In another respect genetics poses a problem for the doctrine of evolution of living things by natural selection. A gene has been found to consist of groups of molecules: respectively adenine, thymine, cytosine and guanine. These four serve as a kind of alphabet and the genetic message is formed by the *order* of the groups. Just as t-o-n is distinctly different from n-o-t, so a change in a gene, a mutation, is disruptive of the usual message. Darwin's fantasy of formation of more complex classes by selection of chance changes is the denial of sound genetics. The logical conclusion is that the types of living things, along with the genes, were planned and formed by the Creator.

No one has observed the formation of an improved type by selection; improved in organization and in the struggle for existence. Until this is observed, evolution by selection will continue in the limbo of wishful thinking.

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THE ANCIENTS AND THEIR USE OF METAL

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The author maintains that the division of history and prehistory into such divisions as the stone, bronze, and iron ages, with subdivisions, is at best an over-simplification, and at worst is quite erroneous. For different materials were in use in different places at the same time; and even at the same place different materials were in contemporaneous use for different purposes. Also, the facts that iron rusts away, while bronze and stone do not, and that the ancients, not being as wasteful as we, did not leave so much scrap about, mean that archaeological samples may give a distorted picture of the kinds of metal and other materials in use.

The re-interpretation of history, proposed here, fits very well into the Scriptural chronology.

In the course of the investigation, many curious facts are discovered about the ancient use of metals.

A. Introduction

In 1819 a Danish archaeologist, Christian Thomsen, proposed an idea so devastatingly logical that no respectable author of a book on ancient history, anthropology, or archaeology would dream of not using it. Man first passed through a Stone Age, then a Bronze Age, and finally an Iron Age. The Iron Age closed about 333 B. C. at the time of Alexander the Great, after which the world entered into more modern times.

Each of the three ages was divided up rather neatly into Early, Middle, and Late periods. With a bit of a flair for sophistication, the Old Stone Age was called the Paleolithic (Old Stone), the Middle Stone Age became the Mesolithic, and the New Stone Age became the Neolithic. Some critics attempted to flaw the beautiful symmetry of the pattern by inserting a Copper Age or Chalcolithic Age between the Stone Age and the Bronze Age. Others inserted an Eolithic Age before the Paleolithic Age.

The original nine periods proved to be inadequate in many ways, and so a marvelous assortment of Roman numerals, capital and small letters of the alphabet, and Arabic numerals was used to subdivide the periods further and further. This method has infinite possibilities for expansion. No speck of dust, no pottery sherd, no stone flake or chip need be unassigned. For the archaeologist there is a place for everything in the neat scheme, and everything is put into its proper place.

The whole scheme is a triumph for man's penchant for classifying. Only one little ripple mars the placid surface of the plan. It does not work.

Based on an elaborate set of assumptions and many decades of the most painstaking archaeological study, the Bronze Age in Palestine is said to have run from 3150 B. C. to 1200 B. C. The Early Bronze Age (EB) is given as 3150-2150 B. C. The Middle Bronze Age (MB) lasted from 2150-1550 B. C., and the Late Bronze Age (LB) was from 1550-1200 B. C.

Similarly the Iron Age was divided into Early (1200-1000 B. C.), Middle (1000-587 B. C.), and Late (587-333 B. C.). In other parts of the world and with different authorities dates for the stone and metal ages differ widely.

Sometimes the dates given for the various ages are said to be approximate, especially for the stone ages. In much of the literature, however, this qualification is not mentioned. To the uninitiated the impression is unwittingly given that at a certain point in time, the bugles sounded around the world with the message: As of 0600 hours tomorrow morning the Middle Bronze Age will begin.

In this paper I shall look more closely at the origin of the concept of the stone and metal ages, their validity, and at a number of curious things reported around the world having to do in some way with metals.

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B. Origins

Despite the massive authority of the 15th Edition of the *Britannica* (1974) that Christian Thomsen in 1819 coined the terms Stone Age, Bronze Age, and Iron Age, these terms had been in use for a much longer time. Certainly Thomsen deserves the credit for popularizing the concept by means of exhibits he prepared for the National Museum in Copenhagen in 1836.[1]

Chinese historians suggested Stone, Bronze, and Iron ages already in 52 A. D. In 1758 a French magistrate suggested the same ages but inserted a Copper Age. In 1813 a Dutch historian argued for stone, bronze, and iron periods in Scandinavian prehistory.[2]

Perhaps some insight can be gained into the persistence of the age system of the past two centuries despite various problems by pondering the statement of a brilliant archaeologist, Franz Boas, whose life work was dedicated to establishing the late arrival of man into the New World. Boas stated that it would be a pity to have new evidence come to light which would overthrow all the admirable scientific work of the past.[3] This kind of desperate rearguard action works wonders in keeping at least some of archaeology in a type of little stone age.

As Fitting says, "Since each succeeding 'generation' of archaeologists could see the 'theoretical' mistakes of their predecessors but not of themselves, they could state with certainty that 'every day and every way we are getting better and better'."[4]

The great missing link in the assumption of the stone and metal ages is the simple fact that all so-called primitive peoples are extremely conservative and simply do not experiment to develop new and better ways.[5] The observations of the anthropologists are completely opposite to what archaeologists assume about human development. Those who changed their ways were taught.

C. The Stone Ages

Mortillet, a Frence scholar, followed up the classification system of Christian Thomsen with a refinement of the stone ages. Based on studies of what was assumed about the Ice Ages and of artifacts found in France, he arranged a system of time periods from oldest to youngest: Chellean, Acheulean, Mousterian, Aurignacian, Solutrean, and Magdalenian. Later the term Abbevillian replaced Chellean because the latter turned out to be identical with Acheulean.

The system was supposed to fit the whole world, but it was based on limited studies in a small part of Europe. Although half-hearted attempts are sometimes made to apply the system elsewhere in the world, the plan, as Archaeologist Macgowan says, is no more than a fifty-year straitjacket patched here and there. After fifty years of study by geologists of the world, who have devoted enormous energy to the problem, there is still no certainty about how many glacial periods there were. There was at least one such period,* but beyond this the vision becomes blurred despite all the elaborate statements in the literature to the contrary. The Mortillet system is tied closely to an assumption of four glacial periods with long intervals between each such period, but scholars come up with wildly different guesses on the length of these ages.

After the Mortillet system came into vogue, rudely chipped artifacts were found in formations supposedly much older than man. The classic phrase, so often repeated, was that man is much older than had formerly been believed. The stones were called Dawn Stones and the Eolithic Age was added to the plan.[6]

Cole notes that the early distinction among scholars regarding stone core and flake industries turned out to be worthless, since both techniques were used together in nearly all places.[7]

Of many other problems which soon followed with the whole scheme, one came out of Africa. Similar stone tools to those of Europe were found, but it was impossible to date them in the same way. They obviously came from a much different time. Magowan concludes that Paleolithic, Neolithic, Bronze Age, and the like, mean less than nothing as a dating mechanism for more than a single locality. Even the term postglacial means different things in two such neighboring countries as Sweden and Germany.[8] Clearly something is radically wrong with the whole scheme. Unfortunately for the scientist, there is no palatable alternative.

Macgowan chafes at the watertight compartments of the stone ages because there are so many discrepancies. Neolithic man grew cereal grains and wove textiles, but at an earlier age man knew how to insert tiny razor-sharp flints into bone or wood for saws or sickles and developed the pottery craft. Since this seemed too much for Palaeolithic Man, scholars inserted a Mesolithic Age.

Attempts to define the Mesolithic Age are rather embarrassing, however, because again there are too many contradictions. Like the Bronze Age, the Neolithic Age suffers from a drastic shrinkage at present in its assumed length. It is almost insulting to list the great sophisticated developments in the brief time span of the Neolithic Age when it presumably took hundreds of thousands of years in the Palaeolithic Age for very slight changes to occur in chipping stones. The Neolithic is credited with pottery, weaving, cereal grains, and domesticated animals.

Then Leakey muddied everything by finding sherds and marks of basketry in Paleolithic strata in Africa. No assertion about the Stone Age is safe. Gordon Childe concludes that there was no such thing as a Neolithic civilization, but for lack of any alternative, the text books continue to carry the whole scheme with no hint of any problem.[9]

Having no better scheme to follow, Will Durant slogs through all the stone ages from Pre-Chellean (Eolithic) down through the Magdelenian, showing all the developments which distinguish the one from the other. At one age man chipped stones this way, and 50,000 years later he chipped them that way. Only the date for the first age is qualified—"about" 125,000 B. C.

*Some, though, have doubted whether the motion of great sheets of ice over the ground, or the very formation of ice sheets in places which are now temperate or even tropical, is either possible physically or necessary to explain the evidence. See, e.g., Cox, Douglas E., 1976. Problems in the glacial theory, *Creation Research Society Quarterly* 13(1):25-34. (Editor)

More daring than most, Durant is willing to see remains of the Chellean Culture, 100,000 B. C., in Europe, Greenland, the United States, Canada, Mexico, Africa, the Near East, India, and China. Still more daring, he finds the Mousterian Culture, which features Neanderthal Man at 40,000 B. C., on all continents. Durant allows for pottery in the Magdelenian Culture, 16,000 B. C., but Glueck puts the Pottery stage at about 5000 B. C.[10]

Another way of dividing up the Stone Age was that used by Glueck and others in the Middle East. The Palaeolithic Age was divided into Lower (before 70,000 B. C.), characterized by pebble, bifacial, and flaked tools; Middle (before 35,000 B. C.), associated with the Mousterian Age in Europe; and Upper (before 10,000 B. C.).

