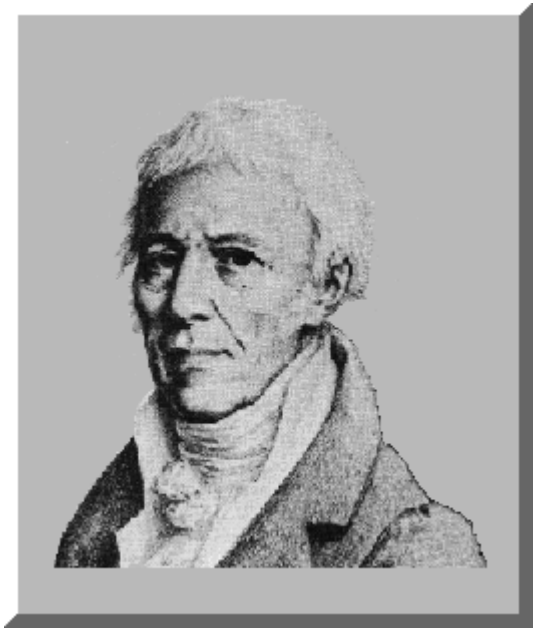
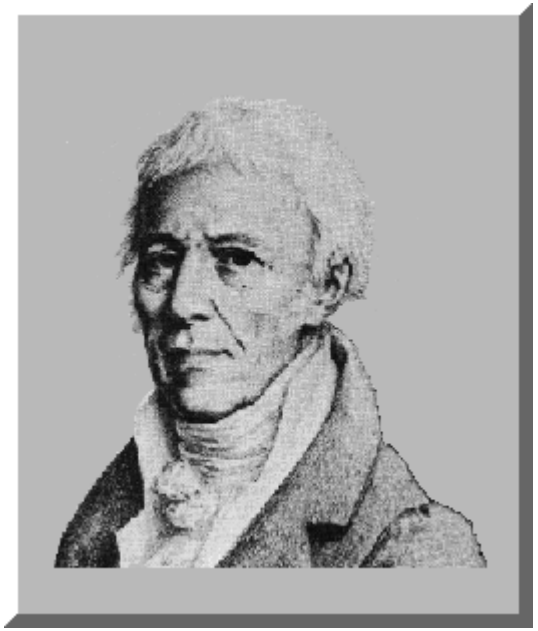
HISTORY OF  EVOLUTIONARY THEORY



JEAN BAPTISTE LAMARCK (1744-1829)

