century witnessed a spurt of cultural progress unequaled in history, this being the age of Pericles, Empedocles, Aeschylus, Sophocles, Zeno, Democritus, Hippocrates of Chios, Anaxagoras, Euripides, Leucippus of Miletus, and the painters Polygnotos and Micon. Anaxagoras was the first to state that the moon shines by reflected light and to explain its phases correctly. Empedocles, like Pythagoras, held a corpuscular theory of light; but he reversed the current. He taught that the streams of particles or rays run out, antennae-like, to the objects of visual perception, and return with information. He taught that perception is due to the contact of an element found in the sense organs (fire, for example, in the eye) with the same element placed outside us. Light has a finite velocity; the sun is an image of the earth, produced by reflection. The Greeks of the time knew that light travels in straight lines ("rays") and knew also the laws of reflection from mirrors, etc. (the equality of the angles of incidence and reflection).

From about the time of the Greek philosophers and men of science and art just listed, the center of the civilized world shifted for the first time from Asia and Egypt to Greece and Europe. Soon Greek art was highly prized and Greek pottery and other exported objects were found in all the sites later excavated in western Asia and nearby eastern Mediterranean areas. Agatharchos of Samos, who painted and wrote on perspective and the third dimension (depth) in painting; Hippocrates of Cos, the father of scientific medicine and ophthalmology, who described the media of the eye and knew of the optic nerve; Pheidias the sculptor; Herodotus the historian; Aristophanes the dramatist, who understood the use of lenses as magnifiers and condensers of rays, and in whose "Clouds" was mentioned the use of a burning-glass (convex lens of rock-crystal) to destroy writing on a wax tablet; the great philosopher Plato, and the Painters Apollodoros, Zeuxis and Parrhasios -- all these were soon to follow the men of illustrious names already cited. Apollodoros continued the work of Agatharchos and went beyond modelling the outlines of figures, surrounding them in space with light and shadow. Both of these painters were criticized later by Plato for their illusionistic painting; for this was "deception." Then came the famous retort of Apollodoros: "it is easier to criticize than to imitate." Many humorous stories are told of the painter Zeuxis; of these we shall repeat only one here. We are told that he painted a boy carrying grapes. The grapes looked so real that birds came and pecked at them. Praise for this perfection displeased Zeuxis because he thought that had he painted the boy better, the birds would have been scared off. This story and others show that the first object of the painters of the day was to secure a realistically literal representation. We shall return to Plato, mentioning here besides his criticisms only that he had ideas on vision and the optical (retinal) fusion of colors.

From the reign of Artaxerxes II (404 - 359 B.C.) we have recovered some of the most interesting decorations of Susa, colored glazed bricks, which will be described later. By 400 or earlier began the La Tene Iron Age, centering largely in France and carried primarily by the Celtic peoples, who were evidently lovers of much color. Slightly later came the time of Aristotle (384 - 322), who held a theory of the retinal fusion (blending) of colors, which fusion might replace mixing of colorants (coloring materials) on the palette, and a theory of color contrast; and he stated the idea that drawing (line) was more important than color in painting, an idea that was to be debated in modern times by the followers of Poussin and Rubens. He combated the corpuscular theories of light, connected the rainbow with reflection from

droplets in the clouds, discovered the nerves of sensation and called them the "canals of the brain" explained twilight and was the first comparative ophthalmologist. Theophrastus (372 - 287 B.C.) quoted Demokritos at length on painting. We shall return to him later, along with the great Greek painter Apelles. To the 4th century also belonged the "Pseudo-Aristotle" who wrote a tract "On Color" describing the various modifications of color and their combinations, the effects of light and shadow, superposition and juxtaposition; and expressed theories of perception.

That color was still of much interest to the ancient world may be seen in many examples. Chromatic color was the very essence of Greek architecture, which was not content with limitation to the whites of stone. We shall later have more to say about the use of color on reliefs and sculpture in the round, ornamenting Greek temples. The effect of color was variegated and enhanced by the use of metals for armor and accessories such as horse-trappings. Individual statues were also colored; and many examples of traces of coloring of these and architecture have been unearthed. Very early examples of archaic temple-sculpturings were painted with a few strong, crude colors, usually decoratively, not copying nature. Blue and a bright brick red were often used. Blue was used for the hair and beards of men. Oxen were sometimes in green; but later the colors were closer to nature and less vivid but more harmonious. Some little statuettes known as Tanagra figures, which possess great charm, were first found towards the end of the 19th century A.D. in graves at Tanagra (Boeotia, Greece) and other sites, sometimes illicitly dug. The production of these began in the period 340 - 330 B.C. An interesting example is a terra-cotta group of two graceful, gossiping women, with their couch making up the pyramid-shape which so often lends an atmosphere of informal dynamic stability to modern paintings. In a book on these figures, reviewed recently (AJA 1950, 440-444) their history is traced to the end of the second century B.C., and to other sites, as in Alexandria and Asia Minor.

An example of more prolific use of color in this general age was on a frieze of the tomb ("mausoleum") of Mausolus of Halicarnassus of Caria, dedicated to his memory in 353 B.C. by his consort Artemisia. This was one of the "Seven Wonders of the World." The most important frieze on this building showed a battle including Amazons and Greeks. There was vigor, spirit and rhythm in the oblique lines of the figures. Weapons of the warriors and trappings of the horses were in bronze. In the Greek custom, the whole frieze was alive with color; the flesh was dull red, draperies vermilion, white, green and gold, and background blue. Bridles were of metal. Another example, and another of the Seven Wonders, was at the Temple of Diana (Artemis) at Ephesus, begun only three years after the date of the Mausoleum. Pliny said that its sculpturings were almost all by Praxiteles. It held also some of antiquity's most famous paintings, including the equestrian picture by Apelles of Alexander the Great, at whose pictured horse the conqueror's real horse neighed. The story goes that Alexander had failed to praise the picture enough. "King," then said Apelles, "your horse is a better judge of painting than you are." This story, like the one told of Zeuxis, indicates literal representation as the prime objective of painting at that period. The pediment and the drums of the 127 sixty-foot columns were decorated with figures in red, yellow, yellowish green, purple, orange and blue.

About 330 - 324 B.C., the Iron Age came to India with Alexander. From somewhere near the end of this century, the Nabataeans established a strong kingdom centering at Petra, called by a poet the "rose-red city (of southern Transjordan) half as old as time." The allusion is to the

color of the rocks -- Petra means "rock" -- surrounding the valley, the rock of its narrow-gorge entrance and the rocks out of which its temples were hewn. Here the Nabataean Arabs, in flowing robes of Tyrian purple, built a commercial empire by trading at high prices bronze, iron and the purple, for gold, silver, pearls and myrrh. The valley has been called a "rose-red, lilac, and golden-yellow vale of pleasures and treasures" (Hammerton, p. 113). But Petra was originally a robber's stronghold. Nelson Glueck, in his "The Other Side of the Jordan" (1940), said that in "art, architecture and ceramics, the Nabataeans were one of the most gifted peoples known in history." Their power was at a height in the first centuries B.C. and A.D. Herod Antipas "was to rue the day when he divorced his Nabataean wife, the daughter of Aretas IV Philodemus (9 B.C. - 40 A.D.)", and Paul of Tarsus was to feel the power of the same Aretas (Glueck). It was the Nabataeans who completed the downfall of Cleopatra, in the war between Mark Antony and Augustus, by destroying the Egyptian fleet. Glueck (p.168) spoke of Nabataean houses pretentiously painted with brilliant red, blue and green patterns; and in one vaulted room, of plaster painted in horizontal bands of green, blue and red.

For a color note in the third century we may cite a house excavated in a Scythian town, Neapolis, near Simferpol in southern Russia. This house had a tiled roof of red, yellow and green plaster. We then may close this general survey by mentioning that the Iron Age came to Scotland about 250 B.C., in Ireland in the 2nd or 1st century B.C., to Japan about 200 A.D., and to Oceania (the Pacific islands) only with Captain Cook, "benefactor of every nation," only in the 18th century A.D. Its end in central Europe was about the start of the Christian era.

We have traced a general outline of the Iron Age and the use of iron sporadically for ornaments, tools, weapons and other objects. We have seen that the first general use of iron began in or near the country of the Hittites. Several early cultures on which we have information belong in the stage of transition from the Bronze Age to the Iron Age during which the use of iron became gradually more general. Some of these may have been discussed under the general heading, the Bronze Age. We may begin here with the Hittites, whom we left in the 14th century under the great king Subbiluliumas. In the Hittite capital at Boghaz Köy, stratum IIIa ran from about 1450 B.C., in the reign of Dudhalias II, to about 1300, in the reign of Muwatallu, with the reign of Subbiluliumas a high point falling between these. One authority states that the stratum was ended by a sack of the city by the Gasges. Stratum IIIb covers the period 1280 to 1200, the Hittite rulers then being Hattusilas III, Dudhalias IV and Arnuandas. In the reign of the last-named king (about 1220 B.C.), and in fact beginning even before 1240, there was a rapid decline in the prestige and power of the Hittite Empire; and about 1200 the Phrygians crossed the Hellespont, and with the help of other migrating peoples, overran the empire and brought about its collapse. This was a period of great disturbances; and it may be noted that, parallel to the Hittite decline, a similar decline in the power of the Achaean Greeks occurred.

During 1947, the site called Karatepe in Turkey was excavated, revealing a citadel wall and two gates built of orthostates bearing reliefs and inscriptions, which proved to be in both Old Phoenician and in Hittite hieroglyphic script. Indeed, the inscriptions turned out to be just such a bilingual record as it is the good fortune of philologists to discover only on rare occasions. These bilingual inscriptions will undoubtedly be a great aid in the decipherment of the Hittite hieroglyphics, so that we shall soon know more of Hittite history. Several translations have already been reported. From these it has been found that the city was built by a certain

king Asitawandas, king of the Danuna (one of the Peoples of the Sea, related to the Greeks, whom we shall soon meet at greater length), who gave his own name to the city. He classed his dynasty as that of Mopsus, who is known to Greek history and legend as a hero of Cilicia (southern Asia Minor).

Even as late as the 14th century, the Hittites under Subbiluliumas had rivals in Asia Minor to increase their difficulties with Hurrians, Mitanni and the pharaohs of Egypt: in the southwest, Arzawa; in the southeast, Kizwadna (later Cilicia); and in the northeast, the united kingdom of Azzi and Hayassa. The northwest was unknown to the Hittite kings. When Subbiluliumas concluded a treaty with a king of the Hurrians, Tushratta, king of Mitanni, undertook an unsuccessful war against the former king. Tushratta (1380 - 62 B.C.) is known from his correspondence with Amenhotep III and Amenhotep IV of Egypt, and from the marriage of Tushratta's daughter to the former ruler of Egypt. Indeed, Mitanni princesses of three successive generations sometimes married Egyptian pharaohs. The pharaohs also solicited and received gifts of iron from the Hittites. Tushratta was killed by his own son. As for Mitanni, it as well as the kingdom of the Hurrians was incorporated into the Hittite Empire by Subbiluliumas. A later Hittite king almost defeated Ramesses II in the famous battle of Kadesh, and a still later (1282 - 60) one signed a non-aggression pact with Ramesses II, who confirmed it by marrying the Hittite ruler's daughter. Mitanni apparently had Hurrian nobles and commoners, but kings with Indo-European names.

In the field of art, we are able to say more of Hittite (and, incidentally, Kassite) motifs and influences than of colors used by them; however, Hittite reliefs were generally painted with chromatic color. There were few if any flat Hittite paintings. But the Hittites handed down significant art motifs to later times through Assyria, Syria, Lydia and Phrygia. Assyrian rulers later boasted that they "built in the Hittite style." The colored reliefs were carved in stone orthostates forming the lower walls of the palaces. Avenues to the palaces and entrances were flanked with huge sphinxes and lions. The Hittites were not as skillful in portraying humans as in depicting animals, especially hybrid and demoniac beings. Heraldic bird-headed demons held up the roof of Heaven. In such fabulous monsters, Hittite art was akin to Sumerian art and to that of the Kassites, who invented the winged gryphon, the winged lion, the serpent with snail-like head, a goat-headed animal with a fish body, and the winged centaur. The Hittites borrowed somewhat from Egypt and Sumeria (and later, from Assyria), but in turn they strongly influenced the art of the peoples named above. Two thousand years after the fall of the empire of the Hittites, their double-headed-eagle symbol, derived from the winged-falcon disk of Egypt, was conveyed to European heraldry by the Crusaders in Asia Minor. It was independently devised by the Nazcas of Peru some time between 600 and 1000 A.D.

Leaving the Hittites and turning first to the Khwarazm (Choresm) district of Uzbekistan in Siberia, where a complete cultural sequence has been worked out by Russian archaeologists, we find there the Early-Iron-Age culture called Amirabad (1000 - 500 B.C.) which followed the Neolithic Kelte-Minar culture and the Bronze-Age Tazabaghyat culture. The people of this culture, practicing agriculture and animal husbandry, lived in communal houses built of clay. Their pottery was an uninteresting dark, flat-bottomed, hand-made ware, decorated only with incised ornament, hence of no color interest.

Turning next to Iran, we find in stratum V at Siyalk a transitional culture when some iron was in use along with bronze in greater quantity. The level may be dated at 1400 - 1000

B.C. It is known in part from a necropolis, in the plain Cemetery A, which contained iron objects. The pottery of the level was of monotonously uniform gray color. The most characteristic vessels were beautiful pitchers with long spouts and handles, richly decorated with geometric motifs and sometimes animals. The women of the culture wore iron, bronze and silver jewelry. The men were buried with weapons and a quiver of copper arrowheads; but the other weapons were of bronze, the rich being able to afford iron daggers. The skulls of these people resembled those of the Illyrians of Europe; and as their customs showed them to be a new people, they may have been part of a great group of peoples who, in the last half of the second millennium B.C., passed from southeast Europe through the passes of the Caucasus and around the Black Sea into the highlands of Iran. These people were IndoEuropean (Aryan) speaking folk like the Phrygians and related to the Illyrians who migrated from Thrace (European Turkey) to Asia Minor.

In level VI of Siyalk (1000 - 800 B.C.), much material again comes from a necropolis, Cemetery B. Here the pottery was similar to but somewhat different from Phrygian pottery, and included both painted and "monochrome" wares. The painted pottery bore rather boldly executed animal decoration (including the horse) in red-brown on a buff ground, and geometric motifs arranged in panels. The monochrome ware was either red or black, the vase forms being the same as those of the painted pottery. This ware increased in relative amount as one went westward into Asia Minor, the painted ware falling off in quantity. The stratum was marked by crude finger-ring copper seals; and it should be noted that, although this stratum and Cemetery B belong to the Iron Age, bronze objects still predominated in quantity over iron ones.

In the three centuries following 1000 B.C., burial in megalithic tombs, a wholly new custom for this part of Asia, marks the appearance of a new people, the Aryan-speakers, including West Iranians, especially the Medes and Persians, and North Iranians, as the Scythians. These tombs spread over three millenia, beginning in the Copper Age, perhaps as early as about 2200, though the most important ones date about 1000 B.C. The most characteristic objects found in them were elaborate bronze horse-bits and bridle rings, which combine with the records of later traditions to show the importance of the horse (and the chariot) in the "Aryan" cultures. The tombs and the "finds" from them are best known from Luristan (western Iran). Here the mane and tail of a chief's favorite mount often accompanied him in the grave, and horse burials or sacrifices were not uncommon. Many of the tombs, best known from the period of Luristan dating around 1000 B.C., had been broken into by grave robbers; and highly valued bronze horse and chariot trappings from Luristan found their way, two decades ago, into the European and American markets, other objects in the tombs being neglected. The descendants of the Lur chiefs, in Achaemenid times, idealized their country, describing it as "lovely in horses, lovely in men," but saying nothing about its women. But since horse-breeding and bronze art are foreign to our subject, we shall have to pass on without further comment on the barbaric but vivid and charming Luristan Bronze art.

Not far from the heart of Luristan and west of Siyalk, Giyan level I (1400 - 1200 B.C.) belongs to the period of transition from Bronze to Iron Ages, ending at least at the beginning of the latter. The level was marked by burnished gray pottery, said to be related to the wares of Hissar III, Anau III, Shah Tepe, Turang Tepe and Cemetery A at Siyalk. The makers of this ware have been regarded as invaders whose pottery replaced the painted potteries of Iran and Turkestan. The newcomers had also new types of copper and bronze tools and more wealth

(than their predecessors) in gold, silver and brightly colored semi-precious stones. Widely varying dates (going back even to the 4th millennium B.C.) for the beginning of the gray ware have been advanced, so not too much should be made of the similarities just mentioned. The nature of the techniques required for production of gray wares are such that they may have been produced by a number of independent peoples over a long course of time.

As in Luristan, in the mountainous country of the Kassites east of Babylon, the horse assumed great importance and was a divine symbol to the Kassites, who are generally credited with introducing the horse to Mesopotamia. We know very little about their culture. Their names appeared at first in business documents as laborers and horse grooms. By 1660 or 1650 B.C., they had seized power and established the Kassite Dynasty of Babylon. But the Elamites, whose country around Susa had been a Babylonian province, gradually made themselves independent of Kassite rule; and about 1170 Kutir-Nahhunte II, a short-lived son of the great Elamite conqueror Shutruk-Nahhunte, rebelled and established an Elamite empire which lasted till about 1150 B.C. We know the Aryan Nordic character of the deities of the Kassites, and some of the words of their language, but otherwise we know little about them. Their characteristic pottery was an uninteresting drab-colored ware. Kutir-Nahhunte probably was aided by Aramaean and Assyrian pressure on Babylon. But the Elamite kingdom lasted only a short time, succumbing after about twenty years to the Pashe kings, who seem to have been rulers of Isin. The only king of importance in the Pashe dynasty was Nebuchadnezzar I, who became king about 22 years after the fall of the Kassite kingdom.

In Mesopotamia, the Nuzu pottery, of light color on red or black, continued into the Iron Age at Nuzu, having reached a peak in the reign of Saushtar of Mitanni (1450 - 25). It died out in the upper Khabur river region in the 14th century B.C., but continued into Atshana II (13th century) and even later in Nuzu and Assyria.

Assyria in the 14th century had reached the period sometimes known as Middle Assyrian (to 1000 or 900 B.C.) before Assyria had become dominant in the Middle East. This period may be begun with the reign of Assur-Uballit (1356 - 21), some of whose correspondence with the pharaohs of Egypt was found at Tell el-Amarna. Among other boasts, he claimed to have destroyed the armies of the "widespread Subarians." In the tablets of the period, we find that the trades represented in the population included dyers, weavers, fullers, makers of headgear, goldsmiths, plowmen and gardeners. Assur-Uballit's successor defeated the Kassite king of Babylon, and a later Assyrian king reported victories over Kassites, Gutians, Hurrians and Subarians; and by then Assyria was beginning to control Mesopotamia to the Euphrates river. Soon Shalmaneser I (1272 - 43 B.C.) invaded the Armenian plateau to obtain copper and probably iron. His troops, using the horse and the chariot, attacked the Hittite dependencies, Mitanni and Hanigalbat, as well as Babylon. His successor, Tukulti-Ninurta I (1242 - 06), held hegemony over the Subarians and soon crushed the Kassites and occupied Babylon for seven years. But the early 12th century was to some degree a period of decadence in Assyrian power, only to be succeeded by a resurgence of power under Tiglath-Pileser I (1114 - 1076). This energetic ruler defeated the Moschi in Cilicia and the Aramaeans and Amorites in Syria. He took tribute from Phoenician cities and from much of Babylonia, and occupied the oasis of Palmyra in the Syrian desert; but the Egyptian pharaoh bought him off when Tiglath-Pileser moved southwest toward Egypt. Among the gifts sent to the conqueror was a crocodile. With this warrior king began what may be called the Assyrian Empire, which was to last until

612 B.C.

Turning to Syria at Judeideh, in stratum V there the pottery was imported Late Helladic IV and "Sub-Mycenaean," perhaps originating in Cyprus. Along with these were handmade "cooking pots," tempered with shells. In level IV, regarded as "Syro-Hittite", the cooking pots, a rough ware for kitchen use, continued along with a simple pottery ware whose fabric core was orange-buff in color, and with red-slipped and burnished as well as painted wares copying Sub-Mycenaean and Cypriote motifs. At Ras Shamrah, a tablet with the oldest known "ABC," dating from the 14th century B.C., was found late in 1949. It had 30 characters of the Northwest Semitic ("Ugaritic") alphabet arranged in exactly the same order as they occur in Hebrew and in Aramaic. This order is also familiar to us in the Greek alphabet. The date of this tablet corresponds to stratum I at Ras Shamrah. This level experienced more than one catastrophe: for about 1435 it was captured by the pharaoh Amenhotep II; shortly after 1360 a great earthquake destroyed the town; and near 1200, the rebuilt city was destroyed again by the invading Peoples of the Sea.

At Hama, after a gap in occupation, stratum F (1200 - 925) was an Early Iron level, marked by the reappearance of painted decoration on the pottery, using especially animal (as stag), bird and fish motifs. Arrangement of the design was in panels, with the painting done with very dark brown to red paint. Many of the cinerary urns were decorated only with geometric motifs, which were also employed to separate panels in the more pretentious naturalistic decoration. Other vases were in monochrome yellowish or reddish slip or decorated with vertical burnish, the favorite form among cinerary urns being a handleless jar with ovoid body. Greenish faience was used for amulet figurines of the gods and for the cylinder seals, which were found along with scarabs in the cinerary urns. A violet amethyst seal may represent the goddess Ishtar with her attribute the lion. An ivory mug found in an urn had a handle in the form of a goat. Beads for necklaces were made of red quartz, frit, white, blue or red faience, or of variously colored stones. Iron was found in the F stratum in bracelets and in swords of Sub-Mycenaean type. The civilization of this level, probably that of the invading Sea Peoples, was by no means a barbarous one. The next stratum, level E, to about 720 B.C., was an Aramaean one.

The Iron Age came to Palestine with the Peleste, later called the Philistines. Technically, "Iron I" or the Early Iron period, that of the Judges and the Israelite United Monarchy, includes the 12th, 11th and 10th centuries, though iron came to most of Palestine only late in the 12th century. Iron II or Middle Iron Age, the period of the Divided Monarchy, includes the 9th, 8th and 7th centuries; Iron III or the Late Iron Age ran from about 550 to 330 B.C.

Except for a few fortified towns, before 1200 the Israelites had conquered the lands on both sides of the river Jordan. But soon the Sea Peoples had overrun the whole coast from Gaza to near Mt. Carmel, absorbing the Canaanites in this fertile country. One of these peoples was the Philistines, whose origin has been stated. Shortly before 1050, the Philistines with their iron weapons defeated the weakened Israelites, who lacked iron swords, in the battle of Ebenezer, capturing the Ark of the Covenant and destroying Shiloh, where the central Tabernacle of the twelve Israelite tribes had been located. The Israelites had been weakened by fighting the Canaanites, the Bedouins (the camel-riding Midianites, the Moabites and the Ammonites), the Syrian Aramaeans and even each other. But this warfare helped to unite them gradually into something like a single nation. Saul managed to throw off the Philistine yolk about 1020, but

after his death at Mt. Gilboa the Israelites were again under subjugation until the time of David of Judah (about 990 B.C.), who defeated the Philistines twice and captured Gath. This was one of a confederation of city-states, a five-membered "Pentapolis" including also Ashdod, Ascalon, Ekron and Gaza. The success of the Philistines was due not only to their iron weapons and their military and political skill, but also to their united front, while the Israelites were still a group of mutually jealous tribes.

It has been frequently noted that there existed a sharp contrast between the Canaanite, Phoenician and Philistine cultures, on the one hand, with their towns and palaces, their serfs and wealthy class, and their massive fortifications, and the Israelite culture on the other hand, with its rustic huts, its freemen and its thin-walled enclosures. The Philistine strata in the excavations, it has already been noted, may be readily marked by the characteristic Philistine pottery. Except for the Philistine ware, dating from 1150 or some what earlier to about 1000 B.C., the dividing line between Bronze and Iron Ages was marked by a sudden deterioration in the quality of the pottery. The red and black on creamy gray on buff-clay pottery has been described in our introductory Iron-Age section, At Bethel in the Early Iron Age, the dominant vase was a large store-jar (pithos) with characteristic coarse clay and collared rim, the latter going out of fashion about the time of Saul. The black on creamy white "beer bottles" of Tell Qasile have been destroyed.

The oldest fortress of the period was Saul's citadel at Tell el-Ful. This was built with casement walls, a type which was in general use for two centuries, to stand off the Philistines. But there were few other important buildings before the death of David. The Israelite state, that of recent semi-nomads, was still in a rather primitive pastoral and farming stage, just beginning to develop a mercantile and industrial stage. On the other hand, Hiram, king of Tyre and Sidon and friend of David and Solomon, rapidly developed a commercial empire (usually called the Sidonian) on the ruins of the Philistine power crumbling under the defeats by David and the dwindling Mycenaean commercial empire around the Mediterranean. The Canaanites of Hiram's time (about 969 - 36 B.C.) were becoming the Phoenicians of history. A recent discovery of a Phoenician tomb inscription in Cyprus dates to this time, while an inscribed Phoenician stone from Sardinia, far west in the Mediterranean Sea, dates to the same time; and the oldest painted pottery from a cemetery at the Phoenician colony Carthage was closely related to that of Megiddo V, dating about 1050 - 975 B.C.

Israelite amulets of the period included clay plaques showing naked pregnant women, free from the insignia of a goddess such as were worn in Canaanite figurines and plaques. But strata of non-Israelite cities of the time, as Beth-Shean and Megiddo, contained various cult objects as well as "incense-stands" or "flower-pots" often decorated by serpents in relief. The Song of Deborah in Judges V, celebrating the victory of the Israelites under Barak over the Canaanite forces headed by Sisera, has been dated by Professor Albright between 1150 and 1125 B.C., that is, between the Canaanite cities of levels VII and VI.

A remarkable discovery resulted from the excavation of Megiddo stratum IV (950 - 815 B.C.). Here extensive stables, capable of taking care of 480 horses, were found. They go back to the time of Solomon (962 - 22), whom the Bible informs us was much interested in horses and chariots. Among this king's projects, besides the great stables and the Temple, which took seven years to build even with Hiram's help, were a port (Ezion-Geber) on the Gulf of 'Agabah, east of Sinai, and a fleet of ships. Here too he built a complex of industrial plants, devoted to

the smelting and refining of copper and iron and production of metal articles for foreign and domestic markets. Mudbrick furnace walls were green with the fumes of smelted copper ores. Nowhere else in the ancient world has anything like these refineries been found. They are all the more remarkable for a people not long removed from the semi-nomadic state. It is quite probable that the famous visit to Solomon of the Queen of Sheba was for business reasons rather than because of Solomon's wisdom or personal charm. She was no doubt looking for markets for her country's ores and other products in exchange for the many domestic, decorative and personal objects produced by Solomon's smiths and metallurgical experts.

In a palace at Megiddo were found more than 200 carved and incised ivories. One was a pen case of an Egyptian whose title was: "Royal Envoy to Every Foreign Country ; another was an ivory plaque showing the prince of Megiddo celebrating a victory. Related to these 12th-century ivories were some from distant southwestern Spain. These ivories began a group which included examples excavated from Nimrud (Biblical Calah), from Arslan Tash east of Carchernish and from Samaria. Many were used as inlay to decorate furniture. The Samaria ones included a group carved in very low relief with lavish use of gold and insets of blue lapis, colored glass and "paste" (powdered lead glass frit). The group was of Phoenician manufacture, with Egyptian motifs; for example, showing Horus holding Truth, and Isis and Nephthys adoring the "djed pillar."

Solomon's extensive building operations and the magnificence of his court led to his imposition of burdensome taxes, which were not reduced at his death (in 922 B.C.), when the northern tribes petitioned his son, Rehoboam (931 - 13), to do so. The North under Jeroboam (931 - 10) revolted, and the kingdom of David was eventually broken up into two kingdoms, Judah and Israel. Hostilities between them lasted for half a century, ending only in the time of Omri of Israel 880 - 74 B.C.).

We have had various intimations that the twelfth century B.C. was a Dark Age marked by the migrations of many peoples. Barbarians from the north had destroyed most of the Mycenaean civilization of Greece and the eastern Mediterranean Sea; the Hittite Empire had disintegrated, leaving only small states around Carchemish, Hama and other cities in Syria, as a reminder of former Hittite greatness. The Kassite dynasty at Babylon had come to an end in the century, while barbarian Aramaeans and Chaldaeans were filtering into Mesopotamia.. It is perhaps a good place to say a little about two or three of the migrating peoples who entered the records of the period.

A recent (1948) article by R. A. Bowman states that the Aramaeans of this period, called "Ahlame Aramaeans" by the Assyrians, about 1100 B.C., were related to the much earlier (2900 - 2700) migrating group, called the Setiu by the Egyptians and the Suti by the Akkadians. The Aramaeans were traditionally descendents of Nahor, Abraham's brother, while the Transjordan people of Moab and Ammon were descended from Lot, Abraham's nephew, who migrated with him. The Bible connects directly the Mesopotamians and later Aramaeans; and the Hebrews claimed relationship with the Chaldaeans through their Aramaean kinsman, Nahor. Probably the early patriarchs were part of the earlier Suti migration from the middle Euphrates district through the Syrian desert to Palestine (some going to Babylonia), and must have been in Canaan before 1800 B.C. The sons of Jacob, perhaps the 18th century Habiru, were probably the Ahlame Aramaeans who came out of the Syrian desert into Palestine during the Amarna Age.

In northwestern Mesopotamia, the power of Assyria was threatened for a time by the

inroads of the Muski (Moschoi in Greek), probably a tribe of the Phrygians, who included the Trojans and who were in the vanguard of the peoples who destroyed the Hittite power. The Phrygians, a mountain folk who were supposed to have come from southern Russia near the Sea of Marmora, crossed the Hellespont into northwest Asia Minor soon after 1300 B.C., and a little later the Phrygian, or part Phrygian, Priam seized Troy. It was about this time that Greek tradition says that the "divine-born" Greek heroes with long pedigrees, as Pelops, previously mentioned, entered Greece; and Professor Myres suggested that they were related to the Phrygians. The Phrygians in Priam's time had pushed southwest, where they were attacked with some success by the Amazons, a nation of women, believed by some to have been a portion of the Hittites, who showed traces of having been a matriarchal people. Just before the Trojan War the Phrygians were more successful, pushing eastward into the Hittite country. A recent suggestion was that Pelops was not Phrygian but a Hittite. As a result of the movement of the Phrygians, various peoples subject to the Hittites fled down the Syrian coast in heavy, two-wheeled ox-carts, and by sea in ships, occupying all northern Syria, some almost to Egypt. Associated with these folk were several tribes more specifically known as the Peoples of the Sea, whom we have met several times before. The pharaoh Ramesses III hastily assembled his army and navy and met and defeated the invaders at the borders of a small kingdom on the Orontes river in Syria in the year 1175 B.C., and again in 1172. The Washhasha (Uashasha) from Crete or Caria were captured and retained as slaves; the Shakalsha from Sagalassos in Pisidia made peace and were retained as mercenaries; the Peleste, from southwest Asia Minor, were allowed to settle on the coastal plain north and west of the plateau of Judah, to become the Philistines who later so plagued the Israelites, whose land Palestine was to take the name of the Peleste; the Thekal (Tjikal or Zakkal) settled near them, closer to Mt. Carmel; and the Danaans (Danuna), the rear-guard from Argolis in Greece, settled in northern Syria. Probably also Achaeans, Phrygians, Carians, Libyans and Hittites were involved in some of these attacks, or in the general disturbances occurring throughout the Near East. Ramesses III himself did not rely wholly on Egyptian troops and seamen to cope with the land and sea raiders, but employed some Shardana, probably from Sardis, as mercenaries along with some troops from Libya.

Ramesses III was one of a number of pharaohs of that name, who, together with Nakht-Seth (or Set nakht), a member of the family of Ramesses II, made up Egyptian Dynasty XX. This dynasty was founded before 1180 when Nakht-Seth restored order after a short period of anarchy, during which a Syrian usurper held power. Egypt's period of decline began with this dynasty. Its last few kings were mere puppets in the hands of the priests of Amun. On the death of Ramesses XII, Herihor, high priest at Thebes, seized the throne, founding a dynasty (XXI) of priest-kings there. But meanwhile, a prince of Avaris in the Delta, called Smendes (or Nesubenebded) ruled an independent kingdom. Avaris was renamed Tanis; and the proportions of the land of Egypt ruled by Tanite and Theban kings varied from time to time. The tomb of a king of the dynasty was discovered in 1940 at Tanis. He was buried in a chamber of pink granite in a series of sarcophagi, the outermost of which was also of pink granite. The next was a sculptured likeness of the king in black granite; and the next two were in gold and silver. One of the treasures of the tomb was a 72-pound necklace of blue lapis lazuli and gold.

About 935 B.C., after a further period of decline of power and prosperity, Sheshonk (Shishak) I, descendant of certain Libyan mercenaries who had become powerful in Heracleopolis, founded Dynasty XXII. Egypt was reunited, with capital at Bubastis, and some of

its foreign power was restored. The dynasty included three more pharaohs named Sheshonk, two named Osorkon and two named Takeleth.

The power of the last Libyan or BubasiteA kings was practically limited to Heracleopolis and Thebes. A new Bubasite dynasty (XXIII) arose, and Egypt soon was broken up into city-states. A prince of Sais, in particular, gained power. Egypt was then invaded by the Nubian king Piankhi, who conquered the whole country, but retired to Nubia. Then a son of the Prince of Sais ruled (Dynasty XXIV); and there was some revival of art, if not of power. About 711 B.C., Shabaka, son of Piankhi, founded the Kushite or "Ethiopian" Dynasty XXV. Other kings of the dynasty were called Shabataka (699 - 689) and Taharka. (689 - 663 B.C.) Kush is the land south of Egypt proper, from the first to the third cataract of the Nile. It is also regarded as the Egyptian name for Nubia, which usually is placed south of Libya and west of the Nile and Kush. Still further south, near the fourth cataract, was Napata. Here ruled a line of kings, from Kashta to Tanutamun, a son of Shabaka, both of whom, along with Kashta, have been regarded as of Egypt's Dynasty XXV. The period from about 750 till after the middle of the 6th century B.C. is often called the Napatan period. Still farther south was Meroë, whose period of importance (Meroitic) followed the Napatan. The Nubians and Kushites were racially akin to the Libyans, sharply differentiated from the woolly-haired negroes, having straight or curly hair, and other non-negroid features.

During Taharka's reign, Egypt was conquered by the Assyrian kings Esarhaddon and Ashurbanipal. Taharka fled to his Nubian domain. After an unsettled period, Psamtik I of Sais (663 - 609 B.C.) put a native line again on the Egyptian throne. This 26th dynasty included two others of this name, Necho II, Apries (or Hophra) and Ahmose (or Amasis) II. Psamtik defeated the migrating Scythians in Palestine, turning them back from Egypt. During this period there occurred a renaissance of Egyptian art and a last flash of Egypt's military might. But Necho's army was routed at Carchemish (605 B.C.) by Nebuchadnezzar of Babylon. In 525 B.C., Egypt was again conquered, this time by Cambyses the Persian.

The decline in prestige which had fallen upon Egypt even at the beginning of the 21st dynasty was well illustrated by the Report of Wenamun (1060 B.C.), that of an Egyptian envoy who was subjected to humiliation while on a mission in Syria, where Egyptian armies once had commanded great respect and fear. He was sent to obtain cedar timbers for a bark for the god Amun. He was robbed at one town and received coolly by the Prince of Byblus, who wanted payment in advance and was skeptical of Wenamun's credentials. The prince showed the latter to tomb of envoys of Ramesses IX, who had been detained in Byblos seventeen years, and died in captivity. But the prince admitted that Amun was the greatest of gods, who favored Egypt, and that Egypt had taught Canaan the arts of civilization. Wenamun had to wait long before sailing because of the pirates on the seas who held merchantmen for ransom. It is also an interesting commentary on the times that the envoy's language was understood in the Canaanite or Phoenician cities, but an interpreter was required for him to speak to the queen of the district on eastern Cyprus where he was shipwrecked. The Asiatic coast had kept contact with Egypt, at least from the time of Ramesses III.

The Saitic period of Egypt, including dynasties XXVI through XXX, with the royal residence at Sais, was notable for an attempt to revive the art and religion of the Egypt of two thousand years before, as in later times medieval Europe tried to revive classical Greek art and literature. Though not fully successful, the period has left some charming wall reliefs, excellent

skill in the goldsmith's art and metal working, fine bronze statuettes, delicate jewelry using stones with harmonious color combinations, and numerous "ushabtiu" figures. These little painted figures, servants put into the tombs to accompany the master and wait on him in the afterlife, were no longer merely household and agricultural workers, as in earlier times, but figures of Osiris with the god's crook and lash, though still servants of the deceased.

Necho built a big navy; and Herodotus said that he built the canal connecting the Nile with the Red Sea. Such a canal, however, is known to have existed much earlier, so Necho probably repaired it and deepened the channel. The historian credits Necho's Phoenician sailors with sailing round the Cape of Good Hope and Africa, returning in the third year through the Pillars of Hercules (Gibraltar). Necho's successor made an expedition into the Sudan, as we know from the inscription left by a Greek soldier on a statue of Ramesses II before the pharaoh's temple at Abu Simbel. The Greek wrote in a rare back-and-forth manner, like a man plowing a field.

The pharaoh Apries is known to us from the prophesies of Jeremiah, who sought to take the Babylonian side in the struggle with Egypt. When the king of Judah failed to take this advice and Nebuchadnezzar took Jerusalem (587 B.C.), Apries offered a haven at Daphnae (Biblical Tahpannes) to the Jews who escaped. Others formed a Jewish military colony at Elephantine. But not long after this (in 539) occurred Belshazzar's feast and the fall of Babylon itself before Cyrus the Persian. Before this came the pharaoh Amasis. It was he who gave to Polycrates of Samos the advice to throw away his most prized possession, a ring; this was the story made into the famous ballad of Schiller. Another friend was Croesus of Lydia (560 - 546 B. C.), who coined the first money and became a symbol of great wealth. He too fell prisoner to Cyrus.

A noted picture of Jeremiah bewailing the fall of Jerusalem was done by the 19th-century painter Eduard Bendemann. The rebuilding of its walls was painted by Julius Schnorr, whom we have met before. The "Writing on the Wall" was the subject of a painting by the great Rembrandt,, while the fall of Babylon, portrayed as a luridly lascivious city, was painted by the 19th-century painter Roehrig.