The Mesolithic Age, also called the Natufian Age (before 7,000 B. C.), was divided into Lower and Upper. This age saw the "sudden" development of all cereal grains and the domestication of animals—a spectacular scientific achievement. As noted above, others credit these achievements to the Neolithic.

The Neolithic Age followed, characterized by the development of villages and pottery. The Pre-pottery stage was about 7,000-5,000 B. C., and was followed by the Pottery stage, about 5,000-4,000 B. C.

Next followed the Chalcolithic Age, about 4,000-3,300 B. C., in which both stone and copper were used. Jericho is given as the classic example of both Neolithic stages, the Chalcolithic Age, and of all the ages which followed.[11]

The fun begins when a Neolithic arrow point, as reported by Dawson, is found in a skeleton from the Palaeolithic Age. Evidently the arrow flew over a time gap of many, many thousands of years.[12]

D. Carbon 14 Dating

In the midst of the incredible confusion in dating the past, Libby came to the rescue with C14 dating which at last placed dating on a scientific basis. Creationists can indeed accept some value to C14 dating even though there are problems. Archaeologist Griffin, a scholar's scholar, neatly sums up the problems by saying that C14 runs on the same specimen that have given results far outside allowable statistical error tend to shake the faith of the social scientist or humanist in the magic of atomic science.

By way of illustration he notes three cultures in New York, all dated at 2500 B. C., which show no cultural contacts with each other. In another case, material from a tomb pit in a mound gave a C14 date of 130 B. C. The same specimen, given a different acid treatment by the same laboratory, gave the date of 1227 A. D. Two other samples were then tested resulting in dates of 50 B. C. and 1 A. D.

Elsewhere freshwater mussel shell from a site yielded a date of 350 B. C. but this is much too early for that culture according to other evidence. Oak wood from a site gave a C14 date of 480 A. D. The date is too late by 300-400 years, so another run was planned. Charcoal from a Hopewell site yielded a date of 1050 A. D., but this is impossible for that culture. Identical materials along with reliable evidence of being contemporary in Illinois and in the Mississippi Valley yielded dates differing by as much as 1300 years.[13] In some situations C14 may be useful. There is no reason to be over-awed by it.

Mellaart is only typical about the state of the art of dating when he comments that the Stone, Bronze, and Iron ages, devised in the 19th century, are now in many respects obsolete, but they are still in common use and have been adapted by Near Eastern scholars. He asserts that C14 gives a more nearly absolute chronological framework for prehistory all over the world, thus supplanting earlier schemes based largely upon guesswork.[14] All is well after all.

In her study of East Africa, Cole notes that deposits which cannot be earlier than 3000 B. C. were dated by the C14 method at 5758 B. C. If the C14 date fits, it is used. If it does not, "these unexpectedly early dates suggest that the deposit may have been contaminated."[15]

Elsewhere in Africa shells gave C14 dates of 21,000 years, which were described as "impossibly old." Living shells from Lake Edward in the Congo show C14 ages of 3000 years.[16] Such findings do not help to spread confidence about the C14 method.

An attempt to re-calibrate C14 dates from analysis of cores of very old bristle cone pine wood has upset, for the time being, the favored theory of a slow diffusion from the Near East to Europe in ancient times. As a result Stone Age tombs in Brittany are now dated 1000 years older than the oldest similar ones in the Eastern Mediterranean, and 1500 years older than the first pyramids of Egypt.[17] One can safely predict that this patchwork on C14 will soon be supplanted by still other attempts.

E. Bronze and Iron

One of the initial suprises in reading the literature about the Bronze Age and the Iron Age is that metals are very incidental to the whole elaborate scheme. The many subdivisions are based almost entirely on pottery. Much of the confusion about time rests on two factors: calibration of Middle East dates with the chronology of Egypt which is disastrously in error, and the long life attributed to the mud brick. Other factors, such as fire and destructive invasions, also played important roles in the many levels found in the mounds or tells of ancient cities and towns.

In the analysis of ancient tells, often 50 to 100 years are allowed per mud level. This conclusion may be plausible in a desert region where rains are all but unknown. The key to the problem of course is the duration of mud brick in rainfall. Kenyon noted that mud brick disintegrates in the rain, and in such a climatic condition the growth of the tell would be very rapid.

There are two reasons why early Jericho can be measured in decades rather than in many millennia. Garstang found that the early floors of the city were built in part on the channel of the great spring there and the water seeped upward. This resulted in frequent rebuilding. Further, there is good evidence that early Jericho was even wetter than the Dead Sea area in the time of Lot when it was described as watered like the garden of the Lord. The conventional dating of ancient

Jericho is therefore based on assumptions which simply do not hold water, to coin a phrase.[18]

No one who accepts the Bronze Age—Iron Age scheme has yet explained how bronze could have preceded iron. Tin is not usually found in the bronze civilization centers, which means that man conquered the sea before the Bronze Age got underway. Further, the metallurgy of iron is simpler than bronze, and iron ore is more widely distributed than copper and especially the tin needed for bronze.

Macgowan has harsh words for the so-called Bronze Age, which he calls a misnomer and a phantasm—a minor phase in the use of copper. Much of the Bronze Age is limited to the area of southern Europe, Asia Minor, and (much later) the Incas in Peru. He notes that most of the world used iron before bronze.[19] With so much of the world poorly investigated, e.g., the vast stretches of Siberia, there is still much to be learned about early man and his use of metals.

Besides the obvious critical factor, often overlooked, that iron rusts rapidly and bronze does not, another significant fact must be considered. This is the ancient tabu about iron. Iron was deliberately omitted in the funeral chambers. This practice is known to have existed in Palestine, and a similar tabu was observed in Greece and Rome. In Egypt iron was called the "bones of Seth" and played a significant role in religious observances.[20] The Maya were very familiar with metals, but they shunned any use of metal in their buildings over a period of many centuries.[21]

The conclusion is obvious. One cannot fix a chronological period by the percent of bronze and iron objects found in tombs.

Perry massed convincing evidence that the earliest food-producing civilizations were world-wide in their impact. He identifies a long list of their sophisticated technology and culture, including metal-working with gold, copper, and iron. Precious stones, including the diamond, were sought and used. Perry leaves it to others to explain why the earliest civilizations were the most sophisticated in the ancient world, and why civilizations which followed showed many evidences of degeneration.[22]

The obsession of the ancients with metals is shown by the names of key metal producing areas. Nubia was the Egyptian word for gold. Hatus, the Hittite capital, means Silver City. Cyprus is obviously the same as the present word, copper. Tarshish means a smelter, and the word Barzel or Brazil, which means iron, spread into the Atlantic.[23]

Metals also became identified with heavenly bodies. The sun was gold, the moon was silver, Jupiter was electrum (a mixture of gold and silver), Saturn was lead, and Venus was copper. At a later time quicksilver or mercury was associated with the planet Mercury.[24]

It is curious indeed that Moses, unaware how modern scholars would separate copper, bronze, and iron ages, spoke of copper, bronze and iron in one breath in Genesis 4:22. The word for brass may be translated from the Hebrew as either copper or bronze.

In the Pre-Flood world Tubalcain was an instructor of every artificer in brass and iron (Gen. 4:22). According to Nelson, the Pentateuch contains thirty references to bronze (or brass or copper) and two references to iron. Although attempts are made to date Moses as late as possible, he lived about 1500 B. C. and spoke familiarly of iron centuries before the assumed beginning of the Iron Age.[25]

Mining, metallurgy, and smelting were highly developed long before the universal flood, and Noah and his sons passed on this technology after the Flood. Some of Noah's descendants learned the technology before they broke away or were driven away from the first tribe of them all. The knowledge of metals or lack of it and the characteristics of the environment for a given group of people determined whether or not a metal age followed for them. Thus there were metal ages from the very beginning while other peoples live in a stone age today in remote parts of the world.

The promised land was described long before the Iron Age as a land whose stones are iron and out of hills of which the people could dig copper in Deut. 8:9. Cain, after the first teacher of metallurgy, Tubal-Cain, became the Hebrew word for smith or worker in metals. Thus the Kenites were a tribe of smiths.[26]

F. Places and Metals

Africa In South Africa, Livingstone found survivals of ancient metallurgical processes. Evidently the smith reduced iron from hematite ore, and then forged tools from the material. Livingstone observed that the people had never known bronze, nor had they gone through a Stone Age.

One scholar observed that smelting furnaces used by natives in India and Africa were very similar. It is curious that the natives used yellow hematite to produce iron, but this powdery ore bears no resemblance to iron. Malachite, a semi-precious green stone, gives no hint that it is rich in copper, yet natives smelted this ore extensively in the heart of Africa from ancient times.[27]

The Victoria Cavern is associated with bones of extinct lion, bison, hyena, wooly rhinoceros, and mammoth. In this deposit were found perfect bone needles, bone implements, some awls, a gouge, an oval ironstone implement, and a bone, bearing the outline of a horse's head, which appeared to have been sawed. Strangely, the horse is hog-maned, which means that mane had been clipped. The scholar investigating the site dared to suggest that metal shears had probably been used.[28]

Akkadia Language study sheds some light on the history of metals. Akkadian was an obsolete language by 1500 B. C., yet texts in this language use words for tin, copper, lead, gold, silver, iron, and bronze. One hymn speaks of bronze as a mixture of copper and tin.[29] The big surprise is iron. The Iron Age had not yet begun.

