


TOBACCO-POISONING.



NICOTIANA TABACUM.

CHEMISTS, botanists, and physicians unite in pronouncing tobacco to be one of the most deadly poisons known. No other poison, with the exception of prussic acid, will cause death so quickly, only three or four minutes being required for a fatal dose to produce its full effect. It is botanically known as *nicotiana tabacum*, and belongs to a class of plants known as the *volanaceæ*, which includes the most poisonous of all species of plants, among which are *henbane* and *belladonna*. There are more than forty different varieties of the plant, all of which possess the same general properties, though varying in the degree of poisonous character.

Nicotine.—The active principle of tobacco, that is, that to which its narcotic and poisonous properties are due, is *nicotine*, a heavy, oily substance which may be separated from the dried leaf of the plant by distillation or infusion. The proportion of nicotine varies from two to eight per cent, Kentucky and Virginia tobacco usually containing six or seven per cent. A pound of tobacco contains, on an average, 380 grains of this deadly poison, of which one-tenth of a grain will kill a dog in three minutes. A case is on record in which a man was killed in thirty seconds by this poison.

A Pound of Tobacco will Kill 300 Men.—The poison contained in a single pound of tobacco is sufficient to kill

300 men if taken in such a way as to secure its full effect. A single cigar contains poison enough to extinguish two human lives if taken at once.

The essential oil has been used for homicidal purposes. Nearly thirty years ago it was employed by the Count Bocardmé to murder his brother-in-law for the purpose of securing his property.

The Hottentots use the oil of tobacco to kill snakes, a single minute drop causing death as quickly as a lightning stroke. It is much used by gardeners and keepers of green-houses to destroy grubs and noxious insects.

A number of instances are recorded in which instant death has been produced by applying a little of the oil from the stem or bowl of an old pipe to a sore upon the head or face of a small child.

Poisoning through the Skin.—The poison of tobacco is so potent and violent in its action that even the external application of the moist leaves to the skin is sufficient to produce most serious symptoms. If a cigar be unrolled and the leaves composing it be applied over the stomach, great nausea will be produced in a very short time. This method has been used to induce vomiting. Cowardly soldiers have been known to place tobacco leaves under their arms just before a battle, for the purpose of producing sickness.

Some years ago a man was detected in attempting to smuggle a quantity of tobacco by placing the leaves next to his skin. The nearly fatal symptoms which followed led to the discovery of the smuggler.

Deadly Vapor.—If tobacco is poisonous when applied to the skin, it is doubly so when inhaled. The smoke of tobacco contains, in addition to *nicotine*, several other poisons, the chief of which are *pyridine*, *picoline*, *sulphuretted hydrogen*,

carbon di-oxide, carbonous oxide, and prussic acid, all of which are fatal poisons when received into the system in any other than the most minute quantities. Thus, it is not to nicotine alone that the evil effects of smoking are due, but to all of these poisons combined.

Birds, frogs, and other small animals, die when exposed to the fumes of tobacco in a confined space. Cheese mites, flies, bees, and other insects may be quickly killed by directing upon them a stream of tobacco smoke from an ordinary pipe.

Poisoning through the Lungs.—Inhalation is the most speedy way of getting any volatile poison into the system. The reason of this is obvious when the fact is made known that the lungs present a mucous surface fourteen hundred square feet in extent, every inch of which is in the highest degree capable of absorbing gaseous substances brought in contact with it. This membrane is of the most marvelously delicate character, being of such exceeding thinness that it forms scarcely any obstacle to the passage of gases which enter the lungs by respiration. Just underneath this delicate membrane passes all the blood in the body, or an amount equivalent to the whole volume of the blood, once every three minutes. The vapory poison inhaled by the tobacco-smoker is not simply taken into the mouth and then expelled, but it penetrates to the remotest air-cells, and spreads itself out over the whole of the immense extent of membrane stated. Thus it is plain that the blood of the smoker is literally bathed in the narcotic fumes drawn from his pipe or cigar.

So readily does the system receive the poison of tobacco in this way, that it has been repeatedly observed as a fact that persons who are engaged in the manufacture of cigars

often suffer much from the characteristic effects of *nicotine* poisoning.

When tobacco is applied to the mucous membrane, as in chewing and snuff-taking, its poisonous elements are absorbed in essentially the same manner as when it is applied to the skin, but much more rapidly. In chewing, considerable quantities are also absorbed through the stomach, being swallowed with the saliva.

Poisonous Effects of Tobacco-Using.—Very few users of the weed need to have a description of the effects of a moderate degree of poisoning with tobacco. The giddiness, nausea, and deathly sickness which follow the first attempt to use the poisonous drug are indubitable evidence of the poisonous character of tobacco, which evidence is confirmed by the difficulty—in many cases very great—experienced in becoming accustomed to its use. In severe cases of poisoning, violent vomiting and purging, vertigo, deathly pallor, dilatation of the pupil, a staggering gait, disturbed action of the heart, interference with respiration, and in extreme cases insensibility and syncope, are commonly observed. Only a very small quantity is necessary to produce these symptoms in a person not accustomed to the use of the drug; but in persons who have accustomed their systems to the poison, a much larger quantity is required.