We left Cyprus about 1550 B.C., at the end of the Middle Cypriote period. While not strictly in the Iron Age, we may, without stretching the truth too much, consider the three Late Cypriot periods as a transition to the Iron Age. The periods were made known to us by excavations at Enkomi, Ayios Jakovos, Nitovikla, Milia and other sites. The chief color notes, as in most cases, will come from the pottery.

Among the native potteries, two forms of White Slip ware were decorated with matt brown or orange to black paint on the white slip. Two forms of Base Ring ware, named from the shapes of their bases, had a thin lustrous or dull brown or dark gray slip. In Palestine, this Base Ring ware was black, dark brown or dark gray, with a metallic ring when tapped. A dull brown slip, usually matt, was also used on the "Monochrome Ware." "White Shaved" ware, trimmed after production but before baking by shaving with a knife in long vertical strokes, was plain or covered with a white wash. The Bucchero ware, with vertical ribbed or fluted decoration, possessed a nearly matt slip, at first silver gray, later dark gray to black. Imported pottery, mostly wheel-made in contrast to the native wares, included Mycenaean wares, vertically burnished Red-slipped Lustrous, Black-slipped Lustrous, and a painted ware decorated with matt brown, sepia-colored or reddish paint on a white slip. There were also partly imported, wheel-made, white, red, or blackslipped pottery wares.

In Late Cypriot I, a red-on-black ware was common at Nitovikla. A tomb of the period was of tholos type, antedating the tholoi of Greece. Nude female figurines were part of the religious equipment of the culture. The people of the period were of the round-headed Armenoid type. Apparently, there was considerable trade with Ras Shamrah on the mainland opposite Cyprus, and with Byblos, Tell el-'Ajjul and Egypt, not a great deal with nearby Asia Minor. The Red and Black Lustrous potteries came from Syria. Business on Cyprus was carried out in the "Cypro-Minoan" script, derived from the Minoan "Linear A" script.

In Late Cypriot II (1400 - 1230 B.C.), the Base Ring ware was often mottled black to red, the dull slip sometimes buff colored, and the linear decoration in matt white paint. Monochrome and White Shaved wares continued in use; and there was also a so-called "Levanto-Mycenaean" ware similar to the common "Koine" of Greece, Rhodes and the Levant (coast of Asia Minor); but the fabric was more often coarser and the paint more matt, and differing slightly from the "Hellado-Mycenaean" of Greece. The former style included bird and fish designs, chariots, bulls, goats and stags, with the Koine variety utilizing narrative composition (instead of scenic or panel arrangement) as well as profuse application of white. Belonging to the period was a group of five rich built tombs at Enkomi, discovered in 1896. The palace here dates to about 1350 B.C. The period was that which saw the decline of Egyptian prestige and the rise of Hittite power under Subbiluliumas. The king of "Alasia," probably Cyprus (or its city or district Enkomi), was a loyal ally of Egypt, and warned her against the Hittites. But there were also troubles in the copper mines of Cyprus. Mycenaean interests were strong in Enkomi and in Ras Shamrah, which remained free of Hittite control. But in Late Cypriot II, Egyptian trade went more to Ras Shamrah than to Enkomi, while Cyprus had increasing contacts with Syria and Palestine. In the late 13th or early 12th century, Enkomi was conquered by Greek seafaring warriors or Sea Peoples along with some from Anatolia (or Syria?) and the flourishing Mycenaean civilization was destroyed.

Late Cypriot III was definitely in the Iron Age. At Enkomi, simple shaft graves replaced the chamber tombs. Such a change of customs usually implies a period of turmoil, in this case also indicated by a declining level of prosperity. At other sites there was more continuity. Several of the early pottery wares became rarer; but hand-made *Bucchero* continued in use along with plain and coarse wares, and two painted wares, one of them called Proto-White-Painted Ware. The latter had a matt or slightly lustrous dark brown decoration on a tithite slip. This painted ware developed after 1125 B.C., at the time of the Granary Style Mycenaean pottery in Greece. This was the period when the Achaeans (following earlier Anatolians and Syrians) were emigrating the island from Greece to Crete and the island of Rhodes, due to pressure by the Dorians. When the Dorians in turn conquered Crete and Rhodes, the Achaean Greeks there began the colonization of Cyprus. Legends of the foundation (traditionally in 1176 B.C.) of the town of Salamis on Cyprus by Achaeans from the Greek island Salamis are connected with these events.

The Cypro-Geometric periods occupied the time from 1050 to 700 B.C. Periods C.G. I and C.G. II each occupied a century, and C.G. III one hundred and fifty years. Gold jewelry and fibulae, embossed plaques and the objects in graves of the period indicate a flourishing civilization on Cyprus, but there is also evidence of human sacrifice in the burial ceremonies. The period was named from the prevalence of geometric design motifs, as lozenges (diamonds), triangles and zigzags, on the pottery. These appeared abruptly and reached

maturity shortly after 1000 B.C. There were, of course, some curvilinear motifs along with the dominantly rectilinear ones. The decoration was mainly horizontal and in zones, with panel composition common. The pottery wares of C. G. I included "White Painted I" ware, which had matt black or brown decoration on a buff or greenish white slip, usually with rectilinear patterns; another ware was the "Bichrome I," similar to this but with red added to enhance the general effect, while "Black Slip I" (or "Pseudo-Bucchero" ware had a matt black slip decorated with fluting or ribbing. Survivals of Mycenaean traditions gradually disappeared due to adaptation of the Greek colonists to their new home. Some of the Cypriot pottery found in Palestinian sites, and Syrian ware in Cyprus, indicates mainland contacts. The next period, Cypro-Geometric II, marks the beginning of a decline, but still with considerable prosperity. The potteries of the period, whose names indicate in part their description, have been called White Painted II, Black Slip: II, Black Slip Bichrome II, Plain White II and (late) Black-on-Red I. The last named ware and the two Black Slip wares exhibited a new interest in color as a decorative element. The Black-on-Red ware made use of glossiness contrast as well as color contrast, for the red slip was lustrous and the painted decoration was in matt black. This ware became more common in the C.G. III period (850 - 700 B.C.). The pottery wares already named reached their "III" classes, and red Slip I ware appeared. But the geometric decoration had degenerated, and plain bands of ornament were common. The panel style of design continued, but the filling decoration was simple and uninspired. On the other hand, figure painting, never previously popular on Cyprus, made its appearance some time before 700 B.C. During the period a Phoenician colony became established on the island; and toward its end so-called "orientalizing" motifs began to appear in the art of the island. We shall soon discuss such motifs in connection with Greece, where they appeared somewhat later; and where, as in Cyprus, there was also an earlier Geometric period. Cypriot pottery influenced the wares of the mainland, Black-on-Red ware being common in Palestine and Syria, while the Cypriot Bichrome may have been the inspiration for a polychrome style in Crete. The Cypro-Geometric period ended about 709 B.C. with the coming of the Assyrians.

We have previously mentioned the destruction of Troy VII (b), in which Mycenaean "Granary Style" pottery was found along with gray Minyan ware. With these were also the dark monochrome fluted and wart-ornamented ware ("Bückerkeramik") of the Central European Lausitz culture, whose bearers we may assume were the destroyers of the town ruled by Aeneas after the fall of Troy VII (a) in the Trojan War. Troy VIII, beginning about 900 B.C., went through Geometric and Orientalizing periods, as Greece and Cyprus did.

In the former Hittite country of Anatolia, at Boghaz Köy, Alishar and other sites, the monochrome Hittite pottery wares were replaced after 1200 B.C. by painted wares. But many Hittite elements survived, as their seals and hieroglyphs; but in the eastern and central parts of Anatolia the dominant element of the population was Phrygian. This people spoke an eastern Aryan dialect related to the western Aryan branch which included Greek and Hittite. The Phrygians painted their pots with many colors, especially brown, pink or red, these being put on a white slip ground. The shapes often imitated metal forms and the designs were dominantly geometric.

In spite of much admirable recent activity on the part of Turkish excavators, we still do not know much about the origin and migration route of the Phrygians to Asia Minor. It has been plausibly assumed that they came to Anatolia from the Lausitz areas of Europe by way of

Thrace (Turkey in Europe). We still do not know the relation of the Moschoi to them. But recent publications tell us something of the daily life of the Phrygians. Pazarli, for example, was a hill fortress, such as were occupied by many invading chiefs of "Aryan" peoples. Its magnitude was comparable to those of Mycenae and Tiryns in Mycenaean Greece. It afforded shelter to the chief and his retainers, and had storage bins capable of supporting life in any siege of reasonable duration. The houses were individual, small and two-storied; they differed in some respects from the megaron houses, those of the Mediterranean area and Middle East palaces. The more pretentious structures were faced with glazed relief tiles in various bright colors arranged into geometric designs, heraldic groups of animals and frieze-like processions of animals and soldiers. The Phrygians of the 9th and 8th centuries B.C. had a penchant for sphinxes, griffons, centaurs, lions and bulls, and for horned animals rearing on both sides of a sacred tree. The warriors wore plumed helmets, carried round shields, had bare or gartered thighs, used greaves and long spears. They were much like the soldiers of Mycenae or Carchemish.

In Alishar IV there were three phases. Early phase "4cM," possibly due to the Moschoi, was marked by Buff ware decorated in panels with red or very dark brown paint, with motifs including stags, concentric circles, trees and "tongues." In a later phase, possibly due to the Phrygian dynasty of the almost fabulous king Midas, a fine plain gray or brown burnished ware was produced. These wares were related to some found at the Phrygian royal town of Gordion, west of Ankara in Turkey, where Monochrome red and gray wares predominated, and in Boghaz Köy. At Pazarli, northeast of Ankara, were found orthostatic terra-cotta plaques picked out in black and red on a buffcolored background, and decorated with relief decoration of warriors and animals. At least two of the three levels of Alishar IV and Pazarli dated before the invasion of the Cimmerians early in the 7th century.

The Cimmerians were an Aryan-speaking people akin to the people of Thrace. They were first mentioned in attacks on the Chou kingdom of China about 770 B.C., but by 700 appeared in Southern Russia. From here they were driven farther southeast across the Caucasus by the Scythians, appearing as the Gimiri north of Lake Van (Urartu), while other Cimmerians, mixed with a Thracian tribe, came into Asia Minor from the west. Both the Cimmerians and the Scythians, as well as the Sarmatians, who appeared later in history, were all members of a group of horse-breeding and riding, trousered "barbarians," of Aryan Iranian speech. This group lived for a long period north of the Black, Caspian and Aral Seas and the Jaxartes river, which runs into the Aral Sea. South of this group lived their relatives, a less warlike group including the Medes and Persians. We shall later have much to say of all these peoples and their colors as they pass to the center of the stage of history.

At Tarsus (Gözlü Kü1le), following the Late Bronze Old Hittite period, in which the pottery with partially burnished slip and the unique Hittite shapes were characteristic (including a beautiful red burnished deep rectangular vessel sometimes regarded as a bathtub), came the New Hittite Empire period (1400 - 1200 B.C.01, also a Late Bronze period but marked by the appearance of iron at the end. Pottery was burnished less and was mostly light brown or reddish brown, though often greenish white or gray. At the end came Mycenaean wares of the "Granary" and "Close" styles, along with drab-colored pottery. The prosperity of former times under the strong Hittite kings was replaced around 1250 B.C. by poverty and apparent insecurity, the buildings being mostly poor huts; but the city remained a typical Hittite

provincial capital, probably occupied by Sea Peoples and Cilicians. It was deserted somewhat after 1200, while Mersin, not far away was burned and destroyed a little earlier. At Mersin, following the strongly fortified Late Bronze strata VII through V, with decreasing polychrome pottery (black and red on a light ground) and increasing drab-colored ware, came the Iron Age level-IV. This followed the destruction, and was marked by Levanto-Helladic pottery of a local Cilician type, indicating that Achaean Greeks had settled at Mersin during the disturbances due to the great migrations.

We left Crete in Late Mycenaean (L.M. III) times, after the fall of Knossos and destruction of Cretan power, a period of such decline as to indicate that the Cretan Minoan spirit had been broken. This was especially noticeable in the 12th century during the last subdivision (about 1230 - 1075 B.C.) of L.M. III, when the Achaeans were dominant. This was a period of warfare and generally unsettled conditions, when there was little leisure or security for production of works of art. The period marked a transition to the Iron Age. Minoan culture was assimilated into the general culture of the Mycenaean world. The period from 1075 to 1025 B.C. has been called Sub-Minoan; but it may be treated along with the contemporary Sub-Mycenaean period of Greece.

This Sub-Mycenaean period followed the Late Mycenaean of Greece, toward the end of which iron weapons and Granary style pottery were appearing there. The period is thus a transition from the Bronze Age to the Iron Age. The term is used by some as a synonym for the "Proto-Geometric" period; by others the two are distinguished, allowing half a century for each (the total being 1075 - 975 B.C.). During this period, pottery vases mostly retained the old Mycenaean shapes, and were decorated with lustrous black glaze paint; but the patterns were purely linear or geometric: triangles, straight or wavy lines, zigzags, circles and semicircles. Turning momentarily from vases to other colored objects, it may be remarked that pictures were used at this time to ornament metal shields and embroiderings in garments; but there is no mention in Homer of wall paintings.

A new style, called Geometric, began to take form in the first half of the 10th century. Similarities to the style of the Balkans and farther north were sufficient to show that the Geometric style was, at least in large part, introduced by the northern invaders. But in Greece it was molded into a very distinctive Greek style. This is not to say that there were not various individual styles, which have been associated with the names of specific localities, potters and painters. Many of these craftsmen even put their signatures on their works. Sometimes the painter and maker of the pot were the same person, sometimes different ones. The majority of vases were not signed; but from stylistic studies as well as the signed works we are sure that we are dealing with original works of art. This fact is what makes the pottery so important to the study of Greek art. For practically every original Greek painting on the important flat surfaces and nearly all the works from the hands of the great Greek masters of sculpture have perished, and we know of them only from literary sources and from Roman or other copies.

It is because of these facts and the importance of Greek art to all later art, and because the Greek pottery styles in high probability reflect the art styles in the other techniques and media, as well as certain characteristics of Greek history, that Greek vases have been the subject of many great studies and publications. Greece was made up of many independent city-states; and the Greek's loyalty was local, with little feeling for Greece as a whole. In consequence, Greek art was marked by the existence of local schools, with notable differences

along with some attributes common to Greek art everywhere. All Hellenes, it is true, probably felt some common ties when attending the Pan-Hellenic athletic games, as at Olympia. The oracles, as that at Delphi, were visited by all Greeks; and the common language must have helped to cement ultimate Greek unity. But one writer on Greek culture and history (Durant) pointed out that Miletus specialized in red vases, Lesbos in black ones; Clazomenae favored gray, and Rhodes white; Samos produced fine alabasters, Naucratis exported faience, and Sikyon and Corinth were noted for delicate scent bottles and elaborately painted jugs. While not admitting that the local distinctions can be accurately stated so simply and neatly, we have already noted some differences among the local schools. Athenian vases finally became so popular as to stand almost alone in Greece; but this was only after the end of the sixth century. Before this there were many local competitive styles, each of which has been studied in great detail.

The general color scheme of most of the Greek vases, black on red or red on black along with a creamy white and other accessory colors, is not very exciting. Nor did all Greek vases have great esthetic appeal. There was much economy of means in evidence, with the application of "shorthand" conventions, especially in the early stages. A tree represented a landscape; a column stood for a building, and a row of dots may have represented plowed ground. The human torso was in frontal view, the legs in profile. The vase shapes often were beautiful examples of pleasing symmetry and form, but some gigantic jars were better designed to store wine, oil or grain than to please the eye.

In the Geometric style, the color of the clay was a little darker than before, and the glaze was less lustrous. The first variety (late 10th - early 9th century) was a Black Geometric style, with most of the vase body covered with black glaze and having only one horizontal band of simple patterns as decoration. Later the number of bands was increased and new motifs were added. Then (later in the 9th century) the main zone was divided by verticals into panels, with rows of birds, horses or deer as black silhouettes for decoration. The background also bore various devices as filling, exhibiting the early Greek distaste for empty ceramic space (the "horror vacui"), which was long to persist. In the 8th century, the vases became often very large and were used as grave monuments; and the human figure was introduced into the composition. Many of these were found in the Dipylon Cemetery at Athens, and so the style became known as the Dipylon Geometric.

The early Geometric Age has been called a period of "artistic barbarism"; but the geometric artist achieved a very striking decorative effect, which was apparently what he sought, by means of horizontal bands and panels with geometric motifs like triangles, diamonds, meanders, swastikas, zigzags and concentric circles, often repeated. He had good feeling for design, but no knowledge of perspective, so that he was anxious to show more than we can see: two wheels of a chariot appearing on the same side, the legs of two or three horses with all heads and legs showing side by side. Human beings were silhouettes so stylized as to appear as geometric elements, for example, an inverted triangle serving for the whole torso, with a knob at the top for a head. The painter sought formal decorative effect and made little attempt to copy nature. Black Dipylon vases were decorated sparingly on neck and shoulder.

The Geometric style of painting was essentially monochrome. But in the 7th century B.C. there arose, under the influence of contacts with the Orient, a style which employed contrasts, either of light with dark areas, or of one hue with another. This style lasted into the early 6th

century, and the period is known as the Orientalizing Period. The 8th century saw the foundation of many Greek colonies; e.g., Sinope, Cyzicus, Trapezus in the Black Sea region, following the earlier colonization of Cyprus and the Ionian coast of Asia Minor; and in the last third of the century the colonists went farther afield (Italy, Sicily, Asia Minor). This brought them into contact with the commercial enterprises of the Phoenicians, Syrians and others of the Orient. Bronze shields copying oriental metal-work, ivory reliefs and figurines, and art motifs such as the goddess Artemis with an animal at either hand (derived from the Asiatic group of a hero between two monsters), foreshadowed the developed Orientalizing style.

Techniques and shapes also changed. Sometimes the old silhouette in black was retained, but often with the effect heightened by accents of red or by incised lines to render details. Alternatively, as in rendering the head, a black outline was used, along with black lines for details. The "reserved space" otherwise of the clay color, was often filled in with white to represent the flesh of a woman, and with white or brown for male flesh. Details were often emphasized by touches of white or red-purple. The "outline" and "black-figure" techniques were sometimes used on the same vase. It was the latter one, however, which persisted into the 6th century. Other changes in the style included the use of fewer and larger areas of design, requiring that unity be secured by means of the principle of dominance and subordination rather than by repetition. Sphinxes, griffins and other oriental monsters, usually in processions, entered the design along with lotus, palmette and other motifs of the East. Facility in drawing the human body, no longer all in one plane with frontal body trunk and profile legs, was being developed, and the elements of perspective were being learned. Scenes gradually became more complex, with chariot races and combats replacing processions.

The expansion to more nearly universal trade with the known world, the introduction of coined money, the more general use of writing, and the appearance of monumental sculpture, all contributed to more rapid evolution of Greek culture and art. In a book devoted primarily to color, there is no place for discussion in detail of all the characteristics of the many styles of vase painting which arose during the Orientalizing period. They may be divided roughly into two groups: (1) an Eastern or Ionian group of Asia Minor and the islands nearby, as Rhodes; and (2) a Western or Greek-mainland group. The latter was more progressive, the former more conservative. On the mainland, patterns increased in complexity, there was greater variety of subjects and design, including mythological subjects. The Ionian group employed in general a creamy slip ground, maintained longer the outline technique, the simpler stylized motifs and the animal friezes, the painting continuing its decorative aim, with a tendency toward polychromy and landscape. On the other hand, the mainland tended toward narrative, and replaced filling ornament by inscription, culminating in the Black-figure technique of the 6th century. As already implied, various schools of painting arose, as at Corinth and nearby Sikyon.

In the Rhodian vases, a thin wash or a creamy-white slip served as the ground for the decoration, which was partly in outline, partly in silhouette, with red-purple or crimson red used for many details along with black. The motifs included the lotus, the guilloche, the ibex, waterfowl, sphinxes and griffins. Some interesting vases were small plastic ones in the shape of warriors' heads surmounted by helmets, with contrasting bright reddish blue or red-purple and "orange-brown" along with black glaze as representative color scheme. Some later Rhodian vases from Naucratis in Egypt employed a glaze varying in color with concentration or thickness of layer from black to golden yellow, with terra-cotta red for details, all on a creamywhite slip

along with purplish red and brown. Fikellura vases, named from a cemetery in Rhodes (580 - 480 B.C.), were descended from the Rhodian class. At Clazomenae in Asia Minor, both outline and Blackfigure techniques were employed, the latter sometimes combined with white lines. The colors used were white, brown and black. In the Cyclades, styles varied from island to island; and we shall note only the use of white and red-purple for details, and creamy yellow for slip color. On Paros, a rather elegant decorative style was developed. Certain Etrusco-Ionian small vases (550 - 599 B.C.) were decorated with linear bands in greenish black glaze on an orange-red clay ground. Some of these were Ionian, and others were Etruscan ones due to local imitations of imported Ionian vases.

Turning to the Greek mainland group, we note that the most important class comprised that of Corinth. These vases have been divided into five groups, dated as follows: Proto-corinthian, 750 - 640; Transitional, 640 - 625; Early Corinthian, 625 - 600; Middle Corinthian, 600 -575; and Late Corinthian, 575 - 540 B.C. As has already been indicated, the Attic vases of Athens finally drove the Corinthian ones from the market some time near 500 B.C. Going back a little, the late Geometric vases at Corinth gave way to a Linear Proto-corinthian-geometric style in which the appearance was lightened by the use of wide striped or banded zones instead of large, areas of dark glaze. As the Orientalizing influences became felt, the true Proto-corinthian style arose in the early 7th century with new motifs and forms, and greater opposition of design and field, along with incised lines and red-purple and creamy white color to enhance the Black-figure technique. Certain perfume vases were treated in a delicate and graceful miniature style. About 650 - 630 B.C., the drawing was combined with polychromy in creamy white, two different reds and two browns. The style has been compared with that of painted terra-cotta metopes of the late 7th century temple of Apollo at Thermon in Aetolia (Greece), where a mythological scene was painted in red, black, white and orange on a yellow-wash ground. But no "pure" yellow was yet in use. In the Transitional period, there was more use of red, and the appearance of more "plastic vases," molded in the form of bird, animal or man.

In the Early Corinthian period there was a great expansion of the pottery trade, domestic and export, with new vase forms and a polychrome style with bands of red edged with white, incised tongues filled with red, white or yellow colorant, and ray and rosette patterns, with freer use of incision, of red to emphasize parts of the vase body, and of contrasts of light and dark (black or dark brown). In the Middle Corinthian period, there was considerable advance in drawing and in composition, but with a more mechanical style. To the time belong some votive terra-cotta plaques, some in the Black-figure and some in the outline style, one signed by the painter Timonidas, which show the accomplishments of the Corinthian painters of the period when working on a flat surface. Black, a deep red and white were used on a creamy ground.

In the Late Corinthian period, color played the dominant role in vase painting. In competition with Attic painters, whose clay was orange-red, the Corinthians prepared a red background, especially for figure scenes on large vases. Figures and patterns previously drawn in silhouette were now drawn in outline, often filled in with white and touched up with red-purple. Toward the end of the period degeneration set in, and the Corinthian pottery came to an end shortly before 500 B.C. A class of pottery (about 570 - 510 B.C.) related to the Corinthian, and called Chalcidian, was apparently made in the west, as in Italy, by emigrants from the three-pronged Chalcidic peninsula of Macedonia which juts out into the northern

Aegean Sea. These vases were decorated in an animated style on an excellent orange ground.

In Laconia (including Sparta), about 700 B.C. the vase painters began to rely on contrasts of dark areas of decoration with empty space on a whiter slip. The early Laconian vases employed a rather sober style on a small, neat, pleasingly formed and technically good pottery. Then, influenced by Proto-corinthian vases, animal friezes appeared; then the Black-figure style with incised lines became more popular. In a third period (first half of the 6th century), the favorite vase form was a tall stemmed kylix with a decoration of pomegranates and lotus buds on a white slip. Human figures were introduced, with such subjects as the legends of Herakles and the Prometheus myth. A notable Laconian vase shows a king of Cyrene directing the loading of wool in the hold of a ship. The colors were yellow, black, purple, yellowish brown and white. In a fourth period (550 - 525 B.C.) came deterioration.

Another class of vases of the Orientalizing period has been dated from 710 to 600 B.C. and called Proto-Attic, being a forerunner of the Attic Black-figure style. The earliest ones were sometimes called Phaleron, from a site near Athens where many were found. In the middle of the period there was greatly increased use of white for drapery and to increase the contrast between the flesh of men and women (Black and White style). Mythological scenes appeared with improved drawing, and vigorous combats of men and animals, along with fuller development of the Orientalizing style. Red was added to effect obtain a polychrome effect. Toward the end of the period the Black-figure technique replaced the outline technique. On the flat surfaces painted on plaques, walls and panels, this replacement did not occur. By the end of the 7th century, Athens was competing strongly for the pottery trade with Corinth and Ionia. Soon Attic vases made their way to Egypt, Italy and South Russia; and after the middle of the 6th century enjoyed a monopoly of the pottery trade.

The 6th century B.C. was the period of the Attic Black-figure style, with the decade 530 - 520 witnessing a transition to a new style which we will meet later. The conversion from the old silhouette of the Geometric period to the Black-figure technique, with red and inner white paint and incised lines as accessories, was accomplished primarily at Corinth. Athens adopted the method and perfected a very black lustrous glaze which gave the Attic vases a brilliant surface. During the period, the Attic artists were mastering the drawing of the human figure, at rest and in motion, and of drapery. The period began with a picture of the Nessos Painter, so-called from a scene of Heracles attacking the centaur Nessos, who finally caused the hero's death. The first Athenian Painter known to us by name is Sophilos, whose signature has been found on fragments of three bowls in Athens. He continued the tradition of the Nessos Painter, but was influenced by late Corinthian painting. The middle portion of the period is represented by the François vase, a great volute-krater at Florence signed by potter Ergotimos as potter and Klitias as painter. It has several rows of figures, the subjects coming from Greek mythology and historical traditions: the hunt of the Calydonian boar, the landing of Theseus at Delos, the funeral games for Patroclus, the marriage of Peleus and Thetis, the pursuit of Troilus by Achilles, and so on. Then comes a frieze of animals, and on the foot a battle between pygmies and cranes.

Klitias also painted some drinking-cups of the type known as "Little-master" (Ger.: Kleinmeister) cups, because decorated with miniature figures. Several of the Little Masters, including Hermogenes and Sakonides, are known by name. One group of this type, known as Band Cups, utilized the Black-figure style and contrasts of black with red colors. The first of the

great painters of the period was called Lydos, meaning the Lydian. He probably settled in Athens during the "tyranny" of Pisistratus (following Solon's reforms), when Athens became a great state, with widespread commercial interests. Lydos flourished in the decade 550 - 540 B.C. The great master of the Black-figure style was Exekias, who twice signed as both potter and painter, more often as painter only. His masterpiece, an amphora at the Vatican, done in his elegant style, shows Achilles and Ajax playing on a gaming board, and a scene of Castor and Polydeuces with their parents. In vases of this period, the black-glaze figures often were seen against a red ground, with red-purple as accessory color and white for the flesh of women. On some, purple was used on the borders of garments.

About 530 B.C., a new style, the Attic Red-figure technique, was invented. What caused this revolutionary change has not yet been fully explained. At the same time, many new vase shape became popular, and there were also changes in women's dress. For a decade or more, Black-figure and Red-figure styles existed side by side; but the latter triumphed and lasted until about 300 B.C. In the new technique, the vase was brushed over with a liquid suspension of red ocher (or applied as powder) and the surface polished to a brilliant luster. The preliminary sketch for the decoration was then made with a blunt instrument. Next the outlines of the figures were painted in with a thin contour in glaze, then with a broader stripe. The background was then filled in with the Attic lustrous black varnish glaze, whose formulation the Athenian potters kept secret. Finally the details within the reserved areas of the figures were painted. This was done either with a flat coat or with relief lines of diluted glaze, which varied in color from black to light golden brown. When the decoration with glaze was completed, the accessory colorants were added. These varied for different details and from time to time; common were red, white and gold. The vase was allowed to dry thoroughly and finally fired at about 950°.

In the transitional decade, 530 - 520 B.C., both Black-figure and the new Red-figure techniques were in use, sometimes together on the same vase. This "bilingual" (dual) style was employed by the Andocides Painter (or Lysipidis Painter), a pupil of Exekias, who worked in the most important workshop of the period, that of Andocides. Another Transitional painter was Psiax (or the Menon Painter), more of a "mannerist," distinguished for his love of detail executed with dainty grace. In the Early Archaic Period (about 525 - 500) came Oltos, more at home in the new technique, who was a pupil of the Andocides Painter. His best work was in the decoration of cups, while a slightly later painter, Epictetus, was best known for a series of plates. A painter called Skythes probably was a northern slave, since the name means "Scythian." He showed a taste for the comic type of illustration already seen in the battle of pygmies and cranes on the François vase. Euphronios was both painter and potter. He and the painters Phintias and Euthymides showed an increased interest in the human body and in scenes of everyday life, especially in athletic contests, the last two painters being particularly interested in bodies in motion. Euphronios was said to have been the first to use a thin wash of color to represent shading. He experimented with bold foreshortenings, and was known for the grandeur of his compositions. The next period or sub-period, called the Late Archaic Period, and said to be "the greatest in the history of vase-painting," was the time of the Greek-Persian wars; so we shall reserve consideration of the period until we have watched the Persians enter, occupy and leave the center of the stage of history and color. We shall, however, first turn to Greek painting on flat surfaces and on reliefs and sculpture.

For the beginnings of painting in the Greek world we find that our knowledge is meager and incomplete. Aristotle named Eucheir, a kinsman of the Cretan master craftsman Daedalus, as the "inventor" of Greek painting. There is little doubt that that Greece learned much from both Crete and Egypt. According to Pliny, the first painter who imitated the human contour with lines was Philokles, an "Egyptian," Kleanthes of Corinth, or perhaps Kraton of Sikyon. Philokles (a Greek name) was more likely a Greek who improved his art in Egypt and returned to practice in Greece. He probably drew silhouettes which he filled in with flat colors. According to Greek legend, either Philokles or Kleanthes invented linear painting. Kleanthes painted a Sack of Troy and a Birth of Venus.

It was Aridikes of Corinth and Telephanes of Sikyon who put the "invention" of Philokles or of Kleanthes extensively into practice. Boutades of Corinth painted temple metopes, and according to Pliny invented modeling. All these men were "monochrome painters," using little or no chromatic color. Painting with color was said to have been "invented" by Ekphantos of Corinth. Eumaros of Athens is claimed to have been the first to portray the difference between women and men, perhaps by the use of white and copper red or reddish brown, respectively. Probably very few of the early paintings on flat surfaces were black monochromes like those of early pottery; but such paintings were used on Attic funerary plaques and on tablets by Skythes. The early paintings of Kleanthes, and one of Artemis riding on a gryphon, indicate that painting was breaking away from subservience to sculpture and architecture, to which Greek painting had previously been a mere adjunct.

The names of the early painters so far mentioned, or at least their connections with "inventions," are somewhat legendary. Perhaps the first real name is that of Kimon of Kleonai (near Corinth), who took many steps forward and flourished in the third quarter of the 6th century. Pliny stated that Kimon devised catagrapha, thought by some authorities to be profile drawings, by others to be linear foreshortening. He represented facial features in various postures, varying the old stiffness of expression and of the body. He marked the articulations of the limbs, emphasized the veins, and drew folds and wrinkles in drapery. He may have had much to do with the change from Black-figured silhouettes to the Red-figured technique. He undoubtedly influenced many vase-painters such as Euphronios, one of the so-called "Big Four" Red-figured-vase painters (the others being Douris, Brygos and Hieron), who flourished about 510 - 480 B.C. This technique permitted greater freedom and a better method with which to express the increased interest in drapery and the human body in motion.

Pliny said almost nothing about painting in Ionia, but there seems to have been a well developed school there and on the island of Samos. Several paintings of the school were famous in antiquity. The school was marked by a fondness for polychromy, symmetry and balance, and by sinuous lines and lively action. Athens too was an early center; but the art of painting was there bound closely to architecture and sculpture. The pediments of the buildings of the Acropolis of Athens were "radiant with color." The Hydra pediment, portraying the fight of Herakles with the Lernaean hydra, was essentially a relief drawing. But the color was greatly varied: rose color for flesh, blue, red and white for hair, black for brows, eyelids and pupils, with blue for background and green also appearing. Colors of vivid chroma, in almost violent contrast, were employed in the group centered about the Typhon, a triple-headed monster on the Temple of Athena in Athens. Typhon's body was a vivid rose red, details were in blue, greenish blue, yellow, red, brown and black. The dominant colors were red and blue, and the

background was yellow.

More vivid color was used on reliefs than on sculpture in the architecture round, more than modern taste would sanction. The architecture was vividly colored, so the sculpture had to be brightly colored too, so as not to look "anemic" by contrast. Early Greek stone needed a coat of whitewash; and on this chromatic color was applied, often a bright brick red and blue. When marble, which replaced the earlier stone, was seen in the bright Athenian sunlight, its unrelieved color was often too dazzling for most eyes. Hence human figures in marble had the flesh parts and eyes tinted, and stronger color was used on sandals, drapery and armor. The flesh parts of the statue of Athena Parthenos by Pheidias were ivory and -the robes were of pure gold. The Pentelic marble of the Propylaea and the Temple of Nike was a dazzling white, and color was used on this marble more sparingly. Color was the very essence of Greek architecture. This is not a matter of conjecture, for traces of pigment have been found still present on some temple sculpture. The colors are not usually true to nature," but were used arbitrarily to further the general design. The Acropolis maidens (early 6th century) were represented with red hair, sometimes yellow; men were often given blue hair and beards. Red, blue and green were used on the borders of garments. Black was used for eyebrows, pupils and other details, but often blue was employed where today we would use black or a very dark color nearly black. A wall opposite the doors of the temple which housed the great statue of Zeus at Olympia was blue only, while the other walls bore paintings. The statue was covered with a purple fabric which was removed only on solemn festivals.

On the Parthenon, whose building was started about 447 B.C. and was therefore later than the period we have just been discussing, red and blue were the dominant colors, as they most frequently were earlier (after monochrome black). Other colors here were green, yellow, black and the golden yellow of gilding. The green here and on other Greek sculptures may have been originally a blue which had faded.

Some of the Greek love of rich color may have gone back to the time when statues of wood and even walls were decorated with the brilliant pigment vermilion (mercuric sulfide). Vitruvius (first century B.C.) stated that wax was rubbed over vermilion walls to prevent the sunlight and air from darkening or dulling the color. The nude parts of marble statues were also often waxed to give them a warm ivory color and to help preserve the marble.

In connection with the polychromy of architecture, differences have been noted between the coloring of the Doric and the Ionic orders. The architects of the Doric buildings employed vivid reds, blues and gilding, along with yellow and green; with red, not a good background color, often used for the ground. The Ionic architects used combinations more refined from our point of view, being content primarily to emphasize features of the order by means of color.

Concerning Ionic painting, a good idea of its status in the 7th and 6th centuries may be obtained from painted sarcophagi found at Clazomenai and elsewhere in Asia Minor. There were two techniques. In one a black silhouette was seen on a cream yellow ground, with some additions of white or deep red; in the other, outlined figures were reserved in the light-slip ground, and the background was painted black. The Ionians very commonly used the guilloche, spiral and volute motifs, while the mainland painting favored more the meander, triangle, zigzag and swastika. A notable Ionic vase-painter was Nikosthenes, who produced a great number of Red-figure and Whiteground vases, the latter being of a class we shall meet later.

In the early 6th century, painting at Athens began to free itself from its subservience to architecture and sculpture. The paintings by Kleanthes, Kraton and Philokles have been mentioned. During the age of the Greek "tyrants" (Kypselos, Periander, Polykrates, Phalaris, Pheidon, Myron, Kleisthenes), who fostered the arts, painting flourished. Corinth and Sikyon played the leading roles, but the Ionian cities took an important part. When the latter began to be menaced by the Persians, some of the Ionians emigrated to a haven in Athens, which had been brought to a high point of development by Solon and whose commerce and art flourished under Pisistratos. This was especially true as the power of Corinth waned, and a notable influence of Athens on painting may be seen before the middle of the 6th century. Proto-Attic and Attic Black-figure and Red-figure vase-painting have been described. It is very doubtful whether the Black-figure style was used by mural painters; it was, however, employed on Attic 6th-century funerary plaques. On some of these found at Athens, the colors used were yellowish white, purplish brown, brownish red and a lustrous black, all seen against the orangey red clay ground.

An important monument of the 6th century was the painted marble stele of Lyseas, a priest owning stables of horses which competed in the Panathenaic races. Lyseas was dressed in a white mantle and a purplish red chiton. Other colors used were reddish brown, green, white, black and the red of the ground. At the base was a horse and rider seen against a blue ground. In monuments such as this, the style was still stylized, almost purely flat painting, with solid color-areas except for details mostly scratched in. It was with Kimon that the changes toward the use of perspective came in at the end of the 6th century B.C. The coloring was relatively simple, depending chiefly on black, white and a red which varied from a brick red to terra-cotta red and violet, with a yellowish reserve ground. A "pure" yellow was first employed about 500 B.C. on a marble disk of the physician Aineos, probably dedicated to him by a grateful patient. On sculpture and architecture, much more green and blue were employed.

But the chief appeal in Greek vases stemmed largely from the drawing and design, not from color. Aristotle has often been quoted as saying that drawing was more important than color; and he probably represented the opinions of most Greeks. Plutarch, on the other hand, believed that color heightened the illusion sought by painters, so that color was of paramount importance for this reason. But painting until the time of Polygnotos, whom we shall soon meet, was largely "colored drawing".