Arabia Metal mining in the Arabian Peninsula was abandoned suddenly at least twice, once about 3000 years ago, and again about 1000 years ago, but this is only the more recent history of mining for metals in the Near East. The astonishing scope of ancient mining is illustrated in Arabia by the discovery of 400,000 tons of slag at just one of the mines.[30]

During the height of the Bronze Age, two "lost" civilizations were involved in supplying Mesopotamia with

huge stores of copper. Makan, the Copper Kingdom, lay to the south and east of Bahrain in Arabia. Bahrain was part of the ancient kingdom of Dilmun. The sands of Arabia still cover most of the story of Makan and Dilmun, but Bibby has made a very interesting beginning. Some day in Oman the copper mines and old cities of Makan may be found. Dilmun supplied the great seaports which served the merchants of Ur and of Makan.[31]

Atlantis There are many wild tales and conjectures about Atlantis. Plato described a Bronze Age civilization, but he dated it incredibly early at 9,000 years before the birth of Solon. Many scholars believe that Plato is in error by one zero in his reckoning. In support of this opinion is the fact that the old Linear B Greek symbols for 100, 1000, and 10,000 are very similar and easily confused.

Despite problems with Plato's description there is a growing belief among scholars that Atlantis is to be identified with the island of Thera and with Crete, which ended in disaster about 900 years before Solon.[32] If this is the correct solution, Atlantis thrived well within the so-called Bronze Age.

Baghdad A German engineer, Wilhelm König, was assigned to a construction project in Baghdad. In a ruined building which was dated to about 300 A. D., König found an old vase which had a copper-coated inner cylinder. A solid piece of iron was placed into a thick plug of asphalt. With a solution, for example, of fruit juice, the object would have been a working electric battery.[33] Electroplated articles were excavated in the same general area. Saurat found evidence of a similar technology in ancient Egypt.[34]

In both the Old and the New Worlds, there is evidence that the technique of electroplating was known.[35]

Catal Huyuk Although only a tiny portion of Catal Huyuk has been excavated thus far in southern Turkey, this highly sophisticated city goes back in time as far as any ancient site. The culture is described as remarkably advanced already in the seventh millennium B. C.; the technology included metallurgy.

In addition these people used a full range of pigments derived from metal ores: red, brown, and yellow ochres; copper ores, including bright blue azurite, and green malachite; a deep red mercury oxide; hematite, mauve and purple manganese; and grey galena ore.[36] The sources for many of their raw materials are unknown, but one must assume deep sea navigation long before it has been thought possible.

Crete It is difficult to fit an early Minoan practice into the stone and metal age pattern. Early Minoan pottery vessels were clearly copies of even earlier metal prototypes. Little clay knobs, for example, were placed for rivets on the pottery.[37]

Egypt The early use of gemstones by the oldest civilizations is interesting. Petrie has shown that the use of hollow metallic drills, armed with gems, was common in ancient Egypt for cutting and carving in the hardest of stones. The diamond drill was used among Babylonians at a very early period. It is a curious fact that the Hebrew word for diamond is expressed by two signs which mean a boring stone.[38]

The main purpose of Egyptian sea expeditions was to secure minerals, and it seemed that no place was too far to secure these treasures. In a similar vein, Gudea, the Sumerian ruler of Lagash about 2000 B. C., tells about getting minerals from different parts of the world.[39]

There are discoveries about the ancient use of metals which jar the reader. Metal was used to make lightning rods in Egypt in the fourth century B. C., yet credit is given to Benjamin Franklin for this invention in 1752.[40]

Aldred marvels at the sophistication of the Archaic Period of Egypt, dynasties I and II. He described a remarkable carved dish which he dates at 3100 B. C. which imitates a form originally made in metal. Eyeholes were found in needles and teeth of copper sawblades were punched out by an unknown harder metal, but bronze was unknown at that early time. The copper saws were used with some kind of abrasive. Exquisite workmanship with gold, silver, and precious jewels was common but few pieces have escaped from thieves over the centuries.[41]

Elath In the coming decades archaeological surprises from the Arabian peninsula may still be anticipated. Meanwhile, Ezion-geber or Elath is the largest copper smelting location in the ancient Near East. Large deposits of copper sulphate have been found in caves and galleries which date back to workings by man at 3000 B. C. Solomon, around 960 B. C., only revived a very ancient copper industry at this location.[42]

India The dolmen builders of the Deccan in India were mining for gold, copper, iron, and diamonds. At Bellary and Dharwar, where the dolmens are thickest, the land is riddled with old workings for these metals. Everywhere are cup-like hollows where gold quartz was pounded with stone pestles. Small crucibles were also found for giving assay for gold. At Hutti, gold mines show the extraordinary skill of the ancients. A long series of workings have been exposed down to an unparalleled depth of 640 feet.

Ancient copper mining in Hyderabad State is also associated with dolmen remains. In the same region are rich iron ores. Iron was known from the earliest times, and the techniques are practiced in the area to this day. Perry notes the striking fact that natives never seem to discover a new idea for themselves nor do they modify anything in the slightest. As noted before, strangers taught them in an ancient time.

The parallels between India and England in dolmen building and mining techniques are striking. Something happened that stopped mining activities of the ancients and prevented them from extending their operations. A great catastrophe, whose extent is not known, brought this chapter of ancient history to an abrupt close.[43]

Iran According to Gadd there is no certain evidence in Iran of any people so primitive as to have no metal. At its earliest, Sumer was using metals, and old Susa in Elam and the ancient Indus Valley cultures had bronze hatchets, mirrors, and needles. Copper casting and working with gold and silver were common in very early sites along the Iranian Highlands and up into Russian Turkestan.[44]

Soviet Union A century ago scholars observed that ancient people worked mines of metal near Krassogarsk

on the river Yenisei, 56° North. Wedges, mattocks, mallets, and hammers were found in place. Some of the hammers were of copper. In this region arrow points of copper and gold ornaments were found. Fine animal figurines were made of molten copper. The same kinds of megalithic structures, such as tumuli, altars, dolmens, and menhirs were found here as those in England and Brittany. One enormous stone still standing measured 76 feet above ground, and was 24 feet on one side by 19 feet on the other.[45]

The idea of sudden climatic change in historic times must be accepted. In 1951 Okladnikiv published the results of his research in northern Siberia. Between 3000 and 2000 B. C. Neolithic races spread to the very coast of the Arctic Ocean in the north and the Kolyma river region in eastern Siberia. In a region which once teemed with the mammoth and other now extinct animals, man moved in to satisfy his overwhelming urge for metals. It would be unthinkable for the same cultural pattern to exist in that climate today.[46]

A site on the edge of the Gobi desert was a center of metallurgy at a very ancient time. Both copper and iron were found there.[47]

Gritsai and Yatsko reported a find of bones of ostriches, camels, and hyenas in caves at Odessa in the Soviet Union in 1960. Among the artifacts were skillfully cut bones containing perfect circular holes and regular gooves. The finders suggest that metal tools were used in this process.[48]

Charroux reports on a discovery in 1968 by Dr. Koriun Meguerchian at Medzamor, Soviet Armenia. It was termed the oldest metallurgical factory in the world and was dated at approximately 3000 B. C. Objects made of all the common metals were found at the site. Rocks were hollowed where ore was crushed and treated. Many furnaces were excavated, and at least some of the ore were imported.

Among the metals and alloys found were copper, bronze, lead, zinc, iron, gold, tin, arsenic, antimony, manganese, and steel. Slender steel tweezers, still shiny, were found. Scientists from many countries have verified the find.[49] Assuming that this account is true, the Bronze Age—Iron Age sequence suffers a severe blow.

Sumer Then there is the mystery of ancient Sumer. From the very beginning, Sumer produced highly sophisticated lapidary, copper, gold, and silver work. Yet the metals and stones basic to these arts are not found there. Some inkling can be gained of ancient world travel from the discovery of Sumerian clay tablets in Romanian Transylvania dated about 2700 B. C. This area is noted for a variety of minerals.[50]

In Sumer, the artisans knew that 9-10 percent of tin had to be added to molten copper to create the best bronze. Both Sumer and Egypt mastered all the basic metallurgical techniques at a very early date: filigree, mold casting and hollow casting, intaglio, wire-drawing, beading, granulation of metals, welding, inlaying of one metal with another, sheets hammered so thin as to be almost translucent, repoussee, gilding on wood, and even electroplating.[51]

Troy Scholars were astonished when Schliemann found Bronze Age artifacts at the site of Troy which were below Stone Age levels.[52] Despite the fact that dating is very uncertain on ancient sites, Troy illustrates the fact that Stone Age levels may be found later in time than metal ages.

Ugarit At Ugarit or Ras Shamra, an old sewer, nine feet underground, was uncovered. Completely modern looking lead drains were found in streets which dated back to about 2000 B. C. Shaped like modern manhole covers, they contained round drain holes.[53]

Old World-New World Along with much other evidence, Honore noted the influence of the Far East in America in the manner of gold working, the use of copper, core casting, granulation of metal, alloys, use of bronze, and metal dyeing. In a similar way, he supports a Mediterranean influence in America, for example, in the way copper rivets were used.[54] The lost wax method of casting, long known in the Old World, was expertly used in the New World.[55]

Constance Irwin marvels that the metal techniques of the Old and New Worlds were alike to the point where independent invention can safely be ruled out. The similarity of technique extends to such elaborate processes as casting an object from an alloy of gold and copper, then treating the surface with acid to dissolve the copper, leaving a pure gold surface. In both worlds the same methods were used in hammering, embossing, annealing, welding, soldering, strap joining, incising, champleve, cutout designs, and making objects of two metals.[56]

Magowan and others have noted that bronze and copper weapons and other tools show great similarity in South America to those of the Old World. Further, metal techniques were very similar in the New and the Old worlds. Particularly with regard to the invention or discovery of bronze, it is difficult to conceive of independent invention in the two worlds.[57] It is much easier to argue for transoceanic contacts in the distant past.

