Region, megalithic monuments along the same style are very rare, neither do they occur in Africa and at that remote time America was only inhabited by most primitive nomadic hunters. Once we can establish that the Atlantis Continent existed west of the European coasts it is only logical to investigate the possibility for or against the Atlantis Continent being proposed as the native home of the builders.

As the seafarers could visit so widely dispersed places, yet not come from any of them, we are forced to believe they were apparently capable to navigate upon the open sea and not forced exclusively along the coasts. The cultivated plain of Atlantis was situated along the eastern shore of the main island, facing towards Europe, so that if its inhabitants chose to venture out upon the open sea it would be naturally to the east in the direction of Western Europe. On a large fertile plain, situated upon an isolated island and thus fairly undisturbed by raiding neighbours, (like Great Britain was to evolve much later as a first-class naval power), culture is most likely to flourish in ideal conditions. There is an old tradition that Atlantis was the birthplace of culture, and conditions therefore must have been most favourable for its developement.

About conditions and people in Atlantis during the Neolithic we cannot but guess. Probably the population of the fertile plain multiplied swiftly and the different clans or tribes united into a mighty community covering in the end the entire main island. Already in 4,500 B.C. sea-going expeditions reached Brittany and somewhat later Iberia. Their dead abroad they burried in passage graves. The different shapes of the single graves branching off the main passage indicate that the entombments were spread over a considerable number of years. As their astronomical knowledge developed, their spiritual leaders reached such an authority, possibly by predicting eclipses, that they could persuade the ignorant natives of Western Europe to erect the amazing megalithic monuments. In the course of the millennia the monuments became more and more sophisticated.

Some years ago it was believed Egyptian or Mycenean masters had been determining in erecting the immense trilithons at Stonehegne, as some faience-beads of supposed Egyptian origin happened to be found at Stonehegne. A chemical analysis of the beads unveiled them to be non Egyptian. British, Atlantean or European ?

The observed representations of Mycenean daggers, etc. on the trilithons are probably scrawls by later visitors.

In the present author's opinion, as already stated, it is hard to escape the conviction that the megalithic monuments of Western Europe were erected under the direction of Atlantean masters. When the Atlantean Empire sank into the sea due to a rift, its cultural influence ceased, and simultaneously the erection of the megalithic monuments. Indications of the world-wide influence of the Atlantean culture we find in America. The use even to-day of sacred emblems of ancient Egypt speaks in favour of Donnelly's (1882) statement that Egypt received its culture from Atlantis. It is a curious coincidence that the initial date of the old Maya calendar, viz. the 12th of August 3,113 B.C. should be almost synchronous with the foundation of the first dynasty of Egypt. Before that dynasty the Egyptian culture was rather primitive, and their buildings were in perishable wood; but as from this chronological hinge-point turned suddenly to stone-buildings. From that time on the Egyptian culture improved vastly. Millennia later, the Atlanteans settled again in America and,,as in Egypt, culture soared suddenly far above the contemporary ones it replaced. Astronomical knowledge in the New World also appeared suddenly and was of paramount importance. A theory has been advanced that the perfectly circular, sometimes gigantic stone-spheres scattered in the jungles of Mexico, Costa Rica, Haiti, etc. had they survived in their original position, would have constituted a gigantic representation of the solar systam, viz. a prehistorical planetarium.

Buildings likewise erected with megalithic stones occur in America, but are rather different from those in Western Europe. Gigantic stones have been used in erecting buildings, fortresses, temples, etc. The single stones are mostly cut as interlocking facets so the walls are able to resist earthquakes. Many of the stones of an extremely hard andesite weigh from 50 to about 200 tons apiece. They are embedded into the walls and buildings of the pre-Inca town of Tiahuanaco of unknown antiquity. In the probably equally old fortress of Sacsahuaman near Cuzco and at the citadel of Machu Picchu, cyclopean blocks are perched on the precipitious sides of mountain slopes high above the valley, transported from far away, sometimes from the opposite side of the river where they are quarried. The huge rocks appear as if to have been elevated and transported through the air. Most of the stones have multi-angled planes without any binding agent, but fitting as a jigsaw-puzzle so exactly along the planes of the next lying stones that the thinnest gauge cannot be inserted between them. As closely fitting are also the granite blocks of the Egyptian pyramids. Persistent legends and traditions in South America have it that the ancient builders had developed a rock-softening liquid that rendered stones as soft as clay or putty until the stones hardened again. When such a prepared stone was inserted in a wall, the base of this soft stone molded itself after the different external faces of the adjacent stones, to fit finally perfectly. Without such a softening device, a cast of the opposite angles of the stones had otherwise first to be prepared before the block could be cut according to the mould where it had to be placed to fit; an almost impossible task.

The old culture bearers of America were not only great builders of temples and pyramids, but they were also great road-constructors. The many astronomical observatories erected by them and by their successors, for instance the Mayas, makes it evident astronomy was greatly cultivated and refined. From the top of their truncated pyramids they originally practiced sun-worship, but their successors the Aztecs, the Mayas, etc. deviated from this practice to officiate on human sacrifices there.

In Western Europe their studies of the sun and of the moon was of greater importance than that of other planets. In Old Egypt the sun was at first regarded as the principal god, but was later replaced by Ammon. The Pharaoh Aechnaton tried to restore the sun's supremacy as the principal god, but after his dead Ammon again was restituted to supremacy. Sun-worship was accordingly in oldest times in equal vogue on both sides of the Atlantic, and we may assume it was equally so originally in Atlantis, although Plato speaks of the Greek god Poseidon. As an island empire, Atlantis must have in later years attracted the worship of a sea-god and found him more appropriate.

Over the plains and foot hills of North America from Texas to Southern Canada you may find simple Man-made structures of loaf-sized stones, mostly in the shape of rings 5 to 30 feet in diameters. Most of these structures are generally believed to consist of stones used to hold down the hide covers of Indian tepees or tents and left behind when the camps were moved. Some shelters in the Californian deserts may represent similar ones as those found at Nice in France errected by *Homo erectus* hunting parties about 650,000 years ago (p.). These stone shelters together with some flint-points of Moustérian type found in connection with them represent probably the oldest signs of Man's activity on the continent. As already stated, all surface stones in the Californian deserts are coated with an extremely thin coat of chocolate-brown colous called "Desert Varnish", the result of infenitely slow weathering during untold eons (p.). The flint-points and the stones of the shelters are covered with equally strong desert varnish and must be almost contemporary to the surface stones of the desert.

In addition to the much younger, but still quite old tepee-rings are also found some rings 80 to 200 feet in diameter, mostly with a number of spokes (Fig.). They contain also a central stone cairns and some other ones along the outher circle. According to the astronomer, Dr. J.E.Eddy (1977) these, so-called Medicine Wheels, represent primitive observatories to determine the sun summer and winter solstice and in addition also mark the rising of three of the brightest stars that shine on the medicine wheel, viz. Aldebaran in Taurus, Rigil in Orion, and Sirius in Canis Major. All the medicine wheels examined by him were situated "on the highest land around, with clear, commanding view of the horizon". When the native tribes are asked who made the medicine wheels they all state the wheels were old already when their people arrived. Dr Eddy presumes on astronomical ground that, for instance, the Moose Mountain wheel was built about 1,700 years ago, but in the present author's opinion the different wheels may be much older, probably built by descendants of the Atlanteans. They may have served about the same purpose as Stonehegne in England.

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Eddy, J.A. ; 1977, Probing the Mystery of the Medicine Wheels. - National Geographic Magazine, Vol.151, Nr 1. (Wahington D.C.).

We can take it for granted that the Atlanteans were a sea-faring people, which results quite naturally for islanders. In Medinet Habu they are named the "Sea People" by the Egyptians, and as the Egyptians had this name directly from their enslaved prisoners of war, it is most likely that was the name they used for themselves. In addition to Kon-Tiki rafts they used different sailing vessels built of wood or even reeds. The open sea had apparently no terror for them, since they visited both the European and American Continents, and their descendants could settle on Easter Island and other islands in the Pacific. That the first Atlantean settlers in America, the so called, Olmecs, preferred high-lands far from the sea for their habitat does not exclude that they could make long and daring voyages to explore new coasts, notably in search of the desired tin-ore. It is most likely they also drew maps of the visited coasts. Their close study of astronomy and mathematics makes it not improbable they also could calculate latitudes and longitudes? That the Phoenicians later took up and developed further their geographical knowledge and further improved their maritime charts is most probable.

In 1929 two fragments on gazelle hide representing an old map of the coasts of the Atlantic Ocean and of South America were found in the former harem of the Topkapi Palace in Istambul. This map was drawn in 1513 by the Turkish admiral Piri Reis and according to notes in his autobiography Bahriye compiled from 20 maps, some of them dating back to the time of Alexander the Great. He states amongst others that Columbus had used the same old map when he discovered, or rather rediscovered, the continent on the opposite side of the "Western Sea". This "Impossible Map" of Piri Reis has many astonishing details.

A great deal of evidence to prove the antiquity of the map has been produced. So Magellan did not circumnavigate South America through the strait named after him until seven years after Piri Reis drew his map. The Antarctic Continent was thus apparently known in antiquity, but was not rediscovered until more than 300 years after Piri Reis had drawn his map. That Antarctic is divided by a strait between the Weddel Sea and the Ross Sea was not known until the Geo-Physical Year in 1958.

The coast-line of Antarctica is to-day covered by an ice-sheet more than a mile thick, but on the map the coasts are shown as ice-free. The continent is thus glaciated only over the interior of its larger half, the lesser part of the continent remains thus unglaciated. American oceanographers had, some years ago, obtained a sediment core from the bottom of the Belingshausen Basin near Antarctica. In this core, ice-carried detritus appears for the first time just before 2,700,000 years ago and increases thereafter strongly. Before that date, at the end of the Tertiary, the Antarctic Continent was practically ice-free (Wright & Priesley 1922, p.343). The cross-ridges that connected Antarctica with Australia, New Zealand and South America respectively and made it possible for warm marine currents to penetrate south and wash the coasts of Antarctica must have sunk below the surface at the time of the original map, but not deep enough to enable the west-wind current to dominate (p.). By comparing the Piri Reis map with that obtained by seismic soundings made through the ice during the Geo-Physical Year it was revealed that the old map was surprisingly correct. Where some minor discrepancies occurred a closer check exposed the modern map always to be incorrect.

Another most astonishing fact about this map, or rather maritime chart of Piri Reis is that it is drawn with a perfect knowledge not only of latitudes but also of longitudes and according to the principles of spheroid projection. Longitudes cannot be determined without the possession of chronometers, unknown in Europe until about 1780.

According to Sc.Amer.230,4,p,50 (1974) a strongly corroded and encrusted bronze box, 30.5 X 15 X 7.5 cm, was found 1901 in an ancient shipwreck near the island of Antikythera between Greece and Crete. It contained a clockwork mechanisme, with a complex system of cogs and gears, apparently an astronomical calendar or computor. In 1972 professor Derek de Sola Price of the Yale University was able for the first time to make X-ray and gamma-radiography studies of the fragments. The mechanisme was intended to calculate the position of the sun and moon according to the 19-year cyclical calendar current in classical Greece. A third kind of information was derivid by a differential turntable, not attested to elsewhere in antiquity and that did not reappear in Europe until the 16th century. From ortnography of its inscriptions, its metallurgy, etc. it had been used and once mended and was probably manifactured about the year 80 B.C., possibly in 87 B.C. Chronometers occurred thus already in antiquity.

The astonishing correctness of the map and its great geographical extent over vast territories makes it obvious that the original from which it was copied must have been prepared over a very long time and successively improved by experienced explorers and hydrographical specialists or cartographers. The distance on the map between Africa and South America is exactly as exists to-day, whereas a supposed continental drift ought to have been noticeable after more than 2-3,000 years. Most probably the charts were begun by Atlanteans, perhaps taken over and further developed by Phoenicians or Carthagians, which would accord with the statement of Piri Reis that he had studied a map from the time of Alexander the Great. If originally commenced by the Atlanteans or their American descendants it is remarkable that the islands of Atlantis are omitted on the chart. This ~~fact~~ speaks in favour of the fact that these islands were known to have disappeared at the time when the last copy was prepared. That makes it probable some Phoenician cartographer compiled his chart from older material, copied the coast of Antarctica and perhaps also of South America unknown to himself, but omitted then to register Atlantis which he knew had sunken and therefore been oblitered. It is said that Greenland also is registered on the map of Piri Reis and that this large island, like Antarctica, also is less glaciated than to-day.

Atlantis prospered during the so-called "Climatic Optimum". This optimum was brought about by the penetration of the Gulf Stream into the Arctic Ocean, to begin with through the Denmark Strait, but as the lowest part of Atlantis sank, it veered to east of Iceland and was thus able to penetrate further (a) into the Arctic Ocean than to-day (Fig.35, p. and fig.36, p.). With this event, the greater part of Europe was shielded from its centre of cold and so enjoyed a mild climate. This Climatic Optimum prevailed during the years 5,000 to 1,000 B.C. in N.W.Europe and, according to Anderson (1968, p.33) in North America (Alaska) as well. According to Hough (1950) its climatic counterpart existed similarly in the Antarctic. It was followed, as far as Europe is concerned, by a pluvial time.

The main part of Atlantis including the capital sank about 1,200 B.C. and large parts of it remained probably above sea-level during a few more hundred years. We may assume the continent had disappeared more or less completely about the year 1,000 B.C. We know the Phoenicians, either from Sidon, Tyre or Carthage, to have ventured outside the Gibraltar Strait. The many finds of inscriptions with Phoenician letters in Brazil and the United States speak in favour of these inscriptions to be genuine. The original of the map of Piri Reis was thus probably an old Phoenician chart, which in its turn may have been founded on Atlantean ones.

After the sinking of Atlantis, it is highly unlikely anybody except the Phoenicians would have taken an interest in carrying on a sea-trade to remote coasts. In America the new settlers were busy exploring the country and consolidating their rule over the natives. In Europe the coasts were blockaded for centuries by floating pumice from some of the sinking Atlantean islands of the same geological build as the Liparian Islands west of Italy. Pumice in large quantities entered certainly also the Gibraltar Strait with the strong inflowing current. Later on the Phoenicians kept permanently war-ships at Gibraltar in order to prevent foreign ships from passing the Strait, thus maintaining their monopoly over the trade with places outside the Mediterranean. There exist no record stating that the Egyptians, Minoans or Etruscans undertook any voyeges west of the Mediterranean.

Dating by radio carbon-14 is generally considered to be accurate within certain limits, but some doubts have been expressed about this accuracy. The present author has regarded the dates given as usually too low. The Egyptian calendar dates have also appeared to be older than contemporaneous samples dated by radiocarbon methods. That the dates produced by radio carbon-14 have been too low was confirmed at a conference in Pullman, Washington 1965. There it was stated the hitherto accepted half-life desintegration for carbon-14 of 5,568 years ought to be 5,730 years. According to Green (1968) "... the 14 C content of the atmosphere is not constant with time but depends upon such variables as solar activity, the nature and behavior of the air masses, and especially on the geomagnetic field." "The current rate of decrease in the geomagnetic field is 5 per cent/century, ..." "This means a change to approximately one-third of its initial value in 8,000 years .... or an error of 1,600 years in the 14 C age." The present author has a feeling this increase in the actual age is somewhat too high.

A very promising method has turned up for control of the radiocarbon dates, but unfortunately this control does not yet reach farther back than about 7,200 years B.P.(Before Present). On the slopes of the White Mountains in Eastern California the climate is cool and very dry, so wood does decay only very slowly and old trunks may without rotting survive for many centuries. The bristlecone pine tree living there represents probably the oldest living specimen on earth, and the oldest living tree there is, according to its annual growth rings, 4,600 years old. By counting growth rings of this tree and comparing the result with older dead trunks, scientists have been able to correlate the rings and obtain a ring-calendar streching back to about 7,200 years B.P., or 5,200 B.C. After one year, a tree-ring is dead and does not take up any more C 14 from the air. The rings give thus progressively earlier dates which can be compared with dates obtained by carbon-dating of the same ring. The suspected error in radiocarbon dating can thus be corrected. Until the beginning of our era and somewhat earlier, the differences are very slight, but in the third millennium B.P. the difference becomes increasingly pronounced . Some confusion must occur regarding the proper half-life disintegration because the 8th International Conference on Radiocarbon Dating, Lower Butt, New Zealand 1972 decided that in future the age determinations should be bound on a half-life of 5,568 years. I.U.Olsson (1974) is using 5,570 for her half-life estimate.

An uncorrected radiocarbon dating around the year 2,000 B.C. should according to Wernick (1973-74) be recalibrated to about 2,500 B.C. and an obtained date of about 2,500 B.C. should be recalibrated to about 3,200 B.C., and so on. The C 14 dates from hearths left by Folsom Man must therefore be at least 11,000 years old. We do not know if the recalibrating can be extrapolated with increasing years or if the rate in older times runs more parallel along error of ca. 1,000 years over the radiocarbon value.

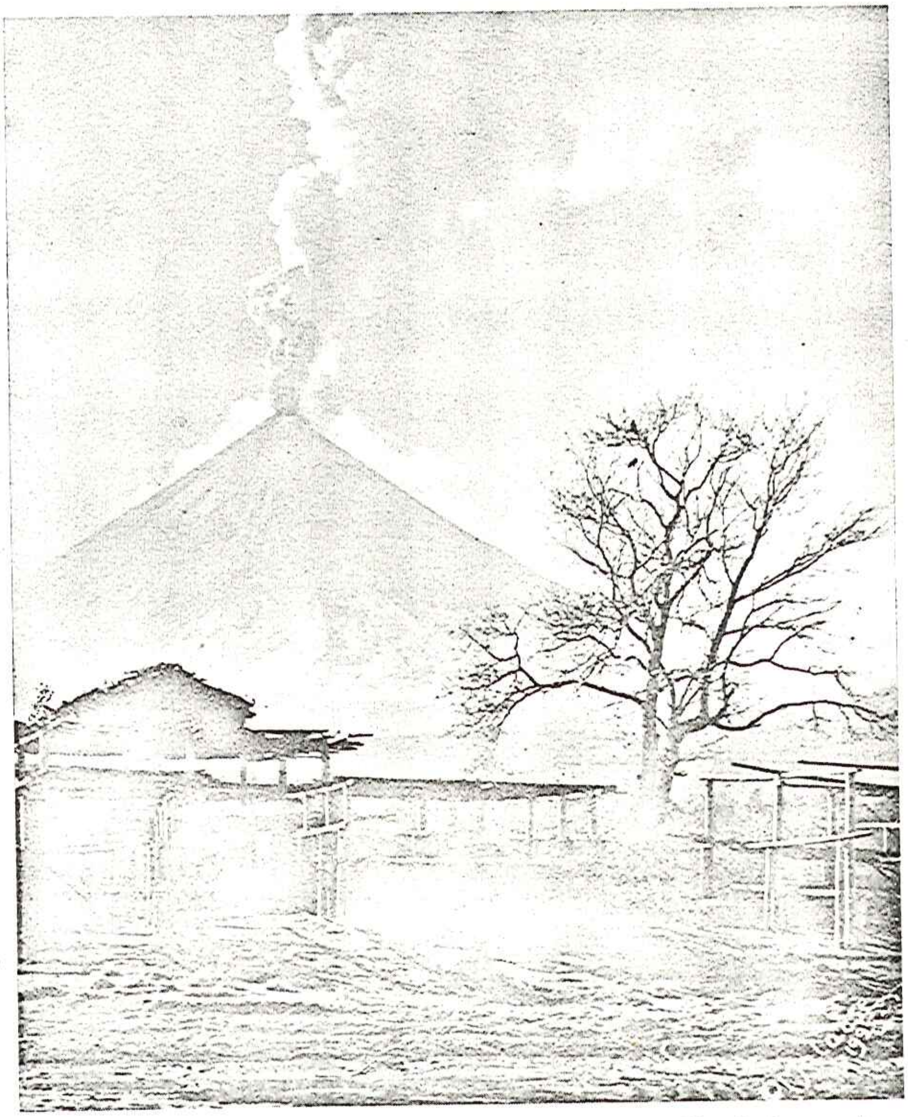
Almost everyone to-day believes that the generally accepted theory of continental drift and of sea-floors spreading from submarine ranges such as the Mid-Atlantic Ridge is a proven reality, but, as amply shown, there is no foundation to this. Until someone has explained the existence and the nature of a force capable of initiating and maintaining a moving current in the subcrustal masses, with a rigidity comparable if not exceeding that of granite, the theory cannot be regarded as viable. It is not sufficient to speak of imaginary nuclear processes, their existence must be proved or at least made believable. The explanation must also be in accord with other sciences and not be met with any contradictions. Scientists are in general reluctant to draw the obvious answer to their observations if they find the answer too sensational. Therefore, it is hard to understand how the almost incredible drift theory could be so universally accepted. It may be that some renowned geophysisist happened to observe boiling water in a pot and the water-current rising from the hot bottom, and transpose the process in the pot to the situation within the earth. That gravity in the interior of the earth maintains the minerals there in a compressed and heavier state slipped apparently from his mind.

