

life which produced them. This well known fact is clearly understood by the alcohol manufacturer, and he rarely pushes the fermentation beyond 5 or 6 per cent. of alcohol, more frequently 3 per cent., when he wants to get all the work he can out of the "torula."

The same law is the basis upon which Koch relies for the destruction of comma bacillus by "tuberculin," and so we might take up every variety of life.

Every one knows how destructive to animal life are the solid liquid or gaseous excrementitious products if they be retained in too large quantity by the animal economy, or if they be introduced from without in such quantity as the organism is unable to eliminate.

Hence, in treating of Hygiene, we must consider that those things most inimical to animal life are chiefly the products of its own existence—the dirt—or the matter out of place, which is the bane of health and life, and "the thorn in the flesh" of the sanitarian.

They must be considered under two heads:—

1st.—Their presence "in propria persona" when their quantity is the measure of their evil influence, and

2nd.—The products which result from the changes which they undergo after excretion, when they become not only much more virulent, but the "nidus" for bacterial life which may decimate a community.

These changes have been previously referred to, and used to be classed as fermentation or putrefaction, but by biologists at present these terms mean the new life established in these products from the dust of the atmosphere, or self-contained germs that finally split this refuse into simple chemical elements, but before reaching this harmless condition poisonous compounds—ptomanes—a new race of germs and other things we are not well acquainted with, are apt to appear in this unsanitary procession.

All microbes are not inimical to human health. Many, and mayhap the majority, are of special service in as many ways, but why is man so punished by certain classes of these germs; and what protection has he got against them?

Some theologians would answer, "it is due to man's natural depravity," but as we can only be guided by observations the answer must be, we do not know, to the first query; and to the second, that the senses

instinctively abhor the conditions which give rise to this class of germs, and this is the rule throughout animated nature. And if by perversion or any other cause the senses fail to do their duty, then other means are forthcoming, which will compel obedience to natural laws on penalty of the life or lives of the delinquents. Since it is the instinct of the *genus homo* chiefly which becomes perverted, so he suffers, and as he tends to pervert the natural life of his companion species—vegetable and animal—so do they in like manner suffer.

The deleterious products or excreta can be classed as follows, and when the term *tissue waste* is included these four classes are included:—

1st.—*Gaseous*—Carbonic acid and vapor of water combined with virulent nitrogenized substances that pass away in the exhalations from the lungs and skin.

2nd.—*Fluids*—Substances in watery solution that are expelled by the skin, mucous membranes and kidneys.

3rd.—*Solids* removed by desquamation and by the intestinal tract.

4th.—Products of the decay of the body as a whole after death.

All these "tissue wastes" are modified by the condition of the organism producing them at the time they separated from it, whether it was in a state of health or disease, or in other words whether these products were only harmful as simple waste or excreta, or specially virulent by containing germs, given off by a body laboring under specific disease.

In treating this subject it must be divided up into sections, and how to do so without being tedious is the dilemma upon which the writer is perched, and he must get the reader's assistance before again reaching *terra firma*.

Previous to getting into this uncanny position the path must be cleared.

It has been again and again stated that *tissue waste* is the great source of bad Hygiene and disease as well, that it is a poison, etc., etc., all of which are facts. But again it is a continuous normal constituent of the body in perfect health, as in disease, and it must be so if we look at its *genesis*. Every thought, word, act or effort, of the economy means tissue waste. Every fluid and solid is charged with it, but *per se* it does not cause disease unless it accumulates from a failure in some of the emunctories or (and here you may differ with the writer,