

HISTORY OF GEODESY

The history of geodesy includes much more than can be covered in summary fashion, but certain highlights are notable:

- **Pythagoras (born 582 B.C.) declared the earth to be a globe.**
- **Aristotle (384-322 B.C.) concluded the earth must be spherical.**
- **Eratosthenes, an Alexandrine scientist, (276-195 B.C.) is given credit for first measuring earth's size. His results were about 16% too big.**
- **Poseidonius (135-50 B.C.) also determined earth's size using arc measurements between Rhodes and Alexandria. Results still 11% too large.**
- **Arabian efforts about 827 A.D. near Baghdad by the caliph Abdullah al Mamun gave an answer only about 3.6% too large.**

Little is recorded in western literature, but see Smith (1986), about geodesy until after the Middle Ages. However with invention of the telescope in the early 1600's, publication of 14 place logarithms and use of triangulation for arc measurement, many advancements were made. Later developments also included the theory of gravity, differential & integral calculus, standardization of length and introduction of least squares adjustment.

- **In 1615 a Dutchman, Willebrord Snellius, measured an arc more than 80 miles long with a series of 33 triangles. His computation of the earth's circumference was too small by about 3.4 percent.**
- **In 1669-70 a Frenchman, Jean Picard, measured an arc on the meridian through Paris and obtained results too large by only 0.7 percent. An interesting note here is that Newton needed and used Picard's measurements in development of his theory of universal gravitation which he published in 1687. Newton also concluded the earth is flattened at the poles due to earth's rotation.**
- **Picard's work was extended north to Dunkirk and south to Collioure by the Cassini brothers about 1700. The total arc was about 8° 20' but the arc was computed in two segments--the parts north and south of Paris. The radius of the earth determined from the northern portion was shorter than that computed from the southern portion. Hence the Cassini's concluded, in fact insisted, the earth is elongated at the poles.**
- **In 1735 & 1736 two geodetic surveying expeditions were sent by the French Academy of Science to Peru (Bouguer) and Lapland (Maupertuis) to make precise measurements to settle the dispute. Results showed quite conclusively the earth is flattened at the poles.**