MOUNTAIN BUILDING (Kober)

The process of the origin of block mountains, dome mountains, and volcanic mountains is more or less well understood but the problem of the origin of folded mountains is very much complex and complicated. Different hypothesis and theories have been postulated from time to time by various scientists for the explanation of the margin of folded mountains but none of them could become commonly acceptable to majority of the scientis

Objectives:-

Famous German Geologist Kober has presented a detailed and systematic description of the surface features of the earth in his book. 'Der Bau der Erde'. His main objective was to establish relationship between ancient rigid masses or tablelands and more mobile zones or Geosynclines, which he called Orogen. He defined the process of mountain building or orogenesis as that process which links rigid mass with Geosyncline. In other word, mountains are formed from the geosynclines due to the impacts of rigid masses.

Orogenetic forces:-

Kober's Geosynclinal theory is based on the forces of contraction produced by the cooling of the earth. He belives in the contraction history of the Earth Kober is definetly a contractionist, contraction providin the motive force for the compressive stress.

Base of the Theory :-

According to Kober there were mobile zones of water in the places of present day mountains. He called mobile zones of water as Geosynclines or Orogen (the place of mountain building). These mobile zones of Geosynclines were sourrounded by rigid masses which were termed by Kober as Kratogen.

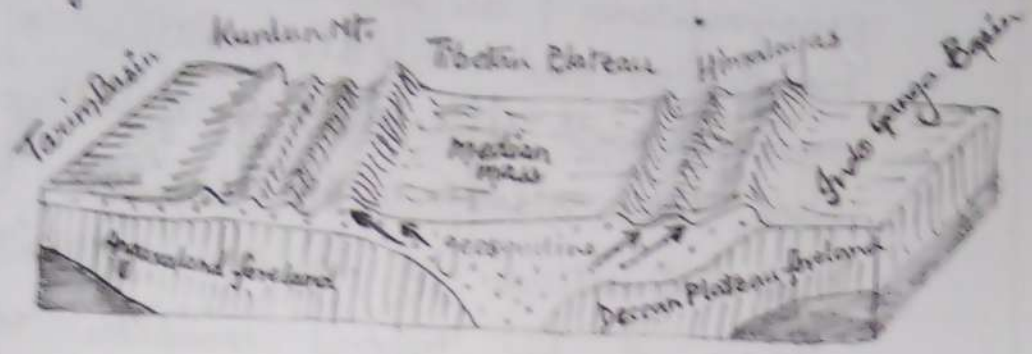
Kober has identified 6 major periods of Mountain building. Three mountain building periods, about which very little is know, are reported to have occured during pre-cambrian. Palaeozoic era two major mountain building periods - Caledonian orogenesis was completed by the end of Silurian period and the Variscan orogeny was culminated in permo-carboniferous period. Kober has opined that mountains are found out of geosynclines. According to Kober, geosynclines, the places of mountain formation are long and wide water areas are characterized by sedimentation and subsidence.

Mechanism of the theory :—

According to Kober, the whole process of mountain building passes through three closely linked stages of lithogenesis, orogenesis, and glyptogenesis.

1st Stage: The first stage is related to the creation of geosynclines due to force of the contraction caused by pulling of the earth. This preparatory stage of mountain building is called lithogenesis. The geosynclines are

long and wide mobile zones of crustal rock bordered by rigid mass, which have been named by Kober as "forelands" or "kratogen".



These upstanding landmasses or forelands are subjected to continuous erosion by fluvial process and eroded materials are deposited in geosynclines. This process of sediment deposition is called Sedimentation.

Stage II :—

It is related to mountain building and is called Orogenesis. Both the forelands starts to move towards each other because of horizontal movement caused by the force of contraction resulting from cooling of the earth. The Compressive forces generated by the movement of forelands together causes Contraction, Squeezing and ultimately folding of geosynclines Sediments to form Mountain Range. According to Kober, folding of entire sediments of geosynclines or part thereof depends

the intensity of compressive forces. If the forces are normal and of the moderate intensity, only the marginal sediment of the geosync-lines are folded to form two margin randketten and middle portion of the geo- synclines and affected by folding activity Kober has attempted to explain the forms and structures of folded mountains on the basis of his typical median mass. The idea of median mass of Kober fully expl the process of mountain building. Accordi to Kober, the Alpine mountain chains of europe can be well explained on the basis of median masses. The median mass located in the Alpine mountain system very well explains the mechanism of mountain building. Alpine Mountains further extended into Asia where mounta ranges follow lattitudinal direction. Kober has also explained the orientation of thrust or compression of Asiatic folded mountain on the basis of foreland theory Asiatic folded mountain including the Himalayas were formed due to compressio and folding of sediments of Tethis Geosyn -lines caused by movement of Angaral and Gondwana as forelands. In

he median mass may be of various forms :—

: In the form of Plateau. (Tibetean Plateau between kunlun & Himalaya. Iranian plateau between Zagros & elburz, Anatolian plateau between pontick & Tauras, Basin range between wasatch range and ~~Sysia~~ Sierra Navada in USA)

In the form of plain. (Hungarian plain betwe ~~Carpathian~~ Carpathians and Dinaric Alps).

In the form of seas. (Mediterranean sea b/w african Atlas mountains & European Alpine mou Carrabean sea between the mountain range o middle amesica & west indies).

II : This stage of mountain building is characterized by gradual rise of mountain & their denudation by fluvial & other pro Continuous denudation results in gradual ... ... height

Evaluation of the theory :—

Though Kober's geosynclinal theory satisfactorily explains a few aspects of mountain building but the theory suffers from certain weakeness and lacunae :—

(1) The force of contraction, as in envisaged by Kober, is not sufficient to cause mountain building. Infact, very extensive & gigantic mountain like the Alps, The Himalayas, the Rockies & the Andes cannot be formed by the force of contraction generated by cooling of the earth.

(2) According to Suess, only one side of the geosynclines moves whereas the other side remains stable. He said, the himalayas were formed due to southward movement of Angara land & the Gondwana land remain stationary.

(3) Kober's theory somehow explains the west-east extending mountains but north-south extending mountains (Rockies & Andes) can't be explained on the basis of this theory.