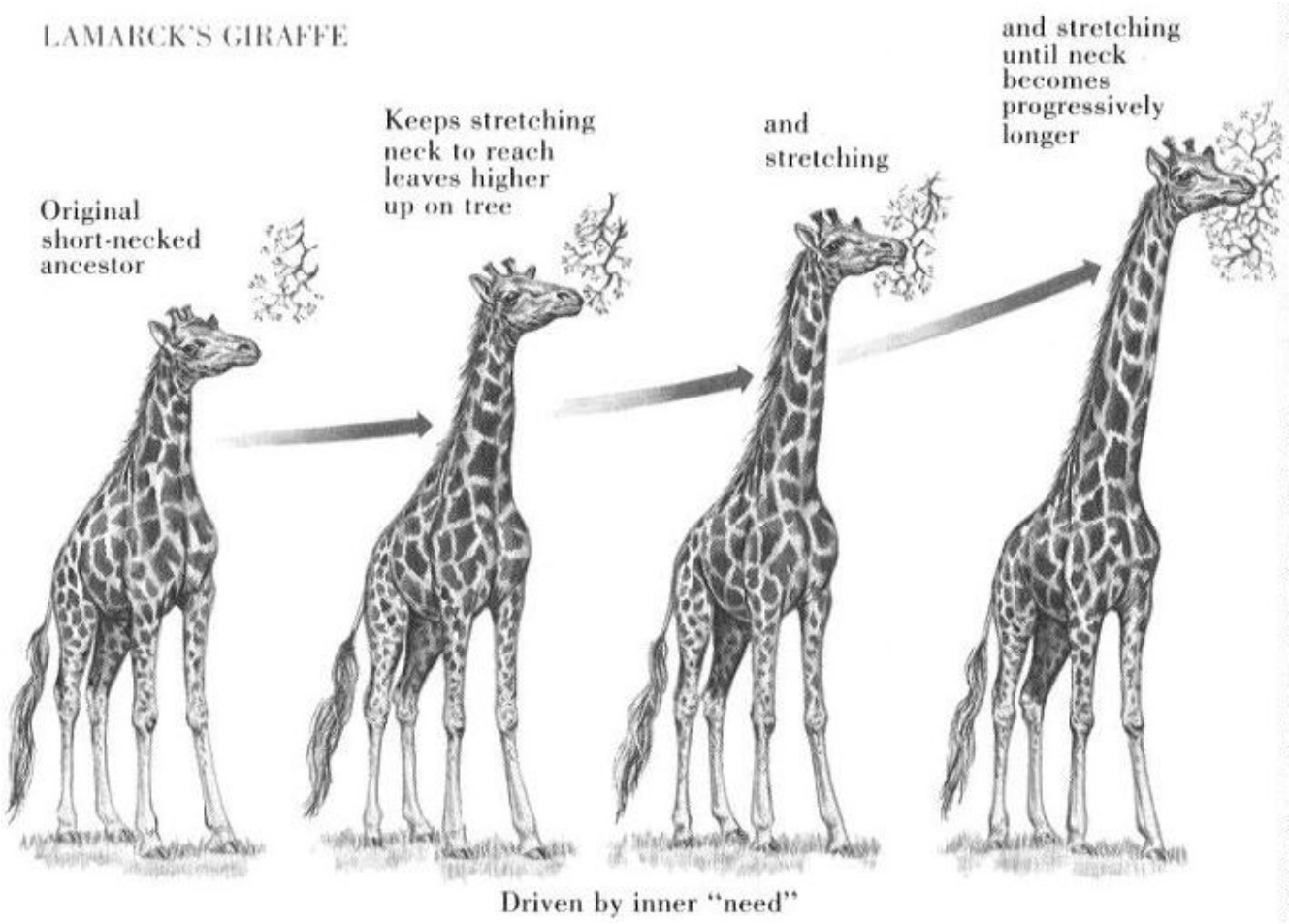
THE FIRST SCIENTIST TO PROPOSE A SYSTEM OF EVOLUTION.

- NOTICED THAT FOSSILS BECAME MORE COMPLEX IN MORE RECENT ROCK STRATA.
- HE BELIEVED THAT THERE WAS AN INTERNAL DRIVE (OR NEED) TOWARDS COMPLEXITY.

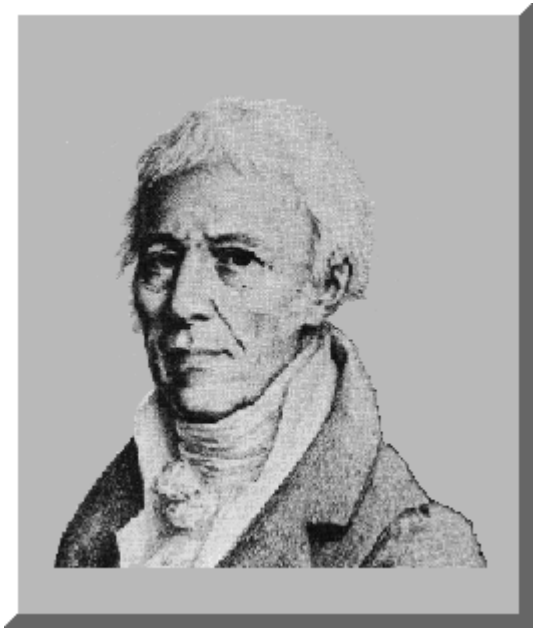


- EACH SPECIES CAME FROM LESS COMPLEX ONES.
- BELIEVED EVOLUTION WAS BASED ON TWO PRINCIPLES:

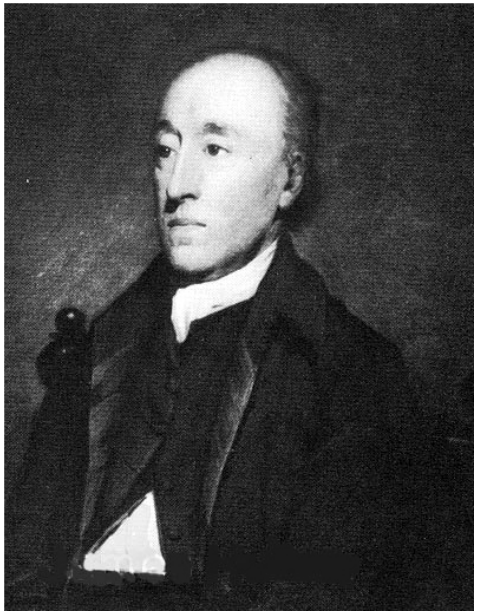
1) ACQUIRED CHARACTERISTICS - ORGANS/ STRUCTURES BECAME STRONGER/WEAKER WITH USE/DISUSE AND ARE PASSED ON TO OFFSPRING.