When, for instance, the submarine canyons were found off coasts all over the world, mostly as continuations of existing rivers, everyone tried in vain and for years to explain their origin in a "natural way". Turbidity currents were most popular, but here also their excavating power was not adequate, especially where magmatic rocks are involved. A subaerial origin by running water was long rejected in spite of the fact that the walls of the canyons frequently showed signs of air-weathering, the canyon bottoms were flat, not U-shaped in cross-section, and the entire sculpture of the continental slopes indicated traces of subaerially running water. That an extensive lowering of the general sea-level really had occurred towards the end of the Tertiary is now beginning to dawn amongst scientists (Shepard 1948, Lindberg 1972), XXIII International Geographical Congress, Moscow 1976 on "Sea-Level Changes During Pleistocene").

The existence above water-level of the Mid-Atlantic Ridge as the Continent of Atlantis and also of many other now submarine ridges until many thousand years after the end of the Quaternary Ice Age is still accepted only reluctantly. Scientists may have founded their scientific career on the present distribution of land

and sea. That this and other ridges really reached above water-level is undeniable; the proofs are too conclusive. We may on the other hand be grateful to Atlantis and its connecting ridges to have sunk. Thereby they made it possible for the Gulf Stream to enter the Arctic Ocean enabling its warm water to melt the Arctic icecap and also change the meteorological situation in the North Atlantic. This sinking of the ridges was thus instrumental in, and the ultimate reason for, the ending of the Great Ice Age. Had this not occurred, tundra conditions would still prevail in most of Europe and North America south of a large persisting inland ice-sheet.

The constriction theory is the only one that is able to explain in a natural way all movements in the earth's crust. The old theory of isostasy is out of question as it requires a fluid or semifluid substratum. We know that the earth's crust is solid down to a depth of 2,900 kms and that down to 6-700 kms a stress will cause a rupture followed by earthquakes. If somewhat plastic, the stress would only release a flow.



Frontispiece. The volcano Klutchefskaja Sopka (16,000 feet) in Kamchatka, seen from the village Klutchi. (In the foreground are racks for drying salmons as dog-food). This volcano, like most active ones, has periodical eruptions when the subcrustal masses locally liquify owing to pressure from the constricting continental shelves. This constriction is caused by cooling from the ice-cold oceanic bottom-water. The eruption ceases when the local magma reservoir is emptied. During the winter of 1925 an eruption from this volcano covered Northern Kamchatka with a blanket of ash, preventing all travelling with dog-teams. The author then reached a village on foot from the interior on the 15th day with food for only three days and only 10 dogs out of 20 surviving.

12

Fig. 1.

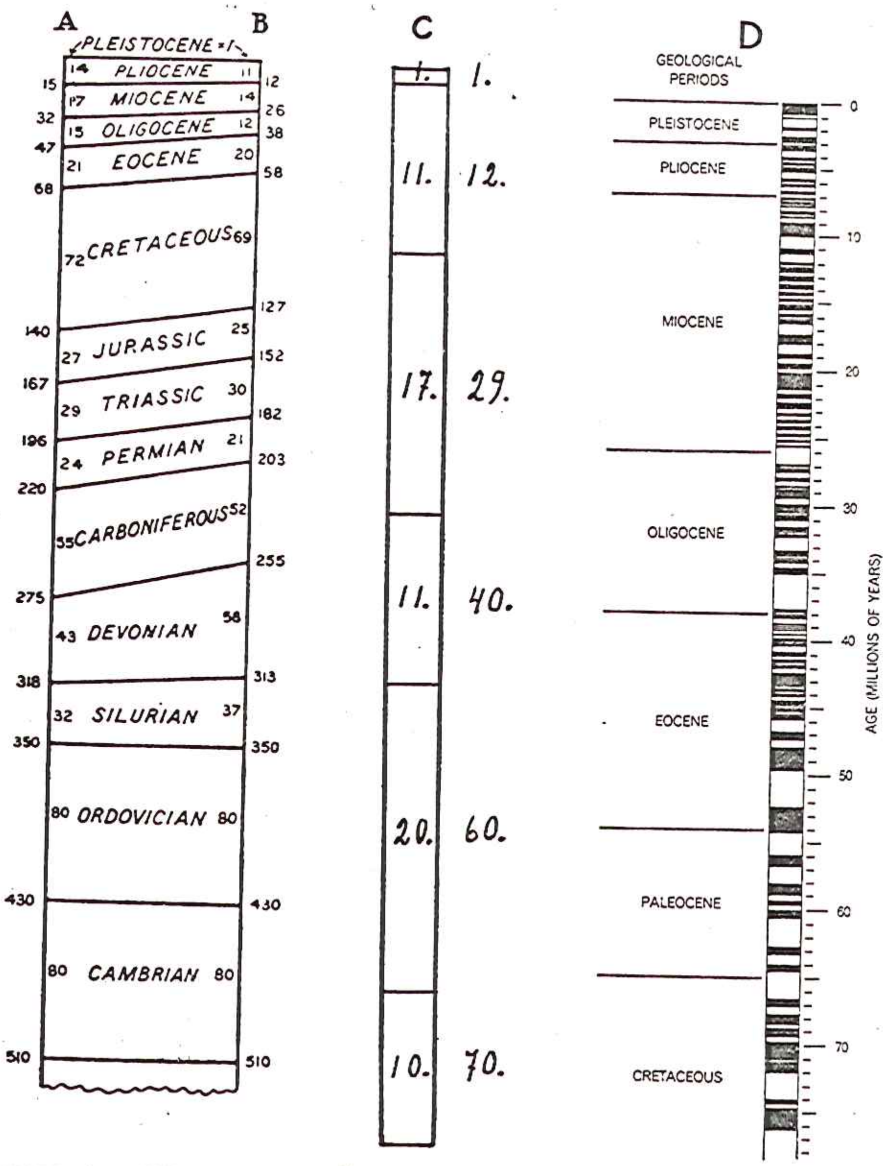

A
B
PLEISTOCENE = 1
PLIOCENE
MIOCENE
OLIGOCENE
EOCENE
CRETACEOUS
JURASSIC
TRIASSIC
PERMIAN
CARBONIFEROUS
DEVONIAN
SILURIAN
ORDOVICIAN
CAMBRIAN
C
1. 1.
11. 12.
17. 29.
11. 40.
20. 60.
10. 70.
D
GEOLOGICAL PERIODS
PLEISTOCENE
PLIOCENE
MIOCENE
OLIGOCENE
EOCENE
PALEOCENE
CRETACEOUS
AGE (MILLIONS OF YEARS)

Fig. 2

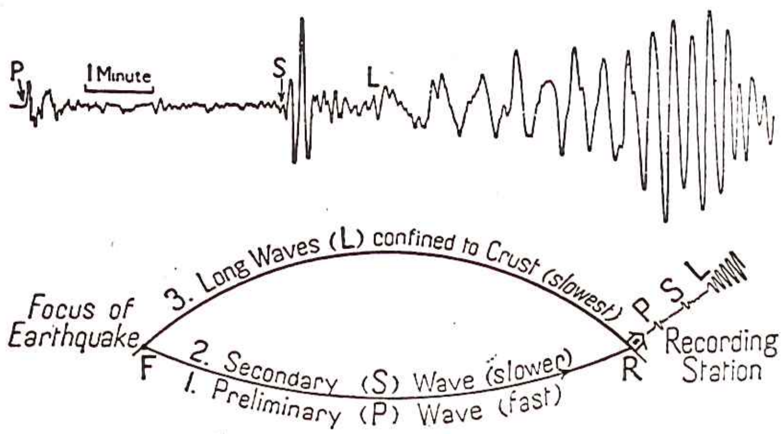

P
1 Minute
S
L
Focus of Earthquake
F
3. Long Waves (L) confined to Crust (slowest)
2. Secondary (S) Wave (slower)
1. Preliminary (P) Wave (fast)
P S L
R
Recording Station

Fig 3

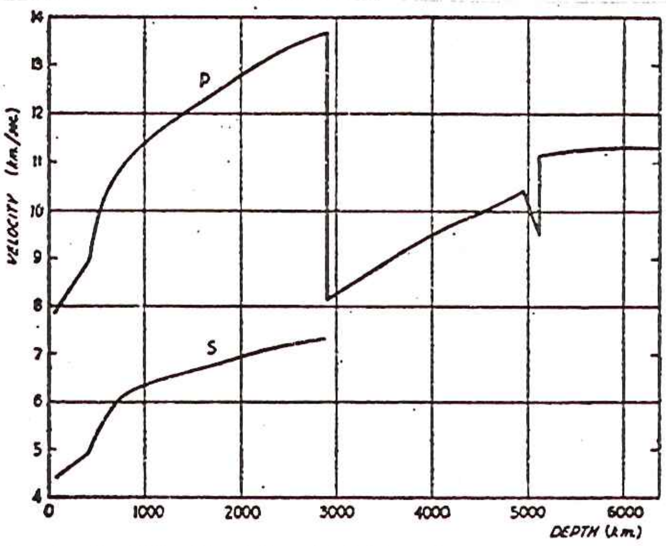


Fig. 4

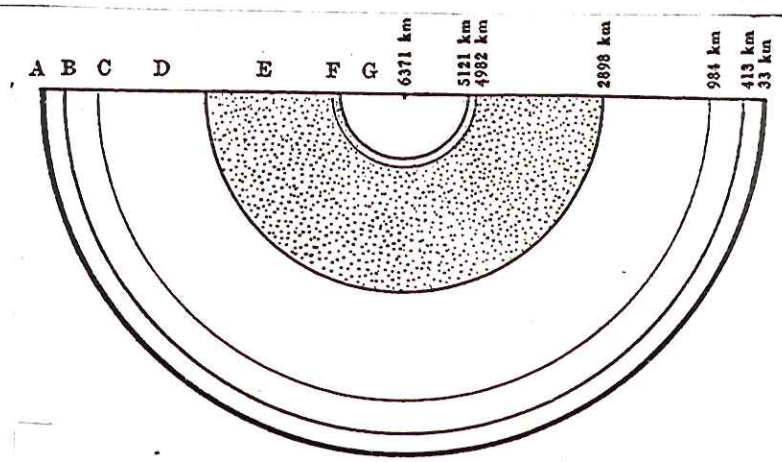


Fig 5

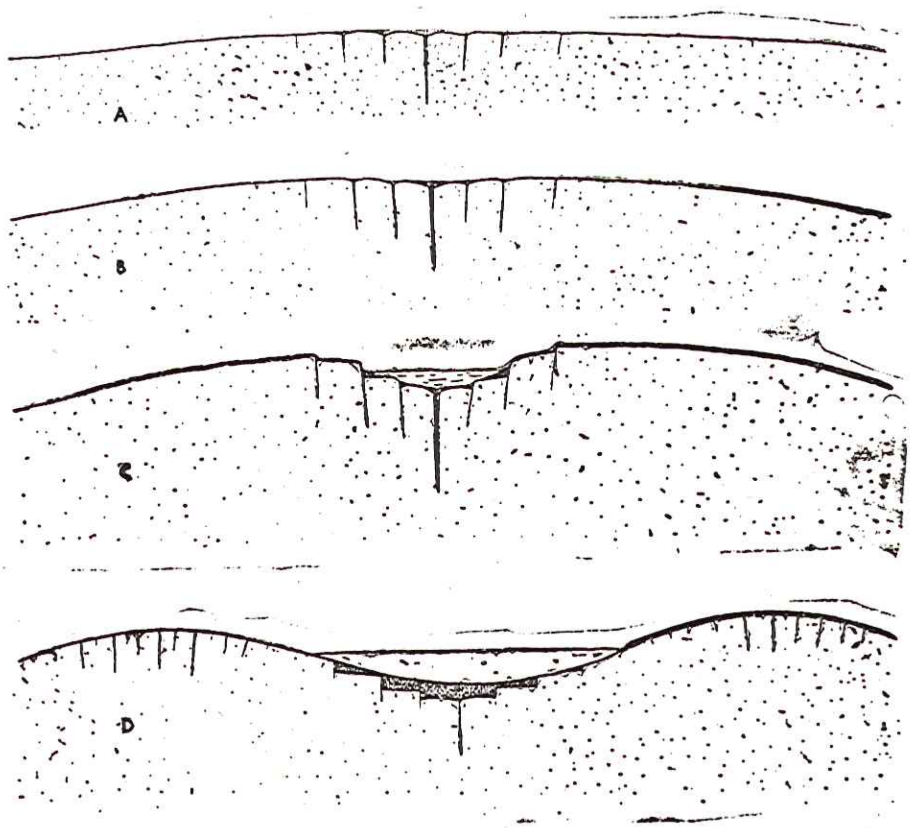


Fig 6.

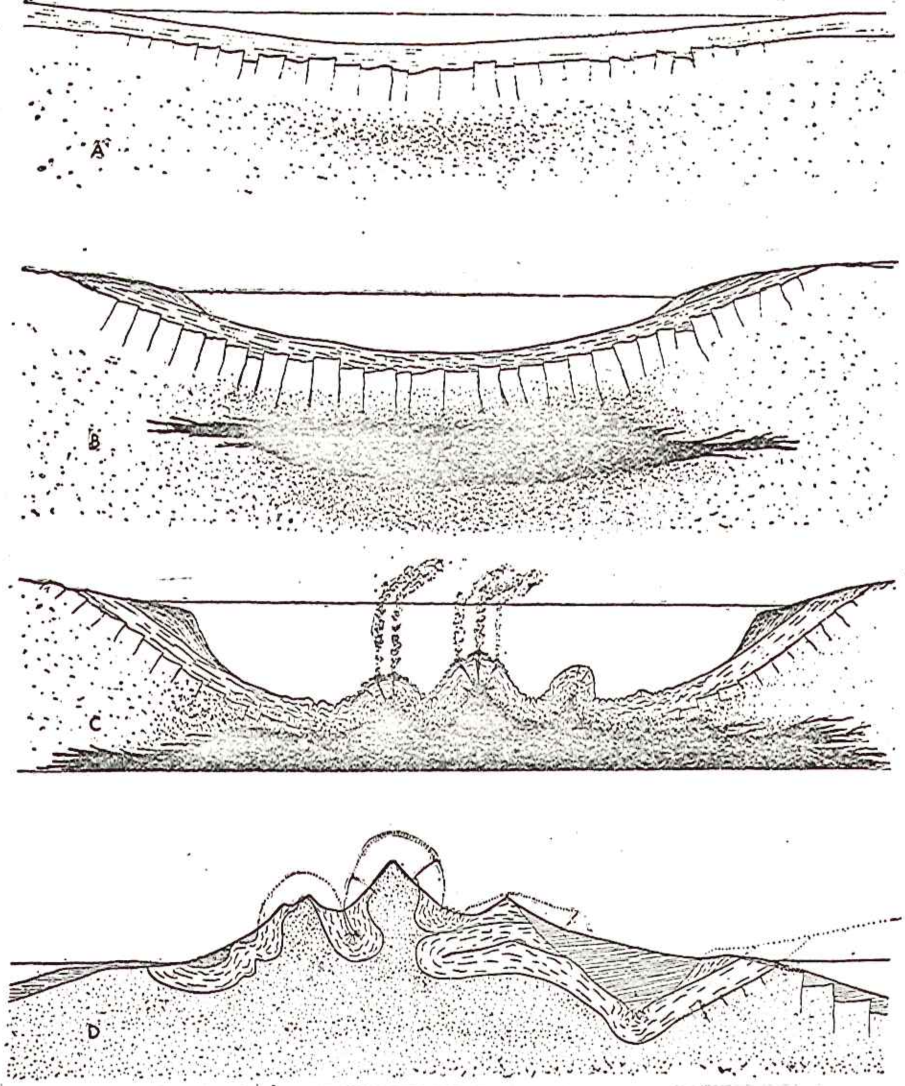


Fig 7

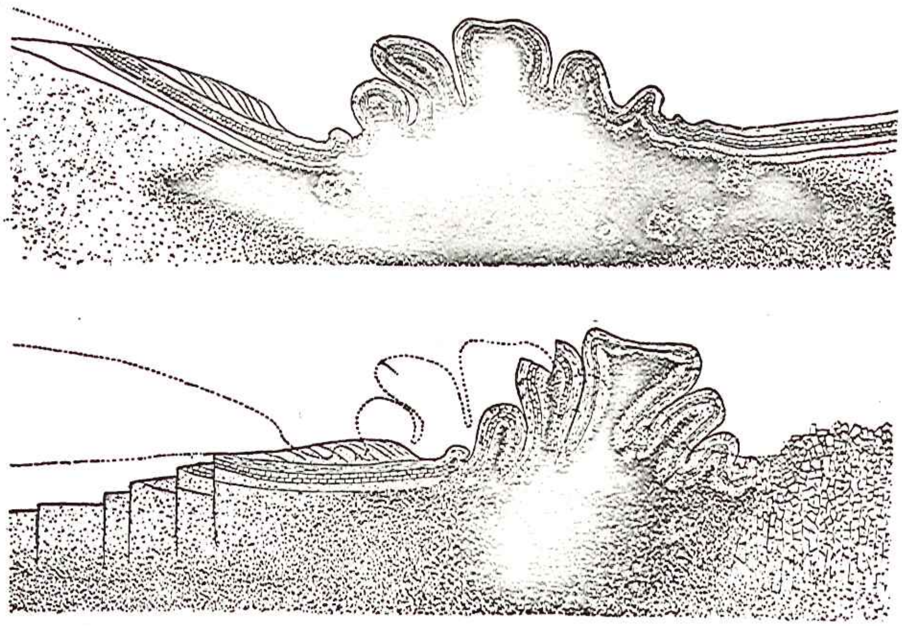


Fig 8

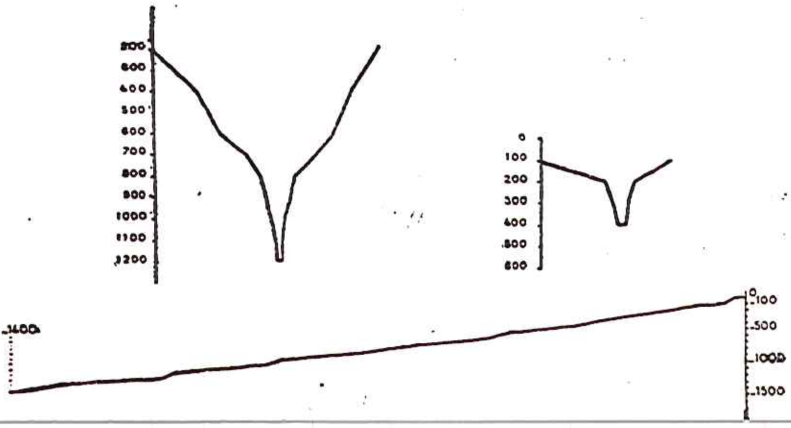


Fig. 9.

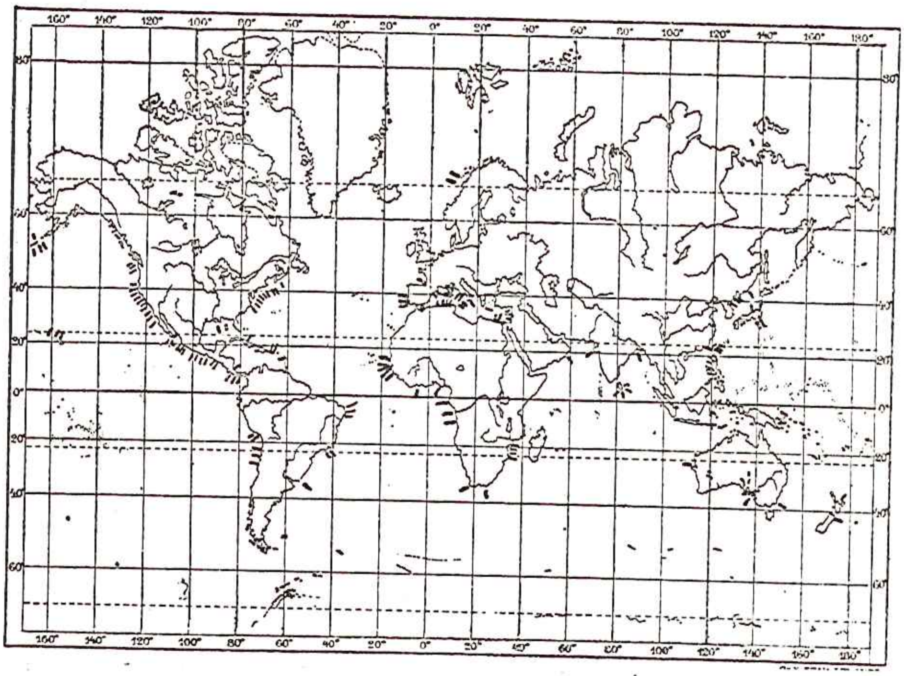
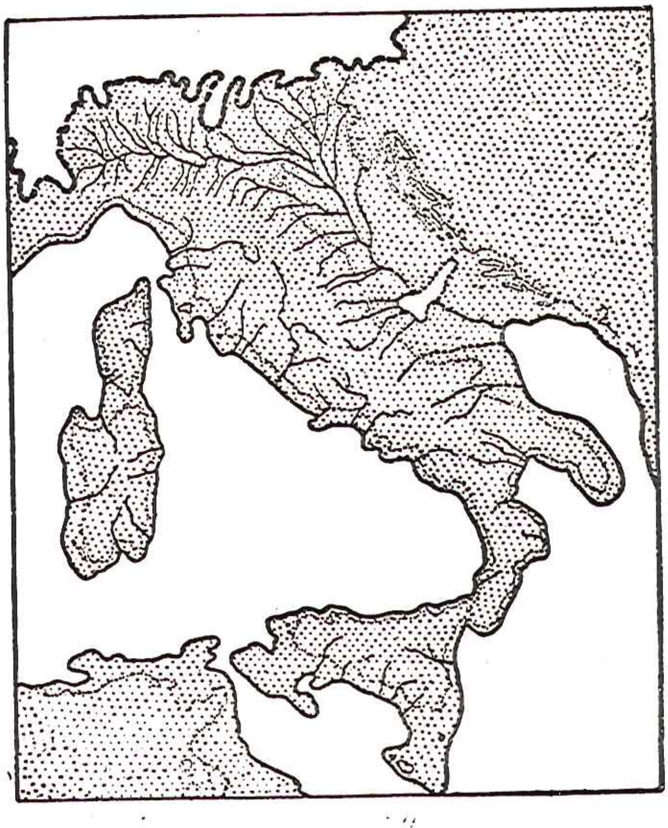


Fig. 10



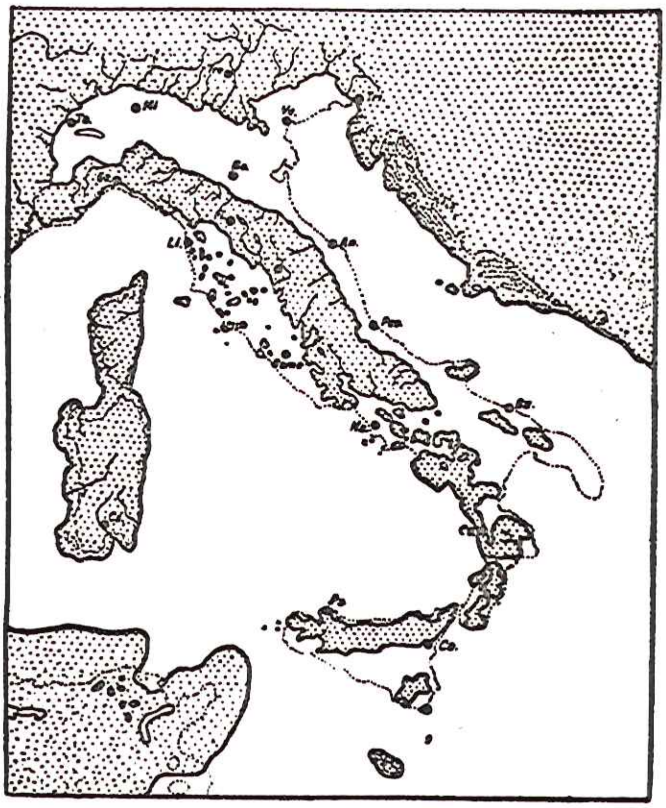


Fig 11.

