Resistance. We need to account for:

(a) The already existing resistance to infection.
(b) The resistance which develops during the infection.
(c) The resistance which persists after infection.

These questions can best be answered by a study of the phenomena which are grouped under the title of immunity.

Immunity is the power which certain living organisms possess of resisting infection. It is a specific power.

Virulence or pathogenicity is the ability of a micro-organism to overcome the protective mechanisms of the host. The action of these organisms and reaction of the host results in what we call disease.

Susceptibility is due to the absence or suppression of the factors which underlie immunity.

Types of Immunity:

(a) Natural--may be inherited by an individual or a whole species.
(b) Acquired--through artificial means; may be either (a) active, or (b) passive.

1. Active:
   (1) Attack of disease
   (2) Introduction of virus or live organisms
   (3) Introduction of vaccine or dead organisms
   (4) Introduction of toxins

2. Passive:
   (1) Introduction of anti-bodies from another organism.

Theories of Immunity:

The science of immunology is only 30 years old. The explanation of it has been a subject of discussion for centuries. Even primitive peoples have tried to immunize themselves. There have been many theories.

(a) Exhaustion (Pasteur)
(b) Retention
(c) Ehrlichs--Side-chain

Duration of Immunity

(a) Transient--in a great many infections: diphtheria (from attack of disease); tonsillitis; common colds; influenza.
(b) Permanent--appears to be for life of the individual: smallpox; measles; typhoid fever; mumps; poliomyelitis; chicken-pox; etc.

Tests for Immunity

Scientists have developed a number of tests which will determine whether an individual is susceptible to a specific disease.