EXAMPLE: LONG NECKS OF GIRAFFES



2) UNIVERSAL CREATIVE FORCE - AN UNCONSCIOUS STRIVING IN THE LOWER CREATURES TO BECOME MORE COMPLEX AND MORE HUMAN.



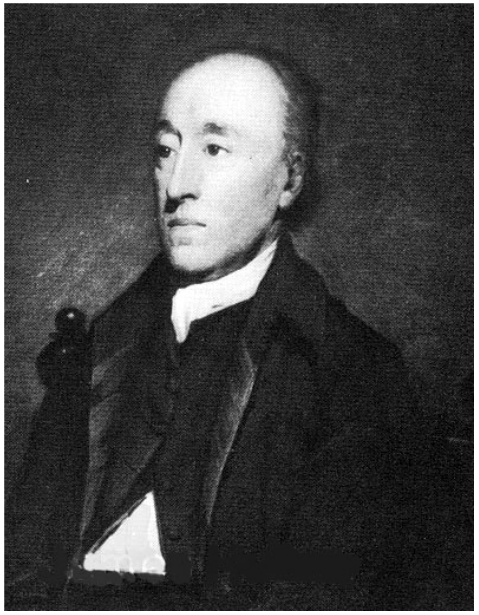
JAMES HUTTON (1726-1797)

WAS A SCOTTISH GEOLOGIST

SIR CHARLES LYELL (1797-1875)

WAS A BRITISH GEOLOGIST

UNIFORMITARIANISM - A PHILOSOPHY OF SCIENCE, BASED ON THE ASSUMPTION THAT THE NATURAL PROCESSES OPERATING IN THE PAST ARE THE SAME AS THOSE THAT CAN BE OBSERVED OPERATING IN THE PRESENT.



THEY CONCLUDED THAT THE EARTH WAS VERY OLD AND HAD CHANGED ITS FORM SLOWLY OVER TIME DUE TO NATURAL PROCESSES.

- LYELL WAS ABLE TO DATE THE AGES OF ROCKS BY USING FOSSILS EMBEDDED IN THE STONE AS TIME INDICATORS.

- CHARLES DARWIN MADE USE OF LYELL'S DATA ON FOSSILS FOR HIS THEORY OF EVOLUTION.

ERASMUS DARWIN (1731-1802)

- HE WAS CHARLES DARWIN'S GRANDFATHER.
- SUGGESTED THAT COMPETITION BETWEEN INDIVIDUALS COULD CHANGE SPECIES.

ANOTHER IMPORTANT CONTRIBUTOR IS **THOMAS MALTHUS** (1766-1834) AND HIS STUDIES ON POPULATION SURVIVAL.

MALTHUS OBSERVED THAT IN NATURE, ORGANISMS PRODUCE MORE OFFSPRING THAN SURVIVE.

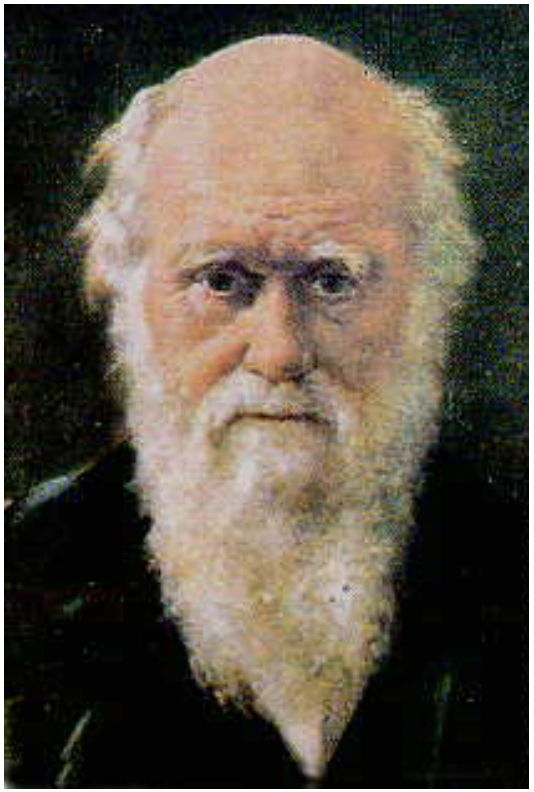
- OBSERVED THAT HUMAN POPULATIONS CANNOT KEEP GROWING INDEFINITELY.