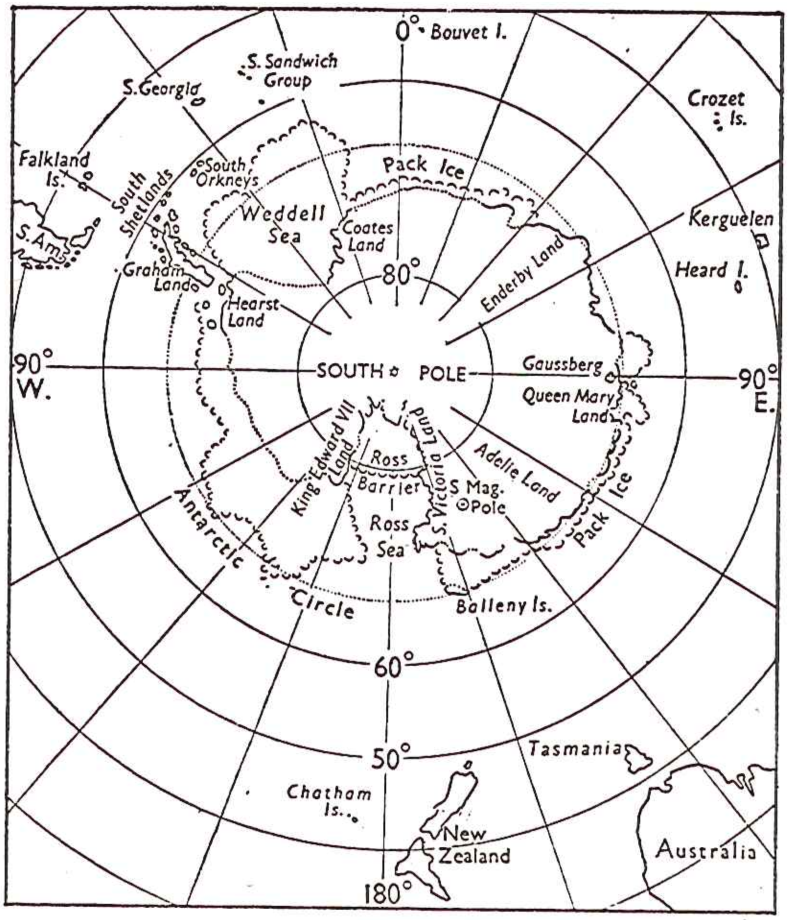
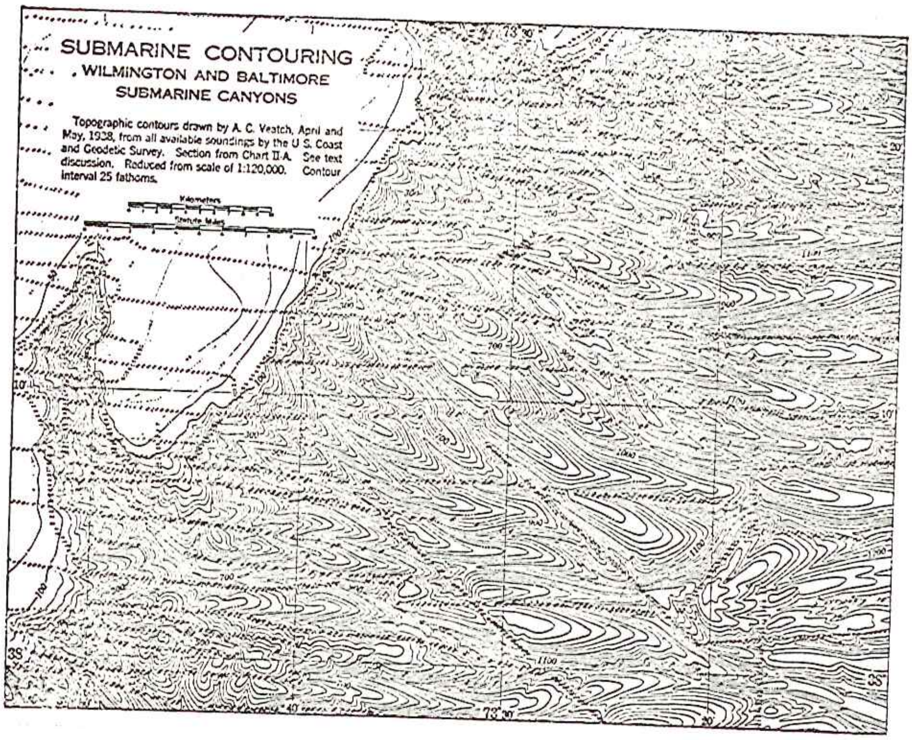

0° Bouvet I.
S. Sandwich Group
S. Georgia
Crozet Is.
Falkland Is.
South Orkneys
South Shetlands
Pack Ice
Weddell Sea
Coates Land
Kerguelen
S. Am.
Graham Land
80°
Enderby Land
Heard I.
Hearst Land
90° W.
SOUTH POLE
Gaussberg
90° E.
Queen Mary Land
King Edward VII Land
Ross Barrier
S. Victoria Land
Adelie Land
S. Mag. Pole
Ross Sea
Pack Ice
Antarctic Circle
Balleny Is.
60°
50°
Tasmania
Chatham Is.
New Zealand
Australia
180°

Fig 12.

Fig. 13


SUBMARINE CONTOURING
WILMINGTON AND BALTIMORE
SUBMARINE CANYONS
Topographic contours drawn by A. C. Veatch, April and May, 1938, from all available soundings by the U. S. Coast and Geodetic Survey. Section from Chart II-A. See text discussion. Reduced from scale of 1:120,000. Contour interval 25 fathoms.
Kilometers
Statute Miles
73°30'
73°30'

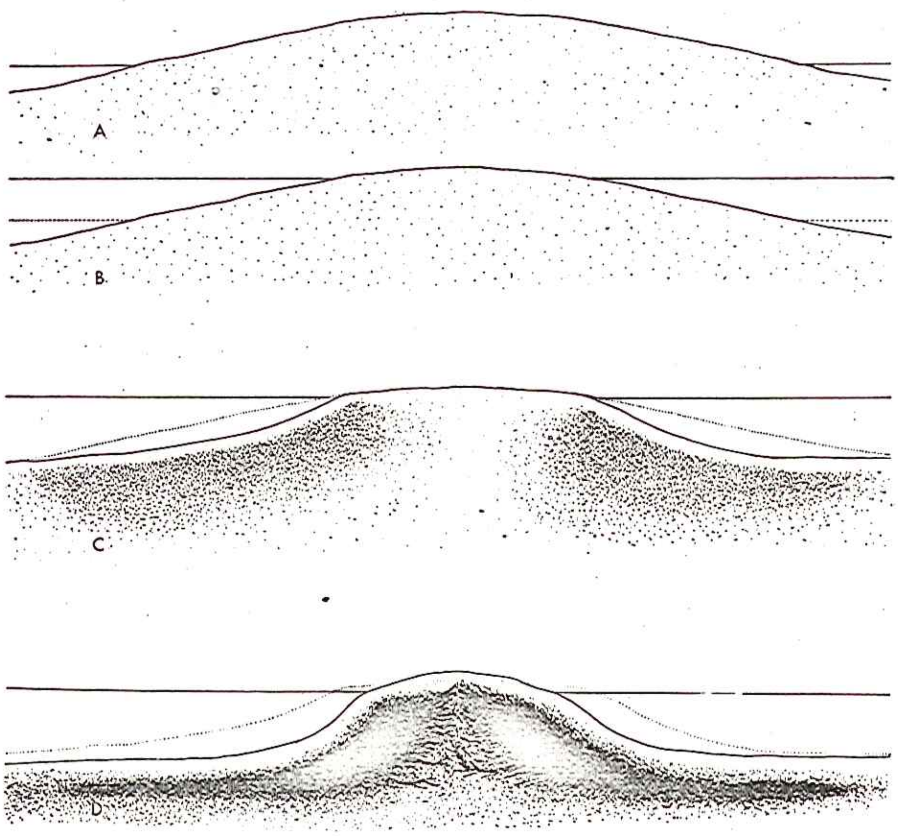


Fig. 14

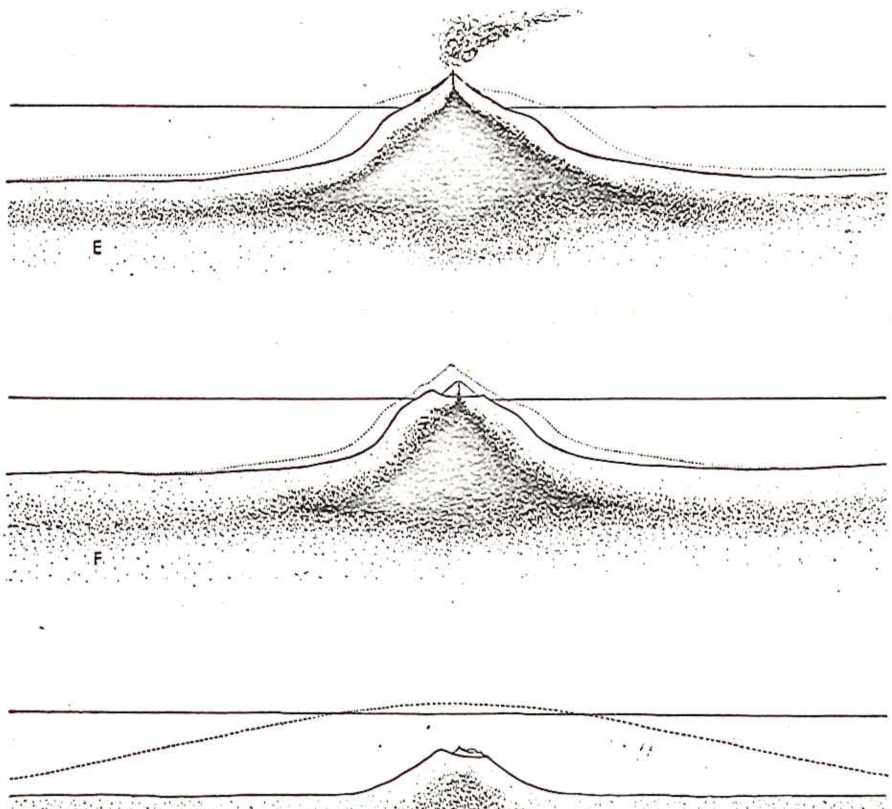


Fig. 14

Fig. 15

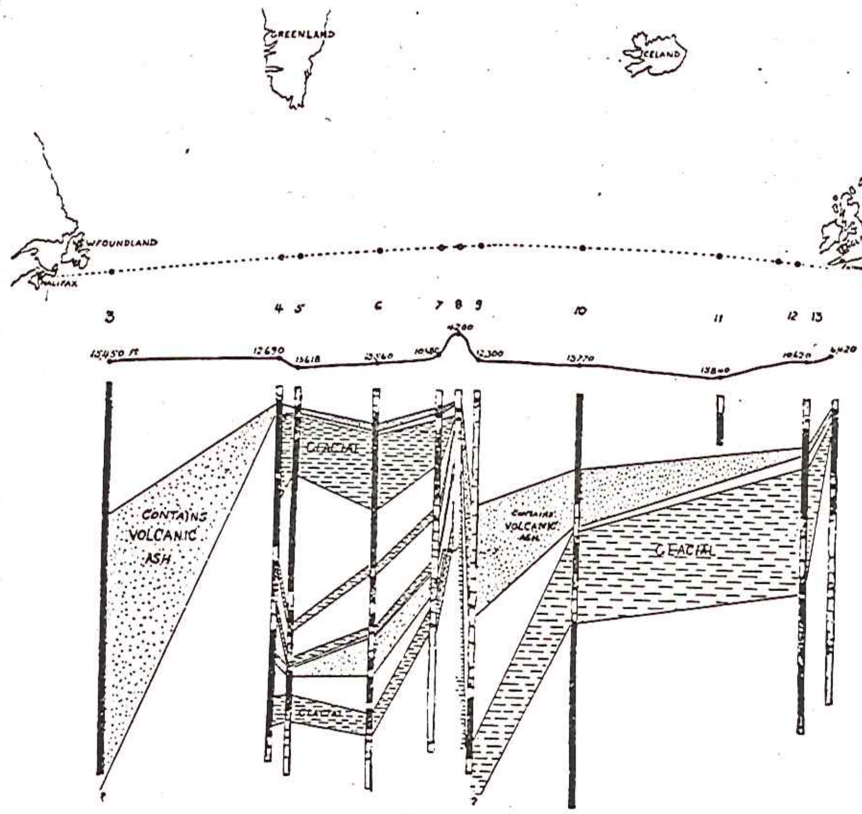

GREENLAND
ICELAND
NEWFOUNDLAND
HALIFAX
3
4 5
6
7 8 9
10
11
12 13
15450 ft
12690
13618
13560
12300
13770
13840
6420
CONTAINS VOLCANIC ASH
GLACIAL
CONTAINS VOLCANIC ASH
GLACIAL
GLACIAL

Fig 16.

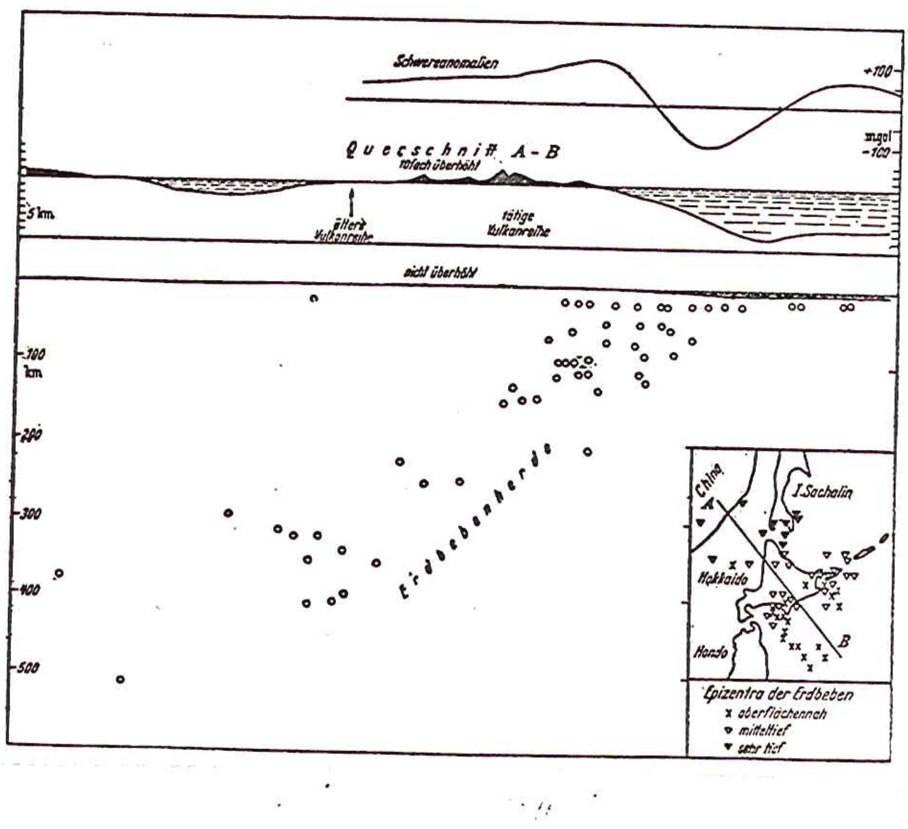

Schwereanomalien
+100
mgal
-100
Querschnitt A-B
10fach überhöht
5 km
ältere Vulkanreihe
tätige Vulkanreihe
nicht überhöht
100 km
200
300
400
500
Erdbebenherde
China
I. Sachalin
Hokkaido
Hondo
A
B
Epizentra der Erdbeben
x oberflächennah
mitteltief
sehr tief