We now observe Italy replacing Greece in the center of the stage, retracing our steps somewhat in order to orient ourselves for a better view. In viewing the Late Bronze Age of Italy, we met the Italici and the Terremare culture; and the Villanovan culture, that of Italic Umbrians displaced from their homes by the Etruscans, was mentioned. The name Villanova is that of a site five miles outside of Bologna, where the culture was first found. The Villanovans, who cremated their dead, were made up of four groups. Of these we shall mention only the Northern Villanovans, centered north and East of Bologna, and a Southern group, occupying Etruria and Umbria southward to the site of Rome. The other two groups were in the extreme north of Italy. West of these were the Ligurians, a people of uncertain derivation; to the south were the Samnites and Latins, and to the east the Picenes. The Villanovans were probably of Terremare stock, with strong accretions of people from the northern Balkans. Like the Urnfield peoples, they buried the urns containing the ashes of the dead in small cemeteries. They were peasant farmers who lived in round huts and wore woolen garments fastened with fibulae

(safety-pins). The women used pins having large colored-glass heads. The urns were bulging and loosely constructed, not clean-cut like the Greek ones. The incised decoration was not in definite zones or tied to the important parts of the vase. It often consisted of isolated squares and triangles, with meanders, diamonds and rosettes also common. When not of hammered and riveted bronze, the biconical urns were usually of black carboniferous ware. Early terra-cotta vases from trench tombs at Narce, in Faliscan territory, were decorated with geometric designs on a very dark brown or red lustrous body.

There were four periods of Villanovan history, beginning roughly at 800 B.C. or earlier. Iron was sparingly used from the start, but became more common in the second period, coming from ports chiefly in the south east of Italy. Fine iron swords and iron implements, glass and yellow amber became common. Iron was still more extensively used in the third period, which may have ended after 500 B.C.

It is generally believed that the Etruscans who displaced the Umbrians from Tuscany and may have brought iron to Italy, were the Tyrsenians or Tyrrhenians whom Herodotus said came from Lydia and sailed from Smyrna about the time the Phrygians were overrunning Asia Minor. They probably came to Italy not all at once, but in groups over a considerable period. Peake and Fleure, in their interesting series, "The Corridors of Time" (vol.IX, p. 125), stated the belief that the Tyrrhenians were not Lydians, but a trading colony of Sumerians in Lydia, and in evidence cited several elements of culture common to the Etruscans (supposed Tyrrhenians) and Sumerians. The set of nine volumes by Peake and Fleure, though full of interest, is now somewhat old; and we do not know whether the authors would now hold to the same belief about the Etruscans. Thucydides, 5th-century Athenian historian, stated that the Tyrrhenians were related to the Pelasgians of early Greece; and a recent author (Geo. Thomson) has claimed that Tyrrhenians, Etruscans and Pelasgians were all matriarchal and had other customs in common. The Tyrrhenians first appeared in inscriptions of Ramesses II (1290-24 B.C.), and were included in an attack on Egypt in the time of Merneptah (1219). Archaeologists used to place the date when the Etruscans became established in Italy at about 1000-975 B.C., but more recently a date in the 8th century has been favored, while one author cited evidence for two waves, one at 1000- 950, the other at 800 or earlier. In the early 7th century, the Etruscans developed an advanced civilization and in the 7th and 6th centuries B.C., they were ruling Rome and were widespread in Italy.

The Etruscans were a wealthy, luxury-loving people who surrounded themselves with costly works of art, many exported from the East. Their wealth came mainly from the mines which they controlled. Like the Egyptians, they believed that the soul led a life of pleasure and entertainment in the afterworld. For this reason, the dead were buried in underground hypogaea, which in the case of those able to afford them, were adorned with paintings. The scenes depicted were gay and lively ones of hunting, banqueting; dancing and games, though at a later time the subjects became more gloomy.

Some of the oldest known Etruscan paintings (7th century B.C.) were found on a wall of a tomb at Veii, north of Rome. A hunting scene was painted here in the fresco technique with red, yellow and black pigment (the last named appearing gray) on a bluish gray ground. A border showed lotus and triangle patterns in the same colors. The work was crude, and the artist apparently delighted in strong contrasts of color. The animals were painted with zones of various colors (red, yellow, black), with little attempt at truth to nature, and with dots of

contrasting colors strewn over the zones. One leg might be painted red, another yellow. The work gave an effect reminding one of wall tapestries; and it has been claimed that the artist was influenced by the imported tapestries of the period.

The painted tombs at Tarquinii (modern Corneto) ranged from the 6th to the 2nd century B.C. They were mostly rather small, composed of one chamber only. The pictures do not seem at all tomb-like, but on the contrary impress one with their gayety and richness of color. The central beam of the ceiling was often painted in red, in a checkered pattern of red, blue and yellow, or in concentric circles of these colors and black. In the 6th-century Tomb of the Bulls here, which shows Ionic influence, Achilles has surprised Troilos at a fountain watering the horse of King Priam. The horse was yellowish, with grayish blue mane, tail and hoofs. A checker pattern on the fountain was in red, blue and white. Achillest flesh was reddish brown, his loincloth red. The painting was framed by parallel bands of red, yellow and gray, white and black. The pediment at the top was decorated with figures including the Chimaera and the horse of Bellerophon, again employing blue, yellow, red and yellowish white.

In the Tomb of the Augurs at Corneto there was a scene illustrating the Truscan love of realism, brutality and lively action. A dog on a leash, guided by a masked figure with pointed cap, was attacking a man with a club but with his head in a sack so that he could not see the attacking dog. Two heavily built wrestlers were also shown in combat. The colors used were reddish brown, black, creamy white and greenish blue. In the Tomb of Hunting and Fishing at Corneto the scenes of hunting, fishing, a family meal and dancing were not remarkable for composition or drawing, but the Etruscan love of nature and realism was well illustrated and the color is interesting: rich blues alternating with violet, red, brown, yellow, black and white. These are the only known archaic wall paintings in which the human figures are small and the landscape elements large. In the Tomb of the Baron at Corneto there is a scene with youths leading horses and talking with a woman in a gray chiton and brown mantle. It is notable for considerable use of a bright green and brown on the garments. Some painted wooden tablets found near Sikyon in Greece and now in the National Museum in Athens exhibit many remarkable similarities to Etruscan tomb paintings.

Some terra-cotta funerary plaques in the Louvre, found in a tomb at Caere (modern Cervetri) possess colors which are properly somber red, brown, black and creamy white. Besides such plaques, bronze vases and gold work, Etruscan art objects included their "bucchero" pottery, whose clay had a typical dull black color. Some early vases of this class were decorated with incised ornament. Later, under Greek influence, relief decoration was common and the forms improved in shape. A recent great work on Etruscan vase-painting (J. D. Beazley, 1947) describes several classes, but black vases far outnumber the others.

Etrusco-Ionian vases have been already mentioned. To supplement the bucchero vases, Proto-Corinthian and Corinthian pottery was imported. There were also imitations of Corinthian vases made by Etruscans, so-called Italo-Corinthian vases, polychrome ones using white and purple decoration over the glaze of the background. These vases, dating from the late 7th to the middle 6th century, were ornamented with motifs related to the incised figures of bucchero vases; and they resembled early Etruscan tomb paintings in the treatment of animal figures.

The painting technique used by the Etruscans, at least in two tombs at Tarquinii, was reported a decade ago. The walls and ceiling were first given a thin coat of caustic lime-plaster. The preliminary drawings were first outlined in some erasable material, then incised in the

plaster. Next a second thin coat of whitewash was applied over the incised drawing. The final picture was put on this relatively transparent priming layer. The incisions may have been treated with a fine brush in light red pigment. The body of the colorants for figures and objects were then applied en bloc, without shading or contours, while the ground was painted a warm ocher yellow. Finally, the major elements of decoration were outlined in black. The palette consisted of yellow, light and dark (iron-oxide) reds, blue, green and black. The outstanding color was red; the green was rather weak. The blue was Egyptian blue; this, mixed with malachite, yielded the green. The yellow was a thin wash of ocher. The black was soot or lamp black. The process was not true fresco, but fresco secco.

We shall reserve a summarizing statement of Etruscan painting until we have viewed its greatest period and the period of its decline.

Near the middle of the 8th century, the traditional date being 753 B.C., a portion of a pastoral Italic tribe speaking a Latin dialect came down from the Alban Mountains of central western Italy and settled on a hill near the river Tiber. The Tyrrhenians (Etruscans) were on the other side and occupying Veii, not far north of Roma, the new site. Soon the Latins spread to a second and a third hill, building a temple on one and a fortress on the other. Some of them had meanwhile merged with a related hill tribe, the Sabines, whose camp was another hill in the same group. They also incorporated some Etruscans. But the Etruscans as a whole were kept at a distance by the Latins, though before long the former, probably with the aid of Umbrians, seized power in Rome and made Tarquinius its ruler. Gradually all the territory down to the Greek colonies near modern Naples was annexed. Before long Rome was a flourishing city with splendid public buildings. As for the Etruscans, their rapid expansion culturally and politically took place in the late 7th century, and in the 6th century they were dominant from the Po valley to southern Campania.

Recent archaeological work tends to show that Romulus, the reputed founder of Rome, was a legendary figure. The real founder of Rome as a city was Numa Pompilius. There were six kings of Rome in the period 575 - 460 B.C., after which Rome became a republic; but not at 509, the old date usually given for this change. The traditional reason for the expulsion of the Etruscan kings was the excesses of Tarquinius Superbus. The expelled Tarquins enlisted the aid of Lars Porsena, ruler of Clusium, but his expedition proved a failure. The Etruscans and the Romans, aided after 493 by the Latin League, fought for more than a century. The Romans fought also the hill tribes to the east and south.

The Pre-Roman Iron Age in central Europe has been generally divided into two parts, named from the two cultures called Hallstatt and La Tène. The Hallstatt culture, whose name comes from a center of the salt trade in Austria, where a large cemetery of the culture was discovered a century ago, has already been introduced in the section on the Bronze Age. This was because the first two divisions of the Hallstatt period (A and B), which were not found in the cemetery, were identical with the last two divisions (D and E) of the Central European Bronze Age. These two Bronze-Age divisions date from 1000 to 640 B.C., while Hallstatt C and D followed in the Iron Age.

The increasing use of iron in the Hallstatt period was only one of several changes. Increasingly strong influences from Greece and Italy were being felt in the Hallstatt region and other parts of Europe. The people of central Europe were using more salt and for the first time making it an important item of commerce. Horses were being ridden, perhaps for the first time,

rather than driven. And even the weather changed, from warm, dry summers to cooler and damper ones. But though iron was in demand, it was still expensive, and bronze was used to fabricate many objects in daily use. Bronze fibulae (safety pins) were traded far and wide, and spectacle-shaped fibulae (like present-day "frogs" on garments but of metal) were especially characteristic of the period. Axes were made of both bronze and iron. Bronze buckets, large bronze situlae (buckets with bulging sides) and bronze vases such as wine pitchers, were in use. Swords passed through several stages. Some early ones of thrusting type were of bronze or had iron blades and bronze (or even ivory) pommels. As iron became cheaper, blades became very long and heavier, and the slashing or cutting swords were evolved. Still later, these were replaced by shorter, mostly thrusting swords with a horseshoe-shaped pommel. The so-called antennae-swords, with branched pommel, were characteristic of the period. Scabbards were of decorated wood or leather, later of beaten bronze. Daggers were common, sometimes gold plated or highly decorated. In the great Iron-Age Hallstatt cemetery, there were both cremations and burials, indicating a mixture of peoples. With the former were associated mainly bronze daggers and swords, vessels and brooches with pendants, while with the latter were iron axes and lances, amber and imported glass. Grave goods also included many objects of personal adornment: bracelets, yellow amber necklaces, fibulae, bronze belts, beads, and double-spiral ornamental pins.

The pottery of the culture intended for everyday use was of a brown, black or reddish clay, not too well baked, some quite plain, some decorated with geometric motifs, of which the meander is notable. This motif was taken over from the Villanovans. The painted vases were mainly with geometric figures in black, or red and black, on a yellow or orange slip. Solar symbols and stylized animals and humans were also in use. In the graves of Burrenhof, Württemberg, the vases were painted in red, yellow and brown. After a Bronze-Age transition stage, due to expansion of the Lausitz-Urnfield folk with "cylinderneck" urns and string and groove decoration, came a stage with pottery flasks polished and decorated by painting with red, yellow or black patterns. In the next stage, which was in the Iron Age, when there was a revival of burial (in place of cremation), pottery painting was combined with a fretwork ("Kerbschnitt") scheme of decoration. This was a deeply impressed ornament derived from wood-carving; its effects depended on addition of light and shade to a pattern usually linear and angular. On the Alb, in southern Germany, a dull white ware was in use. With a local culture due to the Salem tribe, the vases were decorated with white, red, yellow and black inlay. Rhodian ware and Greek gray ware marked the last stage, whose graves were rich in bronzes, fibulae, decorative girdles and large bronze cauldrons often supported by tripods. All these pottery wares were hand-made, the potter's wheel being still unknown in central and western Europe. In central Europe, glass vases appeared during the last half of the Hallstatt period. Small vertically ribbed glass cups, yellowish green to "brownish" green in color, were found in the Hallstatt cemetery. A fragment of a flagon was translucent and deep violet with whitish bands. These were all made by hand or with a mold, for glass blowing was unknown until the Imperial Roman period.

Thousands of yellow amber beads were found at Hallstatt; and commerce in amber from the Baltic region grew to large proportions in the period. From their distribution it appears that they were owned by rich and poor alike. Pink coral too was evidently supposed to have some sort of magical powers, as amber had, and was a popular Hallstatt ornament. Female

costume consisted of an armless tunic and a mantle fastened in front by means of fibulae. With these were worn as decorations a broad ornamental belt, a necklace, earrings, bracelets and anklets. Leather belts with trappings of stamped metal were very popular; or, as mentioned above, metal belts were worn.

Different authors have regarded the people of the Hallstatt culture as either Keltic or Illyrian, with the (later) La Tène folk, the heirs of the Hallstatt culture, being pretty generally accepted as Keltic. Perhaps the best opinion is that the people who developed the Hallstatt culture were Keltic, but with their culture being greatly influenced by that of the Illyrians. The languages of the Kelts and the Illyrians were very closely related. The former were a highland type, while the latter developed in the lowlands. The Kelts were thought to be a fusion of the people of the Tumulus (or barrow) culture with the Lausitz-Urnfield folk. From the standpoint of ethnical types, some of the Kelts were a blend of Nordic longhead type (the Tumulus folk) with a round-headed type, while in other areas of Europe the Kelts were more round-headed.

It was the Hallstatt warriors of southern Germany who, threatened with famine because of the worsening climate, and having learned the use of powerful iron swords from Italy, swept down on the Alpine Lake Dwellers, some time late in the 7th century B.C. These people were driven from their homes, whence they passed through northern France, finally crossing the English Channel to Sussex, Kent and East Anglia. The Lake Dwellers in turn set other migrants and invaders in motion. The Late-Bronze-Age invaders of England have been called by the cumbersome name Deverel-Rimbury, a name formed from two of their burial sites in Dorset. Some of the Keltic invaders had iron swords, but most of them had bronze weapons. But it was not long before some of the invaders taught the native smiths how to forge iron. They also introduced a new agriculture, based on the use of the plow instead of the hoe.

North and east of the Hallstatt area, especially on the German plain, the Lausitz-Urnfield culture survived. Here several styles of pottery decoration developed in sequence. The first was a yellow or red ware decorated with rows of punch marks along with lines or grooves. Next came a style utilizing punch marks and cord impressions along with zigzag lines probably derived from zigzags in color on the Hallstatt painted wares. This type had a reciprocal influence on Hallstatt pottery. The third type was a more elegant variety of the second. In central Europe and the Danube basin, there was also a ware decorated with semi-realistic drawings, as horse and chariot scenes.

We now return the East to the center of the stage, taking first a quick bird's-eye view of the Khwarazm district of Uzbekistan in Asia. Here the flat-bottomed thin colored hand-made pottery of the Bronze-Age Tazabaghyat culture of the second millenium B.C. was replaced by a dark flat-bottomed ware, lightly ornamented with incisions. This was an item of the so-called Amirabad culture of the Early Iron Age, dating in the first half of the first millenium B.C. The people lived in communal houses of clay and practiced agriculture and animal husbandry to sustain themselves.

Sialk V and VI were mentioned in the introduction to the Iron Age. In V (1400 - 1000 B.C.) and Cemetery A nearby, still in the Bronze Age, but with a trickle of iron appearing, the beautiful polychrome pottery of previous levels was replaced by a monotonously uniform gray ware. Sialk VI and Cemetery B were definitely in the Iron Age (1000 - 800 B.C.); and red, black, gray and plain pottery, and a ware painted with red-brown designs on a buff clay surface, were all found together. This pottery was related to the Phrygian ware, but with distinctive

differences.

We have stated that iron was in use by the Assyrians before the end of the Middle Assyrian period (at 1100 B.C.). The Assyrian Empire may be considered as beginning with the conqueror Tiglath Pileser I (1114 - 1076 B.C.). We have mentioned Assurnasirpal II, who obtained iron from the Moschi at Carchemish, and the connection of Tiglath-Pileser III and Sargon II with the acquisition of iron. We have also considered to some extent the Assyrian use of color. In the following paragraphs we shall review further the coloring customs of the Assyrians.

We are told that the ziggurat of Sargon at Khorsabad had the lowest story painted white, the second black, the third red, and the fourth blue. The palace was decorated with friezes of brilliantly colored glazed tiles around the arches and on the towers, the colors being chiefly blue, white and yellow. Glazed bricks exhibited figures in yellow and creamy white on a sky-blue ground; red and green were also used somewhat, but more sparingly. A combination of yellow, red and black on blue has already been mentioned. The color schemes were ones we would today call refined and harmonious. Strong value contrasts were not sought by the artists; but this was more true of the figure and animal representation than in the geometric decoration. When using simple patterns, such as rosettes, guilloches, bands, scrolls, palmette or arcade patterns, stronger contrasts were frequently employed.

In the Ninevite palaces, above slabs of sculptured alabaster, the walls were painted in the tempera technique. Here the scenes were pictures of the life of the kings; they were receiving tribute or prisoners, with warriors and euneuchs about them. Hunting scenes, animals, gods and floral and geometric designs were also exhibited. The colors employed were mainly blue, red, black and white., It was reported that they were very bright when first uncovered, but quickly faded on exposure to light and air. Below these paintings were the sculptured alabaster slabs, eight to ten feet high, carved in bas-relief and inscribed. These had many traces of color on them when excavated, as white on eyeballs of figures, and black on pupil, iris, eyebrow, hair and beard. Headdresses, sandals, scepters, horse and chariot-trappings, and other similar objects were painted with saturated red or blue. While no trace of color, or rather pigment, was found on individual large statues, smaller statuettes were usually coated with an even coat of azure blue, while demons were colored black.

In Sargon's palace at Khorsabad, several rooms had a painted black dado at the bottom, while above this was a solid area of some other color. At Nimrud was a reminder of Sargon's ziggurat colors and of Crete, for here in several chambers the walls or their lower parts were painted in horizontal bands, alternately red, green and yellow.

In all the representative coloring, it may be noted that the Assyrians made no attempt to make the colors "true to nature." A solid area of a single color was used to represent a tree, an animal, a human being or a rosette. There were blue bulls and gryphons, yellow humans and trees.

The Assyrian empire came to an end in 612 B.C. when Ninevah was sacked by Nabopolassar the Chaldean with the help of Medes under Cyaxares and of the Scythians. Two kingdoms were founded, the Neo-Babylonian one of the Chaldeans, and the Medo-Persian kingdom in the mountains. The Medes mainly occupied Armenia and part of Cappadocia, while the Persians settled southeast of them. The Assyrian Assur-Uballit II continued to reign for six years at Harran as "King of Assyria," but that city was also soon taken by the Scythians. Necho II

of Egypt (609-594 B.C.) sent an army to take the Phoenician ports and to assist the Assyrians against the Babylonians at Carchemish; but it was defeated (in 605) by Nebuchadnezzar II of Babylon. In 609, Necho had defeated Josiah of Judah and destroyed Megiddo (the Biblical Battle of Armageddon). After Necho's defeat he surrendered to the Babylonians all title to Egypt's Syrian possessions. But soon he persuaded the kings of Judah and Tyre to assist him, against the urgent advice of the Hebrew prophets. In 598, after a rebellion, Judah fell to the Chaldeans. Jerusalem was razed, and the Jews, including Ezekiel, were deported to Babylon. In 588, Necho's grandson persuaded Judah to rebel again, in spite of Jeremiah's warning. Nebuchadnezzar again destroyed Jerusalem and carried away many Jews to fifty years of captivity in Babylon. Jews who escaped were offered by the pharaoh a haven in Daphne in the Delta, which had a Greek garrison; and in 586 there was a Jewish military colony of mercenaries at Elephantine. But Tyre withstood a 13-year siege (585 - 539) by the Chaldeans. Carthage, a Phoenician colony in North Africa, profited by this siege, building up a powerful maritime commercial empire while Tyre was bottled up. It was not until 539 B.C. that Cyrus II, the Persian, defeated the Chaldean (Babylonian) army under Belshazzar (see the Biblical story of Belshazzar's Feast), taking Babylon and Sippar, thus initiating the Persian Empire.

The excavators of Babylon unearthed the famous Ishtar Gate and the approach to it called the Procession Street. The gate was provided with six great towers and decorated with glazed tiles. Lacking a source of stone, the Assyrian scheme of decoration with stone reliefs could not be used. But Babylon had plenty of clay for raw material and became the birthplace of enamelled bricks and tiles. The clay was molded into low reliefs, and brilliantly glazed. For the same reason, metals were also used as a means of decoration. The walls of the Procession Street were decorated with glazed tiles, on which were processions of lions to accompany the images of gods and goddesses carried in the parades which passed along the Street during festivals. Behind the Ishtar Gate could be seen the palace of Nebuchadnezzar, with its terraced gardens, the Hanging Gardens which were one of the Seven Wonders of the ancient world. Lions with white fur and yellow manes, or with yellow coat and red manes, could be seen against the rich yellow-greens of the luxuriant gardens. A lion from the palace, it has been noted, was similar in design, pose and color with the later animals of the so-called "Lion's Frieze" from the Persian palace at Susa.

Chaldea used even more chromatic color than Assyria, and somewhat greater contrasts. The enamel of the Chaldean bricks was thicker and better than that of the Assyrians. The molding in low relief enhanced the decorative value of these bricks. The Chaldean pigments and colors were practically the same as the Assyrian, with blue dominant. The blue came from a copper oxide containing lead, sometimes from lapis lazuli (ultramarine). The yellow was a Naples yellow containing some tin. True reds, which were used almost as little as green, as well as the green, came from oxides of copper, though some reds were iron oxides. A dark Egyptian Red was also in use. The white was from the oxide of tin. The figures were first modelled in a vitreous paste, then colored with the liquid enamels. Paste and enamel had sufficiently similar softening properties to cause them to run into each other somewhat and thus soften the contours. This somewhat alleviated possible harshness in the contrasts of the strong colors.

The Chaldean painting was purely decorative, rarely true to nature. It was nearly all in one plane, which led to monotony, but also to some added dignity. Perspective and foreshortening were of course then unknown. Human forms were heavy, lacking the grace of

Greek figures; for the Chaldean artists considered it a matter of shame to have figures appear unclad.

The Hanging Gardens, which were not hanging but arranged in step or cascade fashion, according to Greek tradition were built by Semiramis, the beautiful and voluptuous queen of Assyria. Tradition also accorded her the honor of founding both Ninevah and Babylon. Probably she was at least in part mythical; and it was Nebuchadnezzar who built the gardens for his lovely queen, the daughter of Cyaxares the Mede. Probably with the new Babylon he also wanted to outdo Ninevah in splendor. The gardens, whose framework was of stone -- a thing remarkable in itself in stoneless Babylonia -- comprised a series of wide balconies or terraces, one above the other, supported by arches, and ascending like a giant stairway to a height of 350 feet. They were covered with soil and watered by hydraulic pumps. Steps led from each terrace to the next one. On each level the most gorgeously colored and subtly scented flowers and luscious fruits known to the ancient world were to be found. Here was a place where a queen could retire from the scorching sun of Babylonia and relax in a man-made paradise.

We have made many scattered references to the Phrygians, whose remains overlie the Hittite remains; and have mentioned the Phrygian pottery colors and their terra-cotta slabs picked out in red and black on buff. In "Tumulus III" of the Phrygian royal residence at Gordion, small graceful pots were found decorated with a diaper motif which combines with the color to give an impression of textile work. These date early in the 7th century. In the Phrygian period at Alaca Hüyük (1200 - 600 B.C.), the pottery patterns were in red and brown on a faint white ground, with geometric motifs, the ware reaching a high state of development in the late stages, when animal and human representations and vegetable ornament were employed. Sun-dried brick and timber were used for the Phrygian building construction. On the steppes, the people protected themselves from heat and cold by means of pits dug in natural mounds and propped with timber. In common with the Scythians, their headgear was the distinctive conical "Phrygian cap." Of their religion, we shall mention only that the Phrygian goddess Cybele was the Hittite mother-goddess in a new and modified form.

The Phrygians may have come from the Lausitz area in Europe through Thrace to Asia Minor. About 1250 - 20 B.C. they were still in Bithynia (northwestern Asia Minor). About 1175 - 72, they invaded Syria, and about 1165 their hordes were in southwest Armenia, and about 1100 held suzerainty over Lydia. Their "empire" may be dated from about this time or a little later, and extended to shortly after 700 B.C., when it was destroyed by the Cimmerians.

We have previously mentioned the first appearance of the Scythians on the stage of history, and the colors of a Scythian house in the Crimea. An outstanding authority on the Scythians, E. H. Minns, in referring to them has used such phrases as their "riotous use of color," and their "striving after color." Their color, like that of several peoples we have been observing, was not a literal copy of nature. The painted vaults in a Scythian necropolis of 28 rock-cut tombs included a red-and-black dog attacking a boar.

The "dazzling and ephemeral" Scythians and related peoples were to eastern Europe and western Asia what their contemporaries, the Kelts, were to western Europe. While the latter were displaced by the Germanic peoples, the Scyths were ousted by the Slavs. The Scyths were first noticed in the 8th century B.C. in the northern Caucasus and about 700 in the land north of the Black Sea. During the time when iron was coming into use, their culture, broadly considered, extended from South Russia and the Caucasus to the Perm district in the north and

to Mdivinsk on the upper Yenisei in Siberia, the Altai mountains, Lake Baikal and Mongolia. The Scythian area proper went from the Carpathians and the Danube to the Don; but beyond them were their relatives, the Sarmatians, the mysterious Cimmerians and other similar peoples. According to Herodotus, the Sarmatians resulted from a mass marriage of Scythian youths to Amazon maidens.

The Scyths were nomads who wore trousers, rode horses astride and slept in covered wagons. But they never slept enough to allow the armies of the great Darius to catch them. Their life was a dangerous one requiring excellent skill in the management of domestic animals and in defending these from enemies. Their leader had to be good and be endowed with authority to match his responsibilities. And he could "take it with him," along with his riches, to the next world. For wife, servants, retainers, horses and special gear all were buried with him when he passed on. In a typical tomb at Kostromskaya was a model of his tent (above), wherein were set out his weapons and gear, while below he lay in a safe cache. Above him (at ground level) were his retainers and his horses.

His chief weapon was a doubly-curved bow of horn and sinew, useful on horseback. He used also a short double-edged dagger with heart-shaped guard. Besides trousers, the Scythians wore jackets and the pointed Phrygian hoods, while Europeans wore sheets and plaids fastened by pins and clasps. The former's clothes were often of soft leather and fur-trimmed. Their hair was worn long and they also wore beards. We know how they looked (as perhaps modified by baggy trousers and full hoods) from one aspect of their own art, a distinctive realistic style in gold repoussé. E. H. Minns reproduced an often-copied picture of four Scythians taken from the famous "Kul Oba vase." Some relatives were also pictured similarly by Persians employing a very different style of art. Moreover, we know their racial type from one district (Bessarabia., Rumania) from 77 crania. The large majority were long-headed, the minority round-headed, the mean being mesocephalic. They were tall people whose skull-vaults were moderately low and noses of moderate width. They were, moreover, metrically identical with a group from the Mdivinsk district in southern Siberia. If the broadheads were not counted, the remainder were narrower faced and narrower nosed, in fact metrically like central European Nordics. They were also like an Iranian type of Nordic of the Early Iron Age found in Armenia, the type which may have settled in Persia and India. The Scythians were thus members of the racial complex associated with the spread of the Satem branch of the Aryan languages (Slavic, Baltic, Armenian, Indic and Iranian) in Eastern Europe and Asia.

With their mode of life, it was only natural that the Scyths should develop an animal art. It was not, however, like that of the Paleolithic Cave Men, which was marked by a dynamic realism, showing the animals in rapid motion, as seen when hunting them. Instead, there was a compact representation of the "pure idea" of the animal. There was a curious blend of naturalism and conventionalism; the subjects, stylistically and decoratively treated, were almost exclusively animal subjects. The interest in the figures was primarily in the animal as a pattern, which was often amplified to enhance the design. Thus, the antlers of stags were greatly elaborated and were frequently made to end in birds' heads. Such features were no doubt due to influences from Mesopotamia, the breeding place of mythical monsters.

Animals commonly portrayed were the reindeer and birds of prey. But in spite of impossible and unnatural features and conventionalism, the art gave a suggestion of vigorous

life. Connections of Scythian art and culture with various other sources (Minoan-Mycenian, Greek, and so on) have been claimed by various authors. The art was somewhat akin to Chinese art in the treatment of line and space, in the sense of design, and in superimposing one animal on another. But it was not derived from Chinese art. Minns believes that the Scythians came to South Russia from the northeast, and that their art arose north of central Siberia. The strong Iranian influences, ultimately from Mesopotamia, were late (300 - 200 B.C.). The earlier art of Kelermes, in the western Caucasus (about 575 - 550) exhibited a mixture of Scythian with Transcaucasian or "Assyrian" (Hittite, Mitanni and Urartu survivals); for example, ibexes on both sides of the "tree of life," the guilloche pattern and archer-monsters with fish wings. Scythian religion included powerful wizards akin to the shamans of northern Asia.

In one direction, until a decade or more ago we could point only to Iranian craftsmen's use of lapis lazuli (natural ultramarine blue), blue turquoise and red garnets. Now we have textiles, felt-work and other appliques in red and black or blue and green taken from the tents to adorn the tombs; and their use probably goes back to the beginnings of Scytho-Siberian art. From a tomb at Pazyryk in the Altai mountain region came examples of colored horse-gear. Red straps of the bridle and crupper were adorned with motifs in gilt and silvered wood; the mane cover was blue. The saddle was decorated above with a combat scene in colored appliques, and below with three elaborate tassels, red and silver with blue fringes. Another saddle was red and blue, while combat scenes combined these with yellow. Horses masks were in red, blue, scarlet, gold and silver.

Across the north of Finland and Siberia has been found a primitive art (axes with butts in the shape of animal's heads going back to Neolithic or even Mesolithic times; also horn and bone-carvings. Recently, realistic animal carvings in northern Eurasia in post-Mesolithic times have been assigned to the third millennium B.C. In central Siberia was an "underdog Scythian" art, that of more settled folk purposefully near sources of metal. It was at its best at Minusinsk on the upper middle Yenisei river, while a simpler variety occurred at Krasnoyarsk. Here were found a succession of cultures running from a chalcolithic one at 2000 B.C., through an Early Bronze Age culture to a Late Bronze stage, the Karasuk stage (1400, Loehr; or 1000 - 750, Minns), with animal-style artifacts related to Mesolithic survivals and to some found at Anyang in China during the Yin period (1300). Here were included ring-pommel knives, axes and "horse-frontlets"; and in the Karasuk stage, special types of knives, daggers, mirrors and cauldrons. Similar objects, along with gouges, scythes and picks, and knives from Siberia, occurred in the "tagar stage," when some iron was appearing. Cauldrons, mirrors and little plaques stretched from Manchuria to Hungary. The Scythians used round mirrors with a loop at the back. Because of their nomadic habits all their gear of course had to be portable: shields, bow-cases and quivers, daggers, horse-gear, hones, and so on. The Scyths used some inlay work; but in the fourth century the Iranians added brighter blue turquoise and red garnet, exhibiting a taste for bright colors, as at Pazyryk.

According to Dr. Henry Field, of the Field Museum, in a January, 1950 (AJA) article reviewing recent work in the Caucasus and central Asia, the ancestors of the Scythians were the Tokhars of the Syr Darya region (central Asia), a people closely related to the Cimmerians. About 700 B.C., the Scythians came from the northeast into southern Russia and penetrated into Bulgaria and Hungary. In 613, a siege of Ninevah by the Medes was lifted, perhaps due to an attack on the Medes by the Scythians mentioned by Herodotus (and predicted by Zephaniah

2: 13-5). The following year is generally given as the date when this Assyrian capital fell to the Chaldeans, assisted by Scythians and Medes.

A few years later the Scythians drove the Assyrians from Harran; and for three decades they controlled southwest Asia. But many Scythians were still occupying southern Russia as far as Hungary in the 6th century. The Scythian empire had friendly cultural or commercial relations with Greek colonies established on the northern shores of the Black Sea. As a result a Greco-Scythian civilization developed. Around 500 B.C., animal-headed knives and daggers, which were of Chinese Yin origin, reached the Scythian territory. This civilization began to decline near the end of the 4th century B.C. We have already mentioned the colored tiles of a house roof of the 3rd century in the Scythian town Neapolis. In this century or later, the Sarmatians were pushed out of central Asia, impinging on their relatives the Scythians and pressing them into the Crimea (southern Russian peninsula) and Dobrudja district (Rumania), even crossing the Caucasus mountains. The Sarmatian "knights in armor" with their long saberlike swords and lances took the leading role, in these parts of the world, away from the Scythians, who disappeared from history before the end of the 2nd century B. C. The Sarmatians in their turn about A.D. 200 succumbed to the Goths, who took the old Scythian territory. A branch of the Sarmatians, the Alans, built a great kingdom between the Don and the Volga rivers, including northwest Turkestan, which was destroyed by the Huns between A. D. 350 and 374.

After the Phrygian empire broke up, and the Cimmerian bands who had penetrated into Anatolia were driven out, power in the Anatolian plateau was divided between the Medes and the Lydians. According to tradition, the rulers of Lydia in central western Asia Minor were children of Herakles. They may have been descendants of the Luvians. According to Eusebius, Lydian sea power was notable already in the 12th century B.C. The Phrygians were driven from Lydia by the Cimmerians. The historical Lydian state was founded in the 8th century.

Some time around 700 B.C., the Lydian king Gyges (687 - 652) discovered gold in the sands of a river beneath Sardis, which became the Lydian capital. According to Herodotus, the Lydians coined the "first" money early in the 7th century. Actually, much earlier coins are known from Mohenjo-Daro. Plato said that Gyges discovered a magic ring by which he could make himself invisible. Gyges was followed by two unimportant kings, Ardys and Sadyattes. About 660 B.C., the Cimmerians were forced into Lydia by the Scythians and Assyrians, capturing Sardis a little later. But the Cimmerians were there broken up and absorbed. Another king of Lydia was Alyattes (609 - 560), who dedicated at Delphi an offering of a large silver bowl and a stand of soldered iron. This was the work of Glaukos of Chios, the inventor of the soldering of iron. The plates of the stand were held together without pins or rivets, by solder alone.

War between Alyattes and the Medes was settled by a peace agreement which fixed their boundary at the Halys river and was sealed by a drinking of each other's blood by the reconciled enemies. The date, 585 B.C., was fixed by reference to a solar eclipse predicted by the philosopher Thales. Lydia became prosperous under king Croesus (560 - 46), whose name has become a symbol for a fabulously rich man. It was Croesus who presented the great columns to the famous white marble temple of Diana at Ephesus, which was compared by Herodotus to the Pyramids. Croesus controlled all of Asia Minor west of the Halys river except Lycia and Cilicia. During this period Lydia developed a luxury industry in richly dyed cloth and

jewelry. But in 546 B.C., the Persians under Cyrus, with the help of Cilicians, defeated the Lydians, took Sardis and made Croesus prisoner. The humane Cyrus spared Croesus' life and allotted him a royal train after putting out the flames of the funeral pyre which Croesus had prepared for himself in defeat.

The merchant princes of Lydia, favorably situated between Greece on the one hand, and Iran and Mesopotamia on the other, amassed great wealth; and the luxury, elegance and debauchery of Lydia became known to the ancient world and considerably influenced Greece. Lydia itself became quite Hellenized and thus helped to bring the cultures of Greece and Persia into contact with each other. These merchant princes made a boon to civilization by the "invention" or reinvention of coins whose weight was guaranteed by the king's seal on it, instead of the previous crude lumps of precious metal which had to be freshly weighed at each transaction.

Turning next to the Medes, whom we shall find not long centerstage, we may recall one or two previously cited pages in their story. The records of Shalmaneser III (859-824 B.C.) mentioned punitive expeditions against two Aryan-speaking peoples in the Caspian plateau, the Medes and the Persians. Other Assyrian kings, including Sargon II, also warred against the Medes. They finally settled in the part of the area (northwest Iran) between Ecbatana (modern Hamadan) and Ragae (Teheran), while the Persians were in the land of Parsua, west of Lake Urmia. The nomadic Median tribes were apparently first welded into something like a nation by a ruler Deioces, who founded Ecbatana and flourished just before the middle of the 7th century B.C. Deioces was succeeded by his son Phraortes, who made Ecbatana his capital and either subdued the Persians or was allied with them; then by Deioces' grandson Cyaxares (625-584). It was he whom, with the help of the Scythians and of Nabopolassar the Chaldean, we found overthrowing Ninevah in 612 B.C., against which Cyaxares had begun operations somewhat earlier. He had also captured Ashur, but had been caused by an attack by the Scythians to lift the siege of Ninevah in 613. The war with Lydia and the peace treaty following it have already been mentioned. Cyaxares' son, Astyages (584-562 B.C.), father-in-law of Nebuchadnezzar II, the Median empire prospered at first; and the Medes were the dominant partner in combination with the Persians. But under Cyrus II, Persia took the lead, as we shall shortly see, although the Bible speaks equally of "the Medes and the Persians" (Daniel 5:28, etc.) and of "the Persians and the Medes" (Esther 1:19). We have already noted the colors of the seven walls of Ecbatana, as given by Herodotus; but we know practically nothing of the art of the Medes. Though they had much to do with the replacement of clay by parchment and pen as writing materials, we also know nothing of their literature.