Persons not accustomed to the use of tobacco often show symptoms of poisoning from taking a very small quantity of the drug, as by inhaling the fumes of tobacco in a smoking-car or a bar-room. Infants are often sickened by inhaling the air of a sitting-room which is poisoned by a smoking father. There are good reasons for believing that not a few infant deaths have occurred from this cause, as it is well known that young children are exceedingly susceptible to the influence of poisons of all kinds.

Condition of a Boy Learning to Smoke.—Of course no one has ever examined the internal organs of a boy while he was undergoing the terrible ordeal of “learning to smoke ;” but lower animals have been examined while under its influence, and the conditions observed are thus described by an eminent scientist and physician :—

“From analogy derived from the inferior animals, which analogy must be very perfect, the conditions of the vital organs are as follows: The brain is pale and empty of blood; the stomach is reddened in round spots, so raised and pile-like that they resemble patches of dark Utrecht velvet; the blood is preternaturally fluid; the lungs are pale as the lungs of a calf, when we see them suspended in the shambles; while the heart, overburdened with blood, and having little power left for its forcing action, is scarcely contracting, but is feebly trembling, as if, like a conscious thing, it knew equally its own responsibility and its own weakness. It is not a beating, it is a fluttering heart; its mechanism is perfect, but each fiber of it, to its minutest part, is impregnated with a substance which holds it in bondage and will not let it go.”

Why all Smokers do not Die of Tobacco-Poisoning.—It is often objected that while chemistry and scientific experiments seem to prove that tobacco is a powerful poison, the experience of thousands of persons disproves the theory of its poisonous character, since if it were so intense a poison as described, cases of death from tobacco-poisoning would be much more frequent.

To this objection we answer, 1. One reason why so few persons are reputed to die of *nicotine* or tobacco poisoning, is the wonderful faculty the system possesses of accommodating itself to circumstances. Through this means the worst

poisons may by degrees be tolerated, until enormous doses can be taken without immediately fatal effects. Corrosive sublimate, strychnia, belladonna, and many other poisons, may be thus tolerated.

2. In our opinion the majority of tobacco-users do die of tobacco-poisoning. Death as surely results, ultimately, from chronic as from acute poisoning, though the full effects are delayed, it may be, for years. A man who dies five or ten years sooner than he should, in consequence of tobacco-using, is killed by the poison just as truly as though he died instantly from an overdose.

Chronic Tobacco-Poisoning.—The symptoms of chronic tobacco-poisoning cannot be better stated than in the following summary by Dr. B. W. Richardson, one of the highest medical and scientific authorities of England :—

“Smoking produces disturbances—

“*a.* In the blood, causing undue fluidity and change in the red blood corpuscles.

“*b.* In the stomach, giving rise to debility, nausea, and in extreme cases, sickness.

“*c.* On the heart, producing debility of that organ, and irregular action.

“*d.* On the organs of sense, causing, in the extreme degree, dilatation of the pupils of the eye, confusion of vision, bright lines, luminous or cobweb specks, and long retention of images on the retina, with other and analogous symptoms affecting the ear, viz., inability clearly to define sounds, and the annoyance of a sharp, ringing sound like a whistle or a bell.

“*e.* On the brain, suspending the waste of that organ, and oppressing it if it be duly nourished.

“*f.* On the nervous filaments and sympathetic or organic nerves, leading to deficient power in them, and to over-

secretion in those surfaces—glands—over which the nerves exert a controlling force.

“*g.* On the mucous membrane of the mouth, causing enlargement and soreness of the tonsils—smoker’s sore throat—redness, dryness, and occasional peeling off of the membrane, and either unnatural firmness and contraction, or sponginess of the gums.

“*h.* On the bronchial surface of the lungs when that is already irritable, sustaining the irritation and increasing the cough.”

The above quotation is of peculiar force, coming as it does from a man who is not only well qualified to speak on the subject from his high scientific attainments and large experience, but is peculiarly well fitted to speak authoritatively, and certainly without prejudice against tobacco, himself being, from force of long habit, a smoker.

Dr. Richardson has elsewhere asserted that the injury done to the blood corpuscles by *nicotine* can be readily detected in the blood of an old smoker by examination with the microscope. He thus describes the changes which are found to take place in the blood of a smoker:—

“The blood is made thinner than is natural, and, in extreme cases, paler. In such instances the deficient color of the blood is communicated to the body altogether, rendering the external surface yellowish white, and puffy. . . . But the most important change is exerted on those little bodies which float in myriads in the blood, and are known as the red globules. These globules have, naturally, a double concave surface, and at their edges a perfectly smooth outline. . . . The absorption of the fumes of tobacco leads to rapid changes in them. Microscopically examined, they are found to have lost their round shape, to have become oval and irregular at their edges, and, instead of having a

mutual attraction for each other,—a good sign, within certain limits, of their physical health,—they lie loosely scattered. Indeed, they indicate to the learned observer, as clearly as though they spoke to him, that the man from whom they were taken was physically depressed, and deficient both in muscular and mental power."

The fact is established beyond the possibility of successful controversy, that tobacco is a poison, deadly in large doses, pernicious and harmful in all doses. It taints the breath, ruins the digestion, obliterates taste and smell, spoils the blood, oppresses the brain, depresses the heart, irritates the nerves, wastes the muscles, obstructs the liver, dims the vision, stains the skin, and deteriorates and contaminates every organ and tissue with which it comes in contact in the body. Its influence is to lessen vitality, to benumb the sensibilities, to shorten life, *to kill*.

J. H. K.

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