Fig. 17

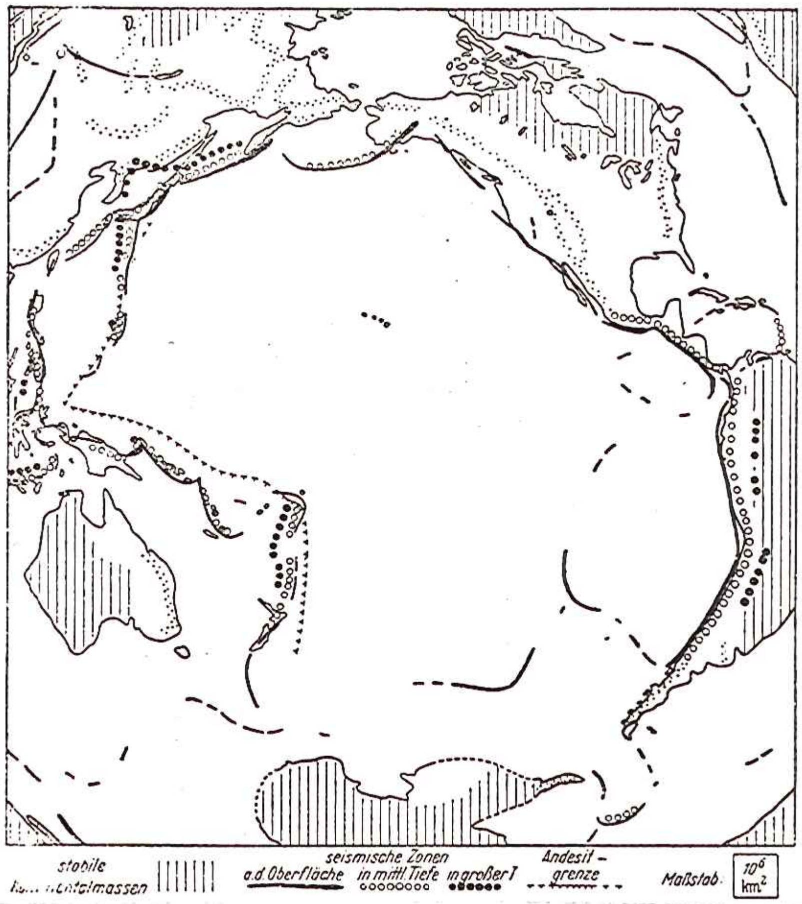
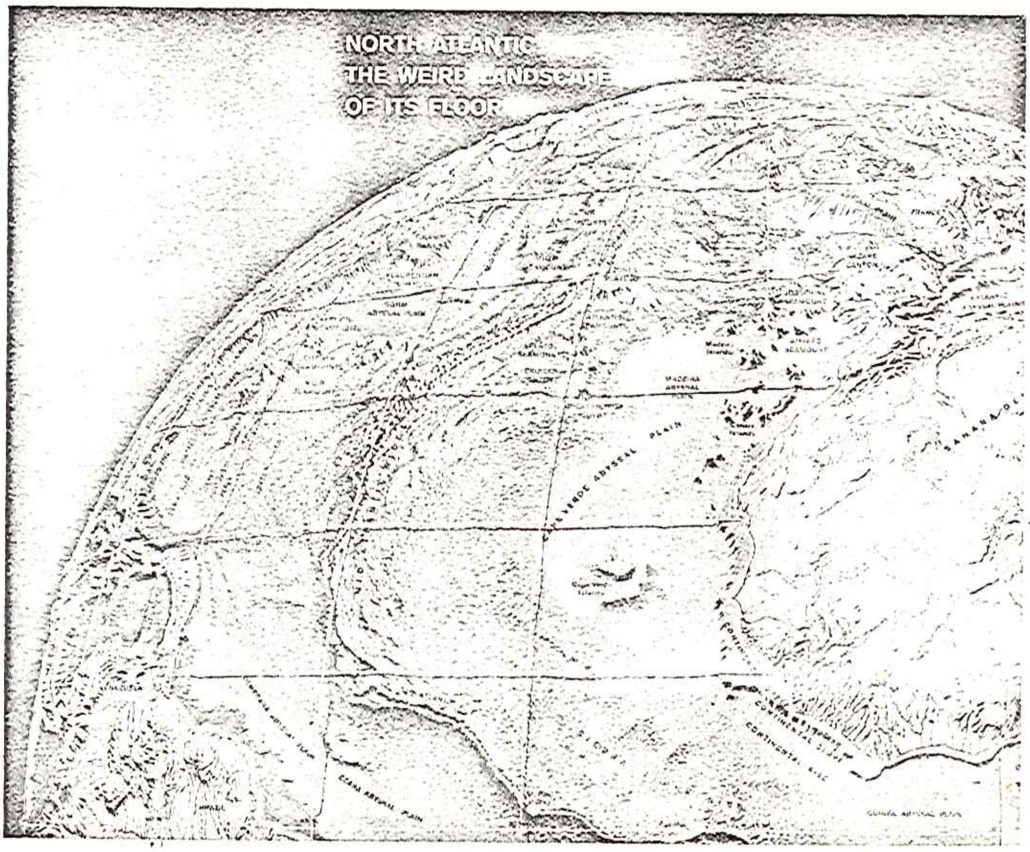
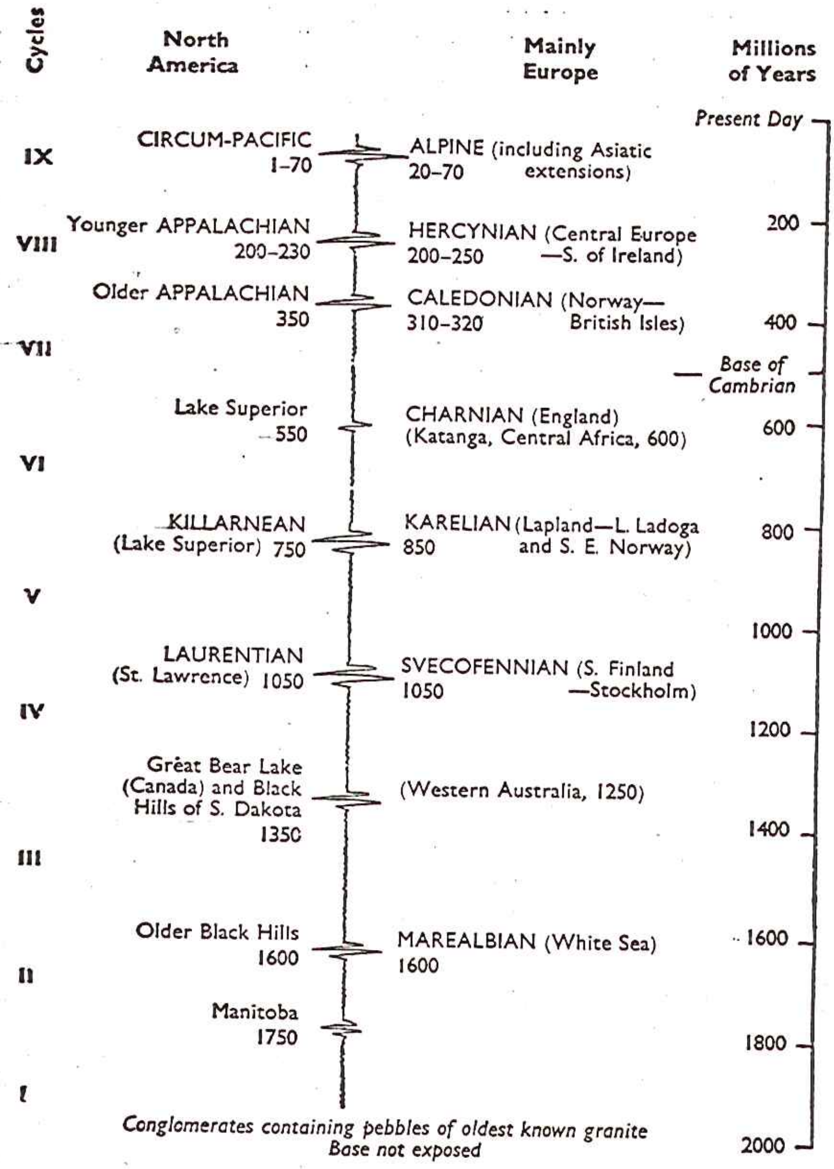

stabile
seismische Zonen
a.d. Oberfläche
in mittl. Tiefe
in großer T
Andesit-grenze
Maßstab
10^6 km²

Fig. 18.

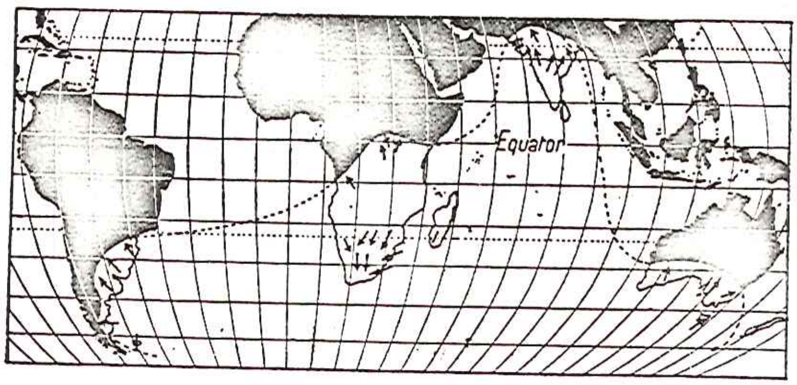

NORTH ATLANTIC
THE WEIRD LANDSCAPE
OF ITS FLOOR



Cycles
North America
Mainly Europe
Millions of Years
Present Day
IX
CIRCUM-PACIFIC 1–70
ALPINE (including Asiatic extensions) 20–70
200
VIII
Younger APPALACHIAN 200–230
HERCYNIAN (Central Europe—S. of Ireland) 200–250
Older APPALACHIAN 350
CALEDONIAN (Norway—British Isles) 310–320
400
VII
Base of Cambrian
Lake Superior 550
CHARNIAN (England) (Katanga, Central Africa, 600)
600
VI
KILLARNEAN (Lake Superior) 750
KARELIAN (Lapland—L. Ladoga and S. E. Norway) 850
800
V
1000
LAURENTIAN (St. Lawrence) 1050
SVECOFENNIAN (S. Finland—Stockholm) 1050
IV
1200
Grêat Bear Lake (Canada) and Black Hills of S. Dakota 1350
(Western Australia, 1250)
1400
III
Older Black Hills 1600
MAREALBIAN (White Sea) 1600
1600
II
Manitoba 1750
1800
I
Conglomerates containing pebbles of oldest known granite
Base not exposed
2000

Fig 19.

Fig. 20.



Equator

Fig 21.

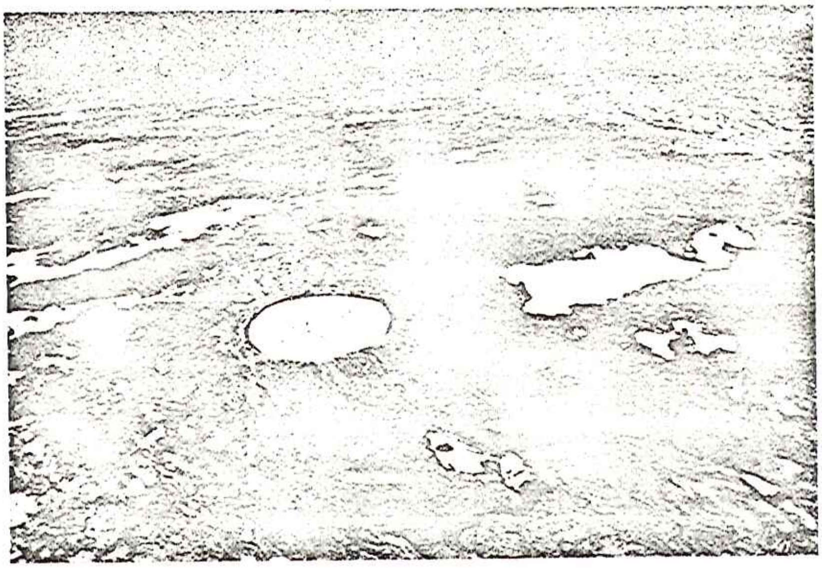


Fig 22.

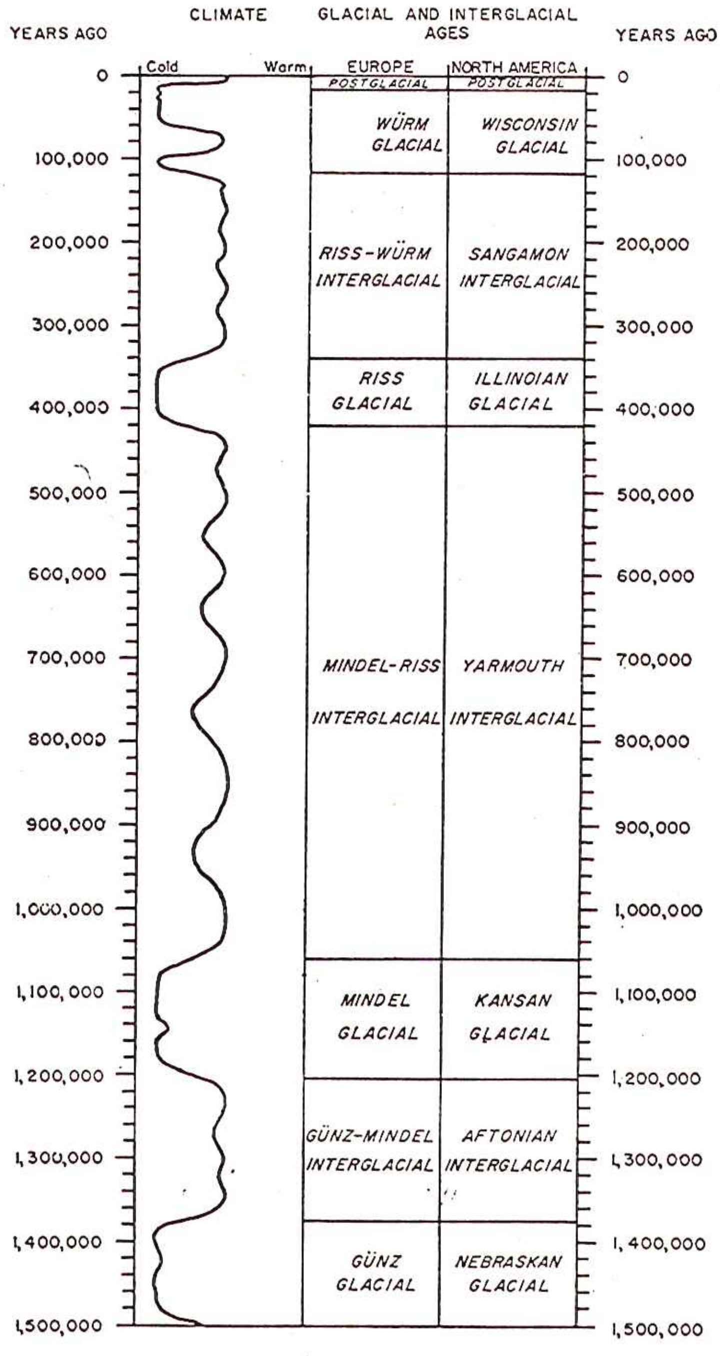
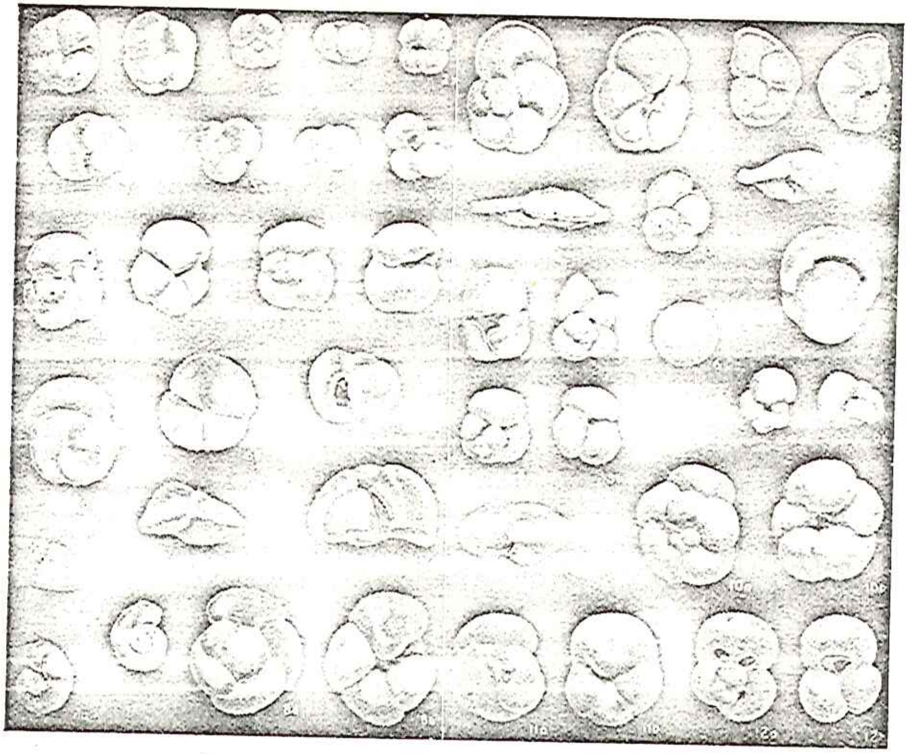

YEARS AGO
CLIMATE
GLACIAL AND INTERGLACIAL AGES
YEARS AGO
Cold
Warm
EUROPE
NORTH AMERICA
POSTGLACIAL
POSTGLACIAL
WÜRM GLACIAL
WISCONSIN GLACIAL
RISS-WÜRM INTERGLACIAL
SANGAMON INTERGLACIAL
RISS GLACIAL
ILLINOIAN GLACIAL
MINDEL-RISS INTERGLACIAL
YARMOUTH INTERGLACIAL
MINDEL GLACIAL
KANSAN GLACIAL
GÜNZ-MINDEL INTERGLACIAL
AFTONIAN INTERGLACIAL
GÜNZ GLACIAL
NEBRASKAN GLACIAL
0
100,000
200,000
300,000
400,000
500,000
600,000
700,000
800,000
900,000
1,000,000
1,100,000
1,200,000
1,300,000
1,400,000
1,500,000

Fig. 23



A.

B.

Fig. 24.

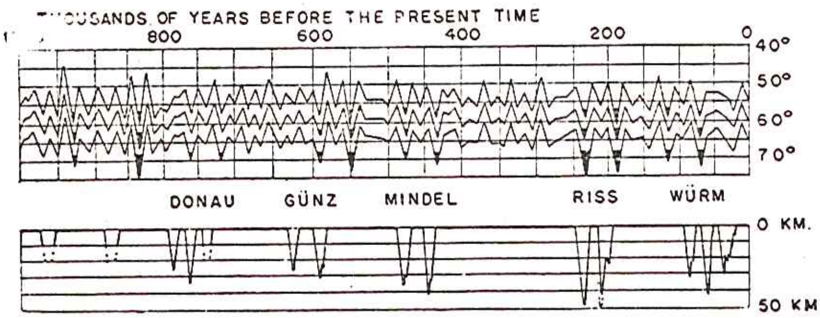


Fig. 25

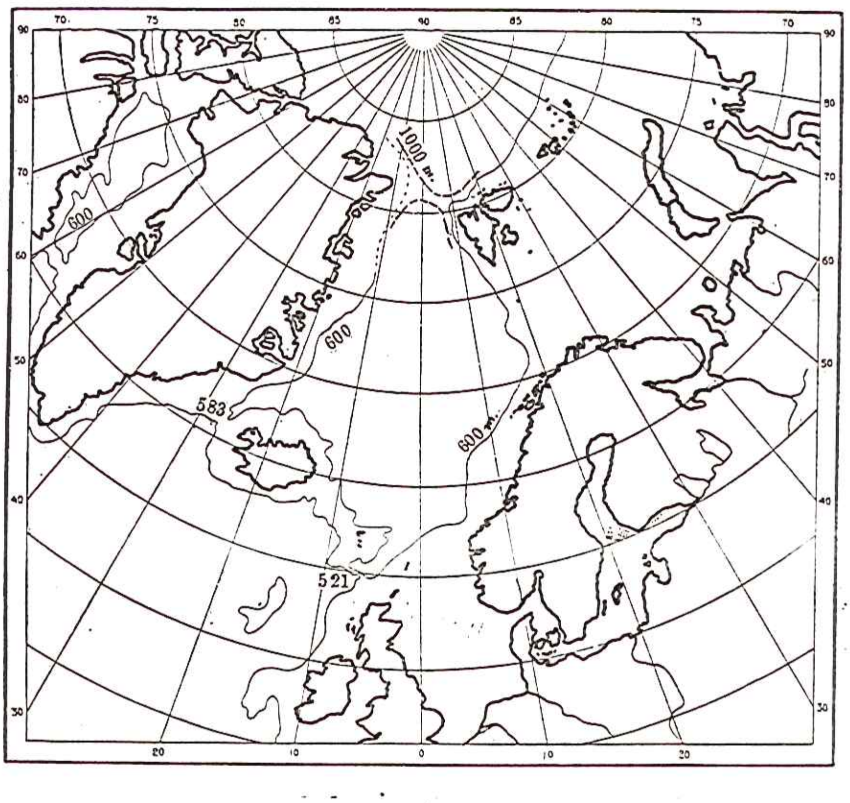


Fig 26.

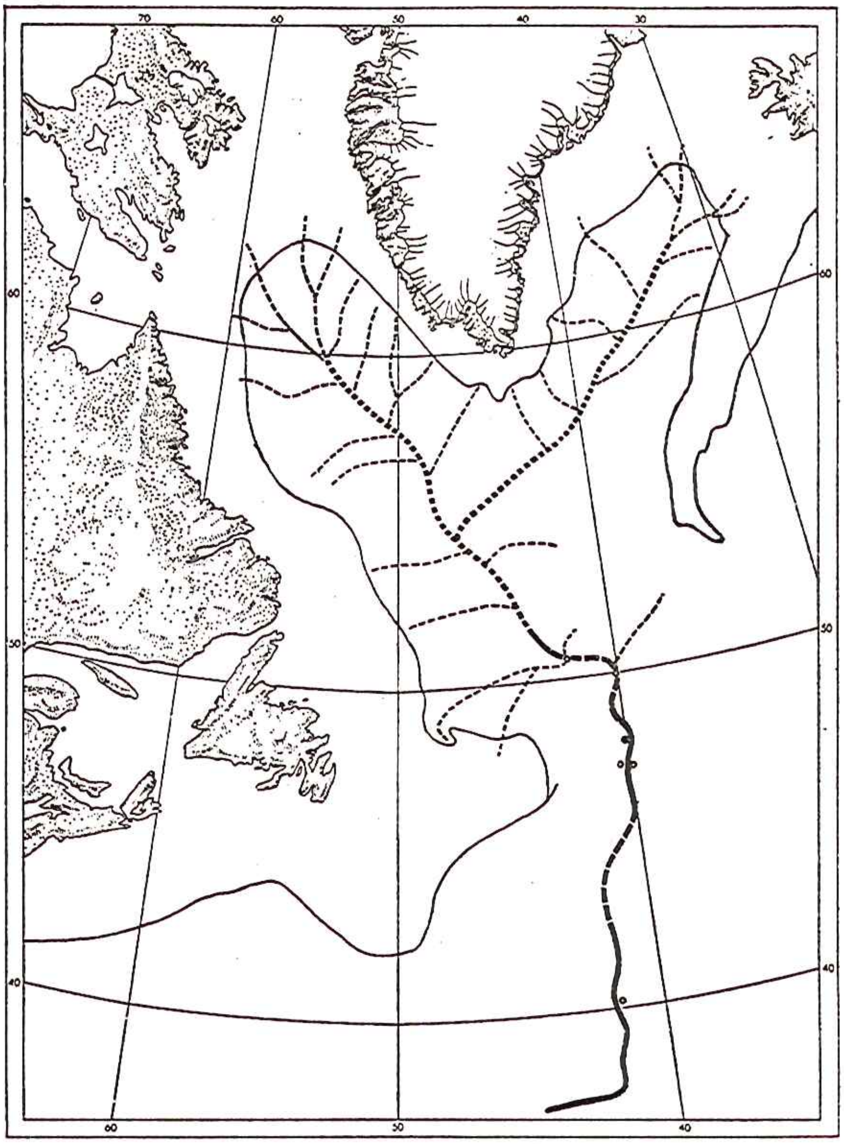


Fig. 27.