The Persians, like the Medes, called their homeland Aryana or Iran, which means "the (land) of the Aryans." This was the western part of the Iranian plateau, up to the Tigris river. It is generally believed that some time around the middle of the second millennium B.C., the Aryan-speaking peoples had displaced from this land of the aboriginal Caspian folk who were perhaps the first, or among the first, to develop the arts of agriculture and metallurgy. The Persians, like the Medes, were mentioned in the annals of Shalmaneser III. The people from the land of Parsua (west of Lake Urmia and southeast of the Medes) were the Persians. They continued to move southward and settled near the Elamite country called Anshan (Anzan), which they called Parsumash. Little is known about the early king Hakhamanish (Greek: Achaemenes, 705-675 B.C.), whose name has been used to designate the line of Persian rulers who remained supreme

until the time of Alexander the Great.

The next king of Parsumash, Teispes (625-40) extended the kingdom to include a district east of Anshan and north of the Persian Gulf. This became known as Parsa or Persis, the Persian land. Teispes divided his kingdom between his two sons, one of whom received Parsa, the other, Cyrus I (640-600 B.C.), receiving Parsumash. The successor of Cyrus, Cambyses I (600-559), bore the title "king of Anshan," for the Persians had acquired much Elamite territory. But Cambyses was subordinate to the despotic and effeminate Median king Astyages, who was his father-in-law.

When the son of Cambyses, Cyrus II, called "the Great," came to the throne of Anshan, Astyages suspected a rebellion. He marched to quell the revolt of Cyrus; but the Medians themselves rebelled or at least accepted with equanimity as their master the brilliant young Cyrus. We have seen how Cyrus went on to defeat Croesus of Lydia (546 B.C.) and Babylon (539). He thus established the mighty Persian empire. Cyrus earned the title of "the Great" in many more ways than as a conqueror. He was noble in spirit, magnanimous to enemies, a wise and capable administrator and one of the most humane of all ancient (or modern) rulers. He was tolerant of all religions and generous to their temples and gods. In the art of the Persians, he was their ideal of physical beauty. His generosity won over even those who had been his enemies. His first capital was at Pasargadae in Parsa; later Ecbatana, Susa and Persepolis were occasional capitals of the empire. But, having brought all of the Near East under his dominion, Cyrus next began campaigns to protect Media and Persia from the repeated raids and migrations of the barbarian nomads from central Asia. He was killed in 530 B.C. while fighting the Massagetae, a portion of the Sarmatians. A glimpse into the character and humor of the great ruler can be seen from Plutarch's account of the pathetic inscription on Cyrus' simple tomb: "Oh man, whosoever thou art and whence soever thou comest -- for I know that thou wilt come -- I am Cyrus, who won for the Persians their empire. Do not, therefore, begrudge me this little earth which covers my body."

Cyrus was followed by Cambyses II (530-22), who defeated the Egyptians at Pelusium about 525, when Egypt became a Persian dominion (Dynasties XXVII to XXX). Cambyses became mad and died by his own hand. Three kings reigned briefly in 522; and the empire started to break up. But it was saved by Darius I the Great (522-486), son of Hystaspes (Vishtaspa), who was of the same name as the patron of Zoroaster, the great religious teacher. It is beyond our function to discuss whether Zoroaster's traditional 7th-century date is too early for this patron to be the father of Darius, or whether Zoroaster's actual date of birth was nearly a century later. But it is known that Darius and his successors Xerxes and Artaxerxes were ardent Zoroastrians.

Darius dealt promptly with the rebellion of leaders of various subjugated provinces of the empire of Cyrus. He described his victory on the famous trilingual inscription carved on the Rock of Behistun, written in Old Persian, Elamite and Akkadian with cuneiform characters. Here we see also Darius with his foot on the prostrate form of the leading rebel, the winged disk with anthropomorphic head which symbolizes the god Ahura Mazda, and a Scythian with high pointed cap. The inscription has been called the "Rosetta Stone of cuneiform decipherment," for a translation of the Persian led to decipherment of the other two languages.

Darius reorganized the empire, dug a canal from the Nile to the Red Sea, built a new capital and palace at Persepolis and began the audience-hall there called the Apadana. The

sculptured reliefs on the stairways to the platform on which the building stood are a famous monument of Achaemenian art. Darius was followed by Xerxes I (486 - 465 B.C.), probably the Ahasuerus of the Bible, and by Artaxerxes I Longimanus (465 - 23). The liberal rule and relatively high ethical standards of the Achaemenid kings, their tolerance and good administration of justice and taxation are all well known to students of history.

The art of Persia was a complex one in which borrowed forms and motifs from Egypt, Babylonia, Assyria, Ionia and Greece were all blended and adapted by Persian architects and decorators to suit the desires and tastes of the Achaemenid kings. But the native artists skillfully molded this eclectic art, under the influence of the excellent taste of the rulers or their chief architects and ministers, into a fine national art which was a development of the older art of Mesopotamia. Persian art evinced a definite love of brilliant but harmonious coloring. Some of the best of this decorative art has been found in the royal palaces at Susa, carrying on particularly the Chaldean art of colored enameled bricks and tiles.

The enameled "Archer's Frieze" from the throne room of the palace of Darius I at Susa showed black and warm white-skinned archers with richly embroidered tunics of citron-yellow and purple or white and purple on a deep turquoise-blue ground with a yellow, white and blue decorative frieze; orange and brown were also used, but no red. The decorative effect of the ensemble must have been very impressive. The Persians showed oriental fabulous monsters in rich colors similar to those of the Archer's Frieze. The wings of enameled sphinxes from the palace were successively citron-yellow, orange, cobalt blue, yellow, cobalt blue and orange, with other parts in white, greenish blue and brown.

The Great Hall of Xerxes I, reached by a flight of steps flanked by ornamental parapets and with supporting sides decorated with bas-reliefs, had walls covered with enameled tiles in brilliantly colored panels with animal and floral designs. White limestone, blue marble and a black stone also contributed to the rich color effect.

The "Lions' Frieze" at Susa was composed of greenish blues, yellows and oranges not quite as deep as the colors of the Archers' Frieze. The design, pose and color of the lions was quite similar to those of the earlier lion, executed in enamel colors on glazed bricks, found in Nebuchadnezzar's palace at Babylon.

It is well known that the Persians were fond of polychromy and used a somewhat wider gamut of colors than their forerunners. The general effect of the enamel decoration was very pleasing in spite of the formal and severe designs suited mainly to architecture.

Though the general color schemes were conventional, the artists apparently exercised their individual tastes (or those of their masters) and did not feel too tightly bound by convention, interchanging hues and altering chromas, achieving a luxurious effect which was still harmonious. The Persians made much use of ornamental metals, and were early users of cloisons, as in their animal art, along with enamel fill as well as colored precious and semi-precious stones. Finally, a word may be said about the Persian costume. Cyrus II induced his people to adopt the long robe or sleeved tunic of the Medes, the length becoming an indication of the rank of the wearer. Persian dignitaries wore the purple robe lined with a white material. The successors of Cyrus usually wore a purple robe which was sleeveless but richly embroidered.

Chapter 7 Color in the Fifth Century B.C.

The Persian period, as far as we reviewed it, brought us about three-fourths of the way through the Fifth Century B.C. The Persian (Achaemenid) empire was ended when Darius III (335-1 B.C.) was stabbed by treacherous attendants, following defeats of the Persians by Alexander of Macedon in the battles of Issus (333) and Arbela or Gaugamela (331).

We have mentioned that in the 7th century iron came into use in China for hoes, plows, hatchets, needles and other domestic uses, but that the first iron or steel swords began to replace bronze ones about 500 B.C. This was approximately the time that, according to Chinese tradition, the aged sage Lao Tzu (Lao Tau) received a visit from the philosopher Confucius (K'ubg Fu-tzu). Shortly after this Lao Tzu went to Honan from the state of Chou, because of disorders in the latter. The period from 500 to 250 B.C. has been called the "Period of the Contending States"; for the Chinese states were in confusion, with the weaker ones being steadily assimilated by the stronger ones. The Chou emperors were losing power, while the north-western state of Chin, with a barbarian pastoral people with much admixed Tartar blood, was growing more powerful. This situation ended in the time of Shi Hwang-ti, builder of the Great Wall in the 3rd century B.C. Iron, which probably reached China from northern India over the Burma Road, did not have as revolutionary an effect as the introduction of bronze had a millenium earlier. Bronze continued to be used for weapons long after iron was first utilized for other uses; but during the Age of Contending States long, straight steel swords came into use. In the west these were developed into the "Crusader's Sword." We know very little of the art or the color of this period.

Turning momentarily to Siberia, we find that in Khwarazm the Early Iron Age Amirabad culture was replaced, during the imperial Achaemenid period, by that usually described as the culture of the "Gorodishches with Dwelling Walls." The gorodishches were fortified settlements, and the walls of the settlements were built so as to be inhabitable. Great canals were also constructed in the period. The pottery was made on a hand-operated wheel; and especially notable were cups with a red engobe used along with white.

Turning next to India, we find few well studied and characterized cultures following the Jhukar and Jhangar cultures revealed, for example, at Chanhudaro. These two extended down to about 1700 B.C. (to nearly 1000 B.C., according to one authority). Then came the culture-period of the Vedic Aryans, followed by a period sometimes called the Heroic Age (1000- 500 B.C.). In southern India, a considerable part of the last millenium B.C. was occupied by the "Stone Axe Culture," which knew some copper and had a hand-made pottery, rarely painted or incised. Between the 5th and 2nd centuries there occurred a "Northern Black-Polished Ware," found for example at Taxila. This city was described by ancient authors as a large and prosperous city of the north, on the main road to the west of Asia; and it possessed a famous university. The black pottery may have been related to the dark gray to black Jhangar ware of Chanhudaro. Of the 5th century and later may be a pottery ware called Trihni Ware. This was made on the wheel from a light red clay containing micaceous sand particles, with a cream, yellow or pink slip, red horizontal decorative bands and black or purplish-black painted motifs. The bands were often edged with a deeper red or with black, and motifs were sometimes outlined with brown paint. A favorite motif was a zigzag line with the intervals filled in with

spots.

In southern Arabia, several kingdoms were formed during the 5th century, especially between 450 and 400 B.C. These included the kingdoms of the Minaeans and the Sabaeans (that of Sheba), and the kingdoms of Qataban and Hadhramaut. These controlled the caravan trade in spices and incense (myrrh and frankincense) across the Arabian desert. In these areas limestone altars of incense have been found decorated with crude drawings of men, camels, antelopes and wild asses. But as yet there have been no publications of the colors associated with the peoples of these kingdoms.

We shall shortly discuss the paintings, mosaics and pottery of the city and kingdom of Pergamum near the Ionic coast of Asia Minor, these being mainly of a date later than our present interest. Two 5th-century paintings in Pergamum were one by Apollodorus of Athens, the subject being Ajax struck by lightning, and one of the draped Graces by Pythagoras of Paros, in the building called the Pythium.

Also near the Ionic coast of Asia Minor was Ephesus, where one of the "Seven Wonders of the World" was located. This was the famous Temple of Artemis (Diana). The goddess was originally a Lydian deity similar to the Phrygian Cybele and the Phoenician Astarte, and was later identified with the Roman Diana. The temple was built of sculptured columns and massive blocks of white, blue, red and yellow marble. The ancients assure us that instead of mortar, gold was used between the joints of the marble blocks. The temple went back, in its earliest beginnings, to an 8th-century shrine; but in a later form work was probably begun about 550 B.C., and the final dedication was around 430 B.C. Some of the beautiful columns were contributed by Croesus, king of Lydia. Pausanias, usually a sober critic, said of the temple: "It surpasses every structure raised by human hands." Pliny stated that "It is full of sculpture, almost all by Praxiteles." When it was wantonly burned down by a man who wished by his crime to make his name immortal, most of the ancient people of means wished to contribute to its rebuilding. Alexander the Great offered to bear the whole cost if the Ephesians would let him inscribe his name on it as dedicator. But the Ephesians jealously refused the offer. The temple was not cold and white, as we think of many Greek temples, but warm and glowing with the color of the marbles and of metals, as well as of the polychroming of the sculpturings and the blue ground of the pediment, against which warm-colored human and animal were seen. Some of the most celebrated paintings of antiquity hung in the "Artemision." Included was the famous equestrian portrait of Alexander by Apelles. Of this picture it was said that the conqueror did not at first praise it as much as it merited. But the king's horse, Bucephalus, as it came near began to prance and neigh at the pictured horse as if it were real. "King," said Apelles, "your horse is a better judge of painting than his master."

Farther south, Palestine, in its Late Iron Age or Iron II (550 - 330 B.C.), was in the period of restoration after the exile of the Jews; but its recovery was a slow process, though the Persians, when they came into power, allowed the people of Palestine considerable autonomy. Greek coastal trading colonies exerted much influence, and in the 5th century Attic Red-figured ware (to be described presently) was replacing Black-figured and Ionian pottery. There was much trade also with the Minaean and other southern Arabian in this general period. A characteristic class of objects of the period in Palestine was formed by four-legged cuboid limestone "Altars of Incense," decorated elaborately with incised geometrical motifs and drawings of plants and animals. In a temple excavated at Hureidah in Hadhramaut (southern

Arabia) was a series of these altars. In the 5th and 4th centuries, there was a thriving trade between Greece and Palestine at Tell el-Kheleifeh (Elath), which was a way-station and commercial center of the Incense Route from Arabia to Palestine and Syria.

At Tell Abu Hawam in Palestine, its Graeco-Persian period (stratum II) extended after a gap from the late 6th to the early 4th century B.C., and was marked by Greek Glazed ware and Black-figured ware. The corresponding post-exilic period at Tell Qasile was stratum VI, in which an extensive governmental building was excavated. It served apparently as an administrative and economic center (for overseas trade). Farther east in Transjordan, there was a definite gap in the culture sequence.

Egypt at this time was in the period of decay (represented by Dynasties XXVII to XXX) which followed the Persian conquest. The Persians permitted some autonomy, and Egypt revived somewhat and became more independent under Nectanebo I (378-360 B.C.). This was accomplished in large part by the greater employment of Greek mercenaries, who fought for every country or ruler who could afford to pay them. During the 5th century, the Near East was flooded with Greek adventurers, as Hecataeus, Ctesias, Xenophon and Herodotus, the father of history. Greek art was prized; and Greek pottery and objects of the time were found in all the excavations of western Asia. The art of this period in Egypt largely continued that of the earlier Saitic period (Dynasty XXVI).

In Cyprus, the first quarter of the 5th century belonged to the "Cypro-Archaic II" period. Bichrome pottery wares were accompanied by a Polychrome Ware with black designs and added red, white, yellow and blue. Cyprus had come (in the 6th century) under Egyptian and then Persian hegemony; and when the Ionian federation, led by Aristagoras, revolted against Persia, Cypriot complicity led to replacement of the old line of rulers of Cyprus by pro-Persian ones, often Phoenicians. Outside Cyprus there were few kings among the Hellenic peoples. By 497 B.C., the Cypriot rebels had been subdued and the island somewhat isolated again. Its art began to decline from the achievement of its best period, 520-480 B.C. In 449 came the defeat of the Persians at Salamis in Cyprus by the fleet of the Athenian Kimon, although he had died in an epidemic. This renewed both Hellenic Greek political and artistic influence in Cyprus, and this tendency has strengthened under a Cyprian king, Evagoras I of Salamis, at the end of the century. Thus little Persian influence can be discerned in Cypriot art of the general period. The period from 475 to 400 B.C. is called "Cypro-Classical I," and is followed by Cypro-Classical II; but by the former time Cyprus had become practically an integral part of the Hellenic Greek cultural sphere, and hardly needs to be viewed separately.

The 5th century in Greece has been commonly divided into four periods: (1) Late Archaic, about 500-470; (2) Early Classical, 475-450; (3) Classical, 450-420; and (4) Late Classical, 430-390 B.C. (There is some overlap; and the last division of the Classical periods outlasted the century.) The Classical period proper was roughly the Golden Age of Athens under Pericles (443-429 B.C.); the Late Archaic period was that of the Persian wars. The latter period, judged by the political issues decided within its span, was one of the most critical of the world's history. If the Persians had been victorious over the European Greeks, as they were over the Ionian Greeks at the beginning of the 5th century and at the battle of Lade, the progress of Greek civilization and art, to which subsequent western civilizations fell heir, might have been materially hampered or at least greatly altered. To be sure, the liberal and humanitarian rule of the early Persian kings may have had its compensations for the world in other directions.

But the victories of the Greeks at Marathon (491), Salamis (480), Artemisium (480), Plataea (479) and Mycale (479); and the heroic defense at Thermopylae, had filled the Greeks with justifiable pride in their achievement in securing their freedom, for Persia was a great power which previously had conquered state after state. The dreaded Persian empire was not invincible; and knowing this gave a great boost to the Greek morale. A united Greece seemed still impossible; but at least, after Marathon, all the Greek states except Argos and Thebes attended a congress and tried to shelve their interstate enmities.

All this had its effect on the Greek spirit. Shortly before, in the age of the "tyrants," Greek art had been influenced by the luxury and affectation of the Oriental life of Lydia and Ionia. There were mannerists and archaists in painting, and resort to elaboration of detail. During the Persian wars, there was a reaction against Asiatic ideas and triviality, and some slight development of a national consciousness and a more serious attitude toward life. Art was pervaded by an atmosphere of grander conceptions and largeness of style, one might almost say a more spiritual approach to its problems. At the same time drawing, modelling and foreshortening improved, and the emotions were better portrayed; and the Persian wars provided new themes. The three-quarter and front views sometimes replaced the full profile, leading to softening of the "archaic set of the features."

A vase painter of power in the Late Archaic period was the Kleophrades Painter, a pupil of Euthymides, whom we previously mentioned. The figures of the Berlin Painter, named from an amphora of his at Berlin, were more graceful without being effeminate or weak. His sense of design was said to be superb. The painter Myson lacked this, but had something of the grand manner of Phintias. The Panaitios Painter was noted as a cup-painter whose figures were engaged in violent action. Similar to him was the Brygos Painter, except that the latter made more use of the accessory colors, red, white and gold, along with rhythmical spacing, incisive drawing and elaborate drapery. Douris was a master of subtle line and elegant decorative composition. The last of the great cup-painters of the period was Makron, who had some what similar abilities.

The Early Classical period (475-150 B.C.) was one of recovery from the Persian wars. Athens, as head of the Delian Confederacy, rose steadily in influence. The expansion of the Etruscans in southern Italy was ended in 474 by their naval defeat at Cumae by the Sicilian Greeks. This removed a market for all but the best Greek vases; but this period was one of the great epochs of vase painting. Vase painters were influenced considerably by the contemporary great fresco painters, Mikon and Polygnotos, and were turning toward more monumental art and to "White Ground" vases, which were closer in style to the greater art. These vases had flat designs in two techniques, one with patterns in black, brown or golden-yellow (diluted black) glaze paint (mainly with red outlines) on a creamy or "dirty" white or yellowish slip; the other (later) one with designs in dull matt pigment. Late funerary lekythoi had outline drawings in lustrous thin golden-brown glaze, then in matt black which faded to gray or red. In very late stages, two reds, yellow, blue, green, mauve and light purple were used. The Achilles Painter, a Red-figure artist, was also known as a White-Ground lekythos painter, using golden-brown, yellow, rose and dark red colors.

Although Polygnotos was one of the great "four-color" (better "four-colorant") painters, he advanced over the others in the more complete realization of the gamut of possible mixtures of yellow ocher along with red, black and white pigments. But marble painting had a

richer palette, in part by using blue instead of black. Though Polygnotos works have perished, we can get some idea of their composition and execution from the literary references and from contemporary vases and later copies. Pliny praised him because he "opened the mouth, showed the teeth, and varied the stiff archaic set of the features." Aristotle wanted the Greek youth to see Polygnotos paintings for their moral uplift, because he painted men "better than they were." This was due to his greater attention to the portrayal of emotional states, and to his restraint in psychological characterization. Aelian spoke of the greatness of the conceptions by Polygnotos; and Lucian and other writers spoke of the thinness and delicacy of his drapery of females. This knowledge of wind-blown drapery probably came from his early life on an island (Thasos) swept by sea breezes. Pausanias, who described his celebrated works at Delphi, made it clear that Polygnotos disposed his figures on different levels and at various depths, above, below or in front of others. This was the epochal change in principles of composition introduced by Polygnotos. Pliny stated that he was the "first to paint women with transparent garments and to give them headdresses of various colors."

By the time of Polygnotos, the use of color had grown and techniques had been improved; and in his work painting passed from colored drawing to real pictorial composition. Besides his innovations in composition, especially in the use of levels, he was an innovator in subject matter and in drawing and in the beginnings of shading and linear foreshortening; also in a slight use of chiaroscuro. He also introduced new movements: lunging, striding and falling backwards. His colors have been mentioned. His varied use of yellow made his reds and blacks more effective. Vitruvius stated that Polygnotos also used a grape-black, a colorant made from wine lees. This black helped him to achieve a sober character in his pictures, renouncing gaiety; and this sobriety was much admired by the ancients. This was in keeping with the restrained coloring and the psychological restraint he exercised in the general execution of his subjects. In the Taking of Troy, the child Astyanax was not hurled from the walls, as Greek tradition had the story, but was seen at his mother's breast just before his doom. The grape-black pigment with white gave a bluish color; but in Polygnotos' al fresco technique, well known ancient blue colorants, as indigo and coeruleum, could not be used. Probably a poor green was obtained from yellow and added black pigments.

Polygnotos painted his celebrated frescoes in the Lesché or rectangular Club Room of the Cnidians at Delphi about 460 B.C. Pausanias described in detail his "Iliupersis," or Taking of Troy, his "Underworld Scene," and other paintings. These descriptions and vases of the time showing Polygnotos' influence, make clear his method of working: a balancing of complex groups in a symmetrical composition, a high horizontal line, the use of levels but no real perspective, and dominance by favorable position (in the center). The subjects include Ilium (Troy) after the capture, the Greeks setting sail, Odysseus consulting Tiresias the blind sage in Hades, the marriage of the daughters of Leukippos, the battle of the Centaurs and Lapiths and the combat of the Athenians and the Amazons. Polygnotos decorated many public buildings in Athens: the Stoa Poikile, or Painted Porch (and colonnade, in the agora); the Pinacotheca, or Picture Gallery, the Anakeion, or Temple of the Dioscuri, and the Sanctuary of Theseus. For these works, he was made an Athenian "citizen."

Somewhat older than Polygnotos, but a contemporary and with a similar style, was the Athenian painter and sculptor Mikon. Not enough is known of either to separate completely the work of the two, but apparently Mikon was more a painter of action, with somewhat less of

Polygnotos' restraint and quiet poise. Like Polygnotos, he painted a picture in the Sanctuary of the Dioscuri, his a scene from the expedition of the Argonauts; and he cooperated with Polygnotos in decorating the Stoa Poikile. Mikon's style was said to have made a bolder use of ground-lines, which cut off figures by means of the background, so that some partial figures were portrayed. This practice of Mikon's was sufficiently well known in the case of a figure named Boutes as to give rise to a cliché: "Sooner painted than Boutes." Kimon was also known for his skillful painting of horses.

The third painter of the age was Panainos, a brother of Pheidias. He or Mikon, or both, painted the Battle of Marathon in the Stoa Poikile. By this time, Greek painting had progressed enough that the painted figures of the generals in the battle were real portraits. Panainos was closely associated with sculptors, including his brother, whom he assisted at Olympia in painting the throne of Zeus and decorating the god's garment. The paintings on the throne were on a set of screens or barriers arranged, according to Pausanias, in sets of three, perhaps as panels between the legs of the throne on the sides and back, the front barrier (facing the door) being painted dark blue. One authority regarded Panainos as the creator of the Olympia pediments, while another assigned them to Mikon.

Besides their advances in better drawing and the technical facility, the three painters Mikon, Polygnotos and Panainos must be credited with definitely breaking away from archaic flat painting and the frieze-like composition with figures silhouetted in a line against the background. But their influence was such that the primary interest of artists was still the beauty and dignity of the figures in the composition. The other advances of the group, especially in color, have been mentioned in connection with Polygnotos. Polygnotos, or perhaps Mikon, was the first Greek artist who was really a painter in the modern sense. About 460 B.C., in the Early Classical period, a beginning was made in the understanding of the principles of linear perspective.

Of the vase-painters of this period, we shall have little to say, except that their work reflected the advances of the age and the influence of Polygnotos and Mikon, for there is nothing much to say about the use of color, our main subject. The great pot painters of the period were Hermonax, the Pan Painter, the Villa Giulia Painter, the Niobid Painter; and the cup-painters, the Penthesilea Painter and the Pistoxenos Painter. The last named was both cup painter (known for his Aphrodite cup in the British Museum), and White-ground painter. The Penthesilea Painter was an exponent of a naturalistic trend in vase-painting characterized by the assumption by the figures of a strong psychological interest. In the large Penthesilea cup at Munich, the subject is Achilles' sudden love for Penthesilea, the Amazon queen, at the instant that he plunges his sword into her breast. This famous work was doubtless painted under the influence of Mikon or Polygnotos. Gray and brown were used along with the red, black, white and gold.

The Pan Painter was a pupil of Myson, and carried on the latter's mannerist style, becoming the leader of a group of mannerists which tended toward stylization of the archaic manner. But with his suggestion of grace and archaic quaintness was some of the freedom of the new style.

Between 480 and 450 B.C., mostly in the Early Classical period was erected the Temple of Zeus at Olympia, the center of the Greek religion. Here was housed the colossal statue of Zeus, modelled by Pheidias in yellow gold and ivory. The building also housed a collection of

archaic gold and ivory statues, and a gold and ivory table on which were laid the olive wreaths for the victors in the Olympic games. The 40-foot high statue of Zeus was enclosed by screens already mentioned as decorated by Panainos, and covered with a purple fabric which was removed only on festival occasions. On removal, this revealed on the throne, pedestal, barriers and garments of the deity, a variety of designs in relief and colors. The barrier facing the temple door was painted dark blue only. The games were begun in the 9th century by Lycurgus of Sparta and Iphitos of Elis. During the festival month a truce was declared between all warring Greek states. The victorious wearers of the olive crowns, when they returned to their native cities, were clothed in purple and drawn by white horses.

A painter who may have been active in the Early Classical period or perhaps later, was a scene-painter Agatharchos of Samos, who first made an attack on the "third dimension" in painting. He made use of perspective to produce the illusion of depth in the theater, particularly as applied to architecture. He wrote a book on the subject which influenced Demokritos and Anaxagoras (to be mentioned presently) to study the problem. There was a story that Alcibiades, politician and general, when Agatharchos refused, on the grounds of overwork, to decorate his home, locked the latter up in his house until the work was done. Agatharchos must have overlapped the time of Zeuxis (to be met soon), for the story goes that when the former boasted of his own speed of execution, the painstaking Zeuxis retorted with dignity: "I take a long time."

During the Classical period (450-420 B.C.), was the time of the Achilles Painter, already mentioned with the colors he employed. In this period there flourished a school of vase-painters at whose head was a certain Polygnotos, not the same person as the famous fresco-painter. They worked in the tradition of the earlier Niobid Painter, who employed the Polygnotan practice of disposing figures at different levels. Others of the school were the Kleophron Painter and the Lacaon Painter. They were not the outstanding artists of the century, for the greatest artists were engaged in the major arts of architecture, sculpture and painting. But drawing was executed now with considerable ease and freedom; and the vases of the period are often described as being in the "Free Style." Three-quarter views and fully frontal views, of standing and seated figures in simple compositions, were drawn with ease. This facility coupled with the idealism of the age, led to figures of nobility and beauty. Drapery was well drawn in flowing lines. Red and gold were increasingly used as accessory colors.

Just before the beginning of the period (in 454) the Treasury of the Delian League had been transferred to Athens, practically resulting in the creation of an Athenian empire, and aiding in giving Pericles, the political "boss" of Athens, the means to undertake his extensive building program there.

Late in the period scenes of mother and child, and mistress and maid, and other feminine scenes, became popular. They are exemplified by a painting by the so-called Eretria Painter on a knee-guard from Eretria (now in Athens), which pictured Alcestis in her bridal bower with her friends about her.

During the period (about 438) the Parthenon was completed. Of this world-famous building J. P. Mahaffy wrote, in Rambles, and Studies in Greece (1878): "All the Old World's culture culminated in Greece -- all Greece in Athens -- all Athens in its Acropolis -- all the Acropolis in the Parthenon." Within the Parthenon was the great gold and ivory statue by Pheidias of Athena, who "sprang fully armed from the head of Zeus." Something has already

been said about the colors of the polychromed sculpturing of the Parthenon.

In our introduction to the Iron Age, we said a little about the ideas of the Greek philosophers Anaxagoras and Empedocles concerning light and its nature. Light, it must be remembered, is very closely related to color, for color may be defined as the characteristics of light apart from variations in space and time. Hippocrates of Cos too was mentioned. He was the father of scientific medicine and ophthalmology, the science which treats of the structure, functions and diseases of the eye. He is not to be confused with Hippocrates of Chios, who was a mathematician. The former scientist, he of Gos, described the eye as consisting of three membranes: the white, the soft and the spider-web-like. These are distended by ocular humors: aqueous, vitreous and crystalline. Hippocrates knew the optic nerve. His curative system was based on diet, fresh air, mineral waters and gymnastics.

During the Late Classical period (430-390 B.C.), there flourished three great panel painters whom we have merely mentioned heretofore; they were Apollodoros, Zeuxis and Parrhasios. Apollodoros continued and perfected the art of perspective begun by Agatharchos, and went beyond modelling the outline of figures to surround them in space with light and shadow. He observed the desaturation of colors in shadow. He was known as Apollodoros "the Shadower." He was the first, or one of the first, to achieve real success in the mixing of pigments to obtain a full gamut of the colors possible with them. The introduction of wooden panels covered with stucco gave artists a chance to develop their own individual styles. Apollodoros made use of this opportunity to create the illusion of reality by the use of perspective and modelling in light and shadow, accomplishing more subtle gradation of color than had been possible before. He had to defend himself against the critics of this new illusionistic painting; and, according to Plutarch, it was in this connection that he initiated the proverbial retort: "It is easier to blame than to imitate." We shall see later that even Plato was one of these critics. Pliny spoke of Apollodoros as "the first to paint objects as they really appeared."

The greatest figure in 5th-century painting was Zeuxis, who came to Athens from Herakleia (Pontica ?) about 424 B.C. Zeuxis carried much further the innovations of Apollodoros. Aristotle denied that Zeuxis possessed "ethos" (moral and intellectual beauty, or the universal and ideal as distinguished from the transient and subjective) because he preferred as subjects the new, unusual and exotic rather than the great. It is clear that Zeuxis cared little or nothing for ethical greatness or sublimity of subject matter. His goal was a realistic effect, as indicated by the story, already told, of the boy with the grapes, and in making his figures stand out in relief by careful modelling; and he studied high lights and color effects. Of his coloring, we can say only that he was a "four-color" painter, like Polygnotos, and that he was known for his mastery of colorant mixture.

Many amusing stories, besides that of the boy with the grapes, have been connected with the conceit, the artistic temperament and the swashbuckling character of Zeuxis. It was said that he strutted at Olympia with his name embroidered in gold on his mantle. He acquired great wealth, and often gave away his works on the ground that they were beyond all price. It was even said of him, an admirer of his own works, that he died from laughing at one of his paintings of an old woman. He was one of the earliest racketeers of history; for, according to Aelian, when he was commissioned by the city of Croton to paint Helen of Troy, he painted her nude, an innovation for the painting of the time, and obtained a large amount of money

charging an admission fee to see Helen. Moreover, he chose as his model not one but a composite of the five most beautiful young women of Croton; in one woman perfect beauty could not be found. But Zeuxis could be gracious even to his rivals. A version of the painted-grape story has it that in a competition, birds attempted to eat grapes he had painted. His rival, Parrhasios, in turn, displayed a curtain so cleverly painted over his exhibit that Zeuxis was deceived and bade him draw the curtain back so that Parrhasios' work might be viewed. On being shown his error, Zeuxis readily conceded his rival the prize, saying that he himself had deceived only birds, but that Parrhasios had deceived him, the greatest artist of his time.

Equal in conceit to Zeuxis was his contemporary and rival Parrhasios of Ephesus (flourished c. 400 B.C.). He wore a golden crown and purple robe, often carrying a staff with golden spirals. He claimed to be a descendant of Apollo, and boasted incessantly of his art. He signed his works with inscriptions praising his own ability. He painted a picture of the punishment of Prometheus so well that a story arose that, for his model, he had tortured to death an old prisoner sold by Philip of Macedon from among Olynthian captives. But the occasion when Philip took the Olynthian captives was long after the time of Parrhasios' death, so that the story can hardly have been true. The same story has also been told of Michelangelo and Rubens; and the story of the realistic curtain, or similar stories, has been told of other artists. But all accounts make it clear that the strength of Parrhasios was not in his color, or in his use of light and shade, but in his mastery of outline drawing without strong inner markings. His outlines were so good that they "appeared to give solidity to his figures; they appeared to fold back and to express what was behind" (Pliny). The painters of the 5th century did not show much interest in atmospheric effects, landscape as such, or in color.

As typical of the age in Greece at the end of the 5th century or the beginning of the 4th century may be mentioned some use of color and mosaics at Olynthus, as described in 1932. Here the walls of the two-storied houses on the north hill were often covered with plaster in plain colors without patterned design: red, white, black or yellow. The main living room of "House 27" was decorated with a pebble mosaic, of which the design comprised a circle inscribed in a square. The square consisted of a peculiar meander pattern, and the circle of the weave pattern; in the angles between were palmettes with the ends of the leaves turned up and ending in spirals. In the center of the circle was a "wreath" or "sun" with sixteen rays running out to touch the circumference. The center of the wreath was composed of white pebbles followed by two rows of green ones and two rows of purple ones. Between each pair of rays ran in order five rows of purple pebbles, three of green, six of purple again, and finally two or three of white. The meander pattern was composed of white and bluish black pebbles with a few purple and green ones interspersed. The general tone of the mosaic was one of rather bright coloring. In the entrance to this room was a small mosaic panel with five rows of dark red pebbles, three rows of green ones and six rows of red again.

During the Late Classical period there flourished the "laughing philosopher," Demokritos of Abdera, who developed an atomic theory and wrote on geometry, perspective, color and painting. His works "On Color" and "On Painting" were frequently quoted by later authors, especially by Theophrastos, pupil of Aristotle. He dealt at some length with the mixing of pigments. According to him, there were four "primitive colors," namely, red, yellow, black and white. Blue and green were not included. But bluish colors (the "indigo" from woad) were obtainable from black and yellow pigments, and green from yellow and purple ones, the last of

which could be obtained from a mixture of red, black and white colorants. Some black added to yellow pigment yielded brown. Concerning vision, Demokritos held that it is due to small particles from the object entering the eye.

The Late Classical period was one of great political disturbances, including the disastrous defeat of the Greeks at Syracuse in Sicily and the second and third Peloponnesian wars, which (with the plague in Athens) led to the break-up of the Athenian empire. This reversal in Athenian fortunes, however, was not felt in her art until much later. The innovations of Apollodorus, Zeuxis and Parrhasios influenced the vase painters of the period. Of these, Polion and the Dinos Painter carried on the work of the Polygnotan group, leading to broad treatment, round fleshy figures, loosely flowing draperies and good rendering of space. The Meidias Painter, on the other hand, worked in the tradition of the Eretria Painter, in a softer, more luxurious style, with pretty postures, clinging draperies and delicately curving lines. About 440 B.C., a local Red-figure pottery ware developed in southern Italy. The style, which presumably was of Greek origin, was indistinguishable at first from that of Attic Red-figure ware; but the hue of the Italian clay was more orange than the reddish Attic clay, while the black glaze was not as lustrous or brilliant as the Athenian glaze. Further, white and yellow and other accessory colors were used much less in the 5th-century Italiote vases. Later, stylistic differences between the Italian and Greek Red-figured ware became more marked. There were two main groups of the former. The first were mainly bell-kraters decorated at first in the Greek style, but later becoming more barbaric. The painters of this school included the Pisticci Painter and the Amykos Painter. The second group continued in the Attic tradition but developed into the class of huge, over-elaborated volute-kraters, known as Apulian vases from the district Apulia in southeast Italy. The best known painter of the group was the Sisyphus Painter.

During the 5th and 4th centuries, when Etruscan power was on the wane, the Oscans were settled in a number of towns, including Cumae and Capua in Campania (southwest Italy); Paestum (Poseidonia), Armento and Heraclea in Lucania (farther south); and several towns in Apulia (southeast Italy). In the Samnite wars, the Oscans fought against the Romans. Their tomb paintings have been of much interest because their scenes exhibit so much of the life of the people. The Oscans probably learned the use of painted hypogaea for burials from the Etruscans, and passed on to the Romans their institutions, including gladiatorial combats. A 5th-century fresco from Nola in Campania portrayed a woman seated on a throne. The figure was drawn in dark brown outline. The woman wears a white garment and veil, a red cap, and holds a red pomegranate and bluish branches, possibly myrtle. Her hair and the folds of her costume were done in brown. The colors of a tufa grave at Ruvo in Apulia were very vivid. The gaily colored garments of the figures of dancing women stood out against a yellow background. Some wore long blue chitons and crimson head coverings with yellow borders. Strong contrasts were present in the colors of the garments, whose hues included red, yellow and (dark) blue, along with black and white.

Some paintings from Paestum (Poseidonia) in Lucania, now in the Naples Museum, showed warriors returning home. In a procession scene a woman in a yellow chiton and red mantle held out a bucchero cup to a warrior in a red garment, golden girdle and feathered helmet. He carried a lance from which were suspended, as trophies, a red, blue and white mantle and a golden girdle. A companion had a gray costume with red border and a shield with blue ground. A second warrior was garbed in red and blue. Below the red ground line was a

wave pattern in blue seen against the yellow wall. From the other side of the tomb were figures on chestnut-colored horses. One rider had a red costume with blue border. Other figures had red patterns on white garments. Above were decorative borders of meanders and rosettes in red, blue and white. The costumes and armor were Oscan, but the paintings show how greatly the Greek influence pervaded the south of Italy.

The Greek influence and spirit also dominated the Etruscan paintings of Etruria in the 5th century. In the Tomb of the Chariots at Corneto the colors were red, blue, black, yellow and white, with some gray and green to picture seated spectators watching funeral games including dancing and athletic contests. The colors of the Tomb of the Leopards at Corneto were vivid red, yellow, blue, black and green; these were used to portray a banquet scene. On another wall were musicians and revelers in a scene of lively action. The coloring of mantles included stripes of green and white on rich reds. The Greek influence and spirit also dominated the Etruscan paintings of Etruria in the 5th century. In the Tomb of the Chariots at Corneto the colors were red, blue, black, yellow and white, with some gray.