Appalachians The Appalachians contained much gold, and ancient man worked this region. There is evidence that the ancients were acquainted with gold and silver mines in Upper Carolina. Copper mines existed in Tennessee and many relics of old mining efforts have been found there. It is curious that gold has not been found in the mounds of America, according to Perry. He concludes that perhaps gold mining in the Appalachians dates back to a much earlier time.[58]

Arizona Ceram is astonished about little cast bells found in southwestern United States, attributed to the Hohokam people. For this process a melting temperature of 2066°F. is needed. How this artistic achievement was made, no one can say.[59] Macgowan comments on the similarity of the bronze and copper bells found in China and in Arizona.[60]

Traces of prehistoric mining have been found in much of Arizona where gold, silver, and copper were sought. Ancient oven furnaces have been noted along the Salt River where copper was smelted in the past.[61]

California There is the curious story that a small piece of metal, shaped like a bucket handle, was found when a piece of gold-bearing quartz was broken. A similar object was reported in a cave at Kingoodie, England. The metal was found within a block of stone

formed during the Pleistocene Age, dated at about 12,000 years or older.[62]

Connecticut A copper coin, found in Connecticut in 1843, was described as having similar symbols to those carved on a rock at Grave Creek, West Virginia.[63]

Virginia Reports from Virginia give one pause. On the Roanoke River near the town of Jeffress, there have been finds of slag. On one site 400 pounds of worked iron were excavated. Other similar sites have been found in Mecklenburg and Brunswick counties. A natural draft furnace used by ironworkers was discovered. At one site a bronze cup, a bronze spindle whorl, and other bronze fragments were found.

Among the worked iron pieces found were a short thrusting sword, small knives, chisels, nails, and headers for making nails. Chemical analysis of the iron revealed that the worked iron was made by the method used by the ancient world, and not the method used in colonial or later times.[64]

Engraved monograms on rocks at one site are similar to those used by early Christians, which suggests a first century A. D. date.[65]

While it would be natural to attribute all such finds to colonial times, the finds were made on virgin land never used by the colonists. If the colonists and the Indians are ruled out, then some very interesting speculations are possible.

Brazil In unexpected places, news of ancient metal working is reported. In the interior of Brazil there are reports of many mines which date back to very ancient times. Mysterious inscriptions on rocks are noted in the Amazon basin which may point to very early contacts by unknown peoples in search of metals.[66]

Mexico The extent of ancient mine workings—pits, shafts, tunnels, stopes, and dumps are astonishing. The Los Cerillos mines in Mexico, for example, included one entire mountain honeycombed by the ancients. Pillars were left to support the roof in the quest for gold and turquoise. The main shaft was 200 feet deep in solid rock with smooth vertical sides cut with great precision.[67]

The Mexicans melted metal in crucibles, cast metal in molds of clay or charcoal, and used the lost art of casting parts of the same object of different metals, for example a fish with alternate scales of gold and silver. Copper and other metals were gilded by a process which would have been the envy of any goldsmith in Europe. Mexicans made birds and animals with movable limbs and wings in a most curious fashion.[68]

Peru Bennett of Yale found evidence in Peru of civilized people who lived 2,000 years before the Inca who smelted ores, welded, and soldered metals. With bronze scalpels they performed trepanning and other forms of surgery.[69]

At Chan Chan, Peru, electroplating was practiced by the pre-Inca Chimu culture. Beautiful artifacts of copper were plated with gold or silver, and silver objects were gold plated.[70]

Tomas reports, as others have done, a number of strange metal finds. In the 16th century Spanish conquistadors found an 18 cm. iron nail solidly encrusted in rock in a Peruvian mine. Since iron was unknown to the Inca, as far as is known, the find was particularly puzzling. The Spanish Viceroy, Don Francisco de Toledo, kept the nail in his study as a souvenir for many years. The account of this find is contained in a letter dated October 9, 1572, in the Madrid Archives.[71]

Venezuela A find of old Roman coins was made on a shore site in Venezuela late in the nineteenth century. Roman and Arabian coins carried dates up to the 8th century A. D. Around 800 A. D. a voyage took place which ended on the coast of South America. Nothing else is known about this event. While authorities scoff at the possibility, Spaniards in the 16th century reported "white" indians. There is no necessary connection, but there may be one.[72]

G. The Lure of Copper

Old Copper Culture There are many puzzles about the ancient use of copper in the Great Lakes region and Canada. Dating has been difficult and inconsistent with other developments in America.

Although the sites of the copper mines extend for hundreds of miles along Lake Superior, and the sites show extensive and remarkable engineering, so far there is no indication of any permanent settlement near the mines. Not one dwelling, skeleton, or bone of these ancient people has been found in the area.

Michigan State University archaeologists reported a find of copper-working tools in Ontonagon County of the Upper Peninsula, which were used to shape the Lake Superior copper. The site was tentatively dated at about 3500 B. C.[73]

Fitting reports two C14 dates of 2700 B. C. and 5500 B. C. for the Oconto site in Wisconsin where stone and copper artifacts were found. Both dates seem too old for what is believed about this culture.[74] At another Wisconsin site two dates from the same source were 5600 and 7510 B. C. On this basis these people are considered among the oldest metal users in the world.[75] The dates are embarrassing and perplexing. Perhaps some day a tie will be found with the Old Copper Culture and world-wide navigation before the time of Abraham, rather than somehow attributing all of the copper culture to early American Indians.

Copper artifacts were well-made and included large spear points - some socketed - knives like some Eskimo forms, gouges, adzes, axes, chisels, harpoon heads, awls, and ornaments. Archaeologists are at a loss to find such a well developed metal industry so early in America. In support of very early dates, however, is a find of copper artifacts in an Archaic site in New York.[76]

Far more puzzling and difficult to explain is a find at Thunder Bay, Ontario. A copper spear point was excavated in association with the bones of extinct bison and horses lying on a blue clay deposit covered with 40 feet of cross-bedded sand, yet the human bones there were of modern man.[77] It hardly need be said that this find wildly contradicts almost everything fondly believed about ancient man.

In prehistoric times the copper of the Upper Peninsula of Michigan was known all over eastern America. It is certain that the deposits were known and in use at the time the Jesuits penetrated this region. Fuller reports that the copper deposits were visited by Indians well into the early part of the 19th century. An aged Chip-

pewa in northern Wisconsin remembered as a youth going with his father to gather copper from the Keweenaw peninsula. Scholars have no clear answer to the fact that while Michigan was the main source of copper, few copper artifacts have been found in that state.[78]

While a scattering of copper artifacts has been found in Michigan, Minnesota, and Wisconsin, no camp site of significance is yet known in these regions. Perhaps the main flow of these artifacts went in other directions.[79] A campsite was found recently on Allumette Island in the Ottawa River near Pembroke, Ontario. Here and at nearby Morrison Island more than 1200 copper artifacts were discovered. More recently on the St. Lawrence River, 30 miles west of Montreal, copper artifacts have been recovered along with an incised pebble showing a very un-Indian smiling human face.[80]

One strange find was reported in the 1890's at Newberry, Michigan, in the heart of the copper country. An inscribed stone along with three stone images were found. The largest, almost life-size, was of a seated male. The stone tablet measured 18 × 25 × 6 inches and was marked off into 140 squares of about 1½ inches in size. Each square contained an inscribed character, some of which appeared to resemble Phoenician or Cypriot characters. The origin of these stones has never been satisfactorily explained.[81]

Another possible link with the Old World is suggested by Dewdney who has found and catalogued numerous rock carvings and paintings in Ontario, carvings on the shores of Fairy Lake in Nova Scotia, and other sites in Wisconsin and Minnesota.[82] While some of the finds are believed to be quite recent, others may be very old.

A find in Alberta, Canada, is of interest. An Old Copper Culture object was found in the bed of Cator Creek, 80 miles east of the city of Red Deer. It consisted of a copper crescent with prongs at each end.[83]

Based on almost identical culture patterns of northwestern Europe and northeastern America as early as 7000 B. C., Riley suggests two-way travel across the Atlantic and trade links between the Old Copper Culture and Europe.[84]

Enterline reports a find at Pond Inlet on the northeast corner of Baffin Island which suggests a climate in ancient times different from today. Below old Eskimo deposits, a piece of cast copper alloy was found. In addition there was much evidence of metal blades and weapon heads at this site.[85]

It is interesting that there are several locations in the central Arctic where pure copper appears on the surface of the ground. In this area Jenness reported about 1922 a number of cairns of non-Eskimo construction. The cairns were very similar to those built for landmarks in Scotland. Stefansson reported that some men of a tribe in southwestern Victoria Island wore very typical Scandinavian beards, and one woman possessed the features typical of Scandinavian girls. Perhaps the relationship is to early Viking explorations in Canada, rather than from an earlier time.[86]

Before the time of Abraham, the ancients dug pits in northern Michigan, built bonfires to heat rocks, poured cold water to split the stones, and then beat out the copper with stone hammers. Ten thousand pits were dug for copper and some estimate that as much as a billion pounds of the metal were produced before about 1000 B. C. when the culture disappeared.

There is some hope that chemical fingerprinting of copper samples can be developed to the point where copper artifacts anywhere in the world can be traced accurately to the mines from which the metal was secured. Perhaps then conjecture can be replaced with fact.[87]

The Mound Builders Somewhere around 3,000 years ago, a remarkable people spread over the Mississippi River valley and its tributaries. There are estimates of 100,000 mounds and other earth constructions built by these people, spread over about two-thirds of the area of the United States. The earthworks were always near water.