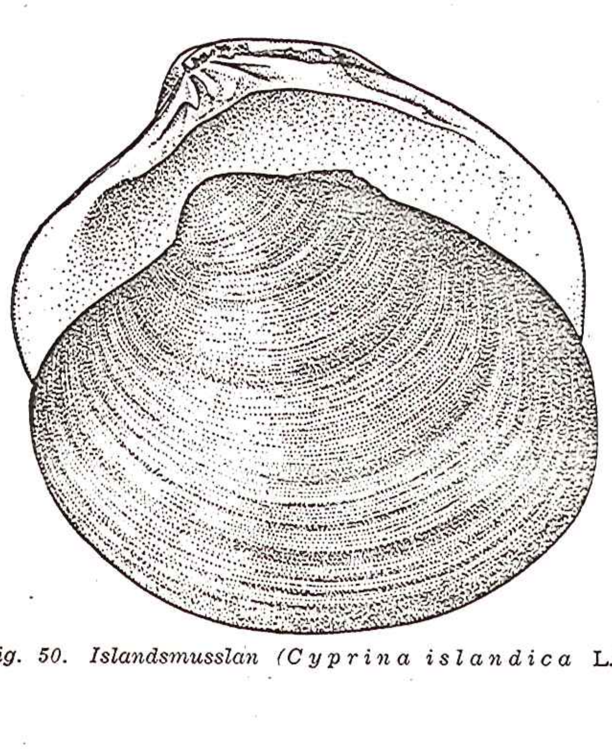


Fig. 50. Islandsmusslan (C y p r i n a i s l a n d i c a L.)

Fig. 28

Fig. ~~32~~ 29

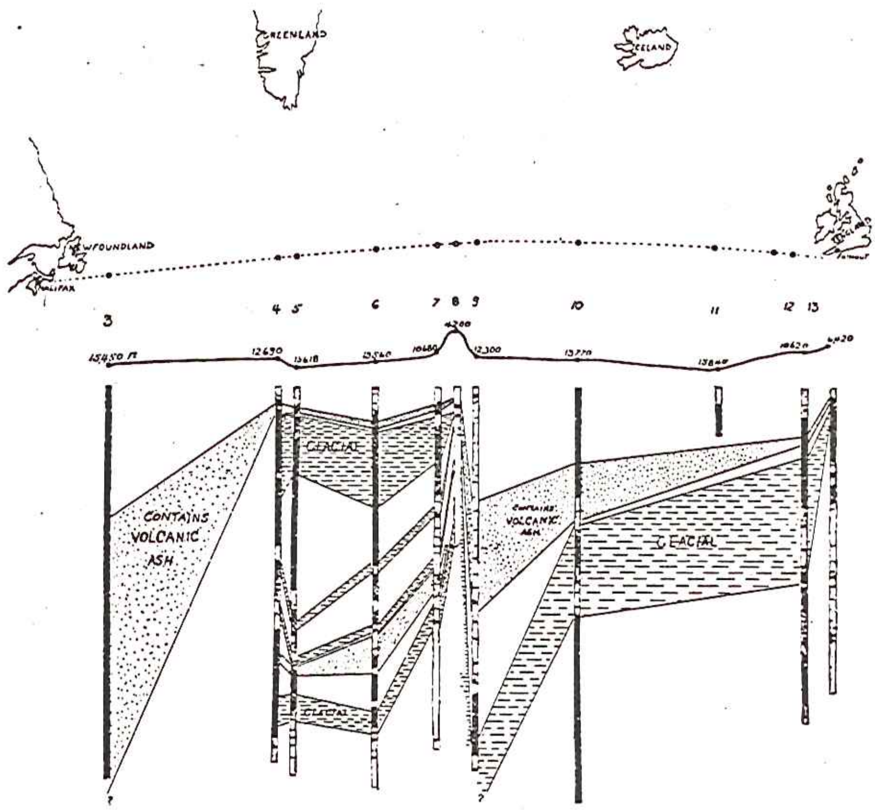


Fig. 30

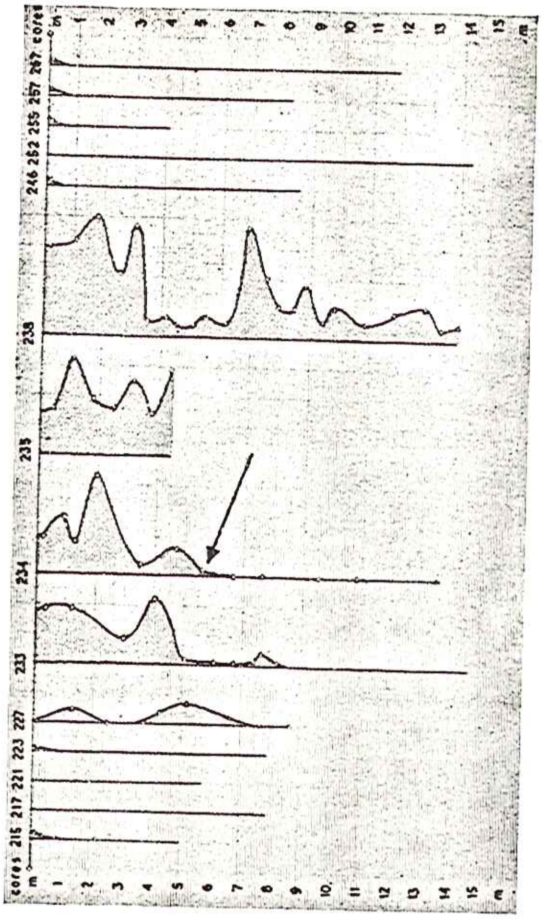


Fig. 31

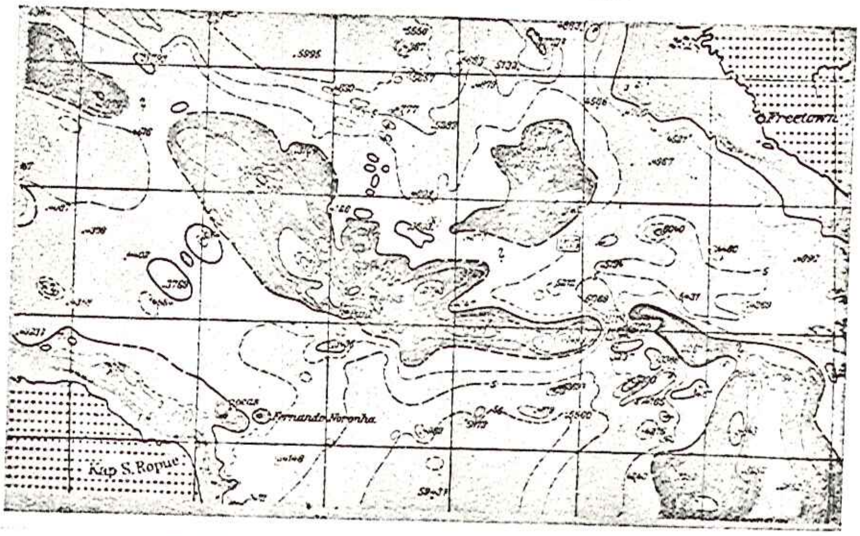


Fig. 32

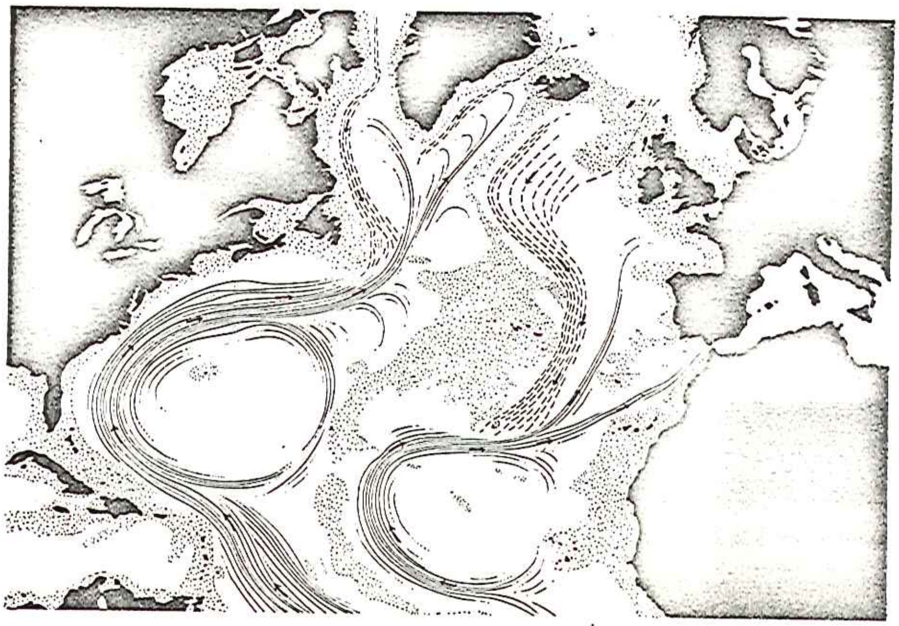


Fig. 35.

Fig. 36.

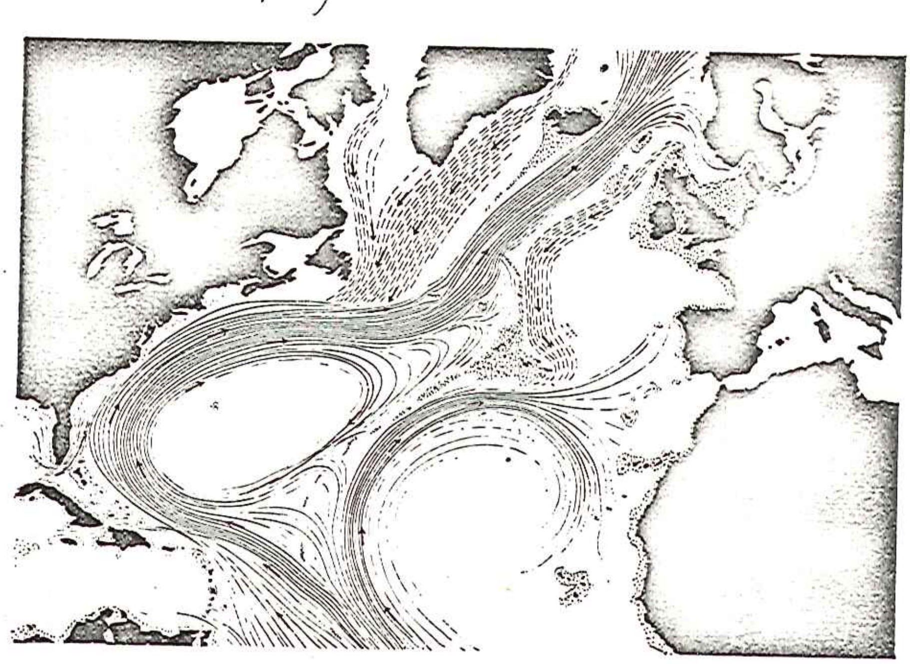


Fig. 37

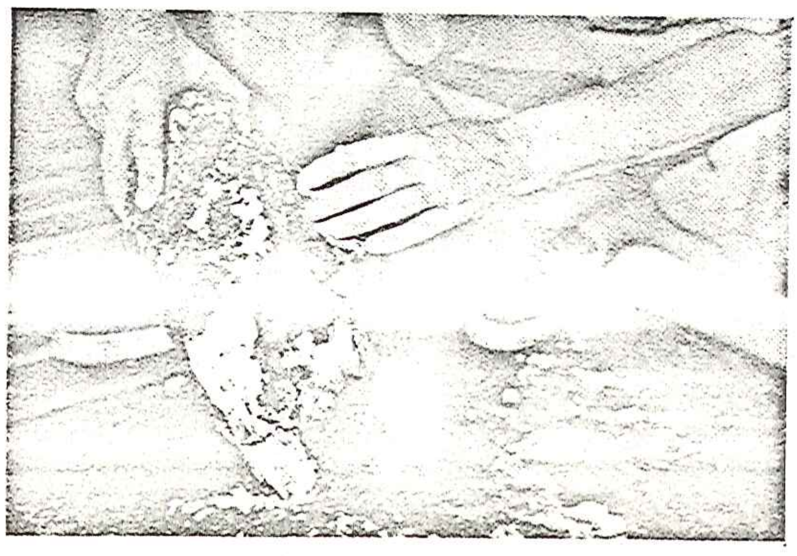


Fig. 38

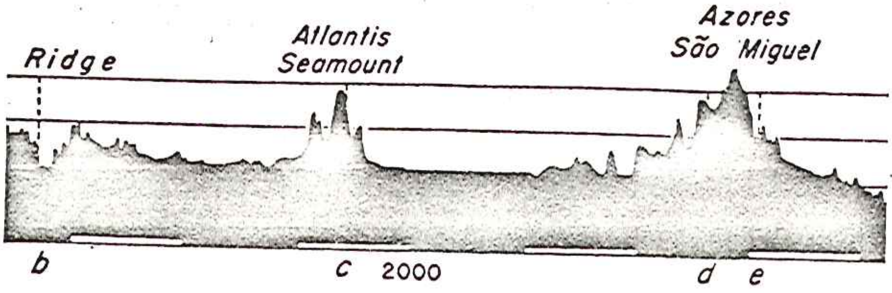


Fig. 39.

Fig. 40

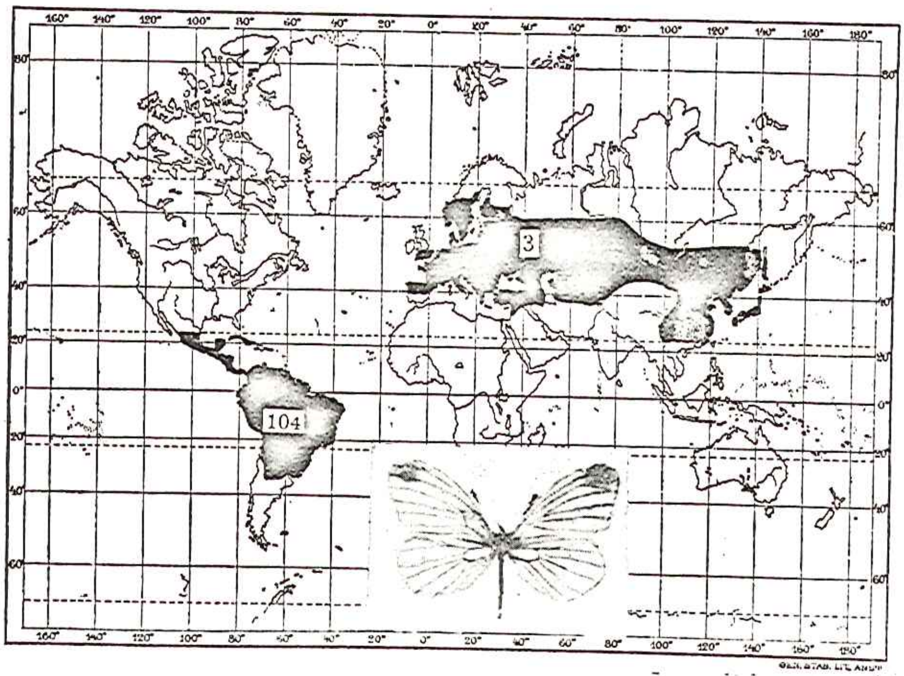


Fig. 41

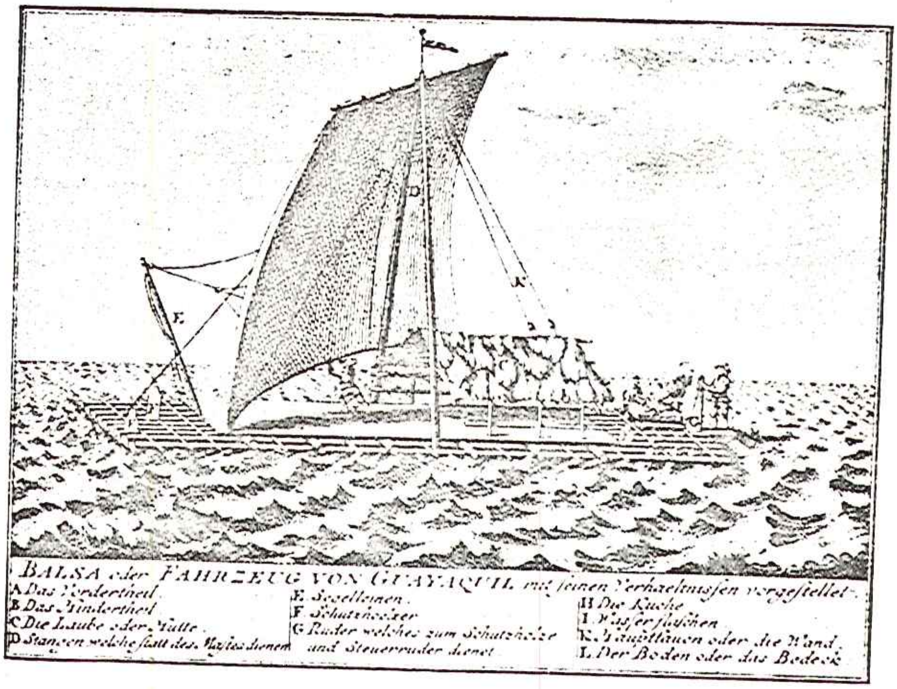

BALSA oder FAHRZEUG VON GUAYAQUIL mit seinen Verhaeltnissen vorgestellet.
A Das Vordertheil.
B Das Hintertheil
C Die Laube oder Hütte.
D Stangen welche statt des Mastes dienen
E Segelleinen.
F Schutzhoelzer
G Ruder welches zum Schutzholze und Steuerruder dienet
H Die Kuche
I Wasserflaschen
K Hauptläuen oder die Wand
L Der Boden oder das Bodeck

Fig. 42

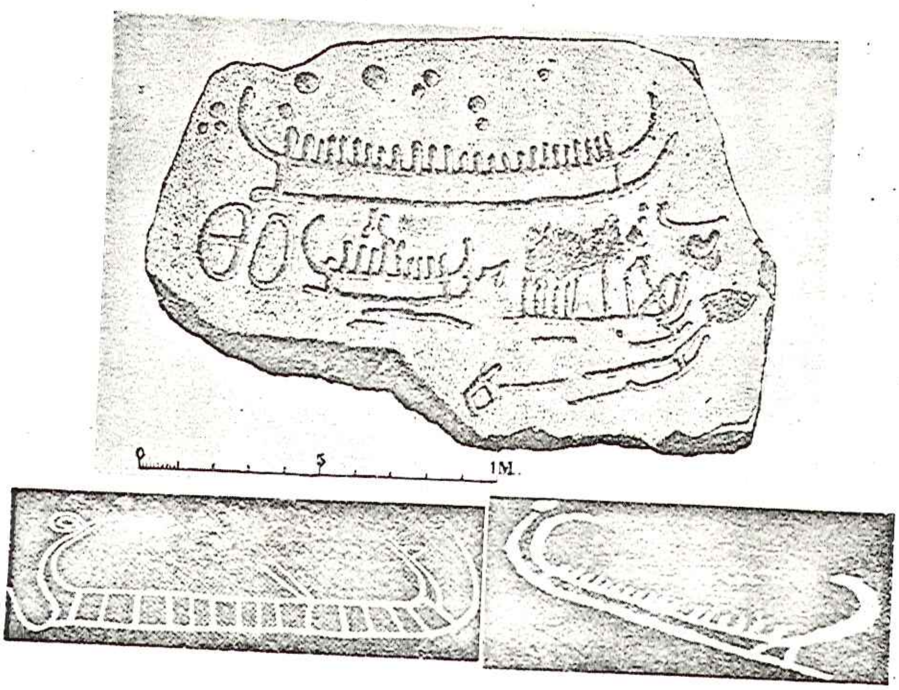
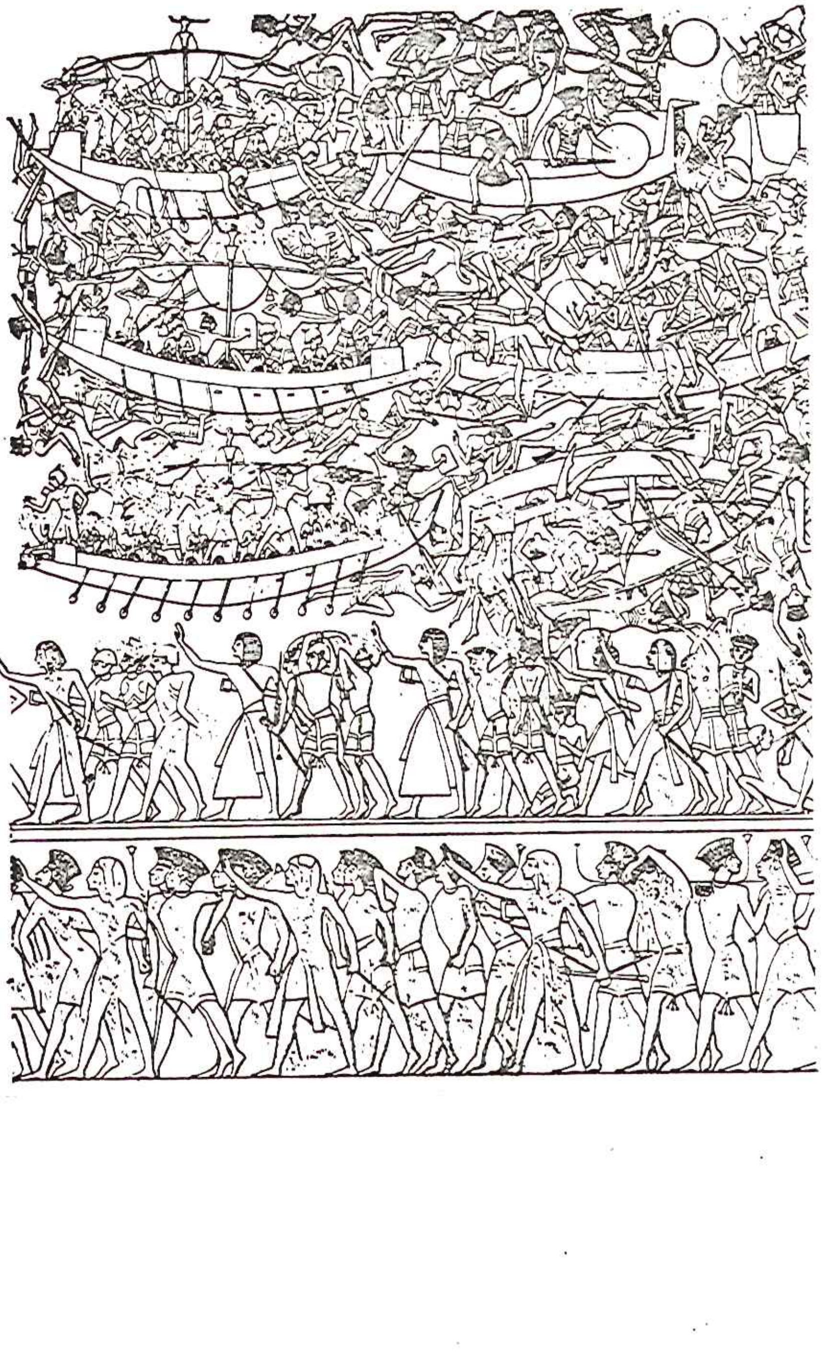

0
5
1M.