Perhaps the best of the Etruscan painting was found in the Tomb of the Triclinium in Corneto. Here were pictured dancers, flute and lyre players, horseback riders and the familiar banquet scene. The colors, more "true to nature" than had been employed in Etruscan painting before, but some "gorgeously rich," included yellow borders on blue and red mantles. The drawing was precise and striking, but full of grace and charm; and the atmosphere of the paintings was one which was pervaded with the joy of living.

In contrast to these paintings, the Etruscan paintings of the period around the middle of the 5th century included gloomy elements concerning death and the afterlife. An example of this was found in the Tomb of the Young Girl at Corneto. Here there were winged deities like the Sleep and Death of the White-ground Attic lekythoi caring for the dead; and the paintings showed very strong Greek influence. The predominant hue was a brownish red, the other colors being greens, yellows and black.

Some 5th-century tomb paintings at Chiusi (Clusium) were similar in spirit to those at Corneto; but differed in being placed on the upper part of the walls only, directly on the rock rather than on plaster, while the lower portions of the walls were left in the natural color of the stone. In the Tomb of the Monkey at Chiusi were pictured funeral games, including performing dwarfs, giants and jugglers.

Chapter 8 Color in the Fourth Century B. C.

During the 4th century B.C., China was still in the state of political confusion, already mentioned, which is indicated by the term The Period of Contending States. About 400 B.C., horse culture was taken over by the Mongoloid Hiung-Nu (proto-Huns) in Mongolia, whose civilization flourished during the ensuing six centuries; but after the time of Shih Huang Ti, they were kept out of China by the Great Wall. Hellenism was spreading eastward through Asia as far as India. But it was not until the last quarter of the century that the Greeks, under Alexander the Great, controlled India politically; and then only for a brief period. Alexander's Asiatic campaign began in 330 and ended in 324 B.C., his defeat of the Indian king Porus occurring in 326. The story was told (by Arrian) that Alexander admired the courage and ability of his foe Porus, and bade Porus, when he finally surrendered, tell him how he would like to be treated. The answer was: "Treat me, king, in a kingly way." "For my own sake," replied Alexander, "you shall be treated thus; for your own sake demand what pleases you." But Porus stated gravely that "everything was included" in his request. Alexander was so pleased with this reply that he made Porus king of all India, though tributary to Macedonia. At this time Hindu India was far ahead of Europe in industrial chemistry; hence Porus was able to present Alexander with a gift of thirty pounds of steel, rather than gold or silver, and doubtless the steel was more welcome than gold to Alexander. At least by Roman times, India had developed tanning, soap-making, glass and cement industries, as well as a dyeing industry; and India had many beautifully colored fabrics, -- for those few who could afford to pay for them.

Shortly after Alexander's death (in 321), the Mauryan empire was established in the Punjab of India by Chandragupta Maurya, who freed India of Macedonian garrisons. His government was a powerful one and Hindustan and Afghanistan prospered under Mauryan rule. A Greek ambassador from the court of Seleucus I Nicator, king of Syria (312 - 280), extolled the virtues of the Mauryan empire and its people; and modern excavation, as at Taxila, has confirmed his judgment, in a material, economic and artistic sense. But Chandragupta, in spite of his virtues, succumbed to the oriental love of ostentation, appearing in fine muslin embroidered with purple and gold. The modern atmosphere of the period was indicated by government-regulated price fixing and road signs at every mile indicating directions and distances.

In our introduction to the Iron Age, we took a quick look at the Mausoleum of Halicarnassus, "alive with color." In the figures of the frieze so described were seen a series of roughly parallel oblique lines which introduced a rhythm that gave a spirited atmosphere to the whole work, a battle between Greeks and Amazons. In the introduction we were also introduced to the kingdom of the Nabataeans, with capital at the "rose-red" city of Petra. The Nabataean kingdom was established in Transjordan about 312 B.C. Before this the Nabataeans were nomadic Arabs. The kingdom lasted until about A.D. 106, when Roman emperor Trajan created out of it the province of Arabia. Nelson Glueck, in the book previously mentioned, reproduced in black and white one of the beautiful murals found in buildings at el-Bared (50 B.C. or later). We have given some of the colors applied to the Nabataean houses and their plastered interiors. The Nabataean pottery was delicately painted in stylized floral or leaf patterns in solid reddish brown on a finely prepared clay which "ranged in color from reddish brown to red" and drab color "between layers of reddish brown or red" (Glueck). The designs

had no "traceable affinities with any other pottery"; but some of the shapes resembled faience pots from Nippur, and in fabric were "as fine as the thin, yellow, unglazed Achaemenid pottery found at Ur." Although the early Nabataeans when nomads living in tents, had abhorred the use of wine, when they became agriculturalists living in houses they no longer banned wine, and the "grape-and-vine-and-leaf" motif. became very common in ceramic and architectural decoration. In the ruins of a temple, called Khirbet (ruin) Tannur, southeast of the Dead Sea, was Nabataean pottery with pomegranate, palm-leaf and date or grape motifs in reddish brown paint on a buff ground.

Belonging to the 4th century was the Constantinople Museum's glorious Alexander Sarcophagus, found at Sidon in 1887, which was greatly influenced by a painting by Philoxenos of Eretria, which we shall soon describe. The latter may have served also as model for the famous Alexander Mosaic found at Pompeii that we shall also meet later. The vigorously carved stone of the sarcophagus still has traces of softly tinted but richly colored paint clinging to it, the colors being on a white ground. On the long sides were shown a lion hunt and a battle of Alexander with the Persians, and on the short sides were hunting scenes. Though a decorative effect was aimed at, there was no glaring discrepancy with the representation of the natural colors.

We have mentioned the Tanagra figurines from Boetia (Greece), Alexandria and sites in Asia Minor. These charming little terra-cotta statuettes, when first recovered from the ground, were bright with color painted on by hand. The date of the beginning of these colorful, simple, balanced compositions. was about 340 - 330 B.C.

The 4th century was that during which the great Greek philosophers Plato (427 - 347) and Aristotle (384 - 322) flourished. Plato, like Empedocles, held a corpuscular theory of light. Vision is due, he thought to particles from the eye (a "divine fire") running out and mingling with light from the sun and an emanation from the object and returning to the eye where they excite vision, that is, give information of the object. Plato discussed optical (not pigment) fusion of colors. Although he was opposed to illusionistic painting by Apollodorus and others, because it was "deception," he showed an artist's delight in color. He published his "Apology" about 393 B.C. and founded the Academy in 386 B.C.

Aristotle of Stagira combatted the corpuscular theories (of Pythagoras and Empedocles) of a stream of concrete particles. Light is energy (an activity) of a diaphanous medium (the "pellucid") filling all space. In his treatise, "De Sensu et Sensibilia," Aristotle gave the germ of the modern theory of optical fusion of colors; instead of mixing pigments on the palette, allow the colors to mix in the eye through juxtaposition at a distance. He advanced a theory of color contrast and believed that colors are mixtures of black and white, but thought drawing more important than color in painting, for one "color" (pigment) sufficed for much of the work of the ancient masters. The rainbow, halos and other atmospheric optical phenomena were merely phenomena of reflection, the droplets of a cloud or rain acting as mirrors to the sunlight. Twilight was ascribed to the reflection of solar rays by the air. Aristotle was the first comparative ophthalmologist. He discovered the nerves of sensation, and called them the "canals of the brain." He has been called the father of zoology, since he encouraged his pupil Alexander (the Great) to have collected for him all known animals, and he classified them and observed their continuities. He may be called also the father of empirical psychology (of which so important a part is the psychology of color), since he was the author of works on the

principles of idea association, memory and dreams. He had an approximate idea of the functions of the blood, and named the aorta. In the field of physical chemistry, he rejected the atomic theory of Demokritos, and added to the four elements of Heraklitos and Empedokles a fifth one, the "quintessence" of the Middle Ages or Buddha's "ether." He regarded air as a material substance; and he was the first to describe brass.

According to Mary H. Swindler (Ancient Painting, 1929), a "Pseudo-Aristotelian" tract entitled "On Color" considered the modifications of which color is susceptible, along with theories of observation and perception of light. Various combinations of colorants, and the modifications of their appearance by light and shadow, and by superposition and juxtaposition, were examined.

Theophrastos of Lesbos, too, flourished in the 4th century. We have mentioned his many quotations from Demokritos on color and painting. But he wrote on a great range of subjects, and was the head of the school called the Lyceum, founded by Aristotle. Before turning to the major art of painting in 4th-century Greece and elsewhere, it may be well to review briefly the chief political events of the century. In the 5th century, the Peloponnesian wars had ended (in 404) disastrously for Athens, and she lost most of her foreign commerce. In the next few decades, these were partially recovered. During the 4th century occurred several major migrations of the Keltic tribes, including invasions of Spain and Scotland, of Gaels into Ireland, Boii into Bohemia, and Gauls into Italy. The Gauls had previously penetrated Italy, but had been stopped by the Etruscans, whose city Veii was long at war with Rome. But finally the Gauls broke through both Etruscan and Roman defenses and about 387 B.C. under Brennus captured and sacked Rome. But after a six-months stay, the Gauls retired to meet pressure by the Veneti, and Rome very rapidly recovered. From 493, she had been merely one of a number of equal members of the Latin League, but in the 4th century Rome gradually gained definite ascendancy in the League. It was not long before she was engaged in the Samnite wars.

Late in the 5th century, Carthaginians under Hannibal had destroyed two Greek cities (Selinus and Himera) in Sicily. In the Sicilian city Syracuse, Dionysius (430 - 367) had become, at first, sole strategos, then "tyrant." He had built up the military and naval power of the city; and by 398 was ready for a war of revenge against Carthage which was fought in 398 and 397, and renewed in 392 B.C. The war was indecisive, but Dionysius was left master of most of Sicily. After a few years he gained control of most of Magna Graecia (the Greek portion of southern Italy). Under Dionysius II, the empire of his father was falling apart. But Corinth sent help against Carthage to her daughter-city Syracuse. The Corinthian leader Timoleon took Syracuse; defeated the Carthaginians near the river Crimisus in 340, and set-up moderate democratic governments in Syracuse and other western Greek cities.

In the north, in this century or the previous one at the end of the Scandinavian Bronze Age, according to some authors some Nordic Teutonic tribes -- Goths, Gepids, Rugians, Lombards and Burgundians migrated from Scandinavia into Germany. We shall have more to say about the Teutonic peoples in connection with the Kelts and in other connections.

Turning now to Greece, we may recall the Corinthian war against Sparta by Corinth, Athens, Thebes and Argos, backed by Persia, which ended with both Sparta and its enemies accepting the Persian terms (386). Soon came a war of Thebes and a new Athenian league against Sparta (377), a peace (371) in which Thebes would not join, the battles of Naxos (376) and Leuctra (371), Theban supremacy and Thebe's defeat at Mantinea (362), and the accession

of Philip II, who developed the Macedonian phalanx, as king of Macedon (359), the First Philippic Oration against Philip by Demosthenes (351), Philip's destruction of Olynthus (348), his defeat of the Peloponnesian Greeks (especially Athens and Thebes) at Chaeronea (338), and the assassination of Philip (336 B.C.) and the accession of Alexander. Between 431 and 338 there had been scarcely a year when none of the Greeks were at war. In rapid succession, Alexander fought in Thrace (335), destroyed Thebes (335) for rebellion, crossed into Asia (334), defeated the Persians at the Granicus (334), at Issus in Cilicia (332), besieged Tyre and Gaza (332), conquered Palestine and Egypt, visited the oracle of Zeus Ammon at the Oasis of Siwah (331), founded Alexandria, defeated the Persians at Arbela (or Gaugamela, 331), gave honor to the treacherously stabbed Darius III, then in a drunken debauch fired the palaces of Cyrus, Darius and Xerxes at Persepolis (330), undertook his campaign in the Far East (330 - 324), bringing the Iron Age to India, defeated Porus (326), returned to Susa, Ecbatana and Babylon, and died in 323 B.C.

In 321 and especially after 319 there followed the Wars of the Succession. Eventually Ptolemy I Soter (323 - 285) founded the Graeco-Egyptian Ptolemaic or Lagide dynasty (from 310). Under the first two enlightened rulers of the dynasty -- the second being Ptolemy II Philadelphus (285 - 246) -- the cultural center of the Hellenic world shifted to Alexandria. Other "Diadochi" (successors) included (after 312) Seleucus I Nicator (312 - 281), builder of 37 cities, who founded the Syro-Macedonian or Seleucid kingdom at Babylon; and Antigonus in Macedonia. After his defeat at Ipsus (301), Antigonus committed suicide; then Lysimachus became king of Thrace and Asia Minor, and Cassandra king of Macedonia and Greece. At the end of the century Ptolemy Soter founded the great Alexandrian library, while Seleucus, who after a battle with Lysimachus obtained Asia Minor as well as Syria, founded Antioch, the Vienna of Asia, and the fortress of Dura-Europos.

In Greece during the 4th century, important schools of painting developed. One was located at Sikyon, and others probably at such centers as Thebes, Corinth and Athens. Since all but traces of the great paintings of the age have perished, again we have to rely on literary accounts of ancient writers and on indirect aids: copies in Pompeian mural-paintings and mosaics, wooden sarcophagi, and grave stelae. We can rely less than in the preceding century on vase-painting, for the vase-painters were unable to keep up with the developments of the major art in respect to perspective, light and shade, and color effects, and so reflected monumental painting less than before. Besides, as we have said, the pottery industry of Athens had declined in the early decades of the century.

The school at Sikyon had been brought by a certain Eupompos to the point where it could rival the Attic school and the Ionian school of Zeuxis and Parrhasios. Eupompos was a contemporary of Parrhasios, and was claimed by Pliny to be a rival of Zeuxis and to follow no teacher but nature. Chief pupil of Eupompos was Pamphilos, who caused drawing, painting, optics and color effects to be studied by free-born boys in the schools of Greece, along with mathematics. He tried to reduce painting to a science hinging around basic laws, drew up a set of rules, and stressed academic accuracy. Of his coloring and work we know nothing except the titles of some of his subjects: the Herakleidai seeking protection in Athens and Odysseus on a raft. He refused to take pupils for less than a dozen years, charging about a thousand dollars for the course. Of Melanthios, who succeeded Pamphilos as head of the Sikyonian school, we know less. He also wrote on painting and symmetry, excelled in composition, and painted with

Apelles' aid Aristratos of Sikyon beside a chariot of Victory.

A pupil of Pamphilos named Pausias greatly developed the encaustic" technique, or painting with hot wax, which yielded blues, greens and reds of high saturation. His facility, chiaroscuro, modelling of figures, perspective and rich coloring were notable, and he may have been the first painter of genre scenes. In the encaustic technique, which may have originated in Egypt, the fluid wax was applied on to wooden or marble panels either with the brush or worked with a heated metal spoon-like instrument or sharp-pointed tool. Pausias probably painted little "Erotes" which were the forerunners of the later "Amoretti" of Alexandrian and Pompeian painting. He was also known only too well for his obscene pictures and paintings of hetaerae. The Roman Lucullus is said to have paid \$2000 for a copy of Pausias' portrait of Menander's mistress Glycera. Pausias was reputed to have become an inimitable flower painter when trying to rival the work of Glycera, with whom he was in love, when she gained her living by making garlands of flowers. The use of garlands as decorative elements and the somewhat mannered art of Hellenistic times may have stemmed in part from Pausias.

The most celebrated artist of the school of Sikyon, and probably of all the 4th-century painters, was Apelles of Cos, of whom tradition has preserved many interesting stories. But of his work nothing has been preserved, nor do we have any known copies. Yet the universal acclaim of antiquity testifies to his ability. His most famous paintings were "Aphrodite Rising from the Sea," for the Temple of Aesculapius at Cos, his "Calumny," painted to give vent to his rage at Antiphilos, a rival painter who had slandered him to Ptolemy I; also his portraits of Alexander and Philip, the first of which has already been mentioned. Apelles was the author of books on the theory and practice of painting. He was apparently a "tone painter," his chiaroscuro being excellent, and a master of composition and modelling. Pliny said that, like Polygnotos, he was a four-colorant painter, with his black a burnt ivory black; yet he was known for the depth and sobriety of his colors and probably had a more extensive palette. But he gave life to his colors by putting a thin coat of varnish over the finished painting; and this served also to preserve the colors. Apelles was a cosmopolite, whose style combined some of the charm and grace of Ionia -- Cos was an Ionian island -- with the practical training obtained in the school of Sikyon. Pliny praised his execution of the dripping foam and purple waves in his Aphrodite painting. Apelles tended to paint what had been considered "impossible" subjects, such as a thunderstorm. The account by Lucian, of his painting of Calumny inspired Botticelli and Dürer to paint similar themes centuries later.

The ancients were fond of telling stories about Apelles, one of which we have repeated in connection with his painting of Alexander's horse, at which his real horse neighed. Once when the great conqueror was talking about painting in Apelles' studio, the painter bade the king speak about something else, lest the boys grinding the pigments should laugh at him. A story which throws light on Apelles' steadiness of hand, as well as his generosity to rivals, was told by Pliny. Learning that his rival Protogenes was living in poverty, Apelles set sail for Rhodes, the former's home. Protogenes was not in his studio when Apelles arrived. An old servant asked Apelles whom she should name as his visitor to Protogenes when he returned. Apelles replied by painting with a brush on a panel, at one stroke, an exceedingly fine line. When Protogenes returned, the woman was apologetic at not being able to name his guest. But Protogenes saw the line and exclaimed: "Only Apelles could have drawn that line." He then drew a still finer line of another color within the first one, and bade the servant show it to the visitor if he returned.

Apelles did return and marvelled at the skill of Protogenes, but accepted the implied challenge and drew a still finer line, of a third color, within the second one. When Protogenes saw this, he knew that his own skill was surpassed, but rushed to the harbor to find and greet Apelles. It was claimed by Pliny that he had seen the panel in question, and was able to distinguish the thin lines only on very close inspection. Anxious to help Protogenes to become better known, Apelles asked the price of some of the latter's paintings. Protogenes' prices were very modest; but Apelles offered him 50 talents (equivalent to \$50,000 or more today), and initiated a rumor that he intended to sell these works as his own. Of course the Rhodians then began to reappraise the work of their own painter, and paid Protogenes more than the offer of Apelles, adding the paintings to their public treasures. The panel with the fine lines was exhibited from generation to generation until it was ultimately bought by Julius Caesar, only to perish later in a fire.

It was reported that Apelles conceded that Protogenes was his equal in all respects but one, namely, in knowing when to take his hand from the picture (when to quit). Yet another story, the circumstances of which led to the jealousy and slander by the Egyptian painter Antiphrilos, may be worth repeating. Apelles was driven to the port of Alexandria by unfavorable winds, but did not venture to appear at the court of king Ptolemy I until an enemy (Antiphrilos or his agent) suborned a court buffoon to invite him to supper in the king's name. The king regarded his visit as an intrusion, and demanded to know by whom he had been invited. The painter seized an extinguished coal from the hearth and drew on the wall a picture of the man who had invited him. His accuracy was such that the king at once recognized the buffoon, and restored Apelles into favor. Such stories as these show not only the striving for realism and perfection of technique in Apelles' time, but also how far painting had come from the time of the primitives.

Protogenes, outstanding rival of Apelles, came from Kaunos, a city in Caria subject to Rhodes, where he long painted ships for a living. Apelles admitted Protogenes' ability, as we have learned, but criticized the latter's over-elaboration and labored efforts. He worked seven years on his best known work, his "Ialysos," named after the hero who founded the city Ialysos in Rhodes. The hero was portrayed as a hunter with his dog running beside him. There is a story that the painter flew into a rage when unable to paint foam on the dog's mouth, and threw a sponge at the painted panel. This inadvertently accomplished the very effect which was wanted, showing that the painting was probably executed in tempera with egg or glue as binding medium. But a similar story has been told of several other painters. Pliny said that Protogenes painted his Ialysos with four coats of paint, so that when the ravages of time destroyed upper layers, the colors might still look fresh and clear. The story is told that when Demetrios Poliorcetes besieged the city of Rhodes, he avoided setting fire to the town or attacking that side on which Polygenes worked so as not to damage this painting. Protogenes continued at work in his village studio in the battle zone. When Demetrios asked him why he did not take refuge within the city walls, his reply was that he knew that a great general like Demetrios would wage war with the Rhodians, not with the arts. It was said that the king neglected the siege to watch the painter at work.

Other Sikyonian painters included Aetion, who painted the Marriage of Alexander to Roxana, the Bactrian princess, a subject painted much later by Sodoma; Theon of Samos, who strove for realistic but sensational effects; Peiraikos, a "painter of low life" (in small genre

scenes); and Athenion, a painter of great promise who died young. Antiphilos of Alexandria, the rival who led to Apelles' painting *Calumny*, has been mentioned. He was much interested in lighting effects and reflections, genre, and even comic painting and caricature; and he may have introduced illusionistic or impressionistic painting, for he was praised for his speed and criticized for his "short cuts." This method breaks up fixed discreet outlines and allows the retina, the sensitive coat of the eye, to fuse the stimuli coming from innumerable small patches of color. According to Petronius, the abbreviated Egyptian technique led to the decline of Roman painting. Some Roman and other ancient mosaics, obvious copies of Hellenistic originals, and some portraits from the Fayum in Egypt have been said to be in the impressionistic technique. In an animated 2nd or first-century mosaic copy, by Dioskourides of Samos, of a 4th-century Hellenistic painting of street musicians, done in the impressionistic technique, the colors used were yellow, violet, gray, red, blue, brown, green and white, a rather extensive palette.

Painters of the Theban-Attic school or group included Aristeides the Elder, who was famous for his portrayal of emotional states; his grandson Aristeides the Younger; Euphranor of Corinth, who wrote on symmetry and color; Nikias, who was said to have been so diligent in painting legendary heroes, scenes of unrequited love, women and battle scenes that he "forgot both bath and breakfast"; Nikomachos, son of Aristeides the Elder and teacher of Philoxenos, and Philoxenos himself, who painted a scene of the battle between Alexander and Darius the Persian which was long thought to be the model for the celebrated Alexander Mosaic found at Pompeii. Nikias' painting of Andromeda, black-skinned beauty Perseus saved from a sea-monster and married, was done in yellow, violet and blue, an interesting color scheme of large hue contrasts, with some red and brown. Philoxenos' battle scene was done in a color scheme ranging from white to yellow and red through gray, brown and "brownish violet" to black, with no trace of blue. The colors of Aristeides the Elder, who painted such pathetic scenes as that of a dying mother in the siege of a city seen with child crawling toward her breast and showing terror lest the child should drink blood, were said to be "hard," scarcely in keeping with his subject matter. But Pliny regarded him as the first artist "to paint the soul." His pupil Euphranor, besides being an author, as mentioned above, was sculptor and painter. In consequence, his paintings had a sculptural quality, for Pliny said that he first gave heroes their full dignity and mastered the theory of symmetry. But his bodies were too slim and the heads and limbs too large. He painted Theseus "fed on beef," which contrasted with Parrhasios' Theseus "fed on roses." His other subjects were historical and allegorical. He combined the technical excellence of the Sikyon painters with the dramatic quality of Aristeides.

The diligent Nikias of Athens was the favorite of the sculptor Praxiteles for painting his statues. The coloring of his Andromeda was given above. Many of his paintings were taken to Rome and placed prominently in public buildings, where they influenced Roman painting; an example was his Alexander in the Portico of Pompey. The painting of Io guarded by the hundred-eyed Argos in the House of Livia on the Palatine is generally regarded as a copy of Nikias' painting. His reputation was based upon his facility, the grace and refinement of his works and his mastery of chiaroscuro.

Philoxenos of Eretria painted the battle between Alexander and Darius III (probably the battle of Issus) for Cassander, king of Macedonia. This painting has been thought by many to be the model for the famous Alexander Mosaic found in the House of the Faun at Pompeii, a

mosaic we have twice mentioned. The mosaic, probably of the 3rd century, and doubtless the original 4th-century painting, was remarkable for its excellent balanced composition, impression of dynamic action and great emotional appeal; and it was marked by cool, restrained coloring. It is not our function to describe the picture in detail; for this, books on ancient painting should be consulted. From the pigments of the time Attic yellow ocher, red from Sinope, a black known as atramentum and Melian white, no green nor blue colorant -- the artist produced by mixture reds, browns, yellows, deep brown and brownish violet to black, and reddish and yellowish grays. The sky was a cool gray. The coloring had not the richness of the Alexander Sarcophagus, due to the absence of blue. Among the seething masses of figures are seen the bold Alexander, who has just driven his lance through a Persian nobleman, the sad face of Darius, who was stretching out his hand as if to aid the victim, a second Persian dismounting to aid his compatriot, Darius' charioteer turning the chariot swiftly, the swerving horses foreshortened to give an impression of depth, fallen armor -- in all some thirty figures arranged so skillfully as to avoid any impression of unnatural crowding. Modelling was done both with light tones and with the "local colors." Pliny was authority for the statement that Philoxenos was a rapid painter and invented some abbreviated methods. These short cuts could have been either cutting off figures in the rear, without painting them fully, by those in the foreground, indicating the rear ones only by heads or helmets; or they could have been the beginnings of the impressionistic technique, as in the case of Antiphilos.

The teacher of Philoxenos was Nikomachos of Thebes, who was noted for his speed of execution, but who, like Fragonard in modern times, combined with this facility strength and charm. Athenion of Maroneia in Thrace was a painter said to produce pleasing paintings in spite of hard coloring. The painters of the Theban-Attic school were less interested than those of Sikyon in academic exactness, but more in grace, charm, ease and versatility, expression of emotion, refinement of coloring and in advances in spatial composition, shading and perspective.

Besides the original paintings by the masters, which have come down to us only as literary accounts, information has been culled from Pompeian copies of Greek originals. In some cases a given subject was done several times, indicating that artists reproduced copies as they had a market for them. In the Pompeian and Roman copies, we find figures done in relief, symmetrical grouping, no landscape purely as such, little third-dimensional depth and little use of atmospheric effects. A typical copy of this type portrayed Achilles about to surrender Briseis. Here the flesh tones were in warm brown, helmets and armor bright yellow and silver, garments crimson, delicate yellow and blue; and figures were massed in the background against a dark violet tent. In a painting of Pentheus Torn to Pieces by Maenade, in the House of the Vetii at Pompeii, the colors included rich blue and violet in garments seen against a yellowish brown ground, along with yellow and warm flesh tones. Nearly as important as the Alexander and its supposed prototype was a painting of the Daughters of Niobe painted on marble by an unknown 4th-century painter and found at Pompeii. Here the colors were strongly contrasted yellow and violet, with red and green also employed.

Summarizing these works of the 4th century, we see yellow, violet and bright blue as a common (complementary) scheme, along with contrasting red and green, as well as black and white. Often the work was done (in the restricted warm range) with the four pigments of the early masters, but more often, especially as time went on, a wider gamut was employed. The

third dimension was attacked, but there was little success in producing an impression of much depth; landscape appeared rarely; lighting effects were strived for; foreshortening, perspective and chiaroscuro were handled with increasing skill, and composition was more elaborate, often without too rigid symmetry. More important for our purposes, coloring was increasingly emphasized in place of drawing; and it was no longer merely decorative.

We may now turn very briefly to the use of color on reliefs of the 4th century. On a votive relief from Eleusis, red outlines were still in use for delineating the faces and hands of two figures, as well as details of the eyes. The ground color was a rich blue, and the other colors were yellow and brown. This use of red was not uncommon for the figures of women in reliefs.

Turning next to 4th-century vases, we must first recall our statement that they fell behind the major art of painting, reflecting it less than was the case in the 5th century; in addition, their artistic quality was not as great. The market for Attic vases fell off in southern Italy as local wares developed in Apulia, Campania and Lucania, becoming almost nil in the second quarter of the century. In its place a market developed in the Greek colonies in southern Russia. In particular, much 4th-century Attic pottery has been found at Olbia and at Kerch (Kertch) in the Crimea; and the style of the period (about 370-- 320 B.C.) is called the Kerch style. Two styles developed at Athens in the first quarter of the century from that of the Late Classical period. One was a simple style which employed the old red and black color scheme with only slight touches of accessory colors. It was exemplified by the work of the Jena Painter, who used thin, flowing lines on the cups he painted. A more "Ornate Style" also developed, with much use of white and yellow for accessories. Two painters of this school were the New York Centaureomachy Painter and the Meleager Painter.

The Kerch style, which evolved out of that of the Late Classical period, made considerable use of accessory colors. Along with the earlier red, white and gold, it employed also pink or rose color, blue, green and violet. The result was decorative rather than pictorial. Instead of the delicate, curving lines of the earlier period, there were now a multitude of thin, short lines to indicate the body outlines and drapery folds. Under the influence of the great sculptors, Praxiteles, Scopas and Lysippus, the style became rather sculptural. The subjects were taken from daily life and from mythology or religion (Dionysiac or Eleusinian).

Vases with relief decoration became popular at the end of the century; with them the red-figure technique came to an end. Its place was taken by the Hellenistic relief vases, inspired mainly by plain black vases which continued into the 2nd century.

Turning to Italy in the early 4th century, we have a look at the Etruscan paintings in the Tomba Golini at Orvieto and the Tomb of Hades at Corneto, whose free style was influenced by Apollodoros and Zeuxis. In the former we see a funeral feast in the presence of the rulers of the underworld, the scene being lighted by candles held in the beaks of birds. A similar scene is portrayed in the Tomb of Hades. Here a dark-blue, cloudlike mist surrounds the heads of Hades and Persephone. In another picture a dark blue nimbus is about the reddish hair of a death demon. The figures are all gruesome, and we see the horrors with which the Etruscans peopled the underworld. They believed that the soul was tormented by such demons as were pictured here, until it could gain its freedom from the body. Contrasting with these figures was the head of one of the banqueters, a young, golden-haired matron, whose cameo-like features were rendered with soft coloring.

Etruscan sarcophagi of the end of the century were usually of terra-cotta with

sculptured figures on the lids. They were, vividly painted, the prevailing colors being blue, yellow, brownish red, green, black, white and lilac or lavender. In a combat between a Greek and an Amazon on a sarcophagus in the Museum at Florence, the Greek wears a deep red tunic and silver-white corselet with golden decoration, and carries a blue shield. The chestnut-haired Amazon, in violet tunic and red trousers, is mounted on a gray horse.

The Etruscan palette was a fairly extensive one. It included light and dark iron-oxide reds, a purplish red which was probably similar chemically but made up of large particle-aggregates, yellow ochers (sometimes roasted to obtain reds), Egyptian blue, green from this blue mixed with malachite or yellow pigment (yielding a weak green), and carbon black from soot or lamp black. The method in the tombs at Tarquinia was to put a coat of lime plaster on the walls and ceiling, then to incise in this plaster the preliminary lines for the drawing. Next a thin coat of whitewash was put on for the ground. The incisions were treated with a fine brush bearing light red pigment. The body of the colors of figures and objects were then applied en bloc, without shading or contours, while the background was painted a warm ocher yellow. Finally, the major elements of decoration were outlined in black. The method was not true fresco, but fresco a secco.

In the south of Italy, the Oscan tomb paintings made use of vivid reds, yellows, blue, brown, gold, black, white and gray. These colors were employed in a picture of an Oscan horseman at Capua. In the same place is the figure of a woman dressed in a brownish red garment and black and red cap. A fresco from Cumae at Naples showed a seated woman with mirror and a servant holding a basket. The lower part of the wall was red; above this, separated by a wave pattern, came the main figure painting, with a creamy yellow ground and the dominant colors being red, yellow, black and white. True green was not used in these Oscan paintings, blue being used in its place.

Turning now to South Italian vase painting, the first group to be considered was in the Apulian style, descended from the monumental Attic style employed on the Early South Italian huge, elaborated volute-kraters. They came chiefly from Tarentum. One class of these continued to be elaborately decorated, ornate and large. They were decorated in black on a yellowish clay, and used plentiful white along with some yellow and red. They showed mythological or funerary scenes on one side and often figures grouped around a grave stele on the other. Many had the designs arranged in three levels. Painters in this style included the Dionysiac Painter, who used much white and yellow for details, the Iliupersis Painter, so-named from a volute-krater in the British Museum portraying the fall of Troy; and the Lycurgus Painter, whose "name" calyx-krater in the same museum depicted the madness of Lycurgus. He too made rich use of added white and yellow colorants. In the last third of the century came the Darius Painter, who made profuse use of accessory colors to picture Darius and the Persians on a krater at Naples. The second class of Apulian vases at first made little use of the accessory colors, but gradually employed more of them, mainly white and yellow.

With these vases, the Apulian Red-figure style came to a close. In their place came plain wares, with relief or stamped designs, or ribbed in imitation of metal vessels, with decoration in white or gold. There was also a group, known as Gnathian from the town Gnathia, decorated with designs in opaque white, yellow and red paint on a black glaze ground and with plastic vertical ribs, the chief subjects being female heads, atyrs, birds and plant designs.

The Luccanian pottery came from Armento, Roccanova and other in sites in Lucania. It

was a conservative style adhering to Attic standards and using less white than the Apulian and Campanian vases. The relatively inferior vases of this group were painted by the Choephori Painter, who did several vases with the subject of Orestes and Electra at the tomb of Agamemnon, the Primate Painter who, under the influence of the Apulian painters, used architectural motifs in white and yellow, and the Roccanova Painter, whose work was characterized by monotonous repetition of subjects, figures and dull patterns. Very different from the other Lucanian vases were those from Paestum in Lucania, constituting the Paestan class. They show the influence of Campania, which is situated just across a small river to the northwest. Although the vases began in the second quarter of the 4th century, the main period of production was about 360-325 B.C. Signed vases are known from two painters of the period named Asteas and Python. The former usually painted bell-kraters, with two figures on either side, on one side two youths, on the other most often Dionysus, associated with a satyr, a silen or Pan. The scenes were most often shown between two upright palmettes. The work of Python was closely similar. On one vase in a scene with Dionysus and an actor, the added colors were yellow, white, brown and red. Other vases of the class employed reddish paint on the black glazed surface and not, as usual, reserved in the color of the clay.

The Red-figure vases in the Campanian style came mainly from Cumae and Avella, and began early in the 4th century. Very few were large like the huge vases of Apulia and Lucania. The clay was often of yellowish or "Dale coffee" or buff color, sometimes disguised by addition of a thin pale purplish red wash. Much use was made of added white and yellow, especially on the vases from Cumae. A carmine red was also sometimes used in the decoration. Vases painted by the Cassandra Painter and the Parrish Painter belong to the period 375-340 B.C. Those from Cumae belong mainly to the second half of the century. Bell-kraters, bail-amphorae and neck-amphorae were decorated with scenes showing women and Oscan warriors wearing the typical helmet with tall crest and feathers, and the triple breastplate. These vases showed very strong Apulian influence, made extensive use of white paint for flesh and drapery of the women, and added yellow for armor, tombstones and other objects. The vases of the Nicholson Painter, among others, showed the typical use of white and yellow for details. The Ixion Painter and his group were associated with a monumental style, based somewhat on the Attic vases of the late Kerch period, which appeared in Campania in the last third of the century. The Rhomboid Group, who used the rhomboid as a filling ornament, continued much in the Apulian style but had not very careful drawing and employed not much white and yellow.

Early in the 3rd century the Campanian Red-figure vases came to an end with a series of small vases with very badly drawn figures.

At the very end of the 4th century (304. B.C.) came the painting of the Temple of Salus by a Roman patrician, Fabius Pictor. Dionysios of Halicarnassos spoke of the brilliancy and harmony of the colors in this work.

About 300 B.C., the geometer Euclid flourished and wrote his "Elements." He also wrote a book on catoptrics (optics of reflected light, formation of images by mirrors, etc.), and one on optics beginning with the assumption that objects are seen by means of rays emitted from the eye in straight lines (Empedocles' view), "for if light proceeded from the object we should not, as we often do, fail to perceive a needle on the floor." From geometrical principles he deduced the equality of the angles of incidence and reflection from mirrors, and investigated the apparent place of the images in a mirror. He also combated the Pythagorean theory of vision.

Besides Euclid and Empedocles, the latter's theory of vision was held by the Stoics, Kleomedes, Plutarch and Galen. That of Plato was in favor with the Platonists and Pliny, and that of Pythagoras by the Pythagoreans, the Atomists and the Epicureans. All of these from Euclid's time held that rays from the eye expand into a "visual cone" resting on the object looked at. Because of the connection of lenses with vision and their use in the study of light and color, we may mention that, according to H. L. Taylor (1924), a pair of round spherical lenses was found in 1902 in a 4th-century sarcophagus from the ruins of Carthage. Lenses were probably in use much earlier, and the Greeks understood the use of lenses as magnifiers and condensers. In 424 B.C. Aristophanes in his "Clouds" mentioned the use of the burning-glass (convex lens of rock crystal) to destroy writing on a wax tablet.

Two events which occurred at about the turn of the century (300 B.C.) were the founding by Seleucus I of the city of Antioch, and the Seleucid fortress at Dura-Europos in the Syrian desert.

The Hallstatt culture of the central European Iron Age gave way, about 450 B.C. or later, to that known as La Tène, a name derived from shallows at the northeast end of the Lake of Neuchatel, Switzerland. The La Tène culture -- and to a considerable extent the Hallstatt culture -- was that of the Keltic group of peoples, who have been presented before on our color stage. The La Tène period may be divided into Early, Middle and Late phases, with division points at about 250 and 120 B.C., the Late phase ending with the beginning of the Christian era, after the conquest of Gaul by Julius Caesar. We have already described the Kelts themselves. They were usually tall and blond, sometimes of moderate stature. They were neither long headed nor round headed, but mesocephalic, and their skulls were neither high nor low, and usually they were narrow-nosed. Ethnically, they were a hybrid people, formed from Nordics and round-heads, the latter being both Early Bronze Age Dinarics and round-headed survivors from Mesolithic times.

Their art, which reached a higher esthetic eminence than that of any other people in western or central Europe during the Metal Ages, was also a hybrid art. But the Kelts fused together the materials from heterogeneous sources to achieve a unified art which was characteristically their own. The chief contributions came from Hallstatt, classical and oriental art. There were also contributions which came from contacts with the Scythians, the Persians and the people of the Caucasus region. Authorities have disagreed as to the importance and route of transmission of Greek influence. Some would have this influence come through Massilia (Marseilles), a Greek colony in France, founded about 600 B.C. Others would minimize this influence and have it come by way of the Alpine region from the Etruscans and Greeks in Italy.