Thousands of constructions were made in perfect squares, circles, squares within circles, polygons, ellipses, long lines in exact parallel, sweeping parrallel arcs, rhomboids, and perfectly proportioned magnifications of natural shapes. Who these people were and their ties with other parts of the world are questions which have never been satisfactorily answered. Two related cultures have been identified, the Adena, followed about 500 years later in time by the Hopewell.

The Hopewells could turn copper into ear-spools, repousse copper, and overlay it with silver and iron. They found and worked iron meteorites. At a later time than the Hopewells, another people used copper for tools rather than for ornaments.[88]

Cahokia, just to the east of St. Louis, was the largest pre-Columbian town in the United States and spread over five square miles. The vast trade network of this cultural center extended as far as Florida, the Appalachians, and the Lake Superior region where copper was secured.[89]

In some of the mounds surprising finds were made. The artifacts predate the coming of Europeans to America.

In a site named the Mallon Mound F, copper pan pipes were found.[90] In the Abbott Farm Site near Trenton, New Jersey, which predates the mound builders, a copper rod, 14 inches long, with an eye in one end, was excavated. No one yet can conceive of the purpose for which this artifact was made.[91] Macgowan reports a copper relic found in 1880 in a mound which has an elephant in harness engraved on it.[92] In the mounds of Ohio, copper axes weighing as much as 23 pounds were found. Copper breastplates and headdresses were cut from heated and hammered sheets.[93]

Donnelly reports that mound builders in America understood the art of casting metals, or associated with those who did. A copper axe cast was found in New York, and in the Mississippi valley various articles plainly show marks of a cast mold. In a mound at Marietta, Ohio, Hildreth found large circular ornaments of copper overlaid with a thick plate of silver. Copper tubes were also found. According to Squier, an early explorer of the mounds of America, copper bosses were found plated, not simply overlaid, with silver.[94]

Among the many strange finds from the Spiro Mound on the bank of the Arkansas River near Spiro, Oklahoma, were small masks carved from wood and over-

laid with copper, cloth woven from bison, and rabbit hair thread.[95] Mounds were excavated in the state of Washington, and one of the artifacts was an armored coat consisting of small pieces of copper tubing.[96] In 1891 there was a report in *Nature* of a giant skeleton found in an Ohio mound. With the skeleton was copper armor.[97]

Poverty Point, Louisiana, is amazing. The enormous construction dates back to about 1500 B. C., many centuries before any other known mound building in the United States, except for satellite settlements within a radius around Poverty Point. A complex of six concentric octagons was built, the outermost almost ¾ths mile across. The amount of earth used in the project was 35 times the volume of the enormous Cheops pyramid in Egypt.

Among the finds were copper and iron ore from the Great Lakes region, and galena (lead ore) from Missouri. These and other remains and artifacts show that the people of Poverty Point had a trade network along the waterways in all directions up to 3000 miles long. The site was suddenly abandoned. No one knows why.[98]

Greece As excavations continue around the world, many more surprises may be expected. A site of unusual interest was reported from the Province of Drama in Macedonia in 1969. Carbonized grape pits were tentatively identified as dating to about 4000 B. C., but house floors and other artifacts were considered a thousand years earlier. Pottery was well-preserved.

Here was found the earliest metal so far in Greece and consisted of simple copper pins, fishhooks, and beads. Slag at the site showed that the copper was extracted there from ore, an astonishing degree of sophistication for that time. Archaeologists puzzle over a curious four-legged ceramic object painted black on a red background. The animal depicted has a hump on its back and most resembles a camel.[99]

Europe Elsewhere in Europe the story of copper is better known. At a very early time people came to Denmark from the sea. Artifacts recovered there include copper axes, spiral armlets, daggers, saws, curious tanged arrowheads, and objects of gold. Amber, ivory, and stone carvings were also found.[100]

A stream of prospectors, traders, colonists, metalworkers, and bearers of a new religion moved over much of the world. In the graves of south France were fine flint copies of copper daggers. The stone axes in Breton are ritual copies of metal axes. For reasons not at all clear, the metal workers buried stone copies of their work. Some argue that the very ancient ships of these times survive today in modern vessels, and point to the Portuguese saveiros as a possible example. While little is known of these ancient sea people, it seems certain that they did not speak an Indo-European language.[101]

Iran Many authorities would agree that the Iranian Highlands is where metallurgy probably began. From this fascinating region, where many discoveries will still be made in the future by archaeologists, metallurgy spread to many parts of the world. It is interesting that near the famous site of Tepe Sialk, one of the oldest villages known, lie large deposits of pure copper. At Tepe Sialk some of the oldest, if not the oldest, copper tools have been found.[102]

Day disagrees. In his overview of the history of man, Day concludes that the earliest metal artifacts are beads and pins of beaten copper which date to about 4000 B. C., and which were found in Egypt.[103] Such statements have a very short life in the literature of archaeology.

In the shadow of Iran's Zagros Mountains is the Great Sand Desert, Dasht-i-Lut, where no man can live among the howling sandstorms. A new discovery was reported in 1973. At the desert edge evidence of a great and flourishing town was found which may predate Tepe Sialk and the finds in Egypt. Among highly artistic artifacts found were copper vessels, axes, nails, and pins. Two metal plates were engraved with fish and deer. A metal flag attached to a staff was adorned by an eagle in XXth century A. D. style. A sudden disaster destroyed the city.[104]

Austria There were copper mines in Austria during the Late Bronze Age, and possibly earlier. In the alpine regions of southeastern Austria, near Prein, some smelting places have been discovered. The most interesting finds here were earthen vessels which were obviously parts of bellows similar to those still in use by African tribes today.

This illustrates the high probability of one original center where the Old Ones taught all those who used the technology before they spread out around the world. Despite all the catastrophes of history, the find also shows the astonishing continuity over the centuries of skills that have been learned.[105]

H. The Puzzle of Bronze

Depending on which authority is read, the Bronze Age is said to have begun about 3150 B. C. At this time the use of bronze, a mixture of copper and tin, was common in Mesopotamia. Users of bronze soon after were swarming into Europe and the British Isles. Swords, shields, buckles, pins, and many other artifacts of this ancient time show great artistic skill.[106]

Tomas notes that copper was well known in Sinai, Crete, Cyprus, Spain, and Portugal, but tin was rare and found in Etruria, Gaul, Spain, Cornwall, and Bohemia. Sea transportation was a necessity. The similarity of bronze tools around the world suggests that all the technology came from one source. Bronze appeared suddenly in Central and South America.[107]

Ancient burials in Hungary and northern Europe contain only copper. Yet burials of similar age in southeastern Spain contain artifacts of both copper and bronze together. With these burials are carnelian beads of foreign origin, possibly from India. This suggests very early deep sea navigation by the teachers of metallurgy. Old Chinese records speak of tin brought from an area to the northwest of China for their bronzes.

The Egyptians, Greeks, Etruscans, and Romans used lead and copper to make a form of bronze. Egypt used flint, bronze, and iron simultaneously. In southern Italy bronze daggers were found identical with Egyptian forms. In all of Europe bronze implements are everywhere nearly identical in form with only minor

peculiarities in each region. The Semitics have no tradition without the use of metals. In India, before the time of the Aryan invasion, bronze which included ten percent of tin was identical with bronzes everywhere else.[108]

In speaking of world ages, each of which ended in destruction, Hesiod, 8th Century B. C., lends some support to conventional thinking about the metal ages. He speaks of the third world age of bronze. Then the earth was repeopled by those who used both bronze and iron, which was the time of the Trojan War. After another destruction the next generation used iron.[109]

Other evidence contradicts this view or at the least complicates it.

Over and over the conclusion must be faced that world-wide use of bronze stemmed from one original source, and the rapid diffusion of this technology eloquently speaks for skilled navigation. The possibility must be considered that China was receiving the same stimulus for bronze-making as was Europe and Africa.[110] Yet historical records are not yet adequate to give a clear picture of who these people were.

Many discoveries as well as finds still to be made have not yet been fitted into a coherent world-wide pattern. In northeastern Thailand and near the city of Saigon, two-piece socketed tools of bronze have been found, tentatively dated at 2500 B. C.[111] Ancient times emerge as filled with enormous energy, enterprise, and sophistication.

At Tepe Yahya in Iran bronze tools containing arsenic have been dated at about 3500 B. C. Who taught the bronze makers?[112] Primitive man does not chip flints one day and then decide to go out and make some bronze tools the next day.

Ancient bronzes are not usually associated with the United States. Yet a few scattered finds have been reported. A bronze dagger was found at Merrimackport, Massachusetts; a bronze spearpoint near Brentwood, New Hampshire; a bronze shield near Windham, New Hampshire; and bronze artifacts near North Salem, New Hampshire, the site of mysterious megalithic structures.[113]

Arctic Region Before a sudden change in climate there was an advanced civilization in northeast Siberia to the shores of the Arctic Ocean. Abundant cultural remains have been found by Russian archaeologists in this frozen Taiga country. The cultures represent the so-called paleolithic, neolithic and bronze periods. Rock carvings, the same in style as those in the caves of France and Spain were found in the Lena river valley near the village of Shishkino.