Fig 43



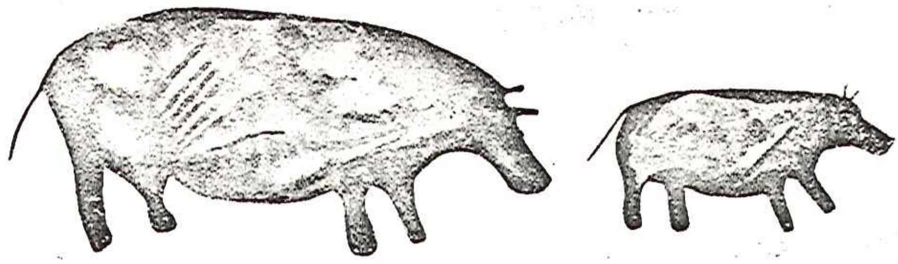


Figure 74. Rock-paintings from Central Sahara in now completely arid tracts indicating that the climate here formerly was moist enough to support peoples with large herds of cattle and also big game such as elephants, giraffs and even hippopotami. (After Henri Lhote, 1958.)

According to Egyptian inscriptions on temple-walls at Medinet Habu extremely severe draughts during several years in succession had prior to 1195 B.C. reduced Libya to a desert and driven the population in despair towards Egypt. This was the time when the main part of Atlantis sank so that a mighty branch of the Gulf Stream, the Canary Current, could break through the sinking continent. Outside Africa this current was comparatively cold so the moisture from the South Atlantic fell down as rain out to sea instead of on land. From that time the Sahara became a desert.

Solon must be incorrect. He, therefore, examined the possibilities of a suggestion advanced in the "Atlantican" (Atlanticae seu Manheimii) (1679—1702) by the old Swedish scientist Olof Rudbeck that an error of translation from the old papyrus may have found its way into Plato's story. He claims the old Egyptians used the month as measure of time and the destruction of Atlantis should have occurred 9,000 months, i.e. 750 years before the time of Solon's visit to Egypt in 590 B.C. We arrive then at the year 1,340 B.C. for the destruction of Atlantis, or more correctly for the war between the Greek and the Atlanteans. About 1,400 B.C. there are records both on papyri, and in the Old Testament (Book of Exodus 2, 23) of a series of severe catastrophes that fell upon the world, such as earthquakes, hailstones (volcanic ash-rains?), droughts, fires, and floods. (Comp. p. 256.) In the Old Testament they are mentioned as the nine plagues the Lord inflicted upon Egypt at the departure of the Israelites. A general unrest in the earth's crust seems then to have taken

Fig. 46

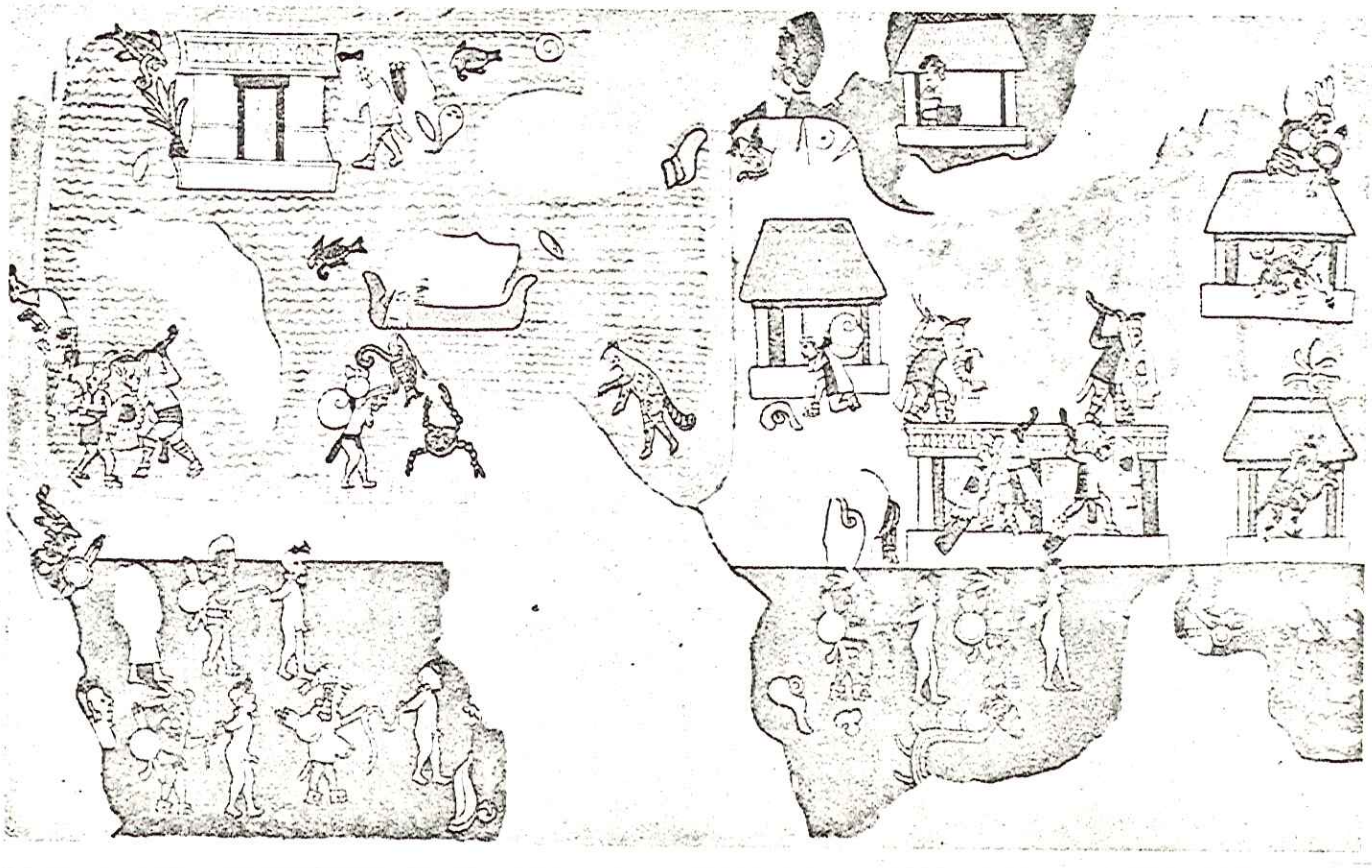


Fig 47

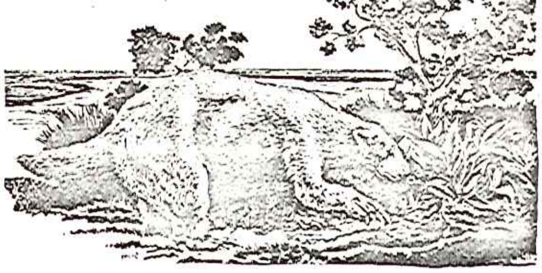
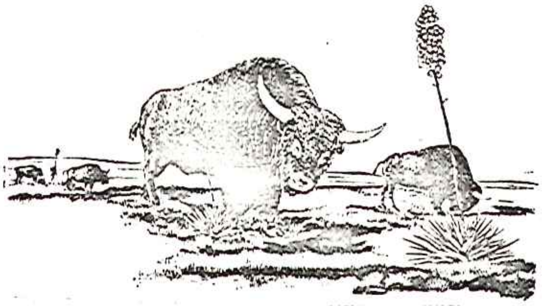


Fig 48



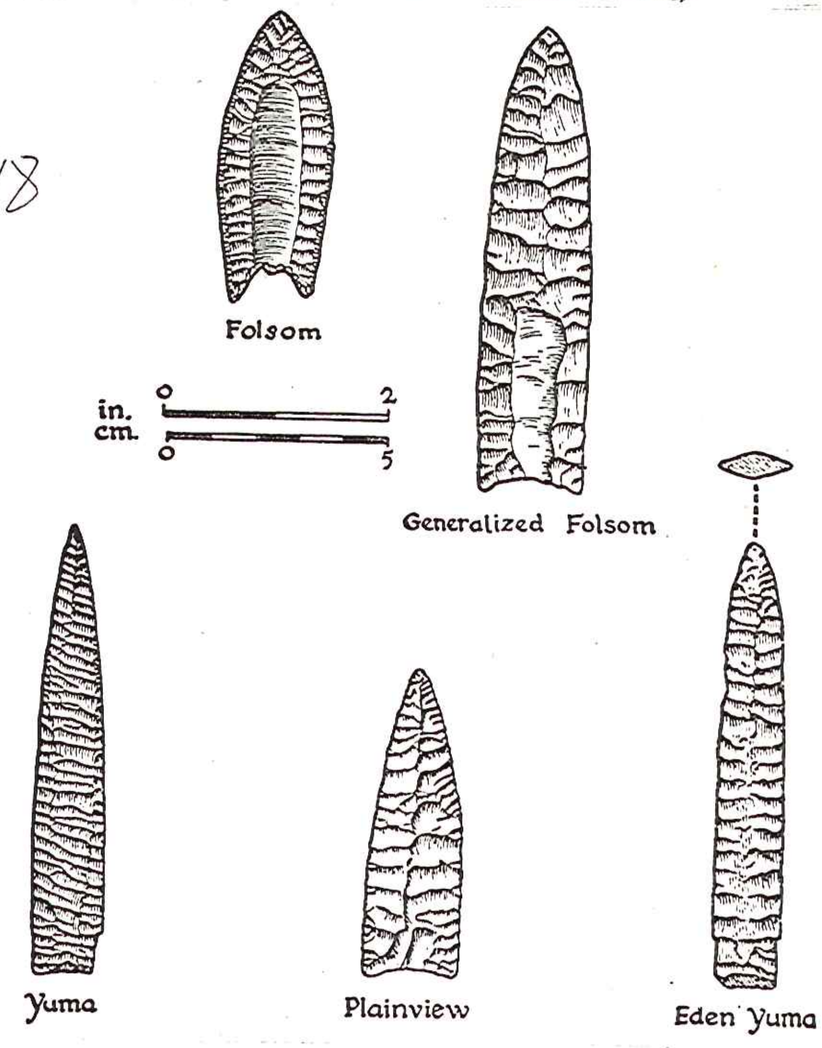


Fig 49

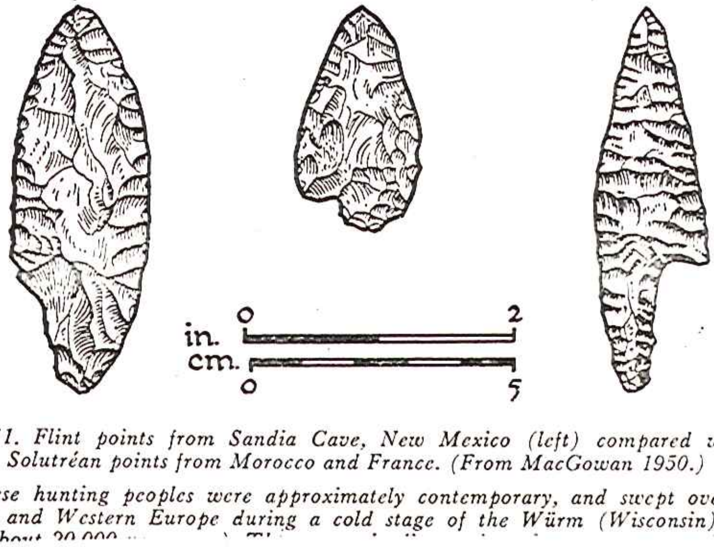


Figure 71. Flint points from Sandia Cave, New Mexico (left) compared with two Solutréan points from Morocco and France. (From MacGowan 1950.)

Both these hunting peoples were approximately contemporary, and swept over North America and Western Europe during a cold stage of the Würm (Wisconsin) Glacial stage (About 20,000

Fig 50

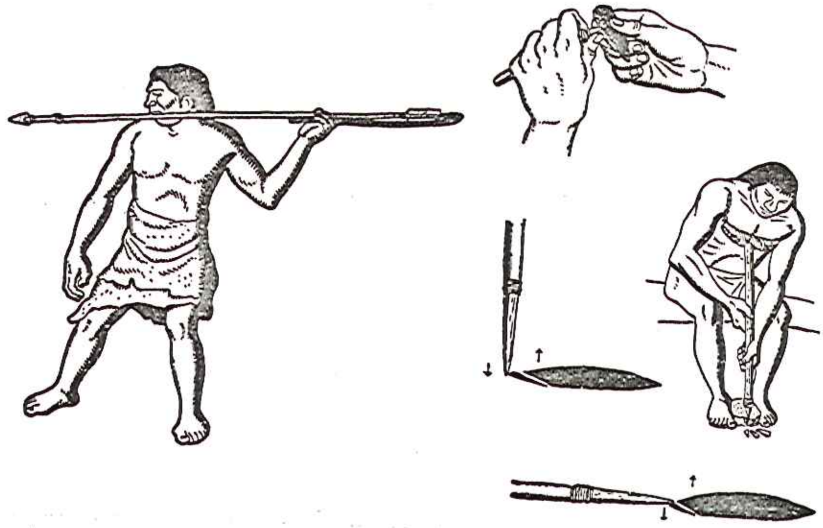


Fig. 51.