- IF THE BIRTH RATE CONTINUED TO EXCEED THE DEATH RATE, EVENTUALLY HUMANS WOULD RUN OUT OF LIVING SPACE.

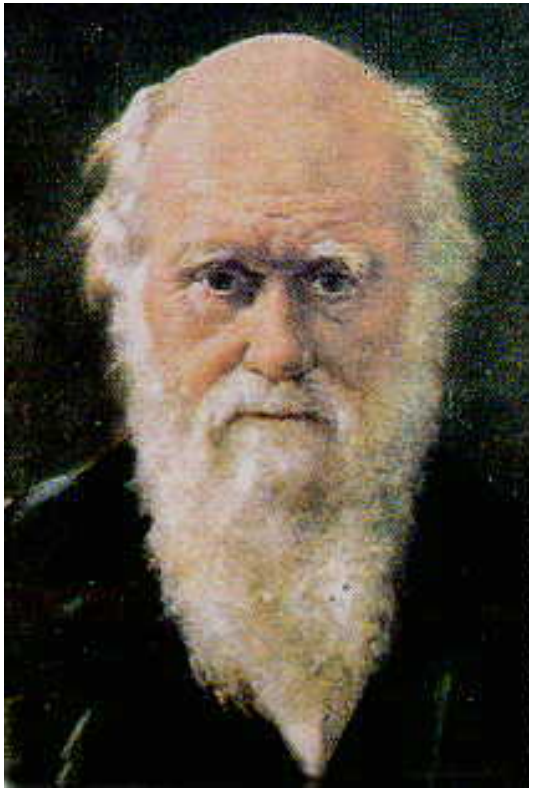
- HE BELIEVED THAT FAMINE, DISEASE, AND WAR PREVENTED ENDLESS POPULATION GROWTH.

- OBSERVED THAT WHEN THERE WAS COMPETITION FOR AVAILABLE RESOURCES, ONLY THE STRONG AND HEALTHY WOULD SURVIVE.

- HE WAS, THUS, THE FIRST TO TALK ABOUT ***SURVIVAL OF THE FITTEST.***

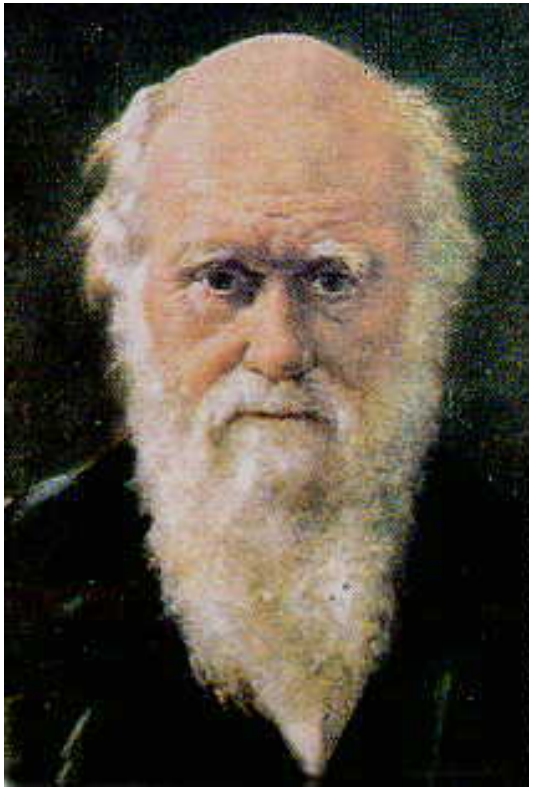


CHARLES DARWIN (1809-1882) WAS AN ENGLISH NATURALIST WHOSE THEORY OF EVOLUTION IS ONE OF THE GREATEST CONTRIBUTIONS EVER MADE TO SCIENCE.



DARWIN HYPOTHESIZED THAT IF THE EARTH CHANGED SLOWLY OVER TIME, THEN THE ENVIRONMENTAL PRESSURES ON DIFFERENT SPECIES WOULD ALSO CHANGE.