Also on the Lena, inside the Arctic circle, stone monuments were discovered. Outstanding finds have been made near Lake Yolba, and in Yakutsk a workshop of metallurgists was found for making bronze axes similar to those of the Near East and in Europe. The ancients of northeastern Siberia could extract copper from ore, melt and pour it in forms. They made axes, beautiful bronze spear tips, knives, and swords.[114]

There are many surprises in the Far East. The Koreans were the first to use cast type blocks of bronze for printing.[115]

There were two periods of the Lake Dwellers in Scandinavia, Germany, Switzerland, and northern Italy, each ending in a terrible disaster. During the second period of time, bronze objects were in common use and have been found in great numbers. The roads through Alpine passes were much travelled during the Bronze Age with many artifacts found along these roads, especially on St. Bernard. Mines were also worked in the Alps at this time. Then there was a sudden event, the mines were abandoned, and for a long period of time the passes were no longer travelled.[116]

It is not considered nice to find the wrong thing in the wrong place. In 1867 a bronze bell was found on North Island in New Zealand. Many centuries before it was probably cast in Java and was of Hindu origin. Other objects of silver and glass were uncovered, but the finders feared ridicule and therefore did not report the finds immediately. Long before the Maoris came to New Zealand a high civilization was founded on these islands. As evidence there are many old terraces with stone walls, enclosures, and other stone structures which predate Maori times.[117]

The Bronze Culture in China was thought to have begun in the Yellow River valley. More recently a Bronze Culture has been found in South China which is a thousand years older than the earliest finds along the Yellow River.[118]

Little is known about the early Harappan Culture which lived in a vast area around the Indus River in India. As is true elsewhere, there was no Pre-Harappan Culture. The culture was mature and sophisticated from the outset. Already in the first period beads of gold sheet with tubular perforations were found. In the second period copper and bronze rods were found along with many beautifully worked artifacts of many kinds.[119]

Turkey from very ancient times shows strong Asiatic kinship, but no one has yet been very successful in sorting out the many cultures of this great land. The Hattians, who were forerunners of the Hittites, dropped in from nowhere and vanished into nowhere. The Hattians were highly skilled in depicting animal life in bronze figurines. This high skill also flourished in the Russian steppes at the same time, but no clear connection has yet been established.

The Hattians produced carefully polished jugs, jewelry, and gold cups of great delicacy and sophistication. If they had a written language, it was written on materials which soon decayed. The Hattians made geometric perforated metal disks or bronze bulls and stags for ritual use. Some of these were meticulously inlaid with precious metals. The Hittites who succeeded the Hattians were also noted for their work in metal and they are usually credited with triggering the Iron Age.[120] As with almost everything, things are not quite that simple.

On the shores of Lake Sevan in the mountains of Armenia northeast of Mt. Ararat some exceptionally rich finds have been reported in 1973. Dating back to about 3000 B. C. were ceramics, utensils, jewelry, wagons, and a unique find of chariots with spoked wheels. Extensive gold mining was important at that time.

Gold and bronze buttons, studded with gems, were found. A possible tie to the Hattians, or at least some common thread, was the find of many types of exquisitely formed miniatures in gold. Ceramics were decorated with pictures of ostriches. Oxen, deer, lions, goats, birds, and frogs were depicted in bronze. Some of the decorations involve graining and lines so fine they can hardly be seen by the naked eye.[121]

Mexican archaeologists reported the find of a bronze axe head on the island of Cozumel in 1972. Since bronze was never used by the Maya, it was an unusual find. Chemical analysis led to the conclusion that the copper in the artifact was from the Western Mediterranean area.[122]

Important Questions Instead of a lockstep so-called Bronze Age, the more important questions seem to be: How much had a given people in a given area of the world been taught by the Old Ones and their descendants? What were the resources of the people where they lived and from trade with other parts of the world? What catastrophic events affected the lives and the technology of the people in an area? The answers to these questions determine whether or not a given people ever had a Bronze Age or not, and has little to do with a chronology.

Among the puzzles involving bronze in the New World are a number of finds of coins and other artifacts.

Around 1890 nine skeletons, two brass bracelets, a copper bead and other artifacts were excavated by an archaeologist at Bat Creek, Loudon County, Tennessee. Only recently has the inscription been deciphered and found to be Hebrew.[123]

Copper, iron, and brass were found in the skeleton of an old ship uncovered from the sands at Manasquan, New Jersey. These remains appear to be from an old Viking ship.

At the Falls of the Ohio near Louisville, Kentucky, skeletons and brass-plated shields were uncovered. The shields bore a Welsh coat of arms, and there are traditions and stories in that area of white Indians who spoke Welsh. Some scholars attribute these finds and other evidence to a Welsh expedition to America in the twelfth century A. D.[124]

Workmen boring a well near Norfolk, Virginia, in 1833 brought up an ancient coin at a depth of about 30 feet. The coin was oval-shaped, about shilling sized, and stamped with figures representing hunters or warriors. Those who studied the find compared the figures with similar ones of ancient Rome, but no definite identification could be made.[125]

Farther to the south, a coin was found near Buttons, North Carolina in 1954 which bore the numerals 1215, presumably a date. The characters on the coin appeared to be Arabic.[126] It is not possible to say whether the coin represents an early voyage to America or whether it was lost by someone in recent times.

An old Syrian bronze coin, dating to the time of Antiochus IV, about 170 B. C., was picked up on a farm in Cass County, Illinois in 1882. Again no definite conclusion could be drawn from the find reported in the *Scientific American*.[127] Another Illinois find is much more difficult to explain. In 1871 near Chillicothe drillers brought up a bronze coin from a depth of about 120 feet. If the find is indeed authentic, a great deal of geological change took place in a very short period of time since coins were not known before about 700 B. C. The discovery was reported in the Proceedings of the American Philosophical Society.[128]

Twenty years earlier in Whiteside County, Illinois, the bit of a well driller brought up two copper artifacts from sand at 120 feet. One of the objects was shaped like a boat hook, and the other was a copper ring.[129]

A Roman coin was reported found in an Illinois mound in 1913 and was identified by Dr. Emerson of the Art Institute, Chicago, as a rare mintage of Domitius Domitianus, Emperor in Egypt.[130] There is no way all the reported finds can be authenticated, but the suggestion is strong that transoceanic travel was not at all uncommon in the past.

A remarkable find was reported in British Columbia in 1882 from the bank of a creek in the mining district of Cassiar. At a depth from the surface of only several feet, 30 brass coins strung on an iron wire were uncovered. The wire deteriorated almost immediately, but the coins were in very good condition. According to Chinese in Victoria who examined the find, the symbols on the coins dated back to about 1200 B. C.[131] While it is known that the Chinese used coins before 700 B. C., it is not known how accurate the dating is on the coins found in Canada. There are, however, many evidences of very early Chinese contacts with America.

I. The Mystique of Iron

According to Archaeologist Schaeffer, more contradictory statements have been made about iron by scholars than any other metal. It is possible that some day proof will emerge that an Iron Age preceded a Bronze Age in Egypt.[132]

Iron, usually attributed to a meteoric origin, is known to have been used in predynastic Egypt for making beads. Smelting of iron ore for tools, weapons, and other artifacts is generally dated back to about 1300 or 1400 B. C. Iron became common in western Europe about 500 B. C.[133] The story of iron, however, may not be that simple.

During the Old Kingdom in Egypt, long before the Iron Age, sharp, finely cut lines were cut into granite, basalt, and into diorite, the steely stone, the hardest of them all. All of this work indicates that a steel-hard medium was used to cut the stone. At Gerzah, 50 miles south of Cairo, iron beads were found at a predynastic site. An iron chisel was found between the stones of the Great Pyramid of the fourth dynasty, and a number of chisels and other iron tools were found in Saqqara near Cairo.

Pieces from a pickax were unearthed at Abusir and a heap of broken iron tools from the same period was found at Dahshur. An iron wedge was found at Abydos. These sites were all from the sixth dynasty, which again long predate the iron age. Most of these artifacts show a nickel content and are probably meteoric iron. One or two iron objects from the sixth dynasty, however, contain no nickel. The conclusion is that iron smelting was known in the Old Kingdom, many centuries before the Hittites began the so-called Iron Age.[134]

Through catastrophes this knowledge was lost for many centuries. At a much later date we have a letter from Rameses II calling for a shipment of the highly prized wonder metal iron, which was at that time a Hittite monopoly.[135]

While it has been fashionable to date events of the Old Testament as late as possible, the correct chronology shows that iron was well known centuries before the Iron Age began. Without including references to iron before the Flood, we note such accounts as Og, King of Bashan, who had an iron bed. There were iron vessels at Jericho. The Canaanites used iron chariots.

Archaeologists found iron axes or hoes sealed in a water passage at Gezer 400 to 500 years before iron came into general use in Palestine if we follow conventional chronology. In the immortal words of the archaeologist, these finds are "not easily explained".[136] Long before the Iron Age, a bow of steel is mentioned in the book of Job. The root word used means to shine, and steel is required by the sense of the statement.[137]

Iron in Europe Donnelly alludes to an iron age in northern Europe which far predates any contact with Greece or Rome. Accounts have come down that in very ancient times the Peruvian rulers worked magnificent iron mines at Ancoriames on the west shore of Lake Titicaca.[138] This information is difficult to evaluate but the puzzling iron nail found in Peru by the Spanish has never been satisfactorily explained.