Whatever its sources, their art leaves no doubt that the Keltic peoples were much alive to beauty and had an inherent love of color. Their sculpturing was crude, and they had little or no art of painting in the modern sense and little or no poetry. Their masterpieces were in metal work, pottery, beads and colored glass, the decoration of such objects as sword scabbards and the backs of mirrors, and especially in colored enamelling. In the "Imagines" of Philostratus were mentioned the artistic achievements of "the islanders of the Outer Ocean" (Keltic Britons) who poured colored enamels on heated bronze.

The production of enamels was no easy task for the craftsman. For it required furnaces capable of raising the temperature of melting enamels to a point near 7000 C.; and in the days

when there were no high-powered special fuels or mechanical forced drafts this was a difficult achievement. But the Kelts and the ancient Keltic Britons of England and Ireland were the great masters of this art, although it originated on the Continent. A slightly orangy red enamel was perhaps the most common; other hues in the enamels were blue, green, and yellow, with red and blue being a common binary combination. Red enamel was used along with red coral, and also as a substitute for the latter.

It has been said that red coral was regarded as a sea-tree, and connected with the mother-goddess who originated in water like the ocean-born Aphrodite. This belief was widespread; it was supposed that when coral began to grow it was white, becoming yellow with the passage of time, and finally red. It was regarded as a "life-giver" or at least a lucky charm. The symbol of the wild boar was connected in ancient Britain with both coral and red enamel; and Tacitus stated that it was supposed to protect warriors in battle. Like amber, coral was worn both as an ornament and as an amulet. When coral was scarce or too costly, a coral-red-colored enamel was worn as a substitute.

In the same way, blue enamel may have been a substitute for greenish blue turquoise or blue lapis lazuli. The color of the green beads worn as charms was due to the presence of copper, while the blue beads were probably of Egyptian origin, that is, blue faience, a vitreous paste. Blue beads were still worn in Greece as charms against the "evil eye" during the present century. The magic amber used in the British Isles and on the Continent for magico-religious purposes came from the Baltic, while the black jet used for similar purposes was found at Yorkshire in Gt. Britain.

With the exception of purple, the dyes used by the Kelts were vegetable ones. In the Irish Gaelic epic of Cuchullin, the Keltic hero, were references to green and blue cloaks and mantles, and gleaming white tunics. The black cloaks of Irish tales were probably of goat's hair like those of continental Kelto-Iberians. Purple cloaks were dyed primarily with purple-dye-yielding shells. A shell-purple was used in ancient Irish manuscripts; and the "venerable Bede," monk, scholar, and Father of English History (A.D. 673-735) referred to purple-yielding shells found off the coasts of Britain. As we shall see in a moment, these were probably not the Murex shellfish employed on the western Asiatic coasts for the production of Tyrian purple. The Gaelic word "corcur" (purple-red) and the Welsh "porphor" were derived from the same source as the Latin "purpura." According to Poseidonius of Apamea (1st century A.D.), the Continental Kelts wore breeches and tartan cloaks. Welsh "brith" (parti-colored) was related to Brython, a "cloth-clad people," and to Irish-Gaelic "brat," a cloth, a cloak or a sail. It may be added, incidentally, that the sails, hulls and attire of the Scottish Pict seamen were of one color, a "neutral" one.

In translating words more or less equivalent to purple, we must take care to note that the ancient purple was not necessarily the same hue as that we call purple today. In this connection it is convenient to collect together some miscellaneous notes on purples. An early center of production of the purple dye from the Murex shellfish found on the Asiatic coasts was the Syrian metropolis Ugarit (Ras Shamrah). Later the Phoenician city Tyre became the chief manufacturing center of the dye, which became known as Tyrian Purple. The name Syria in early times included Palestine, which derived its name from the best known of the Sea-Peoples, the Peleste or Philistines. The Phoenicians before the 12th century B.C. were known as the Canaanites; and Canaan was a Hurrian word meaning "belonging to the land of the purple. But

according to the November, 1926, issue of the interesting but now defunct magazine "Mentor," the Tyrian Purple was almost a blood red; that is, nearer to what we would today call "crimson." In fact there is evidence that the Tyrians used two kinds of shellfish to produce the dye, and it has even been stated that wool dyed with the Murex dye was either blue or red. The smiths of Thyatira, a garrison city which was mentioned in the Book of Revelation and lay between Pergamum and Syria, were united in a rather celebrated guild or labor union; and doubtless the same might be said of the producers of garments and the dealers in purple cloth such as Lydia sold (Acts 16:40); for there were more trade guilds in this city than in any other in Asia. But the famous "purple" garments in which Lydia dealt were probably not made with Phoenician dyes, as was once supposed, but rather with a Thyatiran product, probably the "Turkey red" which was made from the madder root. Madder contains some compounds chemically similar to Tyrian Purple. These were also produced in the 19th century A.D. by Sir William Perkin; and it was said that he prepared Tyrian Purple, but paid little attention to it, since he produced also a better dye by putting the bromine atoms of the purple at other points in the dye molecule.

The Mentor article to which we just referred stated that the red robes of cardinals are reminiscent of the traditions surrounding the earlier Tyrian Purple. The Tyrian dye was extracted at such great expense that only royalty or the church dignitaries could afford to use it. Each mollusk contained only a drop of the precious fluid, which was secreted in a gland near the head that was opened with a needle. The nearly colorless juices produced the crimson-purple dye when exposed to the sun. In the Song of Deborah (1125 B.C.), in which Barak put the Canaanite champion Sisera to flight (Judg. 5:30), we read: "A spoil of dyed stuffs for Sisera, a spoil of dyed stuffs embroidered, dyed and embroidered from the necks of the spoiled!" (with the usual repetitive formula). The Canaanite or Phoenician dyeing industry was developed long before this time. In much later times, Eastern emperors restricted the practice of the purple art to a few individuals or to dyeing guilds. In Rome in imperial times, the wearing of purple was a prerogative of the emperor only, with death the penalty for other wearers. Moses had been divinely instructed to use purple stuffs in the tabernacle, and for the robes of the high priest. The color was also used to bedeck pagan gods. Peculiar powers of appeasing their wrath were attributed to the color; and some vestiges of this superstition carried on through ensuing centuries.

Besides the Murex species, there were similar sea-snails, of the species *Purpura*, whose name was the Latin equivalent of purple. They were found not only in the eastern Mediterranean area but also on the coast of Ireland, where their dye was used in the 15th century A.D. for the decoration of women's gowns. It was said that an Englishman in the 17th century found a man on the Irish coast marking the fine linen of gentlefolk with a crimson dye extracted from a shellfish. After repeated trials, the Englishman succeeded in reproducing the royal purple, whose production had become a lost art during the late wars of the Roman empire.

In England there was a story that the centuries-old tradition of wearing the royal purple was flouted by King Charles I, who became known as the White King. But from the time when Druid priests prepared their victims of human sacrifice by robing them in white, this color had come to have a sinister and unlucky significance in English tradition. From the days of King Arthur there had been a legend that some day England would have a "White King," who would

come to a tragic end. And Charles, either because he was advised to wear white by his evil genius, the Archbishop of Canterbury, or because there was not enough of the royal purple cloth available, unlike all his predecessors was adorned for his coronation in robes of white. The tragic end of King Charles confirmed white as an omen of evil in England. It was even said that white snow fell from what had been a clear blue sky when the funeral procession started. Of course no one remembers that some sovereigns who were crowned while wearing the royal purple also came to sudden or tragic ends.

Returning from this somewhat extended digression, introduced by mention of the purple dyes of the English and Irish Kelts and their relation to Tyrian Purple, we may note that the daring Greek explorer Pytheas visited Cornwall about 325 B.C. and gave an account of the way in which tin was mined and smelted there, brought in wagons at low tide to "Ictis" (probably St. Michael's Mount), whence continental traders took it by ship to France and overland to the Rhone and Mediterranean markets. The tin enticed La Tène adventurers to conquest and exploitation, for the earlier people of Cornwall were not warlike. But the descendants of Hallstatt folk in Wessex and elsewhere built hill-forts for protection against the La Tène invaders of the 3rd century. While the Hallstatt Kelts were becoming Britons on British soil, other Kelts were causing, by their expansion, widespread disturbances on the Continent. In the 4th century B.C. they had crossed the Alps into Italy and sacked Rome. In the 3rd century, they penetrated Macedonia, attacked Delphi and crossed into Asia Minor, where they settled and became the "foolish Galatians" of St. Paul. In the same century (about 250), La Tène invaders crossed the Channel into Britain.

The Kelts traded metals, furs, amber and slaves for an important product of the Mediterranean area, namely wine. But the wealthy Keltic warrior aristocracy of course wanted products needed for the carriage, storage, mixing and drinking of the wine; and these needs were satisfied by bronze and pottery vessels.

One of the Keltic works of art which is frequently reproduced is the bronze shield with bosses and decoration in red enamel, found in the Thames near Battersea Bridge, London. Another is the two conical horned bronze helmet with red enamel studs, also found in the Thames (near the Waterloo Bridge). The shield and similar objects of the Keltic craftsmen were things of great beauty, but the decorative schemes had more than esthetic value to the people of the time. For the motifs -- rings, swastikas, U-form, S-form, triskele, trefoil, and so on -- were motifs with a magico-religious significance. The Battersea shield had the ornament concentrated in three circles; and it appears that three was a La Tène magic number. The triskele and other motifs were illustrations of this fact, and beads and rings were often found suspended from Keltic torques in threes.

The manufacture of glass, much of it colored, became a La Tène industry of considerable importance. Glass beads and bracelets and pendants, including human masks with very large eyes as a charm against the "evil eye," were in great demand.

The metal and clay vessels from the south stimulated the Kelts to develop a pottery industry of their own, and the introduction of the potter's wheel during the La Tène period facilitated this development. Incised and painted red, brown or purple designs were applied on gray, black, brown or reddish clay, with globular forms most common; but much of the pottery was without ornamentation and imitating metal vessels. The decoration was largely geometric, incised or painted on. In the decorated shields, sword scabbards, mirrors and other artistically

decorated objects, the designs, including scroll, palmette, S-forms and others, were almost exclusively curvilinear rather than straight.

The La Tène epoch was the most important period of the fibula, which was usually made of bronze or iron. The torque, a rigid metallic neck ring, twisted or not twisted, was worn by both sexes as a necklace. The Kelts, or at least the Keltic Gauls, wore tunics and trousers as well as a woolen mantle or cloak. These garments were of many bright colors, and often brocaded or embroidered in gold or woven in plaids. Greek artists represented the barbaric warriors as going to battle nude except for the mantle. Their weapons were richly ornamented. Personal ornaments, as bracelets, beads and rings were often made of bronze, red enamel or coral. The dress of the women of the poorer classes was much like that of the men, but the wealthier women adopted Graeco-Roman styles (in the case of the Gauls), while the German women wore a dress which exposed half the breasts. Bracelets were very popular with the La Tène women. The men rarely wore bracelets, but some wore torques as a mark of honor; and the warriors wore belts of leather or cloth fastened by cast-bronze clasps the form of whose openwork was often derived from the Greek palmette. Attractive women's bracelets were made from glass, which was colored yellow by means of sulfur or blue by means of cobalt. Most of these objects, including (for the first time) scissors, and men's iron razors, were found in the sepulchers. Important personages were buried with their chariots, whose wooden parts were probably originally painted in rich colors, and with their swords, javelins, lances, personal ornaments, yellow amber and red coral.

Chapter 9 Color in the Third Century B.C.; Early Hellenistic period

During the first decade of the 3rd century B.C. occurred the Third Samnite War; and Rome defeated the Samnites, Etruscans and Gauls at Sentinum. Rome took possession of central Italy and was becoming the leading power in Italy. Next occurred the conquest and incorporation of the Sabines; and in the second decade Etruria was conquered, the third decade witnessing the conquest of Magna Graecia, the region of the Greek cities of southern Italy. In 280 B.C. Rome was defeated at Heraclea by Pyrrhus, king of Epirus, who had invaded Italy at the invitation of Tarentum, against which Rome had declared war. But soon Rome was victorious at Beneventum, about 265 B.C. captured Tarentum, and practically all of southern Italy came under Roman control. At about the same time came the conquest of the Gauls, a Keltic group, to the Rubicon. In 264 B.C. began the First Punic War against Carthage, in 260 the Punic fleet was defeated at Mylae, the Second Punic War following in the last two decades of the century, with Hannibal and Fabius the two chief actors. The first of these wars left Rome in control of Sicily, Sardinia and Corsica. Late in the century Rome defeated Illyria, the Cisalpine Gauls and Syracuse; but were defeated by Hannibal at Cannae and by Hasdrubal, though reversing the fortunes of war at the Metaurus in 207 B.C. and at Zama in 202. Two Roman wars against Macedonia were also begun within the century.

During the 3rd century occurred the golden age of Alexandria, as well as the building of two of the Seven Wonders of the World. The white marble Pharos or lighthouse of Alexandria was built by Sostratus of Cnidus in the reign of Ptolemy II, while the great Colossus of Rhodes, a statue of Apollo, was built by Chares of Lindus. In this period Ctesibus of Alexandria invented a cannon worked partly by compressed air; also several other machines. Archimedes, who laid the foundations of mechanics and hydrostatics, is also credited with inventions, and was said to have made catapults and burning glasses with which to defend his home city, Syracuse, from the Romans.

During the century Strato, or Straton, of Lampsacus flourished (287-270 B.C.). He was a pupil of Aristotle who wrote on physics, transformed Aristotle's philosophy into naturalism, opposed Demokritos' theory of empty continuous space, and probably wrote the pseudo-Aristotelian tract "On Color," giving theories of perception and observation of light by its mixing and modulation, by superposition and by juxtaposition. He probably understood the "impressionistic" technique and the retinal fusion of small patches of color.

Another important personality of the age was the Chaldean priest of Marduk named Berossus, whom we have mentioned as author of a Sumerian king list, and who flourished about 280 B.C. He also founded a Greek astrological school at Cos, and translated Babylonian astronomical texts into Greek. A man who constructed many astronomical instruments, was Eratosthenes of Cyrene (275-194), who was also the creator of scientific geography and constructed the mathematical rule called the "sieve of Eratosthenes." He devised the calendar now called Julian (366 days each fourth year) and developed a system of chronology often quoted by subsequent writers. Another oft-quoted chronology was that of the Parian Marble, a long inscription (264-3 B.C.). Manetho, noted Egyptian priest and writer, also flourished during the reign of Ptolemy II (285-246 B.C.).

After the middle of the century China, or more exactly the several Chinese states in turn, was conquered by the northwestern state of Chin. Shih Huang Ti, illegitimate son of the queen

of Chin and regarded as the "First Emperor," then unified China and built the 1500-mile long Great Wall as a defense against the Hiung-Nu (proto-Huns), who soon occupied all the lands from the Caspian Sea to the Great Wall. During the century, a third people, the Yueh-chi, a nomadic Turkic-speaking people akin to the Tibetans and Tokhari and ancestors of the important Kushans, but originally from the Caspian region, were living in western Kansu, a Chinese province. Shih Huang Ti ruled dictatorially but well, encouraging science but discouraging men of letters. The Ch'in dynasty lasted only five years after the emperor's death. The Han dynasty which succeeded it lasted, with capital at Lo-yang from 206 B.C. until A.D. 24; and with capital Ch'ang-an until A.D. 220. This dynasty was marked by the revival of letters, the development of a bureaucratic centralized government, the extension of Chinese rule to a larger territory, and the introduction of Buddhism.

In India, where the Mauryan empire had been established by Chandragupta Maurya in 321 B.C., and from which the Greeks had been driven by him after defeating Seleucus I late in the 4th century, Bhadrabahu, a Jain teacher, led the great Jain migration from the north of India to the south. Chandragupta became the disciple of this religious leader. His grandson, Ashoka (263-226), was one of India's great rulers. He was known for his tolerant and humane edicts inscribed on rocks and pillars.

In Khwarazm, the Hellenistic period was that of the Kanguy culture, when a "House of Fire" was the focal point in the social life of the fortified rectangular villages. The pottery was black or red, or light colored and painted with black and red. This culture continued until the 1st century A.D. About the middle of the century, the Parthian or Arsacid dynasty was founded in Asia by Arsaces after defeating the Seleucids. This dynasty was long to plague Rome and to last until it in turn was overthrown about A.D. 229. The period was marked at Chasmah Ali by the use of a glazed bluish green pottery. Shortly after the Parthian kingdom was established, the Greek ruler of Bactria revolted (in 241 B.C.) from the Syrian (Seleucid) empire and formed a Greek kingdom.

About 283 B.C., a certain Philetaerus was entrusted by Lysimachus of Thrace with nine thousand talents and the citadel of Pergamum or Pergamon near the Ionic (western) coast of Asia Minor. After some years of faithful service, in 282 he took the money for himself and declared himself the sovereign prince of the city, founding the "Attalid" line of rulers there, the origin of whose name we shall presently see. His nephew Eumenes I (263 -241 B.C.) added two other cities and made the group into a monarchy; and Pergamum became a brilliant Hellenistic city and, under his cousin Attalus (241-197) and later kings, a center of art and learning. Meanwhile three Keltic-speaking Gallic tribes, after devastating Macedonia (in 279), Illyria and Thrace, crossed into Asia Minor and settled what later was called Galatia. Antiochus I Soter defeated them in 275 B.C., but one of the tribes (before 266) was given a home near Ankara; and the Galatians continued to give the Asiatics trouble, penetrating to Pergamum. Attalus then (229) drove them back from his walls; but his son Eumenes II had trouble in other directions and alienated many of the Greeks by allying himself with Rome. This alliance was partly because the Seleucid king, Antiochus III, alarmed at the growth of the power of Pergamum, allied himself with the Galatians, and in retaliation the Attalids brought Rome on their side. Antiochus was defeated in the battle of Magnesia in 190 B.C. Rome interested itself more and more in Near-Asiatic affairs. In the Third Macedonian War (171-167 B.C.), Rome and its eastern allies defeated Perseus, son of Philip V of Macedonia, and deposed him from the kingship. Later, by

Rome's high-handed action, Pergamum, her former ally, lost the provinces of Galatia and Pamphylia in Asia Minor. Another Attalus distrusted the ability of his heirs to maintain the power and freedom of Pergamum, and at his death in 133 B.C., willed the monarchy to Rome.

In Hellenistic times, Pergamum was known for its paintings and brightly colored mosaics, though not many paintings have been revealed by excavation. Several Campanian murals are thought to go back to Pergamene originals. Some terra cottas with volute, palmette and egg-and-tongue motifs prominent were done both in relief and in colors, constituting plastic paintings. These were executed in the sixth century B.C. Some house walls were painted bluish gray and light blue, with incisions to divide them into sections in imitation of square stone veneer, as in the so-called "First Style" at Pompeii, a style we will meet later. But better paintings have been found which belong to the time of Eumenes II, and will be described when we reach the second century.

There is an ancient story which connects Attalus I with the color purple. About 202 he fought in a naval battle against Philip V of Macedonia off Chios. Attalus, seeing one of his ships about to be sunk, went to its rescue, and put its Macedonian opponent to flight, but in pursuing it became detached from his own fleet. Philip started with a few vessels to cut him off and run him ashore. But Attalus adopted a clever ruse. He spread precious cups and purple robes (then extremely expensive) on the deck of his ship; and this resulted in diverting the Macedonians from pursuit to plunder. Thus he lost only his royal ship, while Philip's losses were much greater.

In the Hellenistic world, schools of painting probably flourished at Alexandria and Pergamum and no doubt at Rhodes, while Etruscan painting was declining. Alexandria may have developed the illusionistic (impressionistic) method and rendered contours by means of color contrast; and we have mentioned the use of color and painting in Pergamum. The Hellenistic "baroque" element stemmed largely from the 4th-century painter Theon of Samos, whose subject matter and methods were of a sensational character, and from the dramatic quality of sculptors of the ilk of Skopas. It was said that to enhance the dramatic effect of his paintings, Theon blew a trumpet before uncovering them to view. Caricature stemmed largely from Antiphilos, while pornographic pictures, which had been made popular by Parrhasios and Pausias, were developed further by the artists of ill-fated Pompeii. The painters in general tried to express emotion more dramatically and to create an illusion of the world of reality, though a playful or trivial element may be noted too.

But the great development of the Hellenistic age was landscape painting. An early landscape painter was Demetrios, who worked in Egypt in the 2nd century. Many rulers, especially the Ptolemies and the Attalids, became art collectors; and public and royal galleries came into existence. The walls of palaces and less pretentious houses became gorgeous with color. While masterpieces became rarer, decorative murals rapidly became moderately common. Floor mosaics, gaily colored marbles and richly chromatic tapestries adorned the homes of the rich. Less pretentious homes were satisfied with the effects produced by colored stuccos. The painter Timanthes II celebrated the victory of the exile Aratus of Sikyon over the Aetolian League. Aratus restored democracy in his native city by overthrowing its Tyrant; but he went to psychotic excess by destroying or mutilating all the pictures of tyrants he could, including a painting by the great Apelles. Though the painter Nealkes was a friend of Aratus, he was unable to prevent this tragedy. Nealkes seems to have been a genre painter, though Pliny

referred to a picture by him of a battle between Egyptians and Persians. Here an ass (and a crocodile), drinking the river's water, was used to indicate the Nile. This was in allusion to the derisive change, by mercenary soldiers, of the last part of the name of Artaxerses "Ochos," Persian conqueror of Egypt, to "Onos," which means donkey. A later Pompeian painting characteristically reflected this note of humor, with a man trying to pull a donkey from the jaws of a crocodile.

A religious scene from Delos was one of a class portrayed on altars and walls adjacent to altars, which depicted scenes connected with the worship of the Genius and the Lares, in this case with the ludi compitalicii. Nude men shown may have been slave wrestlers. These paintings were of the 2nd, and especially of the 1st century, but were of the style of athletic paintings of the 3rd century B.C.; and a certain poet Naevius criticized the painter Theodotos, who painted altars before the houses for the compitalia in the 3rd century, because of the rough way he painted the Lares Ludentes. In this example, the two chief figures, looking like the wrestlers on Greek vases, were in red and dark gray, respectively, on a neutral ground. Behind each was a green palm and an amphora outlined in brown. Above these men was a man in a green tunic and red boots, carrying a red pallium (cloak) and a caduceus. The execution of the work was excellent, and the figures give an impression of lively action.

Belonging mostly to the 3rd century B.C. were a number of painted grave-stelae from Alexandria and from Thessaly. Many were found at Hadra, the eastern necropolis of Alexandria in Egypt. Often the stone was overlaid with a stucco layer, on which the tempera technique could be used. The ground was generally in solid red, yellow or blue, the architectural parts being in vivid colors and the ground line in yellow. Frequently a pale rose color was employed, and violet was extensively used. Reddish brown was employed for male flesh (the old Egyptian custom), and a lighter color grading into rose for female flesh. The lips were red, the eyes white, and the hair black, yellow or red. Garments were often violet or purple, shoes red or black. The scenes were funeral banquets, while many soldiers from countries all around the eastern Mediterranean sea were depicted, including especially Galatian mercenaries, who had a notable effect on Egyptian art. The works remained Greek in spirit, though marked by realistic traits which have been attributed to Galatian influence. The drawing and conventions in human representation were the same as those of Pompeian painting. Of some 1500 Thessalian stelae from Volo (ancient Pagasae), found between city walls, about 400 were built into the walls dated from the 3rd and 2nd centuries. Many have lost their color, but some 200 still had traces of color on them when found. They were painted on marble in the encaustic technique. The so-called Hediste stele, portraying a dead woman and child and the woman's husband, and showing ability to picture the pathos of the scene, was done in violet, yellow and much was red. On the Stratonikos stele, the man of that name was seated on a blue and pink cushion, which covered a yellow-legged stool. He wore a yellowish chiton whose folds were shown in dark gray. His flesh was a deep yellow, his hair and shoes reddish. He clasped the hand of a youth whose chiton was red and chlamys white. More generally, the colors of the Volo stelae were red-brown, yellow, pink, blue, rose, gray and pale green on a violet or red ground, with the preliminary sketch often done in very dark gray. Some of the light pinks, violets, and greens of Hellenistic painting were already in use here in the 3rd century.

Hellenistic painting in Palestine is best illustrated in the tombs at Marissa (Sandhanna) in the south, which have been dated near the second half of the 3rd century. The walls of these

tombs were elaborately decorated with painted scenes and designs, with the free spaces filled with inscriptions and scratched drawings. The colors of the frescoes, originally extremely bright, have faded away to paleness. They included dominantly red and yellow, along with white, black and gray. In a tomb portraying musicians, green is extensively used. Other colors employed are pink, dark red, brownish black and brown. The most interesting scene was a long procession of animals, including some purely fabulous or imaginary ones, while the real ones could probably be found in the famous zoological gardens of Alexandria. The work as a whole exhibited a fusion of Greek with Oriental traditions. In view of the fact that the tombs belonged to a Sidonian colony on Jewish-Idumaeon soil, two paintings of immense cult-objects similar to candelabra in the Tomb of the Musicians are of interest. They were painted yellow, to imitate gold (or gilt), the flaming wicks being red.

Also of interest in connection with Palestine was the qubbah, a miniature tent with domed top, made of red leather. This was peculiar, since from the oldest times tents were characteristically revealed black; and red, because of its high visibility, dangerously revealed the military camp and the position of its commander. The red color must have involved a strongly conservative religious tradition. One representation of the qubbah was on a bas-relief from the Temple of Bel at Palmyra in Syria; it portrayed the qubbah with traces of red paint still adhering to it when discovered. This use of red corresponded to the priestly tradition that the Tabernacle had a covering of ram's skin, dyed red with the dye from the kermes insect. This relief dates from the 3rd-1st century, but the portable tent-shrine went back to the 7th century B.C.

Turning for a moment to the costumes of the late 3rd century, in addition to the remarks just made it may be noted that in the Greek world the himation, the garment of rectangular cloth draped over the left shoulder and about the body, was of pure white. The mantles of Boeotian figurines were in bright pinks and blues. Egyptian linen was usually white, with occasionally a colored border. Dancers' slippers were yellow, and tied with cords of contrasting colors "peeping beneath skirts of purple or sea-green." (AJA 1950, 380, 383).

In Roman houses, which usually had few door and window openings, there was considerable space for wall frescoes. By careful preparation of the wall, the Romans obtained a brilliant, if daring, surface gayly decorated in colors more saturated than the taste of today would sanction. In those murals that have been preserved we see the very strong influence of Greek painting. But the vertical divisions of walls were developed into architectural frameworks, rather than following the Greek usage of horizontal zones. The best of the murals were characterized by a largeness of design, good use of perspective, chiaroscuro and cast shadow, an atmosphere of balanced repose and unity of figures with the architectural and landscape elements.

Pliny referred to early painting at Ardea by a Greek called Lykon who flourished at the end of the 3rd century and also painted Atalanta and Helen as nudes. Older paintings are said to have been painted at Caere. Pliny also mentioned paintings dedicated by Messala in 264 B.C., while Fabius Pictor painted the temple of Salus at the end of the 4th century. Dionysios of Halicarnassos in Asia Minor commented on the brilliance and harmony of his colors. A number of historical paintings commemorated military victories; such paintings on wood were carried in triumphal processions and dedicated in temples, with the victorious general portrayed in a purple-bordered toga. Cities which were taken were personified; and in the procession of Scipio Asiaticus, for example, 134 "portraits" of cities followed his chariot. The essential ideas of all of

these types of painting were collected into more unified compositions at the time of the end of the Roman Republic. Battle pictures were first painted in the first half of the 3rd century during the wars with Carthage.

A notable characteristic of Roman paintings (including now those of a period later than the 3rd century) were the deep (dark and rich or strong) colors of their backgrounds, while the central pictures of landscapes, figures or animals were in lighter and bright coloring. Since they were generally seen in low illumination, strong to vivid contrasts were the goal. Wall mosaics used brilliant blues, such as good cobalt blues, soft purples, various reds, ochre yellow, grayish blue-greens to yellow-greens, black and a creamy white.

Turning to pottery, we may note that the Gnathia vases, already described, continued into the early 3rd century. The Red-figure style had by this time lost its popularity; and vases done in this style were replaced mainly by Hellenistic plastic relief ware, inspired by metallic prototypes, and by polychrome vases and other classes. Of the relief wares, which enjoyed a brief popularity, we shall describe only the painted ones, the others (such as some early Arretine ware) being outside our subject. Examples were found in southern Russia and at Kerch, and indeed all over the Hellenistic world. The polychrome Kerch vases have been described. The Pontic Greeks preferred painted vases, and their product was poor technically, with heavy walls, often with dirty yellow clay; but the painting was interesting. An example is a distemper vase with black ground portraying a combat between a Greek and an Amazon, the other colors being red, blue, yellow, yellowish white, light gray and reddish brown. Much Arretine (Italian or "Roman") ware of the 3rd and 2nd century employed a dark red glaze on a buff ground, and an intricate blending of floral and human patterns.

Vases of the 3rd and 2nd century B.C. from Canosa, which often, along with plastic decoration, were painted with green, red, rose, blue, black and yellow on a usually white ground (sometimes rose or blue). Tarentum in Italy exported small vases with white designs on a black ground. From Hadra in Egypt came sepulchral hydriai decorated on a light (white or yellow slip) ground or with the designs silhouetted in brownish black on the natural clay color.

During the 3rd century, the Sarmatians, "knights in armors" (Minns), were pressing the Scythians westward into the Crimea and nearby lands, penetrating to Transcaucasia, and took the leading historical role from the Scythians. For a color note of the time, we may mention a large building in the Scythian town Neapolis, near Simferopol (the Crimea), whose tiled roof was of red, yellow and green plaster and polished brown clay. At the middle of the century, the Parthian (or Arsacid) dynasty was established southeast of the Caspian Sea by Arsaces, who defeated the Seleucids. At its height this extended to India; and the Parthian empire was destroyed only in A. D. 224 by Ardashir I, who founded the Sassanian or Neo-Persian empire. In the Parthian level at Chasmah Ali in Iran was found a cult building with early examples of glazed bluish green pottery. Beyond Parthia in Asia, the Greek ruler of Bactria revolted from the Syrian (Seleucid) empire in 247 B.C. and formed the Greek kingdom of Bactria.

During the decade following the middle of the century, Laodicea, in the Lycus valley of Asia Minor, where ancient Daria, Lydia, and Phrygia met, was refounded by Antiochus II. It thrived because of the wealth obtained from the world-famous black glossy wool of the region, which was woven directly into garments of various shapes and sizes, including paragaudae, with purple borders. Here was a celebrated medical school from whence came a "Phrygian powder" for "curing" weak eyes!

Chapter 10 Color in the Second Century B. C.; Middle and late Hellenistic Periods

In China, the short-lived Chin Dynasty was replaced in 206 B.C. by the Han Dynasty, which lasted for over four centuries (till A.D. 220); and, as we have already said, this was divided into the earlier "Western Han" and the later "Eastern Han" dynasties. It was at about the time of the beginning of the Han dynasty, around 200 B.C., that a notable event in Chinese art-history occurred; this was the first production of good porcelain from white kaolin. The dynasty was marked by the development of a bureaucratic, centralized government, the revival of letters, the extension of Chinese rule, and the introduction of Buddhism, although a great emperor, Wu Ti (140 - 87 B.C.), introduced the ideology and methods of the philosopher Confucius into statesmanship and the education of the Chinese. Under Wu Ti's rule, China acquired the vast territories of Korea, Manchuria, Annam, Indo-China and Turkestan. Of Chinese ceramics of the Han period, besides the reference to the invention of porcelain mentioned above, we need only add that late Han pottery was often dark gray in color and gave a ringing sound when struck.' No paintings of the period have survived, for reasons explained in part below, but stories were told about a certain artist Lieh-I who could fill his mouth with colored fluid and spew it out in the form of paintings. Phoenixes which he painted were said to be so realistically done that wonder existed that the birds did not fly away. But painting must have been already well developed in the time of Confucius (551 - 479 B.C.), for he spoke of how deeply he was affected by the frescoes in the Grand Temple at Lo-yang (R. Wilhelm, *Short History of Chinese Civilization*; New York, 1929; p. 38). According to Chinese-tradition, painting was first practiced by a woman, Lei, the sister of the legendary emperor Shun of the 23rd century B.C.

But whatever the date and origin of Chinese painting, it must be remembered that Chinese paintings were usually done on perishable silk, never on canvas, though sometimes as frescoes on the walls of buildings. They were executed in water-color, not in oil, which medium the Chinese did not regard as facilitating the subtlety which they sought. Chinese painting, at least at first, was a branch of calligraphy or beautiful penmanship; and calligraphy was regarded as one of the major arts. They became even more similar when, about 220 B.C., there was introduced a new Chinese script, the "Lesser Seal," whose characters were painted with a "hair pen" or brush, not cut as before. The Chinese ink was used for writing as well as for painting. It was in the form of a solid cake which was moistened on a slab to obtain a semifluid material. The ink might be used thick or thin, with strokes bold or delicate. The writing characters were originally pictographs, which evolved into abstract symbols of the original form. Thus abstract form was the most important element in both writing and painting. Except in the frescoes, expression was mainly through the medium of line, with little or no shading, with no attention to depth (the third dimension), with little attention to color, and with essentials emphasized and details suppressed.

Japan had still not reached the Iron Age in the century under consideration, and had as yet no art (or color) history. We shall later find that for some time to come the major elements of Japanese art were influences from China and from Buddhism. Influences from the Buddhist faith dominated the famous Ajanta frescoes of Hyderabad (central India), which have been dated by some from the 3rd or 2nd century B.C. to the 7th century A.D. We shall adopt a more

conservative date which has also been advocated and introduce them in the first century A.D. At the end of the 2nd century B.C., however, belonged some Buddhist frescoes in a cave of Sirguya, Central Provinces, India. Two centuries before this there were literary records of a king's palace containing picture galleries as well as murals.

In the 2nd century B.C., the Yüeh-chih of western Kansu (China), who were distinguished by the Chinese of the preceding century as different from the Hiung-nu (Proto-Huns), were attacked by the latter and were driven west and north to the region of the Tian-shan mountains and to Hami in Eastern Turkestan. Later they moved still farther west into Western (Russian) Turkestan, where in the territory of the Graeco-Bactrian kingdoms they established with the Tokharians the new state of Tokharia. The Tokhari people of Eastern (Chinese) Turkestan have been found surprisingly to speak an Indo-European language, related more closely to Greek and Latin than to Sanskrit or Persian. It is believed that the Tokhari and Yueh-chih were related, both coming originally from the region of the Caspian Sea. The Yüeh-chih may have displaced the Wu-suns (Scythians, Sacae or Saka) from Bactria and the neighboring lands; or, as held by others, the Wu-suns and Hiung-nu of eastern Mongolia drove the Yüeh-chih to Bactria and Sogdiana, the latter being north of Daetria near the sources of the Oxus and Jaxartes rivers, which run into Lake Aral. At any rate, it seems that the Yüeh-chih ruled in central Asia from about 129 B.C., after conquering Bactria, until A.D. 425 or thereabouts, and were the ancestors of the mysterious Kushan people, who in the first century B.C. conquered northwestern India, and whose culture flourished in Khwarazm in the first to third century A.D. By A.D. 100 the Kushan dynasts had conquered all India as far as Benares. The greatest Kushan king was Kanishka, under whom the arts and sciences thrived; but he enters the picture at some later, controversial date, of which the two most strongly advocated are 78 and especially 128 A.D., or even after 143 A.D.

Meanwhile, Greeks, Syrians and Scythians had poured into the Punjab of India during the second and first centuries B.C., developing a Graeco-Bactrian culture there. It was Eumenes II, of the line of Attalids, who built the magnificent Altar of Zeus at Pergamum in celebration of his victory over the Gauls. It was under this king that Pergamum became a great kingdom and reached the zenith of its prosperity. Wall paintings in the lower agora are of special interest because of the profuse use of color there. In a northwestern room of a building in the lower agora, built by Eumenes, the socle, imitating gray marble, was separated by a line of white between yellow and green on both sides, from the upper part of the wall, whose white field was divided into sections by a narrow and a wider green line and by a band of variegated dark blue and green. In the open court the lower part of the walls was a deep red and divided by bands of yellow edged with black. Above a wider black edge appeared a white field divided into sections by alternating red and white lines.

Revealing the brilliant colors and attractive designs of Pergamene painting were the scant remains of two rooms in the palace known as Palace IV. The colors employed here were light and dark greens, white, brown, bluish gray, rose and especially yellow and "Pompeian" red. Motifs included griffins, the egg-and-tongue pattern and a braid pattern with alternating red and blue eyes. Meanders were executed in blue, yellow and a red varying from rose color to pink. The lowest band was a frieze of slender yellow griffins on a Pompeian-red ground; the animals had long tails and sky-blue wings and stood heraldically with one front paw raised on each side of golden-yellow amphorae. Above the tricolor meander pattern painted in

perspective the wall was divided into fields, the colors being deep red, rose, pink, blue and yellow; and finally above this was a band of brown. This elaborate scheme was found in the south room on the east side of the palace. A room on the north side was decorated in blue, red, yellow, yellowish brown, black and white.

Some ancient literary references to paintings in Pergamum exist and include the statement that a temple of the city was decorated by Apelles, considered the greatest painter of antiquity. A second century inscription lists the honors paid by the Delphians to three Pergamene artists sent by Attalus II (159-138 B.C.) to copy paintings in Delphi. These may have included frescoes with legendary Greek subjects done by Polygnotus about 460 B.C. Attalus II was a connoisseur of painting, and other Attalids collected sculptures. Attalus was said to have offered a hundred talents for the painting of Dionysos by Aristides, a contemporary of Apelles; this was at the time (146 B.C.) when Corinth was sacked by the Romans.

A number of fine mosaics have been found in Pergamum, and according to Pliny some of the mosaic-decorated floors were laid by Sosus, the most famous mosaicist of antiquity. The southeast room of the Palace IV having the griffin frieze described above, also had an elaborate mosaic floor, this being characterized by delicate shading and small tesserae. It included a "rainbow" stripe consisting of thirty rows of tesserae which shaded from deep red to pink and from yellow to deep blue-green. On either side were deep black points on white. One part of the field within had a garland decoration, the other rectangular still-life pictures. On the gray ground of the former were the laurel garlands and ribbons, with red berries having gleaming white stones in the center and leaves shading from black through dark and pale green to yellow and pale blue, a plastic effect being obtained with black and brown outlines. The middle stripes of the ribbons were in white, yellow, red or green, all with brown edges. One of the genre pictures was of a fish in dark brown with greenish fins and bright rose-colored belly. Details of head were dark brown edged with yellow; and the gill was in bright red.