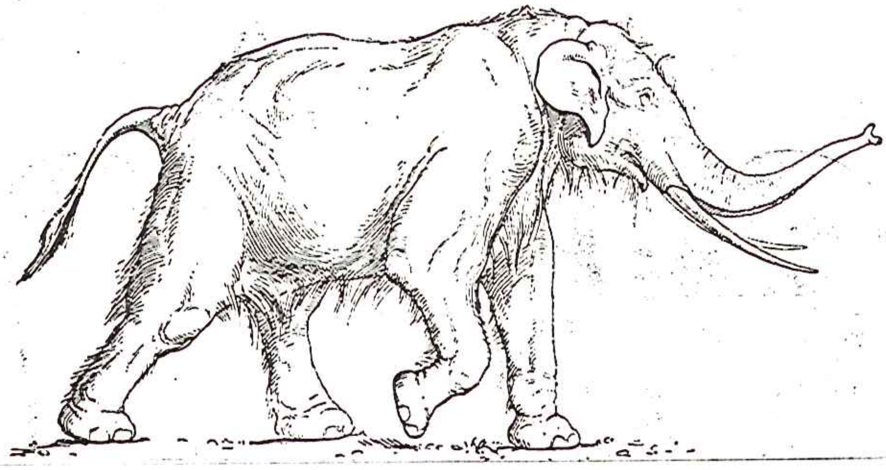


Fig. 52

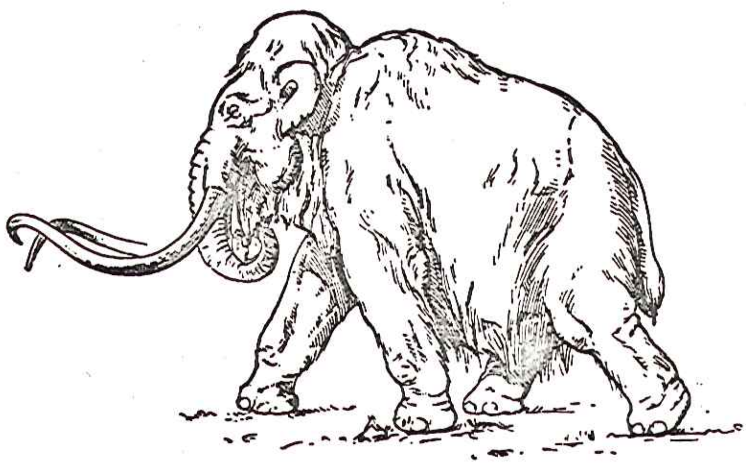


Fig. 53

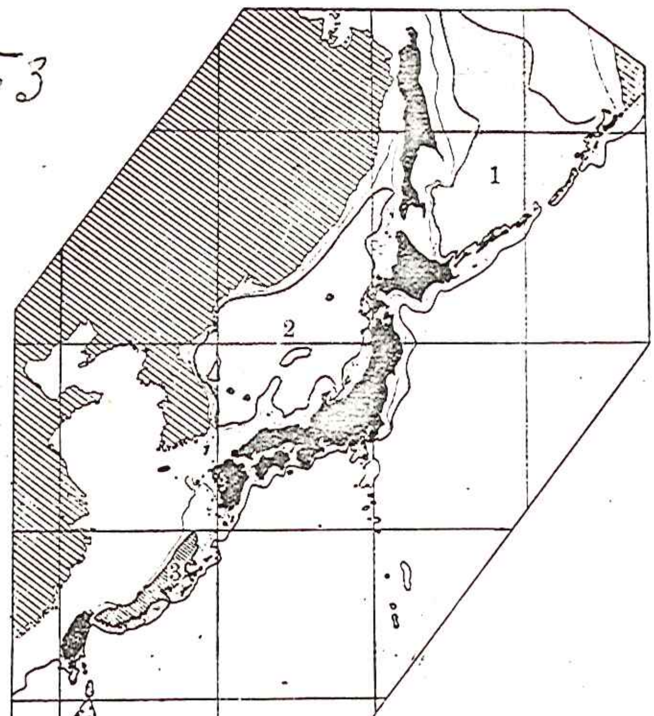


Fig. 54

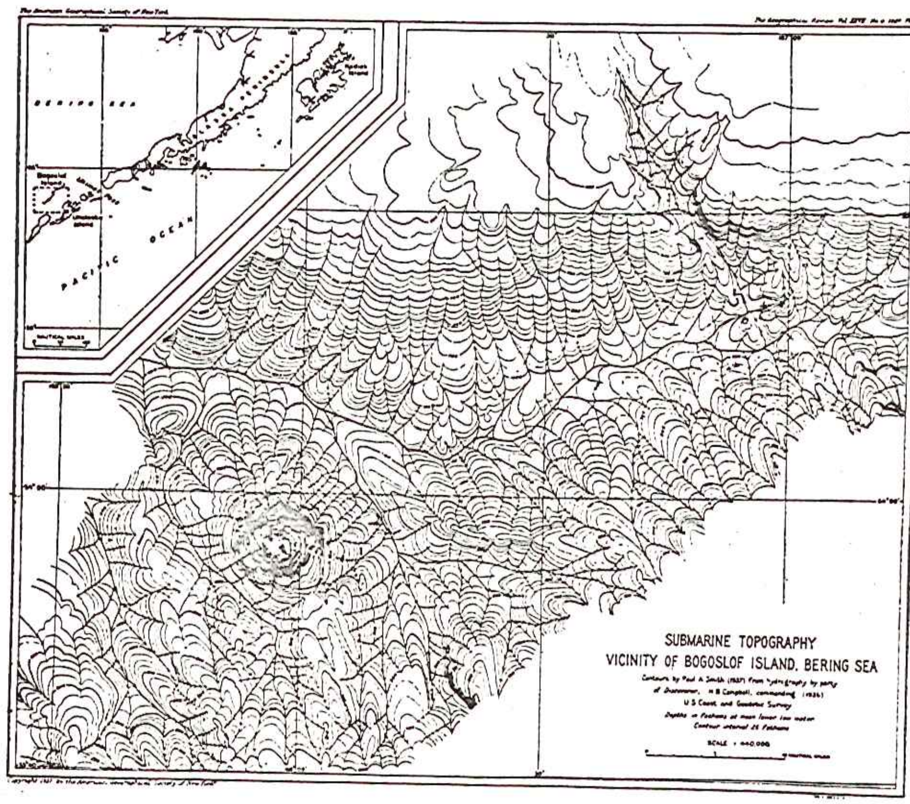
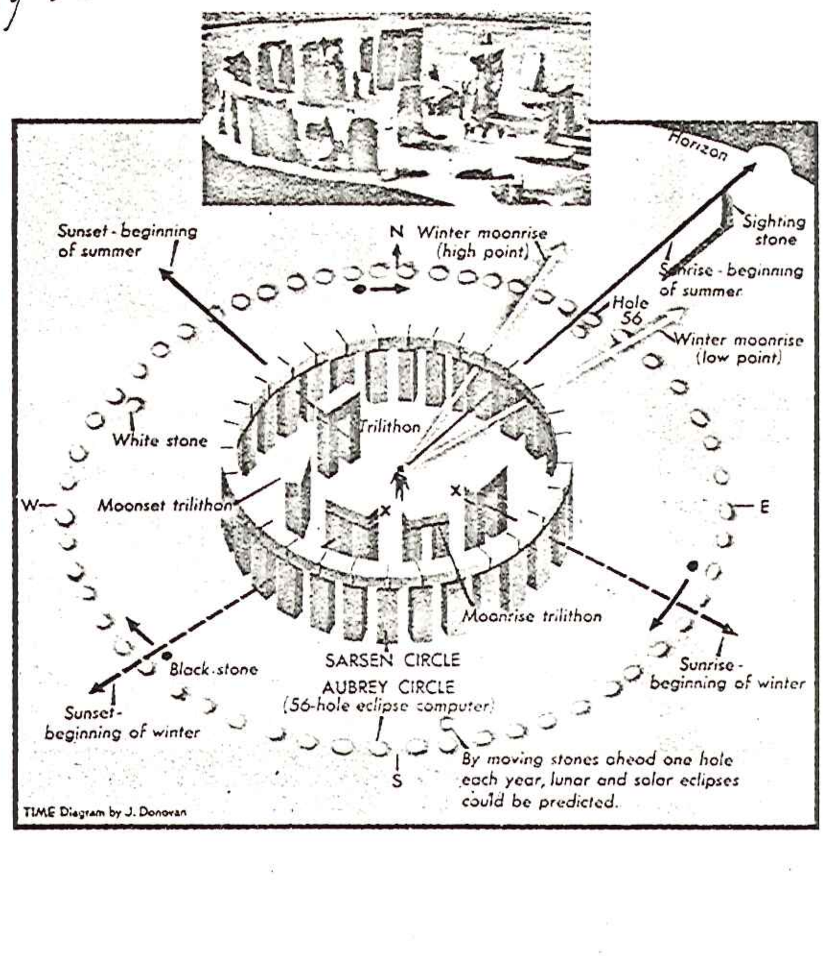

BERING SEA
PACIFIC OCEAN
SUBMARINE TOPOGRAPHY
VICINITY OF BOGOSLOF ISLAND, BERING SEA

Fig 55


Horizon
Sighting stone
Sunrise - beginning of summer
Hole 56
Winter moonrise (low point)
N
Winter moonrise (high point)
Sunset - beginning of summer
White stone
Trilithon
W
Moonset trilithon
E
Moonrise trilithon
SARSEN CIRCLE
AUBREY CIRCLE
(56-hole eclipse computer)
Black stone
Sunrise - beginning of winter
Sunset - beginning of winter
S
By moving stones ahead one hole each year, lunar and solar eclipses could be predicted.
TIME Diagram by J. Donovan

B I B L I O G R A P H Y

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T e x t   t o   t h e   f i g u r e s.

Fig. 1. Four time-scales on the comparative length of the geological periods based on different systems. The figures inside the columns A – B indicates the length of the respective periods in millions of years; those outside the columns indicate the total length from beginning.

A – B. Holmes (1947). Holmes himself regards scale B as the more probable.

C. Simpson's (1944) time-scale for the Pleistocene and the Tertiary.
The names of the Tertiary epochs are given in column D. Opinions regarding the respective length of the Tertiary epochs vary, and the Pleistocene is regarded as longer in C than in D.

D. Heirtzler's (1968) chronology of geomagnetic field reversals extending back ab. 80,000,000 years.

Fig. 2. Seismographic records of different kinds of waves originating from an earthquake.

First to arrive are the Primary (P) or "push-and-pull" waves, which are compressional waves in which each particle vibrates in the direction of propagation. The Secondary (S) or "shake" waves are distortional waves, like the waves on the surface of water, in which each particle vibrates at right angles to the direction of propagation. The Long (L) waves are the slowest and are confined to the crust by reflection; they are latest to arrive. The P and S waves penetrate deeper below the crust, and at all depths P travels more rapidly than S. (From A. Holmes with permission).

Fig. 3. Velocity of Primary (P) and Secondary (S) seismic waves in the deeper layers of the earth. (From Bullen /1953/ by permission).

The Primary waves suddenly reduce their velocity at a depth of about 2,900 kms, but this velocity is again altered inside the core. The Secondary waves stop altogether at 2,900 kms. The mantle to a depth of 2,900 kms, and also the innermost part of the core, are thus considered to be solid, but the outher part of the core to be essentially fluid. The velocity of the seismic waves increases the denser and heavier the medium through which they pass. From the above diagram it is evident the velocity is greatest close to the fluid core where the temperature is maximal and the minerals there are thus denser and heavier than those near the outer surface. The hottest minerals are accordingly lacking any buoyancy, which buoyancy is supposed to be the moving power behind the theorized convection currents.

Fig. 4. Contemporary conception of the earth's interior derived from studies of the velocity of seismic waves. (From Malaise 1951; figures given by Bullen 1947).

The outer granitic crustal layer reaches down 33 kms (to A). The earth's mantle (A–D) is solid, i.e. has a marked rigidity down to a depth of 2,898 kms, but the velocity of the various seismic waves changes somewhat at depths of 33, 413 and 984 kms, possibly due to different times of solidifying or increased specific weight owing to greater pressure. The initial strength of the material of the mantle (B–D) is not significantly less than that of the granitic crustal layer (A), possibly greater ? The outer region of the core (E) is essentially in a fluid state, but the central part of it (G) is again solid. The region F is possibly viscous? With the thickness of the solid mantle amounting to 2,900 kms it can endure the weight of any burden without sinking, but the cold of a covering ice-sheet compels its minerals to constrict and its surface to sink.

Fig. 5. Development of a geanticline vault into a geosyncline (A to D).

A. If an ascending vault is subjected to heating from the earth's interior greater than the cooling from the outer surface, the rocky ground of the anticlinal vault must expand. The lateral expansion of the vault is prevented by the simultaneous expansion of adjacent synclinal vaults, with the result that all the vaults are simultaneously forced to increase their curvature. Cracks will then appear in the upper part of the anticline as the curvature increases.

B. The cracks deepen in proportion with the increase of the curvature. Water will collect in the shape of lakes. The water acts as a cooling agent causing further and deeper cracking.

C. The expansion of the vault is retarded at the top owing to the cooling influence of the circulation of water in the deep cracks, but the expansion proceeds laterally.

D. Once the middle depression of the geanticline happens to reach below the cord between the limits of the geanticline a continued expansion will cause the depressed part to press further downwards and an independent syncline will appear. The ocean water will soon get access to the former lake system and turn it into a marine channel.

Fig.6. A to D. The upheaval of a mountain chain from the depth of a geosyncline.

A. In times of warm climate, such as the combined Tertiary-Cretaceous, the high temperature of the ocean waters combines with the heat released from the earth's interior to cause a rise in temperature of the earth's outer crust. The previously cooled, comparatively thin, continous, and unfractured upper layers of the earth's crust are thereby dilated and forced to increase their curvature. The unfractured layers in an expanding geosyncline will, in addition to its own weight and that of the overlying fracture-zone, press on the subcrustal masses with tremendous power.

B. The pressure against the subcrustal masses increases as the curvature of the expanding vault is forced deeper down. This generates heat and, under the influence of heat and pressure, the subcrustal masses become increasingly softer and finally liquefy locally. With the depression of the bottom of the marine basins the world over, more water could be stored in the deepening basins with the result that the general sea-level of the oceans sinks progressively. At the end of the Tertiary, the level of the oceans was about 3,000 m lower than at present. That was the time when the now submarine canyons of the continental shelves were excavated subaerially by running water.

C. As the synclinal vault is pressed still further down, closer to hotter layers, increasingly larger quantities of the subcrustal masses beneath the syncline liquefy. Simultaneously, more and more of the vault itself is softened and eaten away from below, so its initial strength and rigidity is diminished. In the end the vault cannot resist the tremendous counterpressure from beneath, but yields to it. From the bottom of the deep marine channel a new mountain chain rises in mighty folds and swells. On changing from a synclinal to an anticlinal vault the softened masses of the vault undergo strong lateral compression and wrinkling as they are pressed up between the rigid and firm abutments. The overlying sedimentary layers undergo simultaneously a similar lateral compression and wrinkling noticeable in all mountain chains.

D. The volcanic phenomena that may accompany the upfolding of the new mountain chain are probably of rather short duration. Simultaneously with the upheaval of the new chain the softer volcanic and sedimentary rocks on top of the rising mountain are washed down as sand and gravel. When the pressure eases, the previouly molten masses solidify again below the mountain. In the end the resolidified rocks appear on the surface as granites and gneises. This explains the predominance of igneous rocks in the central chain of many mountains.

Fig. 7. The origin of arcuate mountain chains or island arcs, and of submarine terraces on both sides of the Mid-Atlantic Ridge.

When the softened geosyncline yields to the counter-pressure from below and rises as a new mountain chain it gives way simultaneously to strong lateral pressure from the geanticlines on both sides in their strive to regain an original horizontal position. This explains the intense lateral compression to which most mountain chains have been subjected. If one of the lateral vaults is considerably stronger than the other one, it pushes the entire mountain chain still soft at its base into the form of an arc, and tilts it at the same time towards the outer rim. When the two later anticlines lose their common abutment, they not only flatten out, but usually collapse, mostly in a step-like fashion. The surface of the two former anticlines was strongly eroded in the middle during their continental stage and rendered much tinner. After the collapse, they therefore turn into geosynclines. The curved shape of the Asiatic island arcs, as well as that of many continental mountain chains, e.g. the Himalayas, is thus explained and likewise the tilted and overthrust nature of e.g. the Japanese mountain chains towards the Pacific.

Fig. 8. Cross-section and gradient of the bottom of the Gouf de Cap Breton submarine canyon of the Adour River off the south-western coast of France. The flat bottom of the canyon is in parts 1,000 m deeper than the surrounding sea-bottom. (From Bourcart 1938).

The walls of submarine canyons are frequently air-weathered, presipitous, rocky and of Eocene to Pliocene age. Their bottom contains frequently sand or gravel, rounded by running water.

Fig. 9. Outline-map of the world with distribution of submarine canyons. Each mark indicates one or a group of canyons. It is evident the submergence was world-wide, and the submarine valleys are equally distributed in the tropics and the temperate regions, but many areas lack adequate soundings for the determination of canyons.

Fig.10. Sketch-map of Italy at the end of the Pliocene after that the Strait of Gibraltar had dried up owing to the extreme depression of the ocean basins during the warm Pliocene. The evaporation from the closed Mediterranean caused a marked lowering of the sea-level there. A distinct submarine shore-line, corresponding to the xxxx 200 m isobath, indicates that the surface of the Mediterranean remained at the same level for a considerable time. (From Blanc 1939).

Fig.11. Italy after the Great Transgression (marking the limit between the Tertiary and the Quaternar) caused by the constriction and elevation of the bottoms of the ocean basins owing to the cooling influence of the cold water. (From Leonardi in Blanc 1942).

When the level of the oceans rose, the Strait of Gibraltar was reopened and the Mediterranean was filled with cold water. Pelagic larvae of Arctica (Cyprina) islandica and other boreal or subarctic mollusca were carried in through the Strait and spread along the coasts of Sicily and Western Italy during the warm Pre-Günz (Villafranchian) Interglacial. The shells of the full-grown animals are found as fossils in Quaternary Sicilian and also in the Tertiary Calabrian raised beaches.

Fig.12. Sketch-map of the Antarctic Continent. (From Holmes 1945, by permission).

The Antarctic Continent, discovered as late as the beginning of the 19th century, is now entirely covered by a thick sheet of inland-ice. It is subdivided by a strait between the Weddel Sea and the Ross Sea. This strait, now frozen to the bottom, was discovered during the Geophysical Year 1958 by echo-soundings through the ice. In 1929 an old map of the Atlantic Ocean was found in Istambul, drawn in 1513 by the Turkish admiral Piri Reis and by him compiled from very ancient maps (Comp. p.). On this map the Antarctic Continent was reproduced absolutely correct and for the greater part ice-free.

Fig.13. Submarine valleys off the coast of New England. (From Veatch & Smith 1939).

The submarine slopes of the continental shelves are mostly sculptured below the 200 m isobath. "The topography of the slope showing definite stream erosion forms, quite different from .... the forms made by marine erosion."

Fig.14. Sinking of an island owing to "marginal constriction". (A to C).

A Tertiary island between two marine basins. Hand in hand with the warm climate of the Tertiary the continents were over-elevated and the ocean water was concentrated into super-depressed basins. Large parts of the present sea-bottom were dry land.

B. At the beginning of the Great Ice Age the sea-level of the basins rose strongly and rapidly because the bottom of the basins were cooled by cold water from melting glaciers, constricted, and were accordingly elevated. (The elevation of the bottoms is not indicated in the figures.)

C. As a result of the cooling influence of the cold ocean water on the flooded parts of the island, the crust below the margins constricted and shrank. The borders were thus bent down and sunk. Parts of the shores were then also warped down. The constricting crustalwards borders exerteda strongly increasing pressure on the subcrustal masses. As a result these were compressed and became specifically heavier and warmer.

D. The cooling and constriction of the margins proceeds, and the shores of the former large island are flooded farther and farther inland. Owing to the increased pressure more and more of the subcrustal masses below the constricting margins turn liquid and are pressed towards the centre which rises while the area decreases.

E. The now liquefied subcrustal magmas are forced by marginal pressure up to the outer crust and create a volcano. When the volcanic eruption has continued for some time the local magma reservoir is drained and the volcano becomes quiescent until the reservoir is filled again as further subcrustal masses have been liquefied by the persistent marginal constriction. The surface of the island becomes more and more covered by volcanic material. Many recent islands have reached this stage.

F. The downwarping of the shores of the island continues, and by now only the volcano proper remains above sea-level. The fauna and flora of the former continent or larger island find a temporary refuge and develop further on the volcano. For this reason a peculiar (endemic) fauna and flora survives on many volcanic islands of to-day.

G. The last trace of the volcano has now disappeared below sea-surface and only a submarine peak indicates the site and existence of the former land. If the original land was very narrow (as the Central American Isthmus) with a mountain range crowned by several volcanos along its centre, then the constriction force of the ocean bottom and the submerged mountain slopes will be so strong after the complete submergence that a crack will appear along the very crest running from crater to crater until the entire range is split into two parallel ones separated by a deep chasm. Most submarine mountain ranges are accordingly twin-shaped (Fig.18, p.).

Fig.15. Origin of deep and shallow earthquakes, marine troughs, tsunami waves, and volcanism along young (Tertiary) mountain chains on coasts of the Pacific type.

If a mountain range, running along a coast, is subjected to marginal constriction, its submarine base and the broad ocean bottom outside the coast both constrict. These two constricting forces will then pull in opposite directions with tremendous force. The limit between the diverging forces will coincide with the superficial crush-zone originating from the upheaval of the range, if this is still young. Starting from these old cracks, the diverging forces will tear apart the earth's crust, and a fissure or crack-zone, filled with rock fragments of all size will open up. As the cooling reaches further down, the fissure will penetrate deeper and deeper, down to a depth of 600-700 kms, slowly widening at the same time. Now and then the rocks therein will loose their hold and fall down until they again become wedged. The deepening of the cracks and the rock-falls cause the earthquakes, and the fore-deep marks the opening of the fissure. With such a deep and gradually yielding fissure running along the coast, the marginal constriction may press on the subcrustal masses with unrestrained force, liquefying and forcing them to escape through volcanos. Along coasts with old ranges, as Norway or Brazil, the old superficial crack-zone has long since disappeared and has been replaced by a crust with greater initial strength. Here the continental slope merges gradually into the outer ocean bottom. The marginal constriction is therefore hampered by the pull and tension from the constricting ocean bottom resulting in a general subsidence without producing volcanos, probably because of insuficient liquefication of the subcrustal masses. These masses can only make their way beneath the continent, where they cause positive gravity anomalies. Volcanos are thus nowadays confined to the vicinity of deep cracks, or to islands, etc. where the marginal constriction may press from more than one side.

Fig.16. Cross-section through the active Japanese Island Arc, showing the distribution of earthquake centres and gravity anomalies. (From Gutenberg & Richter 1948).

An explanation that earthquakes are caused by subterranean falling of rocks in a deep crack-zone originating from the bottom of a marine fore-deep and penetrating more or less obliquely under an adjacent continent seems rather plausible. Owing to the irregular horizontal course of the crack-zone and because the centres are projected on a common vertical plane, the crack-zone appears to be broader and more irregular than actually is the case. (Comp. also fig.15 and 17).

Fig.17. Most active volcanos and about 80% of shallow and intermediate earthquake shocks and all known deep shocks occur in the Circum-Pacific Belt. (From Gutenberg & Richter 1948).

Structural arcs of the Pacific Region exhibit typically the following features in order beginning at the convex side: 1/ Fore deep. 2/ Shallow earthquakes and negative gravity anomalies. 3/ Positive gravity anomalies and slightly deeper shocks. 4/ The principal mountain arc (Tertiary or older) with active volcanos and shocks about 100 kms deep. 5/ An older structural arc with volcanism in a late stage or extinct and shocks about 200-300 kms deep. 6/ A belt of very deep shocks (below 300 km

Fig. 18. Bottom of the North Atlantic with the Mid-Atlantic Ridge. The twin-shape of all major submarine mountain ranges the world over is beautifully expressed in this drawing from "LIFE", Nov.21. 1960. (Permission applied for).

The cold ocean water exposes the base of a sinking isthmus to cooling and constriction. The subcrustal masses are then strongly compressed, become first softened by the pressure, then liquefy, and are finally squeezed upward towards the centrum and crest of the range there to create a row of volcanos. The earth's hard crust becomes thus thinner and weaker along the crest of the range. After the submergence the mountain slopes and the adjacent sea-bottom outside it both contract with tremendous force on each side of the crest. Starting from one of the volcanic craters a deep crack appears along the crest running from one crater to another until the range has been cleft into two parallel ones separated by a deep and narrow V-shaped valley. The proved subsidence of the range in Post Glacial time (p.) and its narrow cleavage are two facts disclaiming the correctness of the theories of continental drift and spreading sea-floors. A raising magma flow from below, either from convection currents or from so-called mantle plumes, would raise and not sink a mountain range and also bring its two split parts, if any, wider and wider apart by the supposed spreading sea-floors. The age of the magmatic rocks dredged from the Range show that it was thrust up in Miocene, some 10 or 20 million years ago. The twin-ranges ought to have had ample time to be widely separated.

Fig.19. Diagram to show "The Pulse of the Earth" with the chief orogenic revolutions of geological times. Approximate dates in millions of years. (From Holmes 1945).

The larger orogenic (mountain building) periods are as a rule followed by more or less pronounced glacial times which in turn are succeeded by calm periods of very long duration. The newly elevated mountains are then again worn down and shallow oceans invade large parts of the former continents. The climate becomes then increasingly warm and humid. Towards the end of these calm and warm periods, the heat from the earth's interior cannot be neutralized by cooling and the geanticlines and geosynclines of the earth's crust expand and begin to increase their curvature. The entire process starts thus anew with orogenesis resulting in a general cooling culminating in an ice-age, etc. The earth has experienced many such ice-ages and is now at the very beginning of a long calm period growing slowly warmer.

Fig.20. Sketch-map of the inland ice-sheet and the direction of their moving ice during the Permo-Carboniferous Glaciation. (After v.Klebelsberg 1949).

A tropical climate with laterite occurred simultaneously in Europe, North America, and parts of Eastern Asia. In this tropical zone grew the mighty forests that later turned into coal. The impact of a really large meteorite in Mid-Carboniferous on the very geographical pole (in South Africa) is supposed to have caused the outer hard crust to wobble and be displaced compared to the more stable fluid inner core with its magnetic axis. This would explain the displacements of the magnetic poles observed during Paleozoic times.

Fig.21. Chrubb Crater from the air. (From National Geographic Mag. with permission).

The crater, perfectly circular and more than two miles across at the rim, is an unmistakable landmark from the air. It was explored and proved to be of meteoritic origin by a National Geogr. Soc. - Royal Ontario Museum Expedition 1951.