While the Hittites are generally credited with the first iron smelting, the oldest iron mining known in the Mediterranean area is on the island of Elba where the Pelasgians are believed to have worked. Excavations here revealed huge subterranean canals which had been blocked, perhaps by some catastrophic force, thousands of years before Christ.[139]

In 1930 a report was published in *Nature* that an iron foundry, slag, and ashes were found with Paleolithic materials in a cave at Mumbwa, Northern Rhodesia. The material may date as far back as 2000 B. C., but since this would predate the Iron Age by many centuries critics attempt to attribute the find to Arabs c. 1200-1900 A. D. The radical difference in dating illustrates the problem of solving mysteries of the ancient past.[140]

Perry described the many ancient remains of India. At Kupgal Hill, Bellary District, in central India, there were many ancient hilltop settlements. The Iron Age here followed hard on the Neolithic if any distinction at all can be made. Iron slag and Neolithic tools occur together at the same sites. At Chota Nagpur there are remains of smelting places and iron slag, ornaments, copper vessels and implements, brick foundations, stone beads, and copper celts. There is no support here for the neat arrangement of stone and metal ages.[141]

The Bomvu Ridge in Swaziland in southern Africa includes a peak which consists of an estimated 48 million tons of high grade iron ore (Haematite). This area is covered with tens of thousands of stone implements and honeycombed with ancient pits. Red ochre was used all around the world for cosmetics and for rituals and burials, and perhaps this was the purpose of the mining at this site.[142]

In southwestern Azarbayjan many ancient sites have been excavated and metal objects of bronze, silver, and gold were found. But at one early site iron slag and an iron finger ring were found. The iron slag is called "alleged" iron slag because it was not supposed to be there. The site is also given a late date because of the iron, but perhaps iron working is older than archaeologists think.[143] It seems very curious to say "alleged" iron slag. In the modern scientific age it ought to be very simple to test the material and confirm that the substance either is or is not. No one wants to disturb the fixed chronology of the Iron Age. Whatever is found must fit into the established structure.

An immensely complicating factor in the consideration of the role of iron in ancient life is the shroud of mystery and superstition which covers this metal unlike any other. Undoubtedly the fall of iron meteorites contributed to the feelings of the ancients about iron, but the problem seems much deeper than this one factor.

Iron meteorites were venerated in many ancient temples, for example, in the temple of Astarte at Tyre, in the temple of Amon at Thebes, at Delphi, in Mexico, and of course the sacred black stone of Mecca.[144] Similarly an ancient relic was passed down among the Malay kings. This was the Sacred Lump of Iron which became part of the regalia of the rulers. The lump was regarded with the most extraordinary reverence mingled with superstitious terror. In the Celebes iron was much used in magic rites.[145]

Tabus about Iron Frazer reviews the tabus about iron. To many peoples objects made of iron were especially noxious and dangerous. Roman and Sabine priests could not be shaved with a iron implement, but only with bronze razors or shears. Whenever an iron graving-tool was brought into the sacred grove in Rome for cutting inscriptions in stone, a sacrifice of a lamb and a pig had to be offered. The same rite was repeated when the tool was again taken from the grove.

As a general rule iron could not be brought into Greek sanctuaries. On Crete sacrifices could not involve the use of iron in any way. The Hottentots today never use an iron knife for sacrifices or circumcision. In southwest Africa iron could be used for the operation, but only if the iron knife was then safely buried. In Yap of the Caroline Islands, wood for the fire-drill could not be cut with iron or steel. The men who made the need-fire in Scotland first had to remove all metal from their persons.

Another old belief was later applied to Good Friday, that on no account whatever should iron be put in the ground on that day. Iron was forbidden in Scottish divination ceremonies. In India an old tabu affected a highly educated Hindu Rajah who would not allow iron to be used in any building on his land. His belief was that great evil would follow if the tabu were violated. The Baduwis of Java today will use no iron tools in tilling. Iron there is used as a charm for banning ghosts and spirits. The Toradyas of Central Celebes are very careful not to put iron in a coffin. They think the dead may throw it out, and also think that iron falling on the fields might blast the rice crops.[146]

To the ancients iron was evil, but the poets forgot why. The recital of the origin of iron may have been in-

comprehensible to the poet, yet he knew he had to recite this "deep origin" to control the deadly powers of cold iron. Magic and divination were always present in the grim business of the smith in ancient literature. Aristotle refers respectfully to the grave testimony of the ancient poets. The earliest writers behave like worried and doubting commentators. They always try to explain a dimly understood tradition. They use old words whose meaning is half lost to them.[147]

Some early event having to do with iron left a searing, horrifying memory in mankind which is dimly recorded in ancient writings and in customs which have come down to the present day. Some writers hint at what this event may have been.

If the moon and the planets were bombarded by such a swarm of huge meteors, then the earth also underwent the same catastrophic bombardment at the same time. The evidence that this really happened is all around, and researchers are only beginning to recognize it for what it really is. The asteroid belt which orbits about where a planet ought to exist has led to the theory of a planet that had been torn apart. The jagged fragments were torn away violently and some of them now rotate on their longer axis.

These evidences indicate a violent separation from a parent body. Satellite photos show mountain-size lumps embedded in the earth up to several hundred miles in depth. Perhaps many of our iron and nickel deposits fell to the earth in a great catastrophic event.[148] There are wildly different estimates of the time when enormous meteorites struck the earth. The evidence of the poets and customs around the world support the idea that this event happened early in man's history.

Campo del Cielo, the Field of Heaven, in Argentina is an example of a great cosmic body which crashed into the earth. Scientists from the Lamont Observatory at Columbia University reported the find in 1965. Nine large depressions in the earth were found close together, and another was located 75 miles away. Great masses of iron were found. The scientists suggest a date of about 4000 B. C. for this event. While there is no clue as to the nature of the cosmic body, it was suggested that it may have been as large as the moon.[149]

Other Iron Finds A strange and unexplainable find was reported at the Shefferville Mine in Ontario in 1956. Modern-appearing wood, some charred by heat, as well as fossil-appearing wood, dated by C14 at about 2000 B. C., was recovered from iron ore at depths in the mine of several hundred feet. The deposit of ore was considered to be Precambrian. The wood was later described as late Cretaceous rubble, but the chief mine geologist could find no explanation for the occurrence of the wood and iron ore together.[150] Iron ore dumped on the earth could cover vegetation as described, but not enough information is available to pursue the possibility at this time.

It is difficult to know what to do with reports such as those which follow. Each one has been reported as true, and so they are given a hearing. If any are fraudulent they should be exposed as such. If even one of them is true, we have much to ponder.

The Shawanoes, an Algonquin tribe, have a tradition of a foreign origin and of a landing from a sea voyage to western Florida. In the early nineteenth century they still made yearly sacrifices in memory of their safe arrival. According to their tradition white men lived in Florida long before colonial times, and these people had iron tools. The old Shawanoes passed on memories of earth-covered tree stumps where the trees had been cut down by metal-edged tools.[151]

A pin was reported in a lump of coal by Ellie Booth, Boise, Idaho. Hiram DeWitt, Springfield, Massachusetts, brought a fist-sized piece of auriferous quartz from California. It was accidentally dropped and split open. Inside was a cut-iron nail, 6-penny sized, slightly corroded, but straight with a perfect head. If that find was authentic, other finds made in Nevada may help to explain the matter. The *Carson Appeal* reported that quartz crystals had been found in a mine which could have had only fifteen years in which to form.

At another location a mill had been built and then torn down twelve years later. During these years sandstone had formed, for in the sandstone was a piece of wood with a nail in it. Near Treasure City, Nevada, a fist-sized piece of feldspar was taken from the Abbey mine, November, 1869. Firmly embedded in it was a metal screw about two inches long. Its taper was as clearly visible as was the regular pitch of the threads. Oxidized iron filled the cavity. The specimen was sent off to an academy in San Francisco where it was quietly forgotten. In Sullivan County, Missouri, 1879, a farmer found an old ritual mask made of iron and silver.[152]

In a report from a mine in Scotland, an iron instrument had been found inside a piece of coal, seven feet under the surface of the earth. The instrument appeared to be modern, yet there was no sign of boring into the coal. A nail was found in a block of stone from Kindgoodie Quarry, North Britain. The block of stone was eight inches thick and came from below the surface. The point of the nail projected into some till and was eaten with rust, but the last inch, including the head, was embedded in the stone.[153]

The Kutb Minar iron pillar is found in Delhi, India. It weighs six tons and is about 24 feet high. It is usually dated to about 415 A. D. A forgotten technology was used for the task of forging so large a pillar. Even more surprising is the fact that after 15 centuries there is no evidence of rust on the pillar.[154]

At Kottenforst, west of Bonn, West Germany, is an old iron column called the Iron Man. It extends about five feet out of the ground, and is supposed to continue for 90 feet into the ground. No rust appears on the iron and nothing is apparently known about who made it or when it was made.[155]

Photos and affidavits were made in 1912 to confirm the report of an iron pot found in a lump of coal at Thomas, Oklahoma. When the coal was broken up in the Municipal Electric Plant, the iron pot fell from the center leaving its impression or mold in the coal. The source of the coal was the Wilburton, Oklahoma, coal mines.[156]

An account from Yucatan was written by a Spanish bishop in 1550. Near Merida strange buildings were found quite unlike any others on the peninsula. Stone roofs were held in place by iron rods, but the construction long preceded the coming of the Spaniards.[157]

An iron ax and copper breastplate were found in a mound in Wayne County, Ohio, in 1889. The mound-builders long predate European colonies in America, and thus it is assumed that the iron ax represented a recent burial in the old mound.[158] Mallery, in his book *Lost America*, developed the theory that an Iron Age Civilization existed in America prior to Columbus. He supported his position with photographs, radiocarbon dates, and microscopic and metallurgical analyses. No one has taken this theory seriously since it does not fit what is believed about the early history of America.[159] Enough strange iron finds have been made, however, that serious scholars ought to evaluate his evidence.