The north room of Palace IV with wall decorations previously mentioned was also provided with a mosaic in which the colors were deep and brilliant but harmoniously arranged. This showed floral designs in several colors: reds ranging from deep red to rose color, blue to pale blue, green, yellow, white and black. The best of these mosaics were found in two rooms of Palace V. In a small room on the north end of the east side, subjects include a tragic mask and a comic one, floral and palmette designs and birds including a brilliantly colored parrot. The wide variety of colors used is indicated by the following list of hues: red, brown, yellowish brown, grayish brown, yellow, yellow-green, yellowish green, green, blue, grayish blue, dark blue, brownish black, black, gray and white. The parrot was seen in green, blackish green, red, yellowish brown and white, with the feathers at the shoulder shaded dark purples merging into yellow, green, blue and rose, the bird being shown on a black ground. Even better technically was the mosaic in a large room on the north side of Palace V. This was composed of floral, plant and geometric motifs and an Eros hanging on a vine. The colors were red, dark red, bright yellow, pale green, blue, black, dark gray and white. Near the lower edge of the central portion was represented a piece of parchment, light brown in color, held at three corners with red wax on a bluish gray field. The work was signed by the painter Hephaistion. In a moment we shall have more to say about parchment and its connection with Pergamum.

The celebrated mosaicist Sosos has been mentioned and one of his mosaics described. Another of his, known as the "Mosaic of the Unswept Dining-room Floor," was apparently

copied (and signed) by Herakleitos in a work found in Rome over a century ago and preserved in the Lateran Museum there. In these, scraps of food were shown scattered about on a dining-room floor, the original being at Pergamum. The central mosaic has been lost, but about the middle portion were four narrow mosaics depicting Nile plants and animals. The food items, and a nibbling mouse and chicken's foot, were on a white field next to this band on three sides. The colors of the stones and bits of glass which made up the mosaic were green, red, brown and yellow, along with black and white. In the "Drinking Doves" mosaic, by Sosos, of which copies were known at Pompeii and in Hadrian's villa, the colors were brown, red, blue, green and yellow.

The presence of parchment in the work of Hephaestion mentioned just above recalls to us the origin of this writing material. Parchment or vellum was made from the skins of young cattle, sheep, goats and antelopes by dressing with chalk after washing and scraping with pumice. Pliny the Elder, quoting Varro (first century B.C.), stated that Eumenes II of Pergamum, whom we have mentioned, first promoted the manufacture and use of parchment. He had planned to found a library which would rival the famous library of Alexandria. This ambition aroused the jealousy of Ptolemy Epiphanes, king of Egypt (205-182 B.C.), who clamped an embargo on the export of papyrus sections. This embargo was the "mother of invention," forcing Eumenes to develop the production of vellum, a fine variety of parchment. From his city the product became known to the Greeks as pergamene, and from this came our word parchment. Deluxe editions, according to St. Jerome, who did not approve of such extravagance, were made of vellum dyed purple and inscribed with gold and silver inks. Ordinary editions were written with black or brown ink and had headpieces and initial letters colored with blue or yellow or (most often) red ink, whence the word "rubric," from the Latin for Red. Parchment or vellum continued to be used until the late Middle Ages when paper was introduced from China by Arabian traders.

The pottery sometimes called "Pergamene," of which little was made at Pergamum, will be introduced later under the names: Arretine, Samian and Roman wares and terra sigillata.

Recent excavations at the city Neapolis in the Crimea unearthed a 2nd-century square mausoleum of polished stone containing royal Scythian graves. In its center was a gilded and carved wooden sarcophagus painted pink and blue. The clothing of the buried king was stitched with golden thread and covered with gold-leaf decorations. In the tomb were found 700 Greek and Scythian gold articles. Between two tombs, four horses had been buried, with large colored paste beads, adorning the forehead of one of them. Five painted vaults were discovered among 28 rock-cut tombs here. Vault No. 9 was decorated by a master artist. A colored border consisting of triangles and zigzags around the top of the walls had the appearance of an embroidered canopy. Opposite the entrance was painted a square rug with nine checks framed with arrows. Beside this stood a bearded Scythian holding a lyre. In the center was a mounted hunter with a spear. On the right a red and a black dog were attacking a wounded boar.

In the year 146 B.C., the Romans burned and pillaged both Corinth in Greece and Carthage in North Africa, killing the males and selling the women and children into slavery. When Corinth was sacked, Attalus II, who was a connoisseur of paintings, offered one hundred talents, a great sum, for a painting of Dionysus by Apelles' contemporary Aristides. Corinth before its destruction had become a rich commercial city, notorious for its voluptuous gaiety, as a center of the worship of Astarte, and as a shipbuilding center, due perhaps to the Phoenician

strain in its population, as well as a center of commercialized art and the dyeing of beautiful fabrics in a variety of colors; but which loved industry and honored craftsmen. The Roman commander Mummius sent the great collection of masterpieces of art to Italy, and bound the shipmasters who ferried them to Rome to replace any of them which might be lost on the voyage by a new masterpiece! Corinth profited by the Macedonian destruction of Tyre, only to be destroyed in its turn.

As for Carthage, it too worshipped Astarte or Tanit with dubious rites and placated Baal with human sacrifices. Tanit, who in her better aspects was the goddess of wedded love and scientific farming, and the female principle of fertility, was represented as a chaste figure with long wings of blue, crimson and gold. The adventurous men of Carthage, industrious business men and great seamen, had explored the Atlantic coast from the equator to the ice-packed Arctic. But they failed to support their great general Hannibal. Carthage after its fall was rebuilt in the time of the emperor Augustus, to go up in flames again in A.D. 698 before the Saracens. The Roman city was noted for the graceful designs in red, blue, green and gold of its mosaic floors and pavements.

The system of decorative wall paintings which was popular in Hellenistic Greece and Italy included horizontally sectioned areas: baseboard, intermediate joining course, central portion and cornice, and went back to Hellenic, Ionic and even Egyptian structures. This decorative system was employed in many cities around the Mediterranean region, including Pergamum and Athens, and was revealed especially at Pompeii. Roman houses were built of brick on stone foundations. In the 2nd century D.C., marble was used for columns and other decorative features; and the wealthy imported all sorts of colored marbles. At Pompeii the walls were usually covered inside and out with stucco; and the interiors were often richly decorated with paintings on the stucco. Writers on Pompeii have generally recognized four styles there.

The First Pompeian Style (Incrustation, Masonry or Hellenistic structural; style) was current from the beginning of the 2nd century until the time of Sulla (200 - 80 B.C.). Good examples were found in the vestibule of the House of the Faun and the atrium of the House of Sallust at Pompeii. The style aimed at giving an impression of a wall of solid masonry; and horizontal division into dado or baseboard surmounted by a narrow dividing strip, central area with cornice and uppermost frieze-like section, was the rule. The central portion was patterned to imitate courses of hewn stone, enhancing this effect by using stucco molded in relief for cornices, moldings and other projections. This style was far afield from the Hellenistic Greek landscapes and animal pictures; these were well exemplified in a powerful and realistic mosaic at Naples from Pompeii in which, in a rocky landscape, a lion was rending a panther. The First Style was an architectonic plastic style. An example of a transition to this style is seen in wall decorations from houses in Delos, where the horizontal division occurs along with rectangles in different colors; a red socle is at the bottom, black orthostates above this, separated by a white field, then a frieze of Erotes, and above this white wall rectangles outlined in red. In the example from the House of Sallust, the verticals were emphasized by doors and pilasters in relief, and the stuccoed blocks were painted in gay colors: black, violet, red and green along with a yellow socle.

A Pompeian fresco at Naples, copy of an earlier work, represented a general, probably Attalus I, in a purple mantle and green chiton, alongside of a Nike (Victory) in a grayish blue-

green mantle.

In A. D. 1809 the chemist J. Chaptal reported on some of the dye rose madder found in a shop at Pompeii, but the identification, while probable, was not certain. Some time near the middle of the 2nd century B.C., some lumps of rose madder ("Hellenistic pink") pigment and vermilion (from the mineral cinnabar) were dumped, along with pottery stained with pigment, and refuse, into a well belonging to a supply shop of the South Stoa at Corinth. This paint-pigment has been recently identified positively as rose madder by means of its spectral reflectance curve, which is closely similar to that of some modern English pink or rose madder, but with more flat or horizontal shape. This means that the ancient pigment was somewhat less pure, hence duller. Madder is a natural dyestuff from the root of the herbaceous perennial, Rubia tinctorium, "dyer's root," which is native to Greece. Its chief coloring agent is the substance alizarin (modern "Turkey red"), whose properties are modified by the presence also of the chemically related purpurin. A more purplish sample from the Agora contained some admixed blue frit. The madder dye is made into a madder "lake" or pigment by precipitation on an alumina base from alum and alkali. Some pink madder on a gypsum base, found by Sir Flinders Petrie in a tomb at Hawara, is now in the British Museum. In 1815 the chemist Davy studied some Roman rose pigment, probably from madder, on a vase from the baths of Titus. Rose madder is probably present on many terracotta statuettes in museums. The Corinth sample is the earliest of those mentioned in this paragraph.

The author (Marie Farnsworth, 1951) who identified the rose or pink madder of Corinth gave as the list of pigments used by the Greeks in the 3rd century and the first half of the 2nd century B.C., the following: white, chalk, gypsum, dolomite and white lead; gray, dolomite; black, charcoal, lamp black, bone black and some pyrolusite (a manganese-oxide mineral); yellow, yellow ocher and orpiment; buff, clay admixed with (reddish orange) orpiment; brown, others; red, cinnabar (vermilion), realgar, tetragonal litharge and (later) red lead; pink, madder or a mixture of red ocher with excess of white pigment; blue, azurite and "Egyptian blue" (from the Fourth Dynasty onward in Egypt); green, malachite, chrysocolla, green frit or (usually) a mixture of blue frit and yellow ocher, verdigris and terre verte. The Egyptian blue was obtained from malachite, silica, limestone and natron (hydrated sodium carbonate). This was the universal blue for fresco painting in Rome in Imperial times; and it was exported also to Greece, Persia, Phoenicia and Babylon. The secret of its process of manufacture, which required temperature control difficult in ancient times when there were no thermometers, was apparently lost from the 2nd century A.D. onward. Identification of some samples from Roman wall pigments with some known examples of Egyptian blue from older sources was made in 1937 by means of spectral reflectance curves. (See Granville, ADR 26, 710; 1937). This pigment was the oldest compounded by man from inorganic sources.

Returning briefly to madder, its antiquity as a dye is so great that it is hardly possible to say with certainty where and when it was first cultivated and used. Its first employment is usually attributed to India; but it has been discovered on Predynastic Egyptian mummy cloths found in tombs. It was known to the ancient Persians, and much later, to the Greeks and Romans; and it was mentioned as a dye by the early authors Herodotus (about 450 B.C.), Dioscorides, Pliny the Elder and Theophrastus. In the first dye-trade document written in a European language (Greek), there was a report of trade in madder root between India and Asia Minor; this was in the form of a "periplus" or narrative of a coastwise voyage along the Red Sea

about A.D. 50.

During the 2nd century B.C. the Teutons and Cimbri of northern Europe were restless and began to wander southward as far as the passes of the Alps. This movement was the forerunner or beginning of the great migration known by the German term *Völkerwanderung*, which included the invasion of Italy and France (Gaul), and was most active in the 2nd - 5th centuries A.D., ending only sometime between the 9th and 11th centuries. The Roman Marius, at the end of the 2nd century, defeated the Cimbri and Teutons at Vercellae and at Aix.

The Belgae, a mixed Keltic people with German tinge, who gave their name to modern Belgium and possessed a La Tène culture, reached Ireland during the century, and northeastern France late in the century, covering the land from the lower Rhine to the lower Seine river. About 75 B.C., they invaded Kent in England. Their pottery was of a La Tène type and influenced by Roman wares. The decoration, which indicated no outstanding artistic merit, was by incision, rouletting, stamping, or in the barbotine technique, the colors being various reds, black, gray, or the natural buff of the clay. Their red enamels were often seen on yellow bronze objects, the colors yielding rather strong contrasts.

Chapter 11 Color in the First Century B.C.; Late Hellenistic Period

The first century B.C. was not one of special importance in the history of color or art; but it was a period of stirring political events, particularly in the Roman world, though only the last quarter of the century was included in what we shall call the "Early Roman Period."

Rome was opposed in Asia by two powerful rulers: by Mithradates VI Eupator, king of Pontus (171 - 138 B.C.), who in 89 B.C. massacred the Italians in Asia, and by his son-in-law, Tigranes, king of Armenia (83 - 69), who in 83 B.C. took Antioch. Sulla, who became Rome's military master in 88 B.C., warred against Mithradates in the period 87 - 83 B.C. His dictatorship and "proscriptions" occurred four or five years later. The Roman general Pompey (106 - 48 B.C.) eventually defeated Mithradates and Tigranes. Pompey became a consul in 70 B.C., along with Crassus, warred on Mediterranean pirates in 67 B.C., and was given great powers in the following year. Soon Damascus and Jerusalem were taken by the Romans; Syria, Cilicia and Galatia came under Roman rule, and Pompey in 62 B.C. returned in triumph to Rome as conqueror of Asia, Africa and Spain.

Very soon Julius Caesar became governor of Further Spain; and in 60 B.C. he, Pompey and Crassus formed the First Triumvirate. In the middle decade of the century, Caesar defeated the Helvetii, the Gauls, the Nervi, the Veneti, the Suevi and the Belgae, crossing the Rhine in 55 and 54 B.C. It was about this time that he reported that the Keltic Picts ("painted people"), who had been displaced in many parts of Gt. Britain by the Britons, painted their bodies with the blue dye woad. In 48 B.C., Caesar crossed the Rubicon and Pompey fled to Greece. In the next year the latter was defeated by Caesar at Pharsalus in southern Thessaly. Soon Caesar was with Cleopatra in Egypt; and by 45 B.C. he had completed the conquest of the Mediterranean world. In that year, after the conquest of Asia Minor, he made his famous report: "Veni, vidi, vici" was about this time that he decreed that only the dictator and his household were permitted to wear purple robes. This decree was renewed by Octavian, who was made "Augustus" in 27 B.C.; and the decree remained the law until annulled by Tiberius.

After the death of Caesar came the Second Triumvirate, including Mark Antony and Octavian, which defeated the republican army of Brutus and Cassius at Philippi. In 35 B.C., Antony and Cleopatra were together in the palace of the Ptolemies, and the next year he compelled King Herod to cede Jericho to Cleopatra. In 31 B.C., Octavian defeated Antony at Actium after Antony was deserted by Cleopatra's ships, the former then taking Alexandria and making Egypt a Roman province. We may note here that Cleopatra's own barge had purple sails, an ostentatious mark of royal luxury. In 30 B.C. came her death and that of Mark Antony, and the beginning of the "Pax Romana." In the following year began the rule of Octavian and his dynasty, the Golden Age of Roman literature and art; and in 27 B.C. he was made the emperor "Augustus Caesar," thus ending the Roman republic.

During the century came the Scytho-Parthian invasion of India and the establishment of an Indo-Scythian empire in eastern Iran and western India. During the century too, part of the Hiung-nu were forced west through the wide corridor of Dzungaria, which connects the plateau of Mongolia with the steppes of southern Siberia, by the Chinese and the Tungus; the rest remained in Mongolia. During the first century B.C. and the following one came the spectacular rise of the Nabataean kingdom, which we have already viewed at an earlier period. These centuries saw also the floruit of the South Arabian kingdom of Hadhramaut, which came about

as the Minaean kingdom came to an end there. In the middle of the first century D.C. came the end of the South Arabian kingdom of Qataban with the destruction of its capital Timna. In 35 B. C. reigned the last king of Sheba (Saba), once made famous by a queen of Solomon's time. At the western end of the Eurasian continents, about 75 B.C. occurred a Belgic invasion of Kent (England).

At the beginning of the century there flourished the mosaicist Dioskourides of Samos, who did a street scene with strolling musicians and one of a young woman consulting a magician dealing with love magic. The former was marked by realism and the impressionistic use of color. About the same time Iaia of Cyzicus flourished as a painter of portraits, especially of women, executing them on ivory in the encaustic technique. In the time of Julius Caesar, a famous painter was Timomachos of Byzantium, who was paid eighty talents by Caesar for his painting of Ajax and his unfinished Medea.

About 80 B.C., the Second or "Architectural" Style developed as the First Style at Pompeii. The method has also been referred to as "illusionistic" or "vista" style; and its period was one in which landscape decoration came to play an important role in wall painting, in order to create an illusion of looking on streets or gardens outside the house; that is, the walls were divided into portions with vistas into the open outdoors. A good example is a series of scenes from the Odyssey, painted in a house on the Esquiline at Rome. Episodes from the wandering of Odysseus constituted a frieze in which they were joined together by red-painted pilasters, with yellow capitals. Between these one could apparently look out as through an open window. The paintings were done in the impressionistic manner, with subordination of the figures to the landscape and the production of an atmosphere of unlimited space. In the painting in the Vatican Library of Odysseus in the Underworld the colors used were bright red, yellow, brownish yellow, bluish green, blue-green, bright green and brown.

Murals from the House of Livia on the Palatine in Rome exhibited the architectural style more clearly. Here much use was made of perspective; and in addition to the horizontal division, many vertical structural lines were evident. In the fresco painting on stucco of the Aldobrandini Wedding from a house on the Esquiline, the colors employed were yellow, red-brown, golden brown, light and dark greens, greenish blue, dark red and violet, on a grayish violet background. The atmosphere of the painting was one of static calm. More vivid and dynamic scenes were tempera murals at the Villa Item near Pompeii, which pictured mythological and mystical subject matter. The colors employed were yellow, green, lilac, vermillion and purplish brown. In New York's Metropolitan Museum may be seen mural frescoes from the House of Fannius Sinistor at Boscoreale, with colonnades done in perspective standing out against panels brilliantly painted in red, green, yellow, purple and white. In the so-called Farnesina paintings from a house by the Tiber, Aphrodite wore a white robe with blue stars.

[End of manuscript]

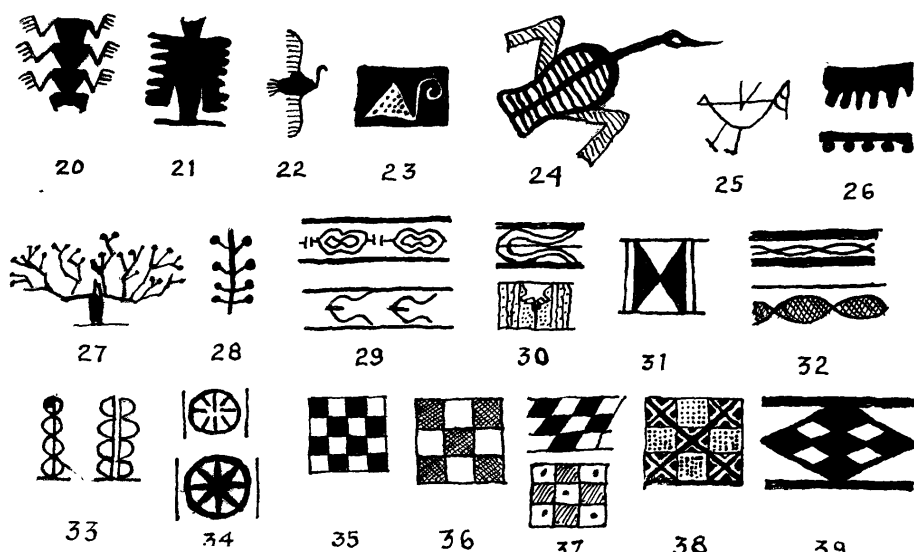
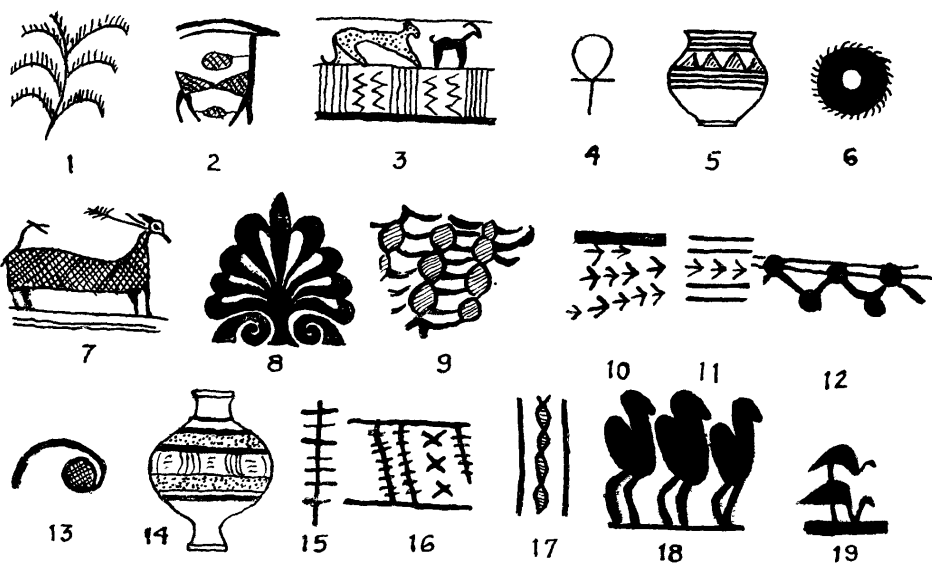
“Design Motifs” and Illustrations

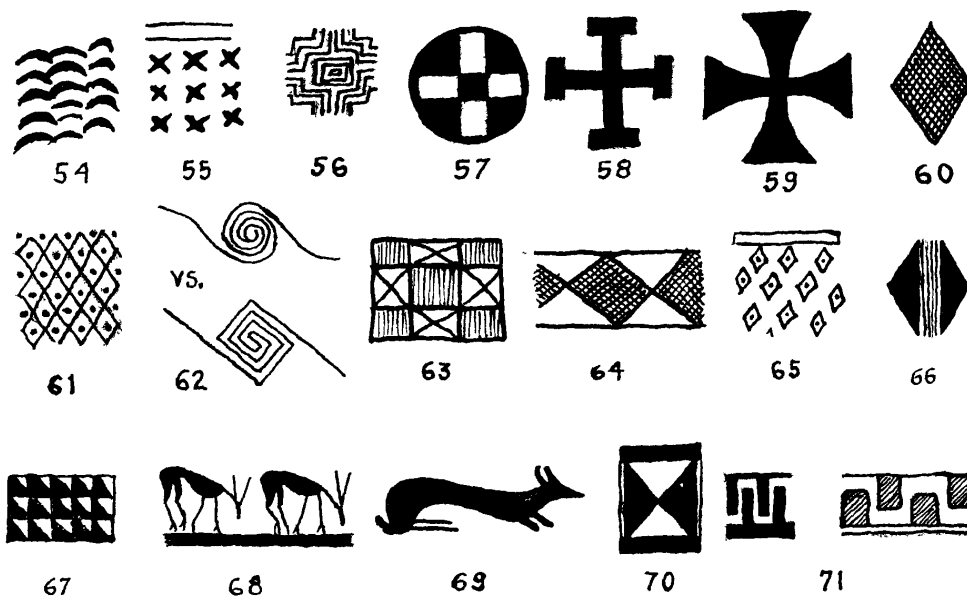
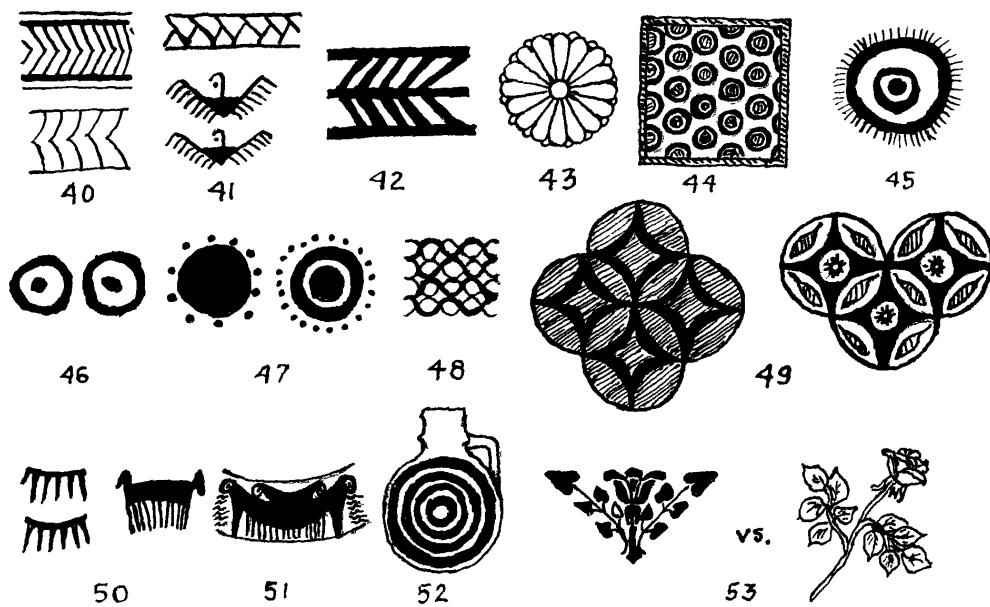
These are taken from handwritten penciled notes. In some cases the spelling is questionable. The “Design Motifs” list has identifications for only 33 of the 207 drawings. They are followed by “Illustrations” drawings, of which only 63 are identified. Note that the figures are not always in sequential order.

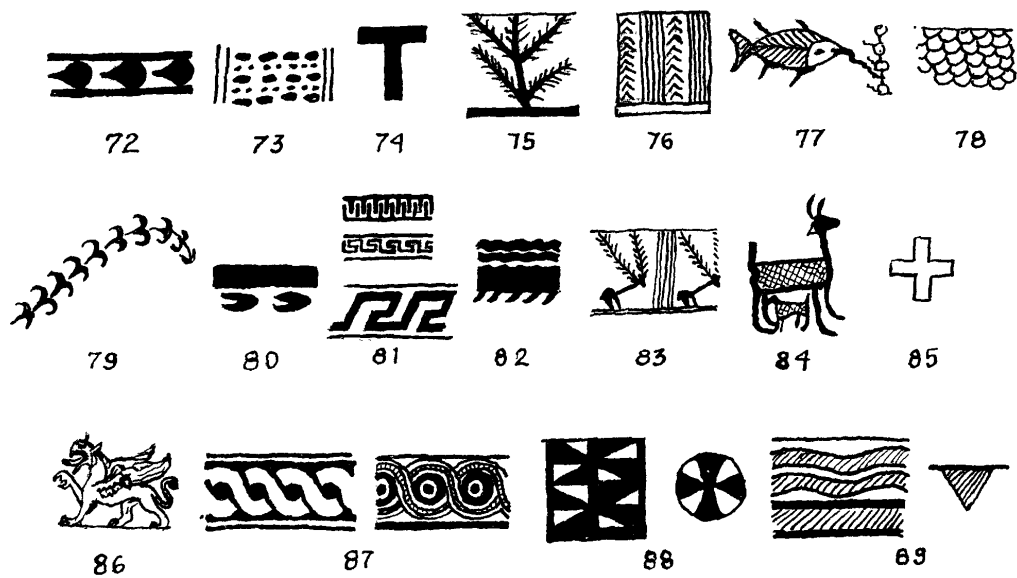
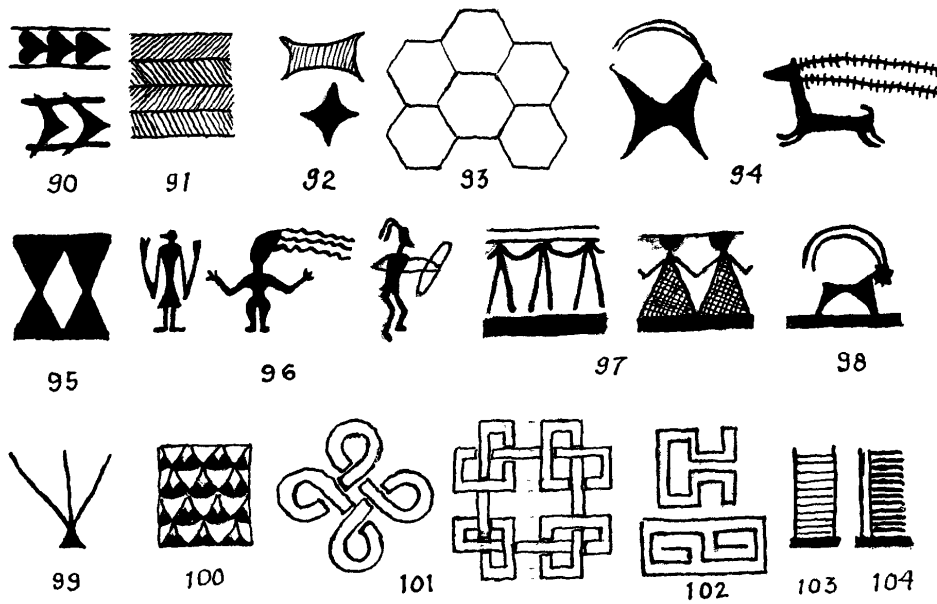
A. Design Motifs

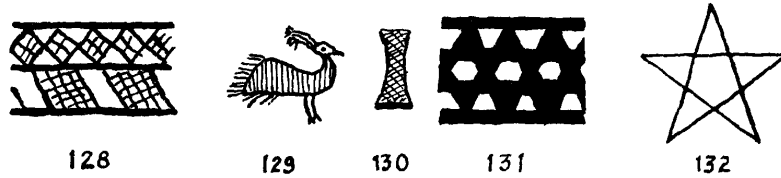
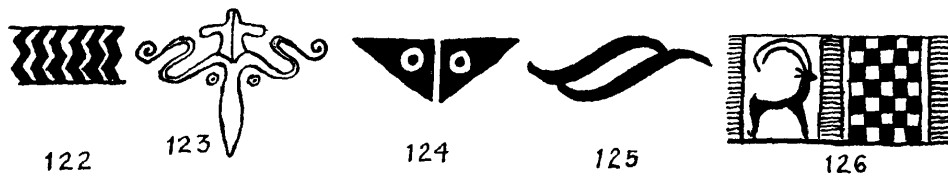
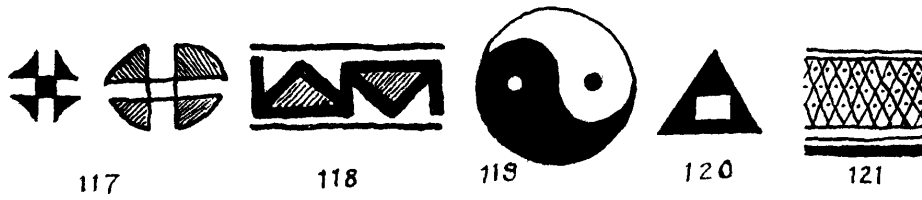
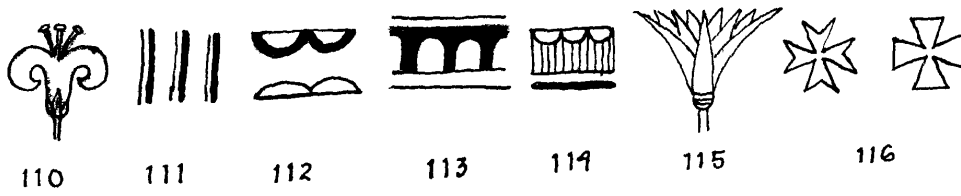
1. Acacia
2. Animals (see birds, quadrupeds, ibex, etc.
3. Animals in a zone.
4. Ankh (crux ansata or Egyptian cross).
5. Annular rings (and triangles).
6. Annular ring, fringed.
7. Antelope
8. Anthemion.
9. Aquatic plant.
- (No number) Arcade design; see loops, negative (113).
10. Arrows (or “points”).
11. Arrows between parallel lines.
12. Ball, joined.
13. Ball and stem.
14. Bands (often broad; see also annular rings).
15. Barred line.
16. Barred lines (and crosses).

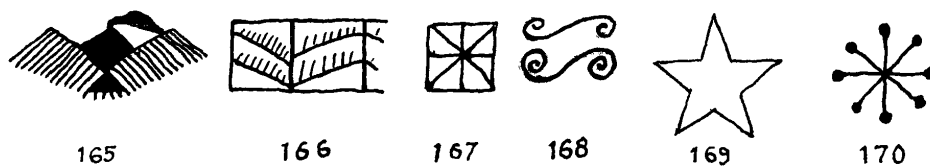
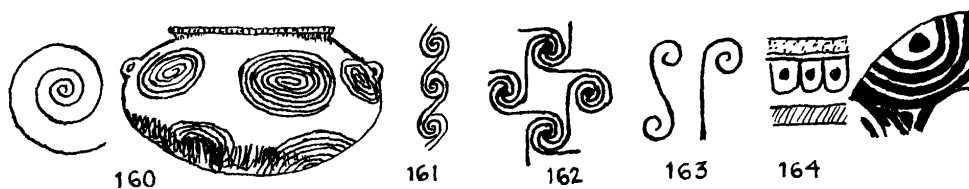
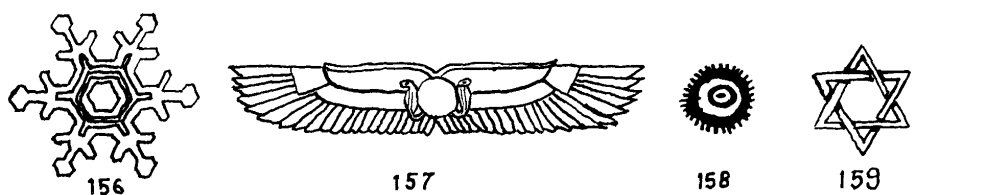
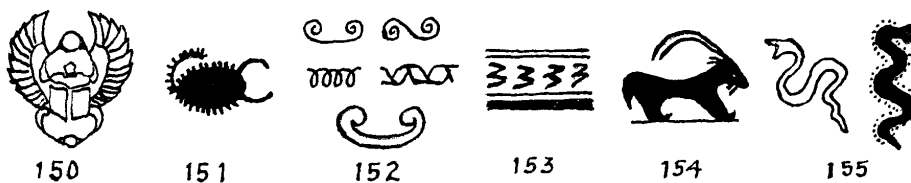
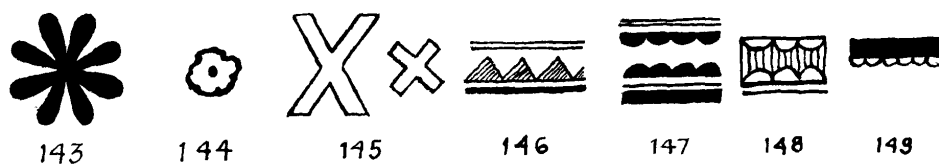
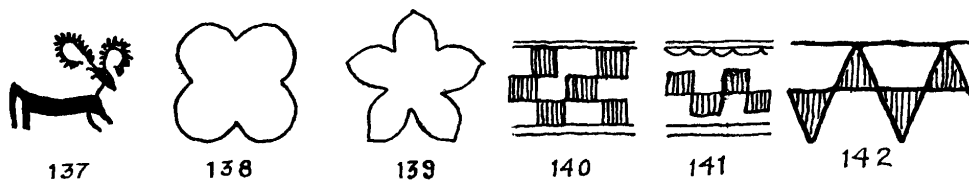
17. Bead motif (actually horizontal; see also cable motif)
18. Birds (in file).
19. Birds, superimposed (see also signs motif).
- 20-22. Birds, feathered.
- 23-24. Birds, geometric.
25. Birds, scrawled
26. Blobs, pendent (lower row; circular)
27. Branch design.
28. Branches, dot tipped.
- 29-30. Bucranium (four variants of stylized bull's head).
31. Butterfly or double axe.
32. Cables (loop chains), open and closed (variants of meander = guillope)
33. Caduceus and divided caduceus.