Fig.22. Pleistocene time-scale and generalized climatic curve based on the study of deep-sea sediment cores. The beginning of the Pleistocene is here considered to be the onset of the Günz or Nebraskan Glacial Stage. (After Ericson, Ewing & Wollin 1964).

A better limit between the Tertiary and the Quaternary is, in the present author's opinion, the great transgression at the end of the Donau Glacial Stage about two million years ago, when the general sea-level of the oceans suddenly rose more than thousand metres exterminating innumerable genera and species of the rich Tertiary fauna and flora. This transgression was caused by the constriction and raising of the bottom of the ocean basins when cooled by influx of cold water from melting glaciers (p.). Until about 175,000 years ago this scale has been checked by 3 different radiodating methods. The average rate of accumulation of sediments was then of the order 2.5 cms per 1,000 years and this average has been extrapolated for the entire Pleistocene.

Fig.23. Free-swimming (pelagic) Foraminifera from the Atlantic. A/ Forms from cold or temperate waters. B/ Warm water forms. (From Wiseman & Ovey 1950).

Every species needs a certain temperature in order to be abundant. From a study of the numbers of the skeletons of the different species in bottom samples, it is possible to gain an idea of the past temperature changes of the surface water and of the climate.

Fig.24. Eberl's diagram of the Pleistocene deposits in the Alpine Region. Below Milankovitch's diagram of the sun's radiation during the last 1,000,000 years. (From Eberl 1930 and Milankovitch 1941).

The general trend of the scales of different author's is most strikingly concordant, but the duration especially of the interglacials usually differ. In the present author's opinion the time scale based on marine sediment cores (Fig.22) is the most reliable.

Fig.25. Sketch-map of the North Atlantic at the 600 m isobath.

The sites of the former land-bridges between Europe and Greenland over Iceland and Spitzbergen are clearly marked, as also the sites of the outlets from the formerly closed Polar Basin or Basins into the Atlantic. This land-bridge over Iceland and Greenland to the American Continent remained over water-level during the Pliocene and until the end of the Ice-Age and sank only 10-14,000 years ago (p.). Animals (elephants) and Man reached America probably this way or over the now also submarine Walvis and Rio Grande Ridges rather than over the Bering Strait (p.).

Fig.26. A speculative and certainly erroneous explanation of the origin of the Mid-Ocean Submarine Canyon. (After Heezen 1956).

American oceanographers persist in attributing the origin of most submarine canyons to the excavating power of "turbidity currents". In the present author's opinion, this canyon constitutes the Tertiary (Pliocene) outlet of the then land-locked Arctic Ocean. The canyon was certainly excavated subaerially, and its northern part was drowned by a transgression at the very beginning of the Quaternary. It may safely be predicted this canyon will originate in the northern part of the Denmark Strait. This strait became open only just prior to the end of the Great Ice-Age. The rapidity of the transgression preserved the (mostly steep) sides of the canyon intact in its southern parts. Further north the Arctic River flowed subaerially during the Quaternary and the land-bridge it crossed sank only gradually owing to marginal constriction. The sides of the canyon were then successively subjected to wave-erosion during a very long time and became thus more or less obliterated. The northern continuation of the canyon may nevertheless still be traceable as a shallow grove on the bottom of the Denmark Strait.

Fig.27. The Iceland shell Arctica (Cyprina) islandica L.

This shell, together with other boreal mollusca such as Chlamys tigerina, Mya truncata, Panopaea norvegica, Trichotropis borealis, etc. is found as fossils in the Sicilian raised beaches along the coasts of Sicily and Western Italy. These raised beaches came into existence during the warm Quaternary Donau-Günz Interglacial, but they occurred also in the late Pliocene Calabrian raised beaches. The climate of the region was then warm, as tropical animals florished together with the first apemen Australopithecinae, but the waters of the Mediterranean must have been cold enough for a boreal marine fauna. The cold water came in through the Gibraltar Strait outside which it was hemmed in by a narrow cross-ridge from the Atlantis Continent, viz. the now submarine Mid-Atlantic Ridge (Fig.28). This water came originally to the North-East Atlantic Basin from the Arctic Ocean through a river crossing the land-bridge between Scotland and the Faeroe Islands.

Fig.28. Sketch-map of the North Atlantic during the Sicilian transgression of the Mediterranean with possible distribution of land and of sea-currents. Continuous lines stand for warm currents, interrupted lines stand for cold ones.(From Malaise 1951).

The Sicilian Transgression was probably contemporary with the world-wide transgression separating the Tertiary and the Quaternary. It occurred probably during the warm Villafranchian Interglacial between the Donau and the Günz Glacial Stages. Cold water then filled since the end of the Tertiary the North-Eastern Atlantic Basin. This cold water was probably hemmed in by a narrow cross-ridge from the Atlantis Continent to the vicinity (north or south) of Gibraltar, but not so far south as indicated on the above map. This cross-ridge constricted later and sank. Only very cold water entered into the Mediterranean.

Fig.29. Diagram showing the composition of bottom core samples across the Atlantic, inside the area of the Gulf Stream, collected by Dr.C.S.Piggot in 1936. This diagram contains the first geological proof that the Mid-Atlantic Ridge (Atlantis) existed above sea-level until many thousand years after the end of the Ice-Age.(From Piggot 1938).

The occurrence in certain strata of the core samples of remains of Foraminifera only living in cold water indicates that these strata were laid down in times with a colder climate than the present one, i.e. colder stages of the Würm Glacial Stage of the Ice-Age. The present sedimentation in the area of the Gulf Stream is uniform and free from inorganic mud. The bottom streams are too slow to transport sand and mud for any distance, and such transport can only be accomplished by surface streams carrying floating ice. To the west of the Ridge, the sediments were composed of the dead shells of microscopic animals (Foraminifera)(Fig.23) now living pelagic in the Gulf Stream, but east of the same Ridge the sediments consisted mainly of coarse sand and mud identical to glacial moraine deposits. This great difference on the two sides of the now submarine Mid-Atlantic Ridge, here locally named Faraday Hills, indicate definitely that this Ridge once separated a cold surface stream carrying floating ice and coming from the north, from the mud-free Gulf Stream. This difference could only have been accomplished if the Ridge then reached above water-level. The Ridge was, since the Miocene, part of a continent, Atlantis, during the Pleistocene and remained above water-level many thousand years after the end of this epoch. The Continent Atlantis must have been contemporary with the Old Egyptian Empire.

Fig.30. Frequency curves of diatoms from some tropical bottom core samples collected by the Swedish Deep-Sea Exp. on the "ALBATROSS". (From Kolbe 1955).

The finds of exclusively fresh-water diatoms, 18 different species in thousands of specimens, at a level of 5.52 m (the Arrow) is a univocal proof that this point on the Mid-Atlantic Ridge (the Sierra Leone Rise) formerly was above the surface of the sea. No species of these microscopic algae can live in both salt and fresh waters, but shells of dead fresh-water species may be brought to sea by rivers or by the wind. They are then found mixed with salt-water species.

Fig.31. Topography of the bottom of the Equatorial Atlantic, showing coring sites rich in diatom-algae. (From Malaise 1956).

Core 234 (+) happened to hit the place of a former fresh-water lake that later on was covered by salt water in connection with the sinking of the Mid-Atlantic Ridge. The marine currents that flow along the African coast would have transported all African diatoms, either carried by wind or by rivers, away from the position of core 234.

Fig.32. The same map as in figure 28, but during the much later Mindel-Riss (Yarmouth) and Riss-Würm (Sagamon) Interglacials, which were contemporary with the Tyrrhenian, respectively Monasterian Raised Beaches of the Mediterranean.

After the narrow land-bridge from Atlantis to Gibraltar (the Azores-Gibraltar Ridge ?) had submerged, owing to the constricting influence of the cold bottom water, the cold marine current from the north along the eastern coast of Atlantis could proceed further south. On encountering a warm current from the south, the cold one dived beneath the former at the same time pushing the warm current towards the mouth of the Gibraltar Strait. This is the reason the Mediterranean changed to a tropical marine fauna during the Tyrrhenian Transgression.

Fig.33. The West-African Wing-Shell (Strombus bubonius L.).

The shells of this tropical conch are found as fossils in the Mediterranean raised beaches of Tyrrhenian and Monasterian age together with corals and shells of other molluscs now living in the Gulf of Guinea. The occurrence of these tropical shells indicates that the water had changed from arctic cold to tropical warm. There is no explanation to this change in the literature.

Fig.34. Topography of the bottom of the Atlantic Ocean. (From Wüst 1939).

This gigantic, now submarine Mid-Atlantic mountain chain extends in an S-shaped curve from Iceland in the north along the entire Atlantic round Africa into the Indian Ocean. Like its branching ridges its sculpture shows that it was once subaerially eroded by running water. When this occurred it formed the back-bone of the Continent Atlantis. It remained above water-level for many thousand years after the end of the Ice-Age and was contemporary with the Old Egyptian empire. After its submergence owing to the constricting influence of the cold bottom water, the main range was split in two parallel chains by the same agency.

Fig.35. Map of the North Atlantic at or shortly before the end of the last Glacial Stage, i.e. about 10,000 to 12,000 years ago.

The former land-bridge between Greenland and Europe was now interrupted at several places and the Gulf Stream got accordingly access to the Arctic Ocean, but only by way of the Denmark Strait. It was still prevented by the northern part of Atlantis from reaching the North-Eastern Atlantic Basin and Europe. With the penetration of the Gulf Stream into the Arctic Ocean part of the ice there melted and the meteorological situation was changed for the entire Northern Hemisphere and consequently for the earth as a whole. The east-wind blowing along the rim of the earlier partly frozen ocean ceased and the American inland-ices dwindled away. This penetration constitutes one of the most important factors that brought to end the Great Ice-Age.

Fig.36. Supposed direction of warm and cold marine currents in the North Atlantic during the Post-Glacial Climatic Optimum, 5,000 to 1,000 B.C., = the time of the European Bronze Age.

When the narrowest part of the Continent Atlantis, south of the Reykjanes Ridge extending south from Iceland and north of the Faraday Hills where Piggot took his sediment cores, had sunken, the Gulf Stream, contained and directed by this continent, could proceed, now east of Iceland, far into the Arctic Ocean. The Polar Basinbecame thus much warmer and consequently the climate of the entire Northern Hemisphere became more genial. The cold water from the Polar Basin could from now on go south as a surface stream following the eastern coast of Greenland, and the cold and warm streams no longer blocked each other's passage in the Denmark Strait. Another cold surface stream from the Baltic followed probably the coasts of Denmark and

Scotland and passed southwards east of Rockall Island and along the eastern coast of Atlantis. The distribution of warm and cold marine currents at that time made it possible for Atlantean mariners to reach South and Central America, North Africa, and Western Europe as far north as Scandinavia with such primitive vessels as rafts, and they could always return home through convenient streams on the same raft. The high cultures of Mexico and Peru may thus all have originated in Atlantis.

Fig.37. Rounded marine chalky rock of Eocene age, partly covered by a blackish manganese deposit and collected from the western flank of the Mid-Atlantic Ridge by the American "Atlantis Exped." 1947.(From the Nat.Geogr.Mag.,Sept.1948 by permission).

The manganese is deposited at a minimum depth of 4,500 m, and the apparently thin manganese covering indicates that this rock cannot have remained at great depth for more than a few thousand years at the most. It is accordingly evident that this part of the Ridge was formerly at a lesser depth and was later depressed.

Fig.38. The Atlantis Plain is clearly visible on this topographic bottom profile obtained by American oceanographers between the island Sao Miguel and the now submarine "Atlantis" Seamount. (After Heezen, Tharp & Ewing 1959).

From the top of this seamount pteropode limestone cobbles, lithified by subaerial conditions have been dredged. This seamount must have been dry land within the past 12,000 years according to the oceanographers, but most probably it remained so until 1,200 B.C. The finding of the Atlantis Plain on the bottom of the ocean is the strongest possible proof that Plato's description is not a product of his imagination, but an exact geographical description of a now sunken land. Plato could impossibly have known the bottom configuration of the Atlantic Ocean.

Fig.39. Rock-paintings from Southern Sweden (Skaane). (From Altin 1945).

The present author has interpreted these and similar rock-paintings as erected in memory of the arrival of rafts with traders from Atlantis bringing bronze in exchange for amber or fur. The cross-wheel was the emblem of Atlantis and of the Garden of Eden, viz. the fertile plain around the capital of Atlantis. The cross-wheel represents the four principal rivers and the circular ditch surrounding the Atlantis Plain. The combination of this cross with the vessels indicate apparently the nationality of the vessels.

Fig.40. Distribution of the subfamily Dismorphinae. Inserted the Palaearctic species Leptidia sinapis (L.).

Except for 3 very closely related species in the Palaearctic, This butterfly subfamily is restricted to the Neotropical Region (tropical parts of South and Central America), where 104 species and numerous subspecies are known. It is most probable that the catalogued ancestors of Leptidia sinapis reached Europe via Atlantis.

Fig.41. Balsa-rafts from the western coast of South America. (From Heyerdahl 1952 after Ulloa 1748).

The Kon-Tiki raft was of the same construction as the one depicted above, and the mast and sail were of the same type as those used by ancient Egyptian vessels. Similar rafts were probably used also by the inhabitants of Atlantis on their expeditions across the oceans.

Fig.42. Pictures of vessels from Swedish rock-paintings of the Bronze-Age. (From Haldin 1949).

According to a new interpretation these rock-paintings depict rafts with elevated platforms. The upturned parts of the bow and stern are thought to represent curved prolongations of the middle log, probably carved into dragon or animal heads to frighten away evil sea-goblins and other mythical spirits. The ancient artists observed the foreign rafts mostly with their masts up and sails hoisted, and they drew the vessels as they saw them from the shore. The occurrence of convenient marine currents at that time made it possible for navigators from Atlantis to visit Scandinavia on rafts and there trade bronze-wares for fur or amber.

Fig.43. Contour paintings from the walls of a temple at Medinet Habu near Karnak in Egypt. The temple was erected by RAMSES III in commemoration of his victory in 1,195 B.C. over the invading Sea People (Atlanteans) and their German allies. (From Egerton & Wilson 1936).

In this, the first known naval battle, Egyptian bow-men in canoes could from a safe distance kill the invaders whilst their sailing ships lay motionless in a calm. The crew of these ships were armed only with swords, spears, and round shields. The Germans had helmets with cow-horns on their head (Fig.44), whereas the Atlanteans had feathers like the American Indians.

Below: German and Atlantean prisoners are taken away to be made slaves.

Fig.44. Enlarged detail from the temple-walls of Medinet Habu depicting two German wariors (in order to show their bronze-swords that were of exactly the same type as those found in Scandinavia). (From Egerton & Wilson 1936).

All bronze implements found in Scandinavia were imported and originated most probably from Atlantis. The mountains of Atlantis consisted chiefly of olivine and other ultrabasic minerals, which usually are very rich in metals such as gold, silver, copper and tin. It is quite probable bronze was firdt invented in Atlantis.

Fig.45. Rock-paintings from the Central Sahara in now completely arid tracts indicating that the climate there was formerly moist enough to support a population with large herds of cattle as well as big game such as elephants, giraffes and even hippopotami. (After Lhote 1958).

According to Egyptian inscriptions on the temple-walls at Medinet Habu extremely severe droughts during several years in succession had prior to 1,195 B.C. reduced Libya to a desert and driven the population in despair towards Egypt there to be made slaves. This was the time when the main part of Atlantis sank so that a mighty branch of the Gulf Stream, the Canary Current, could break through the sinking continent. Outside Africa this current is comparatively cold so the moisture from the South Atlantic Ocean precipitated as rain out at sea instead of on land. From that time on Sahara became a desert.

Fig.46. Pre-Columbian mural paintings from the temple of the warriors at Chitzen Itza, Yucatan. (From Heyerdahl 1952).

White men with yellow hair are defeated by black Maya-warriors and taken away as prisoners. Later generations held the white people in highest esteem as descendants of the gods. This is the reason why the vastly superior native armies of Mexico and Peru did not attack or even resist the handful of Spaniards during the Conquest.

Fig.47. Extinct North American mammals hunted by the Paleo-Indians. (From MacGowan 1950).

Before 1927, American archeologists stubbornly denied that Man had entered America earlier than 2-3,000 years before Columbus. In that year, 23 skeletons of <u>Bison taylori</u> were found together in the vicinity of Folsom, New Mexico. A flint-point was embedded between the ribs of one of the fossils and another in the spinal chord. All the skeletons lacked the tail, a buffalo herd had been killed and skinned by pre-historic Man. The long-horned buffalo <u>Bison taylori</u> was the principal prey of Folsom Man whereas the older Llanos Man hunted mainly mammoths, elephants and the giant ground-sloths.

Fig.48. Javelin points from the developed hunting cultures of North America. (After MacGowan)

The outstanding feature of the Folsom and the Clovis (Generalized Folsom) points is that a large, elongate flake has been removed from both the flat sides to receive the spear-shaft. These points are accordingly grooved or fluted. Folsom Man lived about 11,000 years ago and hunted almost exclusively the extinct buffalo <u>Bison taylori</u> (Fig.47), whereas Llanos Man, connected with the Clovis Fluted points was about 1,000 years older and mainly a mammoth hunter. The mammoth just survived the Ice-Age, which ended about 10,-12,000 years ago.

Fig.49. Flint-points from Sandia Cave, New Mexico(left) compared with two Solutrean points from Morocco and France. (From MacGowan 1950).

Both these hunting peoples were approximatively contemporaneous and swept over North America and Western Europe during a cold stage of the Würm(Wisconsin) Glacial Stage (about 20,000 years ago). They were both the first to introduce the superior "pressure flaking technique"(Fig.50). In the present author's opinion, both originated in Atlantis, and across Iceland arrived on foot to the American and European Continents along the then still existing land-bridge connecting Greenland to Scotland.

Fig.50. The Paleo-Indians, like the Cro Magnon of the Old World, used a spear thrower to get greater velocity to their javelines. This "atl atl" consisted of a wooden handle hooked at one end to engage the butt of the spear. They could thus kill big game from a distance instead of stabbing it.

By the pressure flaking technique it was possible to flake away microscopic splinters from an obsidian or flint and thus get a razor-sharp edge. The weapons had thus a very great penetrating power.

Fig.51. The Strait-Tusked or Wood Elephant (Paleoloxodon (Elephas) antiquus) prospered in Europe during most of the Quaternary, but died out at the end of the Riss-Würm (Sagamon) Interglacial. It was succeeded by the mammoth during the Würm Glacial Stage and the Flandrian Interstadial. (From Osborn 1915 by permission).

Fossils of this elephant are associated with the Sicilian, Milazzian, Tyrrhenian, and Monasterian raised beaches. Archeological finds on the Riviera and in Central Spain show that primitive man, Homo erectus, hunted this elephant 650,000 and 400,000 years ago.

Fig.52. The mammoth (Elephas or Mammonteus primigenius) lived in Europe and North America up to the end of the Ice-Age, but survived somewhat longer in Siberia. (From Osborn 1915 with permission).

Fig.53. Map of Japan during its continental stage, with its 3 more or less completely land-locked seas. (From Yabe 1929).

Japanese oceanographers have found two submarine shore-lines along the coasts of East Asia from the Philippine Islands to South Kamchatka, a younger one named Tama at a depth of about 150 m and an older one at about 720 m (Pre Narita). At least the older of these shore-lines may be recognized near the Bogoslof Island (Fig.54), and also off the coast of California. This deeper shore-line indicates that the northern part of the Pacific once may have formed a distinct marine basin separated from other oceans, and that the Great Transgression at the beginning of the Pleistocene must have temporarily been interrupted, so that the sea-level remained for a considerable time 720 m lower than its present level. The southern limit of this basin is not known, but it reached probably on the American side to the East Pacific Rise opposite Mexico.

Fig.54. The submarine topography in the vicinity of Bogoslof Island on the Aleutean Island Chain. (From Smith 1937).

The minute island Bogoslof was shown by soundings to be the summit of a 2,000 m high volcanic cone. The U.S.Coast and Geodetic Survey discovered a submarine landscape surrounding the volcano with a suggested stream pattern that must have been subaerially eroded by prehistoric streams and preserved intact by the rising sea. Taking the great levelling power of waves and breakers into consideration, it is evident that the sea must have risen with extreme rapidity. Probably the land was drowned by the world-wide transgression at the transition from the Tertiary to the Quaternary. This transgression was the result of the constriction of the previously super-depressed bottoms of ocean basins owing to the cooling influence of cold water from melting glaciers. When the rising water temporarily stopped at about 720 m (Comp. fig.53), the waves smoothed out the topography, which is clearly shown in the upper right corner of the map. (The stream pattern was somewhat exagerated by Smith).

Fig.55. The almost 5,000 year old megalithic monument Stonehegne in Southern England. (From "Time", Nov.12.1965).

This monument was erected in four stages between the years 2,750 and 1,500 B.C. Its oldest stage consisted of a circular ditch excavated in the chalk and defined by banks on both sides. This monument was erected by a Bronze-Age people, in the present author's opinion coming from Atlántis. It was in some way connected with astronomy. According to a still debated theory, lunar and solar eclipses could be predicted by moving stones once a year along the "Aubrey Circle". It was possibly in this way the Atlanteans could maintain their superiority and power over the natives in their vast colonies.