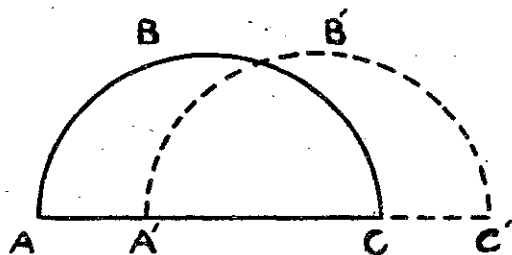


The Survival of The Strongest.

There is perhaps no thought more prominent in the history of the world than the Survival of the Strongest. The stronger nations survive and dictate the policies of the weaker. Centuries ago a Babylon ruled the then known world, as did later a Rome. That which is true of nations is true also of the individual. We all admire the successful contestant in a physical or mental trial. Contests are the principal recreations of the college. This contest becomes a continuous struggle as soon as college days are past. It is here, of course, almost entirely a mental one. In the brute world about us it is, on the other hand, almost completely a physical one. It is the stronger which survives whether considered physically or mentally. Why should this be so?



In the life curve represented by A B C, let A represent a weak animal, and C a strong one. Of their offspring a few will be as weak, and a few weaker than A; a few will be as strong, and a few stronger than C. The weak ones will be the first to perish in the competition which ensues upon a scarcity of food, as the strong will get all of it. Or during an epidemic disease they will be the first to succumb. Hence, as the ones at the A end of the curve have died and those stronger than C have survived, the curve will advance to A' B' C', *i. e.*, to the strong end. And thus it will continue advancing with each succeeding generation. Now let C in the curve above represent a fish with a slightly better fin, or a stronger skeleton, or a larger brain than A. In competition such will survive and transmit to a few of their descendants a little more of that which enabled them to compete so successfully. The curve thus progresses to the strong side; and so with any character of any other animal.

But this curve will branch in all directions according to the necessities of environment. Every class

of animals will spread in all directions where food may be obtained. For instance, certain species of worms burrow in the earth, living mainly upon vegetable mold; others build tubes in which they live — some in salt water, others in fresh; these catch such food as floats by them. Others are free swimmers, active and predaceous. As the environment of these different species differ, so necessarily will their manner of development; that is, other things being equal, those earth worms will survive that can dig the swiftest, those tube-livers that build the strongest tubes; but the active ones will evolve the most rapidly.

However, another factor seems to enter into evolution: When a class or a genus begins to develop in a certain direction, due to environment, they frequently continue developing in that direction even when environment has become unfavorable. For example, the sabre-toothed tiger, which lived in North and South America as well as in Europe ages ago during the Tertiary era, developed its tusks (whence its name) to an enormous degree. But instead of ceasing growth at a certain size, as for the welfare of the animal it seems they should have done, they kept getting larger and larger in succeeding generations until only with difficulty, evidently, could the tiger get food into its mouth, and the race probably died of starvation.

Turning again to our life curve we see that continuing the development in any one direction long enough we will have an animal totally unlike the ones with which we started, but that each succeeding generation differs imperceptibly from the preceding. In time there would be developed distinct species, genera and classes, but a line dividing them would necessarily be an arbitrary one, as they would grade one into the other. This we find to be the case. In the study of ancient life, especially the shells, we get many series where a division into species is entirely arbitrary, and merely one of convenience, as we have all the connecting links in the evolutionary succession.

Let us then take a rapid glance over the classes of the animal kingdom, with especial reference to their succession in time upon the earth.

Owing to the very great age of the oldest sedimentary rocks and the consequent alteration they have undergone, the organic remains thus far found in them are wholly unsatisfactory. In the earliest