THESE EMERGING CHANGES WOULD THEN FORCE THE SPECIES TO ADAPT OR PERISH.



DARWIN STATED THIS THEORY IN HIS BOOK *ON THE ORIGIN OF SPECIES* (1859).

IN ANOTHER BOOK CALLED *THE DESCENT OF MAN* (1871) HE APPLIED HIS THEORY TO THE EVOLUTION OF MAN FROM A PRIMITIVE MONKEY-LIKE ANIMAL.

FROM DARWIN'S COLLECTION OF EVIDENCE, HE CREATED HIS THEORY OF NATURAL SELECTION (SOMETIMES REFERRED TO AS THE SURVIVAL OF THE FITTEST.)

THIS THEORY IS BASED ON SIX POINTS

1. LIKE BEGETS LIKE AND MORE ARE PRODUCED THAN SURVIVE. (OVERPRODUCTION)

2. THERE IS A STRUGGLE TO SURVIVE. (COMPETITION)

3. VARIATIONS EXIST AMONG THE POPULATION (VARIATION)

4. VARIATIONS CAN BE FAVORABLE AND MAY OFFER A SELECTIVE ADVANTAGE. (ADAPTATION)

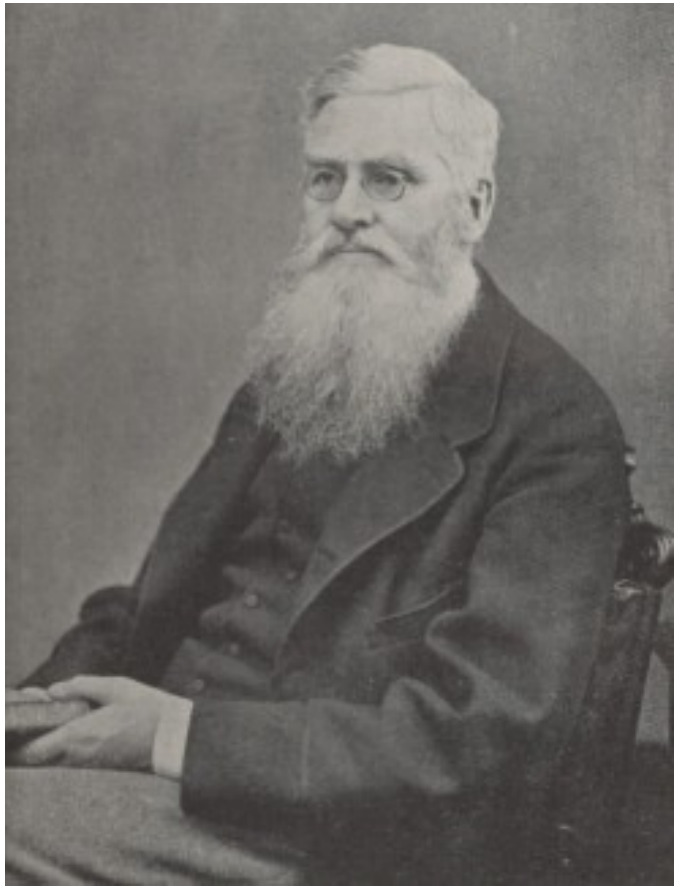
5. THOSE BEST SUITED TO THEIR ENVIRONMENT SURVIVE. (NATURAL SELECTION)

6. WITH ENOUGH ACCUMULATED DIFFERENCES, A NEW SPECIES MAY ARISE. (SPECIATION)

EVOLUTION IS A CHANGE IN THE ALLELE FREQUENCY IN A POPULATION OVER TIME.

NATURAL SELECTION MAY BE ONE METHOD BY WHICH GENE FREQUENCIES CHANGE.

ALFRED RUSSELL WALLACE
(1823-1913)



- BELIEVED TO HAVE DEVELOPED SIMILAR IDEAS ON EVOLUTION AND NATURAL SELECTION AT THE SAME TIME AS DARWIN.

- WROTE A PAPER AND SENT IT TO DARWIN TO REVIEW. THIS SPURRED DARWIN TO FINALLY AGREE TO THE RELEASE OF HIS THEORY IN *THE ORIGIN OF SPECIES* (1859).

A SATIRICAL 1871 IMAGE OF CHARLES DARWIN AS AN APE REFLECTS PART OF THE SOCIAL CONTROVERSY OVER WHETHER HUMANS AND APES SHARE A COMMON LINEAGE.