J. Things of Silver and Gold

There is really no conventional way to explain some reported finds, unless they are frauds. In 1891 Mrs. S. W. Culp, Morrisonville, Illinois, broke apart a chunk of coal near her stove. Inside was a neatly coiled gold chain ten inches long. The metal was tested and found to be 8-carat gold. The ends of the chain remained attached to coal fragments.[160] Near Tweeders below Rutherford Mills, England, workmen quarrying rock discovered a gold thread embedded in stone at a depth of 8 feet. A piece of the thread was sent to the office of the *Kelso Chronicle*.[161]

In 1851 the *Scientific American* reported on blasting in a quarry near Dorchester, Massachusetts. Embedded in solid rock was a bell-shaped metal vessel which contianed floral designs inlaid with silver. In the State Hermitage Museum at Leningrad, U.S.S.R., a golden buckle of Scythian origin is on display. The problem is that the buckle shows the image of a sabre-tooth tiger on it. According to conventional dating these animals were extinct many thousands of years before the Scythians entered into history.[162]

In a Smithsonian Report, 1881, Charles Jones reported the find of a pair of tiny silver crosses found in Georgia, skillfully made, each arm of the cross being of equal length and engraved with Roman letters. No attempt was made to interpret the find.[163]

Among the evidences for ancient mining in California are the following. A mortar was found under volcanic matter at a depth of 150 feet at San Andreas. A triangular hatchet of stone with a drilled hole for the handle was found 75 feet below the surface in gold-bearing gravel and under basalt 300 feet from a tunnel mouth at Table Mountain in Tuolumne County. A human skeleton was found in a clay deposit at a depth of 38 feet at Placerville. A large number of stone mortars, pestles, and stone dishes were found at Murphy's in Tuolumne County.

In this high barren mountain district of California the site of an old mine was discovered. A shaft 210 feet deep was found with human bones at its bottom. Here also was found an altar for worship and other artifacts.[164]

In other gold diggings numerous stone relics, mortars, grooved disks, and other artifacts were reported at various depths. Granite mortars and dishes were uncovered of perfect form which weighed up to forty pounds. A lava vessel, hard as iron, was circular in form and had three legs and a beautifully formed spout. Almost without exception, these ancient artifacts were in or near gold bearing rock or gravel.[165]

An astounding number of ancient gold workings have been found around the world. The Malay Peninsula is just one example. In the Tui Valley immense goldmines were worked by the ancients. One ancient mine, Selensing, was especially astonishing. The low hills are honey-combed for many miles with perpendicular shafts, circular in shape down to water level, and from 100 to 160 feet deep. The method of mining was radically different from that practiced by the Chinese or Malay. There is no clue as to who worked these mines. The mining stopped suddenly at an ancient time and was never resumed.[166]

In the Bible a gold land is named Ophir, and most scholars identify the name with some location on the Arabian peninsula. Solomon's fleets sailed there. In 1571 a Spanish scholar, Arias Montanus, published a world map of biblical lands. It is very surprising that he indicated Ophir in two places on the map: on the Andean coast of South America and in the Rocky Mountain coast of North America. Gold in the latter place was not known until 1849, almost 300 years after the map was published. Gordon suggests a very ancient map tradition carried down over many centuries, an intriguing possibility.[167]

A massive gold sphere is in the treasure chamber of Maria Auxiliadora, Ecuador. The negative in stone of this same sphere is in the Turkish Museum in Istanbul, and was presumably found in the eastern Mediterranean.[168]

Benvenuto Cellini, an artistic genius of the 16th century, spent weeks trying and failing to duplicate an Aztec fish of flexible silver plates inlaid with gold. The goldsmiths of America possessed an amazing level of technical skill.[169] Copper items at Chan-Chan in Chimu, Peru, are plated with gold; and other ornaments, masks, and beads are silver plated.[170] Just as Egyptian vases were covered with a thin layer of gold by an electrolytic process, the same process was used in South America.[171]

Ancient voyages to America from the Eastern Mediterranean are accepted by more and more scholars. Heine-Geldern suggests the same from India, Indochina, and China at an early date, and gold was one of the chief attractions.[172]

The use of gold in the ancient civilizations of the Middle East is well known from the most ancient times. Already in the First Dynasty plaques of gold and precious stones, necklaces of gold beads engraved with geometric patterns or shaped like snail shells, gold amulets of the bull and oryx, and gold capsules in the form of a cockroach inlaid with emblems were known, despite the fact that only a tiny amount survived the grave robbers over the centuries.[173]

Also from the Old Kingdom vases, knives, razors, and a manicure set, all of gold, were found.[174] Similarly at Ur a cone-shaped gold container was found which contained a set of little toilet instruments: tweezers, lancet, and pencil. Such beautiful art had never been suspected at that ancient time.[175]

Contemporary with the old civilizations of the East was the civilization of the Muyu Moqo people in the

south-central highlands of Peru. Jewelry was fashioned from gold and lapis lazuli. The gold foil was so thin that archaeologists were unable to measure its thickness with the equipment they had at hand. These ancients knew the process of annealing. The gold of that area contained a 10 percent silver impurity, and thin hammering was not possible without annealing.[176]

In the Museum of the American Indian in New York there are tiny gold beads elaborately engraved or chased, some welded together and pierced, and smaller than a pin head. It does not seem possible that this work could have been done without a lens.[177]

K. Other Metals

What does one make of the extraordinary human skull (Rhodesian Man) found in a cave at Broken Hill in 1921? Sixty feet below the ground the skull was found within a mass of soft lead ore.[178]

Ornaments of molten platinum have been found in Eduador. Bits of platinum have also been found among the mighty ruins of the island of Temuen in the Caroline Island group.[179] A temperature of 1769 degrees centigrade is needed to melt this metal. In modern times this temperature was achieved only two centuries ago.

The strangest find of all is reported at Yungjen, China, from the tomb of a Chinese general, Chow Chu, 265-316 A. D. A metal girdle was found which consisted of 10 percent copper, 5 percent manganese, and 85 percent aluminum. Yet aluminum was developed for the first time by Oersted in 1825.[180]

When the tin-bearing gravels of Cornwall were reworked for tin and gold, relics of the Old Ones were found, including many stone bowls, mortars, and dishes, mostly of granite. The great similarity between these vessels and those found deeply buried in the gold-bearing gravels of California was noted[181] already in 1881. One culture spread over the world at a very ancient time.

Dartmoor, England, illustrates the total obsession of ancient man with metals; and while this place is unique in many ways, there are thousands of similar old exploited areas all over the world. Dartmoor is 365 square miles of tundra-like country in South Devon, lying to the northeast of Plymouth, England. The area is full of ancient tin mines to satisfy the ancient demand for bronze. There are ancient cut stones that formed cairns, burial vaults, and other ancient monuments: hut circles, stone rows, menhirs, hill forts. The earliest structures go back to about 3000 B. C.

The world's longest stone row is found here extending for two miles across the moor in the Erme River Valley. Abandoned for many centuries, tin was rediscovered here about 1150 A. D., but almost 150 years earlier the wild ponies which still roam the moors were reported. Perhaps they are a legacy from very ancient times.[182]

The trade in tin from Cornwall across France to Marseilles seems to have followed a track coinciding with the line of the ancient dolmen builders. The world-wide extent of ancient mining associated with megalithic monuments is shown by the fact that erecting huge stones is still practiced by a hill tribe in India, and in Japan and North Africa until quite recently.[183]

In their lust for silver, the early Romans smelted a byproduct of 400 tons of lead for each ton of silver. The death rate among slaves who did the mining and smelting was high. Lead was used by the Romans for roof sheathing, cooking, and wine vessels. Democritus gave the helpful hint that the acidity of wine could be reduced by the addition of lead oxide, and Pliny the Elder specified that lead pots must be used in making grape syrup instead of old-fashioned bronze ones.

Lead was generously used for water pipes, cups, sieves, cosmetics, external medicines, and paint. Only the well-to-do could afford all the lead luxuries; and the Roman aristocracy reaped a rich harvest in illness, death, sterility, miscarriages, and still births. A whole class of people of a great civilization was poisoned out of existence.[184]

Lead and the Romans are again associated in a strange account from Los Lunas, near Albuquerque, New Mexico. At this site along the Rio Grande River is an old inscription rock said to contain the ten commandments in Phoenician and dated about 880 A. D. Near the site were found lead crosses, short swords, and lance heads, all covered with a heavy, old concretion. In bad Latin an inscription told of a group which had come to this land to escape persecution. Also in New Mexico, Roman coins were found in a cave in the Cook Mountains.[185]

In closing the subject of man and metals mention should be made of two related finds in the United States. The Hopi Indians of northeastern Arizona discovered the value of coal about the same time as the English in the 9th century A. D. It staggers the mind to read a Harvard study that more than 100,000 tons of coal were mined in the Jeddito Valley by the Indians. It is strange that the use of coal died out after the arrival of the Spanish to that area. Most of the coal was used for fuel in the homes, but coal was also extensively used for firing pottery.[186]

There is evidence that Indians used primitive drilling methods to secure crude oil at sites in Pennsylvania, at Enneskillen, Canada, and at Mecca and Grafton, Ohio.[187]

L. An Afterword

The person who has read the usual accounts of the stone and metal ages in conventional works will welcome these many interesting facts gleaned from a variety of books and journals which tell a different story of the past.

More important, the pattern and chronology one finds in the literature of ancient history, anthropology, archaeology, and other works are based on several questionable assumptions. Hence only a very superficial and erroneous view is given of man's past. Certainly there is no need to be impressed with the truth of conventional explanations. A great deal of evidence contradicts such a view of human history.

Unusual sources have been consulted in this paper because they contain facts or alleged facts which are not found in conventional sources. With the story of the past so confused in much literature today, no potential

source should be overlooked in the search to unravel at least some of the puzzles. Further investigation may help to verify or expose assertions found in such unusual references.

Most interesting of all is the fact that if one takes the Old Testament seriously, one finds a framework of history presented which is supported by a broad variety of non-biblical sources.

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