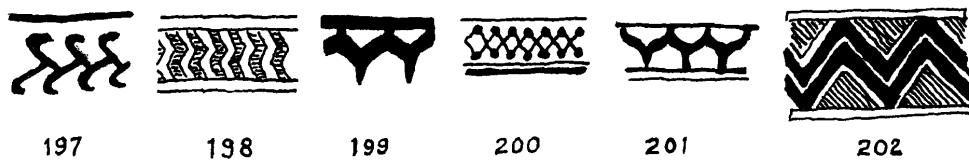
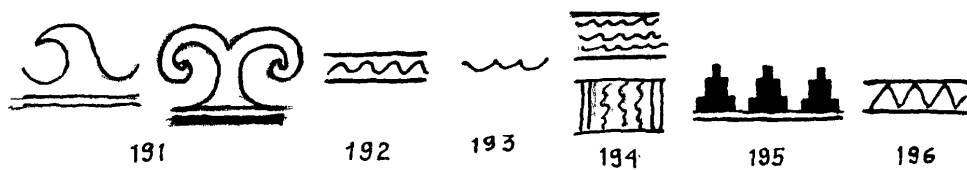
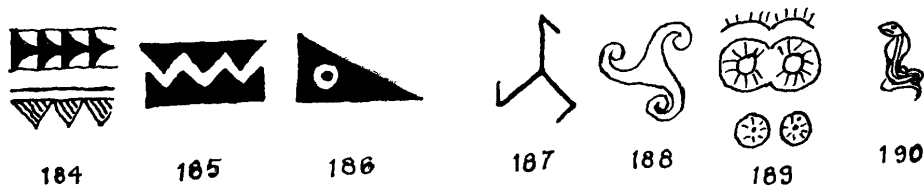
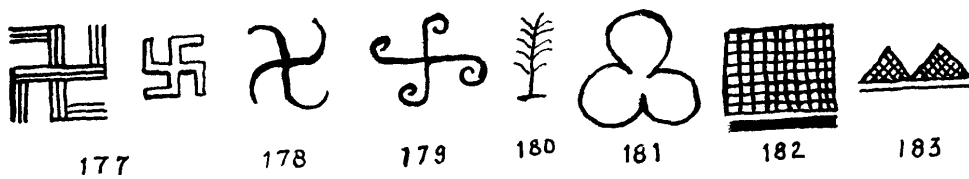
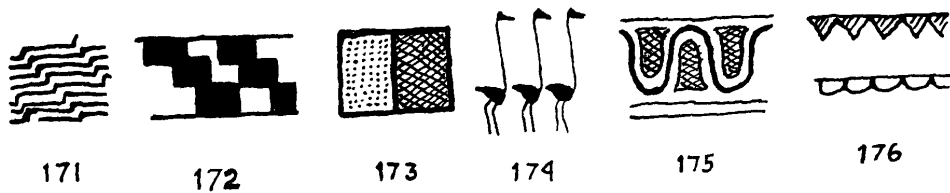


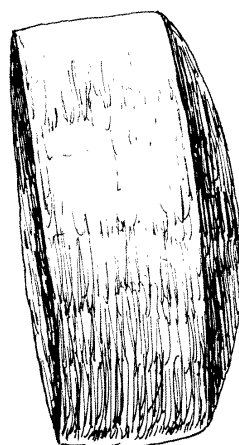
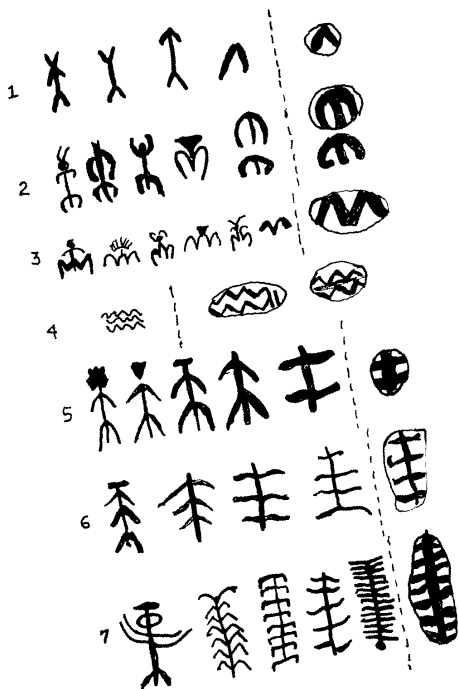












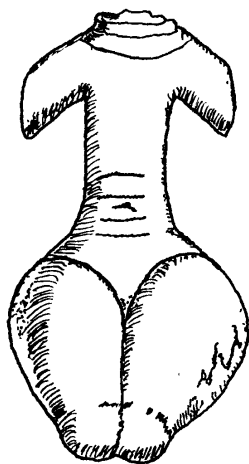
Illustrations

1. Map (not identified)
2. Ancient Nubian Amulet representing both a woman and a cowrie shell. S.E. Smith p 13
3. Neanderthal man. S.E. Smith p. 55
5. Contrast in shape and poise of heads of gorilla (left), Neanderthal (center) and Homo Sapiens ((right).
6. The mother goddess being raised up to become the sky. Smith p. 257
7. One side of Narmer's slate palette. S.E. Smith p. 309
8. Agilian painted pebbles from Mas d'Ayil after Ael (?). Osborne pg. 464
9. Comparison of Mas d'Ayil painted pebbles (at right of dotted line) with Spanish cave-wall petroglyphs. After Obermaier (see Cleland p.64 for legend (?). (no drawing)
10. and 12. Maps of Greece. (drawings not identified)
11. Upper Paleolithic necklace from Barma Grande (Grimaldi) McCurdy I-211
13. The dancing Sorcerer, cave of Trois Frères, Ariège, France. Begouen and Breuil McCurdy I-254. (no drawing)
14. Bison with arrows represented on the body (wall painting in back the two lateral arrows in rear (Niaux, Ariège) after Breuil. Luquet p.69. (no drawing)
15. Stag hunt (in desk rear) Cueva de los Caballos, Barranco de Vallorca Castellon (Spain) after Obemaier and Wernet . Luquet p.72.
16. Wall painting from shelter of Cogul ((Lerider, Spain after Breuil and Cabre) Ceremonial dance (Magdalenian). Mcurdy I-240 and Luquet p.191.
17. The Sumerian Chiera. p.52
18. A Semite and his donkey - Tomb of Khnumhotep II (Beni Hassan). Finegan p.95
19. Pithecanthropus (of J.H. McGregor). Osborne p.81
20. Venuses of Hespugne, Wollendorf, Unter Wisternitz, and Burkett. Old Stone Age. p 164
21. Queen Nefretete: Gardiner frontispiece.
22. Pithecanthropus (from Outline of History).
23. Blue faience lotus cup, Gardner p.52 (no drawing)
24. Kamares vase from Knossos. Gardner p. 82
25. Candia fresco from Knossos, Young girl. Swindler. p.154

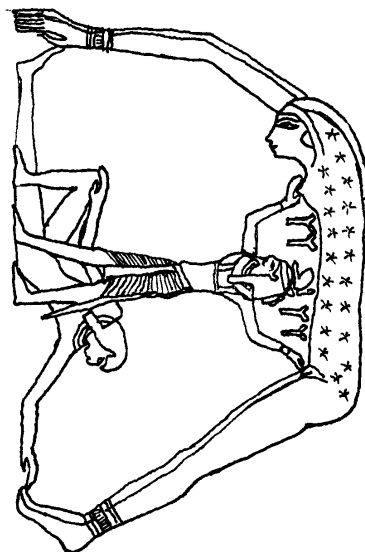
26. Badarian ivory figure. P&F III 56
27. Badarian pot. P&F III 58 (no drawing)
28. Wavy-handled early Egyptian pot. P and F III 64
29. Egyptian "decorated pots" with boat design. P& F III 77
30. Workmen drilling out stone vessels (Egypt). P& F III 88
31. Dhimini bowl (after Tsountas) P&F V, 55
32. Tulip vase of Badarian date from Egypt. P&F VI, 16
33. Typical beaker from Cierupozuelos, SC Spain. P&F VI 45
34. Bell-beaker from Anghelu Ruju, Sardinia. P&F VI, 45
35. Boats. 1&2 (above) boat designs on Predynastic pottery sailing ships on a Predynastic pot from Abados (4) boats in wall painting at Hierakonpolis-after Daryll Forde "Ancient Mariners " p.16 (5) Boat surmounted by an ensign. Moret & Dairy p. 122
36. Egyptian painting at Thebes. Ward I, 6
37. Enameled archivolt from Khorsbad. Winged genius, Palace of Sargon, Khorsabad. (Babylonian, Assyrian?). Ward I, 18
38. Fragment of decoration from Tiryns. Ward I, 48
39. Warrior in file, decoration of fragment of a crater from Mycenae. Ward I, 50
40. Egyptian painted ceiling decoration ornamental pattern.18th - 30th Dynasty. Ward I, 12
41. Egyptian khol-pot. Antimony cosmetic) Lester; Costume p. 36
42. Lady rouging herself (from the Turin papyris) Lester, Coatume. p 35
43. Head of an Amazon (after Hope). Lester p.43
44. Wounded lioness from Kuyndjic, Nineveh. F.V. Reber, p. 92
45. Pyramids of Gizeh F.V. Reber, p.1
46. Sculptural work. Egyptian wall painting F.V. Reber .p.43
47. Prisoners of different nationalities. Egyptian wall painting F.V. Reber, p.45
48. Lance maker. Egyptian wall painting. F.V.Reber, p. 44
49. A Shardana mercenary with long sword in the army of Ramesses II. Moret & Davy p.313
50. Painted vase of Susa I. Childe: Aayans p. 105

51. Egyptian relief from monuments - market scene. Betten: p. 29
52. Turin. Girl somersaulting (acrobat). Swindler #61
53. Akhenaton and his wife enthroned - Tell-el-Amarna relief. Swindler #71
54. Portion of a Bushman painting in a rock shelter near Orange Spring. Masked dance scene with antelope heads and handclapping. Helen Tonge Adam's "Primitive Art" frontispiece.
- 55 thru' 59 drawings are missing.
60. The soul as a human-headed falcon revisiting the body. (Soulbird Ba) 20th Dyn, Cairo. "Wonders of the Past 144"
61. Artist painting a wooden statue -Tomb of Rekhmara (Thuthmose III prefect) Wonders of the Past 218.
62. Bison at Altaniera - cave wall painting. (Wonders of the Past p.760)
63. Hittite Amazon at Boghaz Köy. (no drawing)



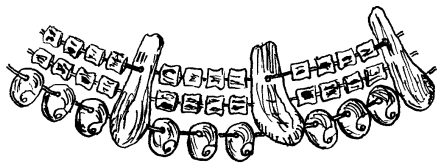


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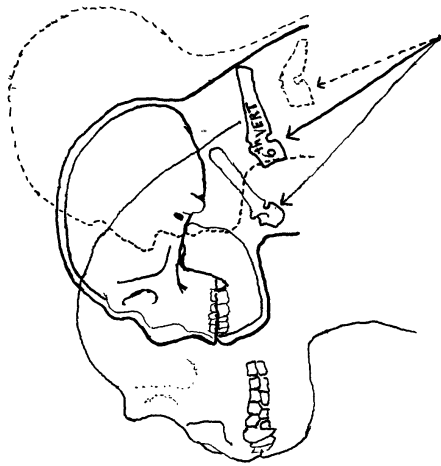


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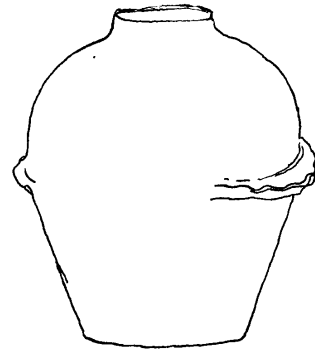
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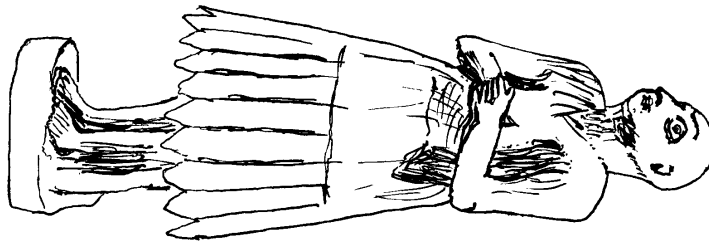
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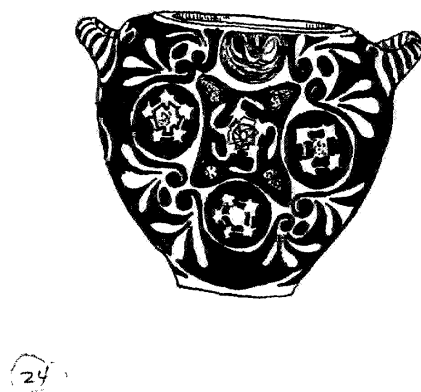
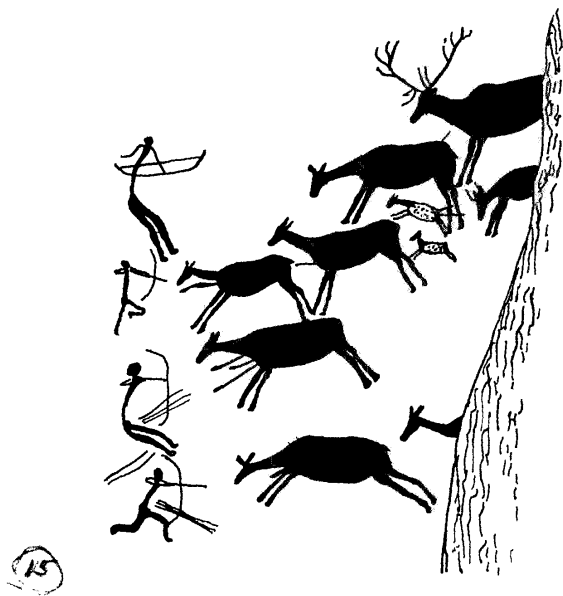


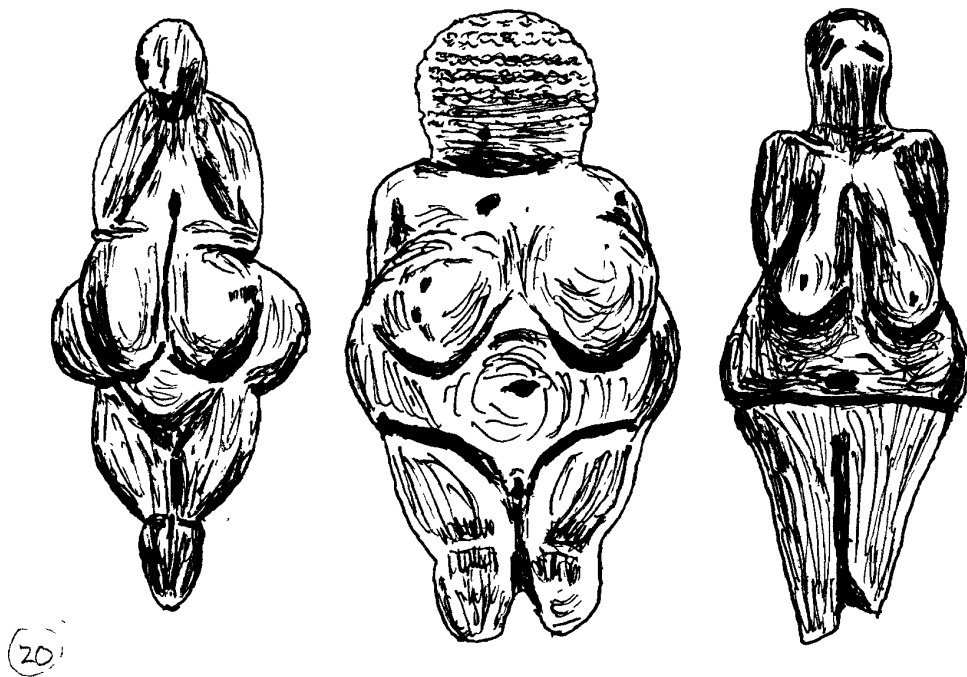
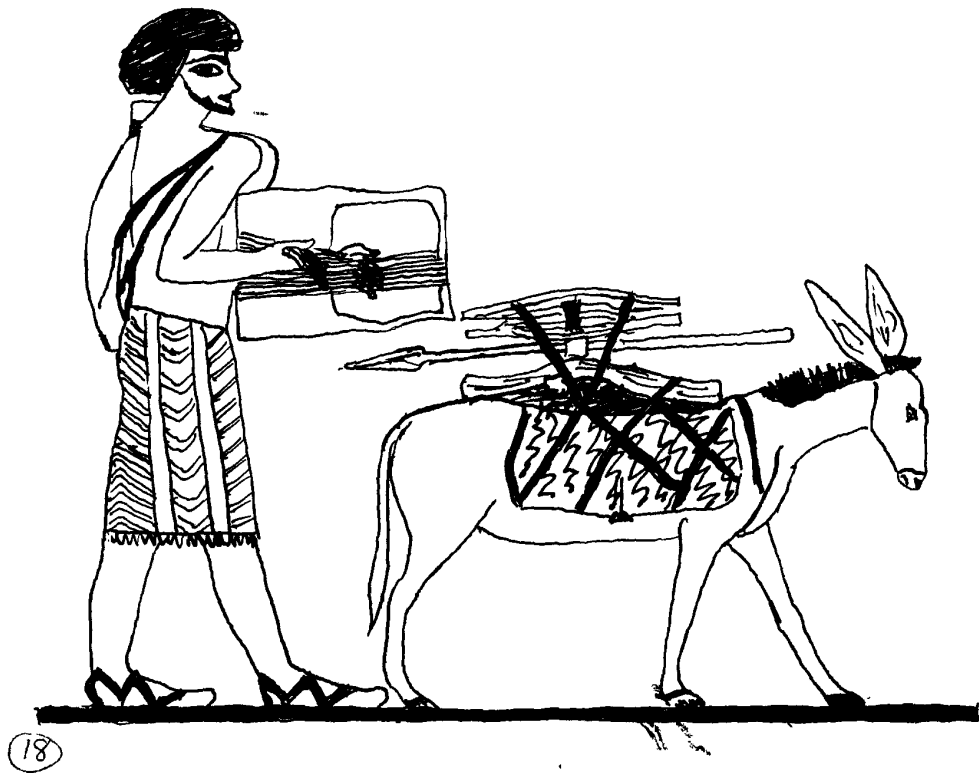
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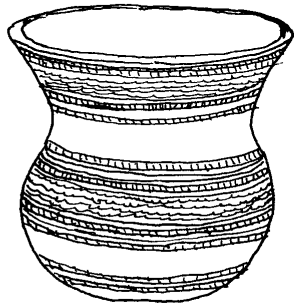




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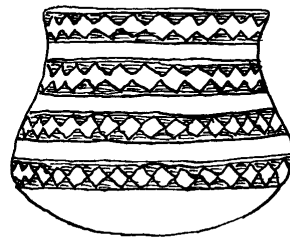
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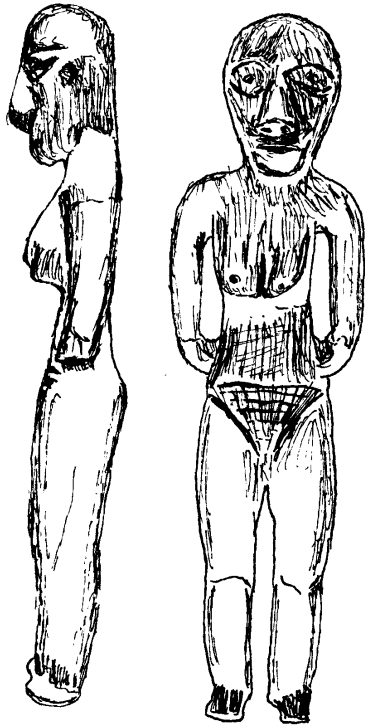


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17



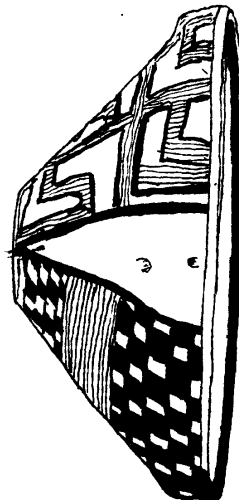


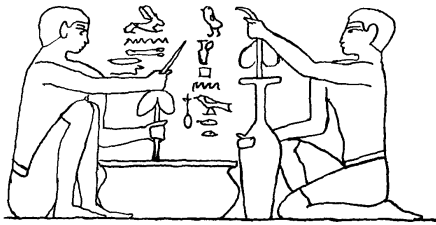
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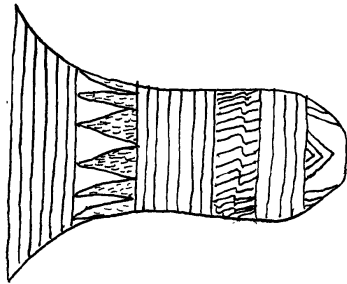
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13





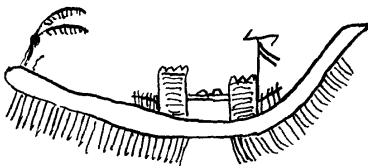
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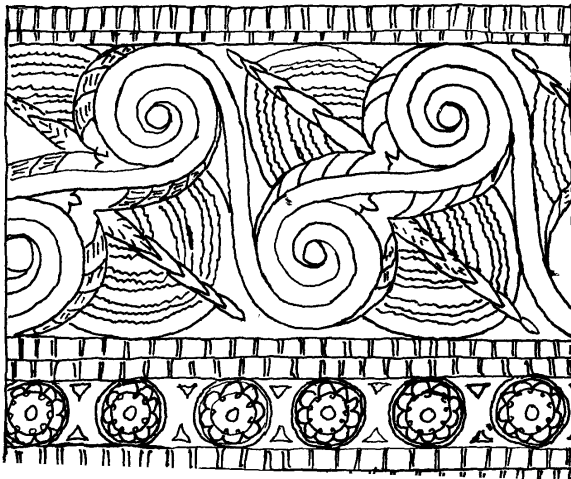
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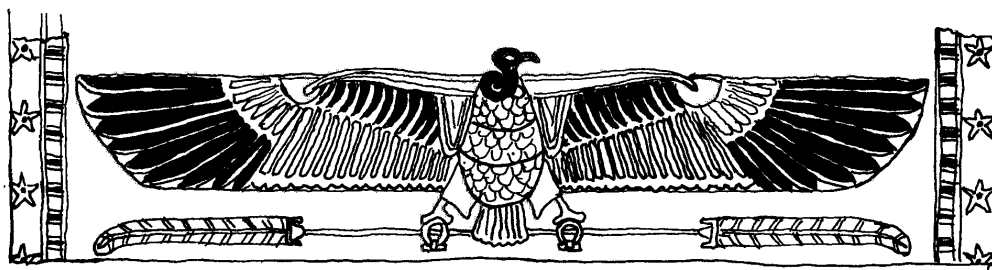


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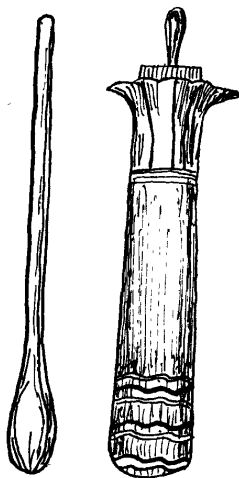


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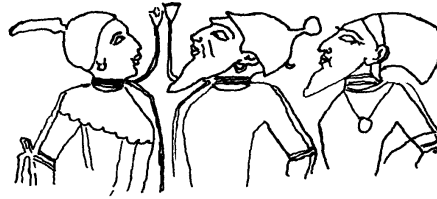


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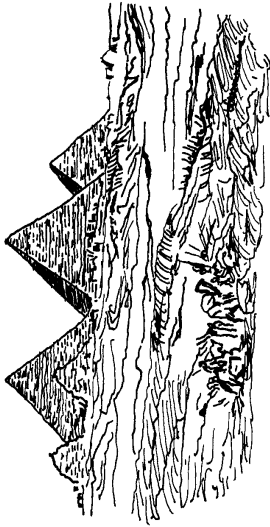




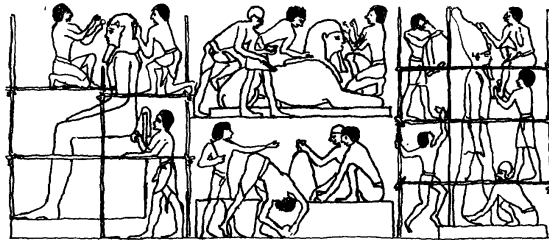
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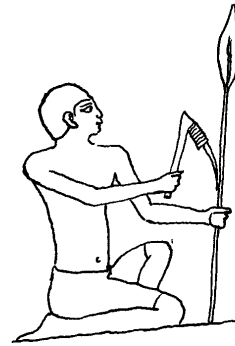
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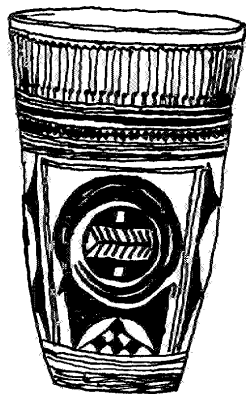
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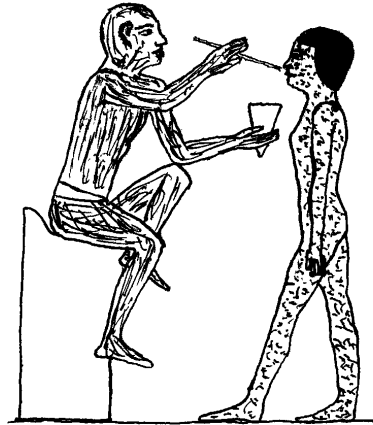
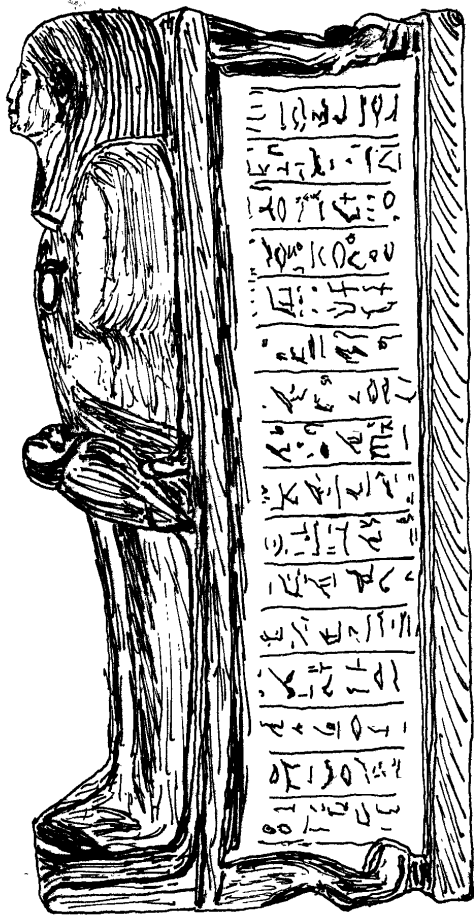


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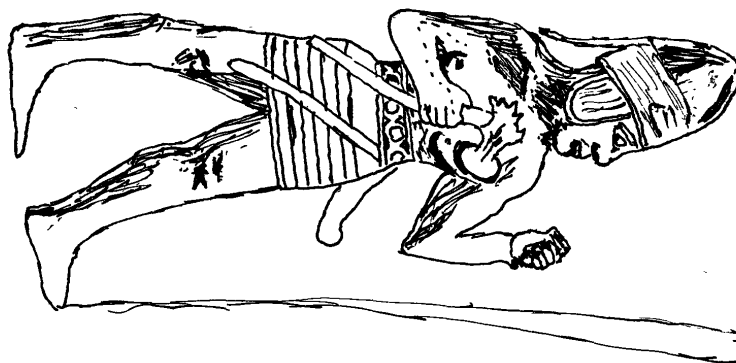


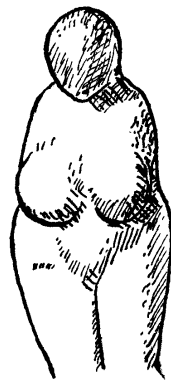


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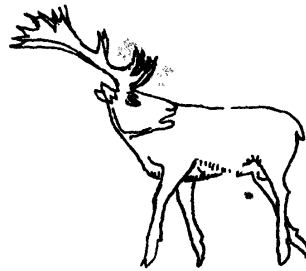
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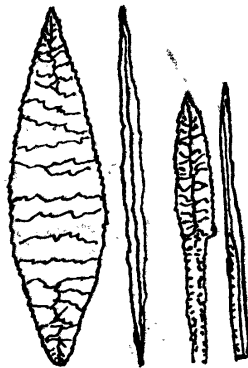
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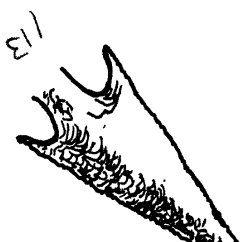
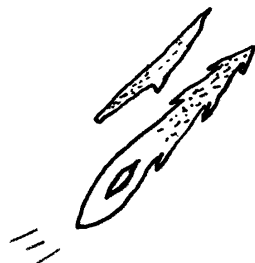
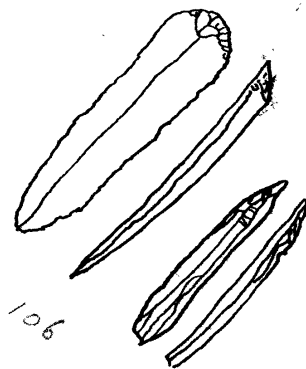
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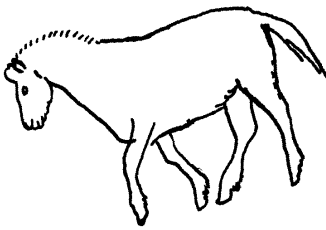
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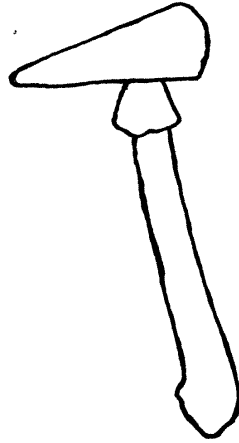
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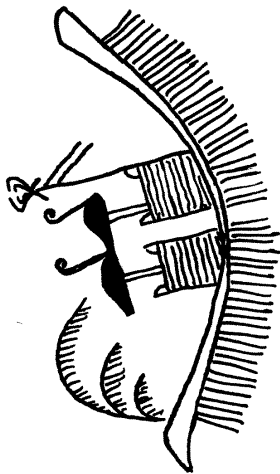
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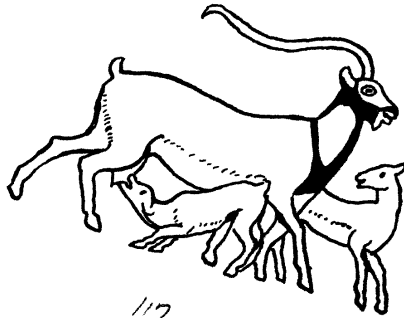
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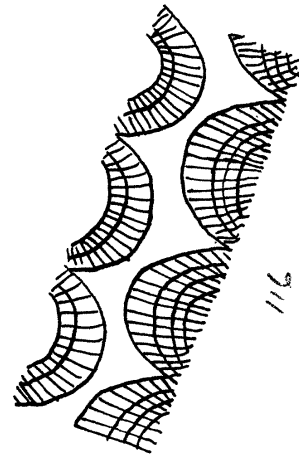
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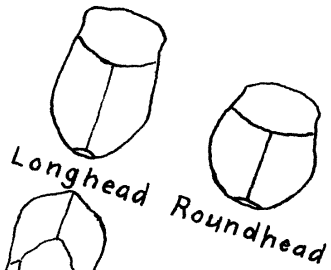
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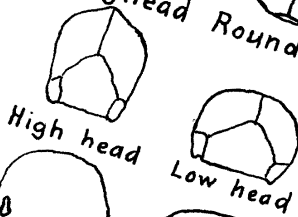
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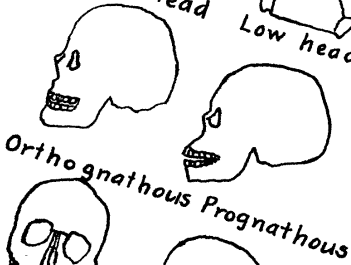
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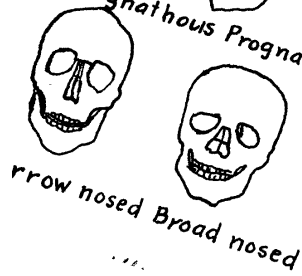
Longhead Roundhead



High head Low head



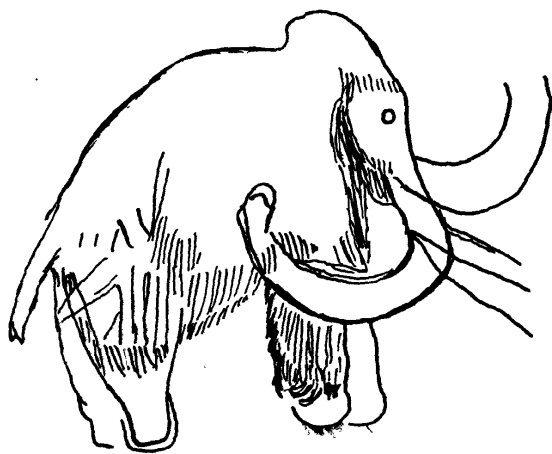
Orthognathous Prognathous



narrow nosed Broad nosed

142

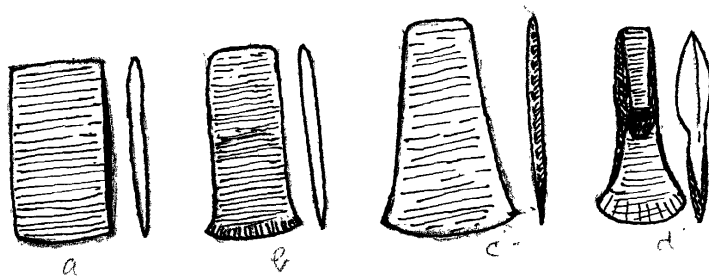




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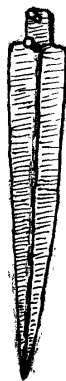
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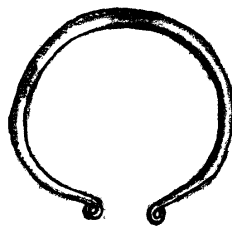
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154

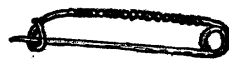


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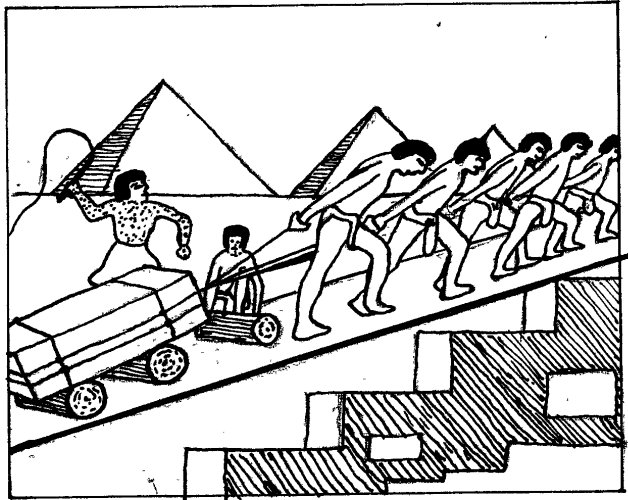


b

152



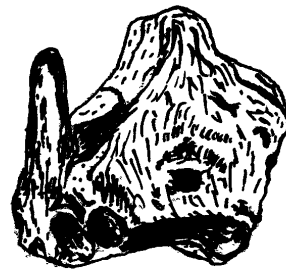
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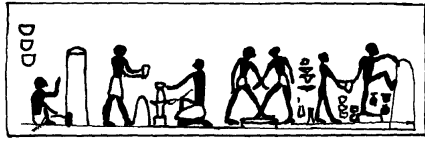
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156



157



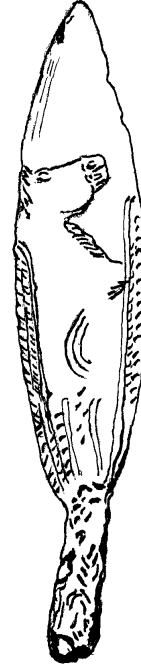
171



158



159



160



163

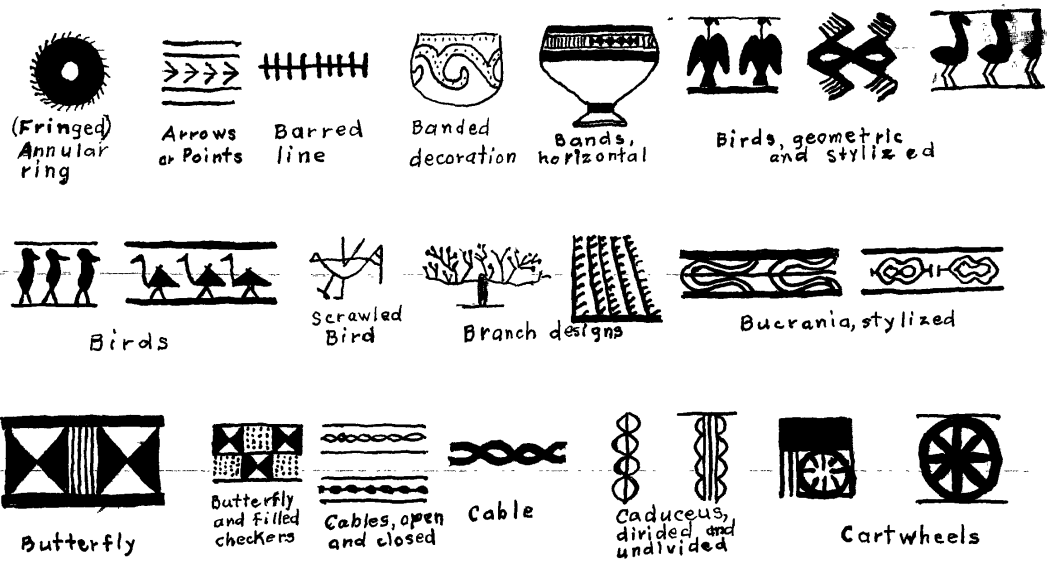


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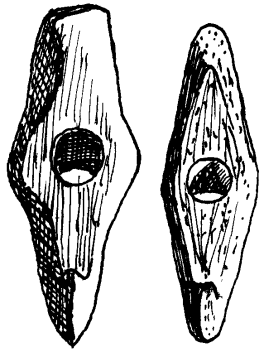
164



159



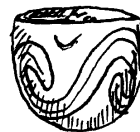
Design Motifs



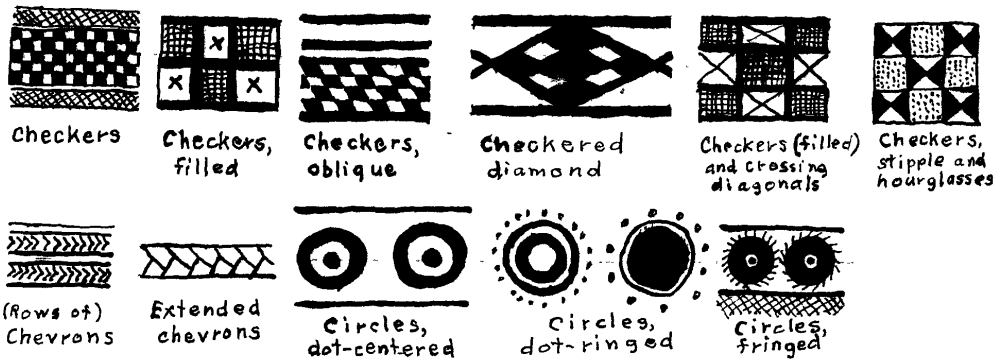
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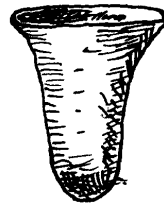
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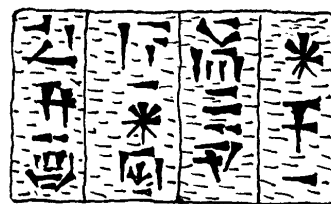
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162



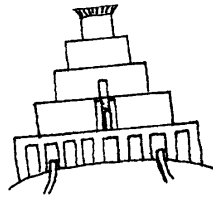
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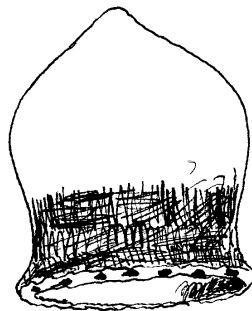
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162



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