

Tobacco and the diseases it produces / by Charles R. Drysdale ; being the substance of an address delivered at Exeter Hall, London, May, 1873, at Manchester Free Trade Hall, March 27, 1873, and at Guildford, on March 6, 1875.

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TOBACCO

AND

THE DISEASES IT PRODUCES.

BY

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BEING THE SUBSTANCE OF AN ADDRESS DELIVERED
AT EXETER HALL, LONDON, MAY, 1873,
AT MANCHESTER FREE TRADE HALL, MARCH 27, 1873,
AND AT GUILDFORD, ON MARCH 8, 1875.

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THE

DISEASES PRODUCED BY TOBACCO.

WHAT is called the Science of Hygiene is divided by authors into two sections. In the one are considered all those points, where collective or governmental interference can effect something towards improving the health of the masses. Much has of late been said upon this subject, under the name of Public Health, and most praiseworthy laws have recently been passed, for improving the water-supply and the dwellings of citizens in towns, as well as in protecting them from the dangerous adulterations of the necessaries of life, such as milk, bread, &c. My task this evening is to refer to a topic of that section of Hygiene which relates to the habits of private individuals; this section has been called *private Hygiene*, a far more extensive subject, of course, than that of Public Health. Governments, alas! can do but little to improve the daily habits of the people. It remains for scientific observers and moralists to enlighten their fellow-countrymen and women on subjects so momentous to their health, as are many of those contained in the section of private Hygiene.

My desire this evening is to examine, whether the use of tobacco, in any shape, is, or is not, injurious or beneficial to the human race. It appears that in the United Kingdom at this present time, we are supposed to pay annually somewhere about fourteen millions sterling for cigars, pipes, and tobacco. Thus, in the year 1841, (*Pall Mall Gazette*, June 16, 1871,) we consumed about twenty-three millions of pounds of tobacco, or 1lb. $3\frac{3}{4}$ ounces a head of the population; and, in 1869, we consumed about forty-two millions of pounds, or 1lb. $5\frac{3}{4}$ ounces per head. Dr. Smiles, in his "Companion to the Almanack," 1870, thinks that we spent some eleven and a-half millions on tobacco alone; and, what with

adulteration, and pipes, &c., it has been thought that we must as a nation pay yearly some fourteen millions sterling for tobacco; that is, I mean, the *male* sex does so, for women consume very little tobacco indeed.

I think, then, that it will not be a waste of time, if I ask why we do this, and whether we ought to continue to do so? The same question is being asked by a host of medical men at this time in France, Germany, Italy, the United States, and in the United Kingdom. Thus, when I mention the names of Benjamin Brodie, William Jenner, Solly, George Critchett, Lizars, Copland, Benjamin Richardson, Wordsworth, Edmunds, Couper, Edward Smith, Hutchinson, Mackenzie, and Allingham, of this country; of Erlenmayer, Liebreich, Hahn, Kostral, Tiedemann, Eulenberg, Vohl, Lundahl, and Strebel in Germany; of Jolly, Le Bon, Blatin, Sichel, Decaisne, Gaillardin, Druhen, and Morin in France; and of Mantegazza, Caccopardo, Scalzi, Petrera, and others in Italy, as strong objectors to the use of tobacco, I think you will indulge me by allowing *me* also to express my opinions as one of its most strenuous opponents; considering it, as I do, one of the greatest foes to health and happiness of all modern habits.

Botanical.—All species of tobacco belong to the genus *Nicotiana*, of the botanical order *Solanaceæ*. They are closely related to henbane (*hyoscyamus*), to *atropa belladonna*, and to stramonium, all of which plants are poisons used in medicine. Tobacco alone of all the four is scarcely ever employed medicinally at the present day, except perhaps, occasionally, in combination with stramonium, in spasmodic asthma. Its use as an injection has been abandoned, as too dangerous to life. It is largely used by farmers in some localities, as the best of all poisons for destroying vermin infesting sheep and commonly also by gardeners for killing the insects upon their plants. Indeed, tobacco is one of the most virulent of all vegetable poisons.

Historical.—I need not, I think, speak at any length of the history of the introduction of tobacco into civilized nations. It appears that, in 1492, the immortal Columbus arrived at the island of St. Salvador, when some of his

sailors went ashore, and returned saying, that they had seen some natives roll up a kind of dry leaf, set fire to one end, and inhale the smoke. It was, then, a gift of savages to civilized men, this same habit of smoking tobacco; and, strange to say, whilst the good works of civilization, peace, wealth and health, advance so deplorably slowly, this fetid herb, borrowed from the naked aborigines of the New World, has over-run the whole of the Old World in the space of three centuries. For, in 1518, Cortez sent home some of the seeds of the tobacco plant to Charles V.; but it was not until 1560, that a certain physician, Dr. Nicot (whence the word *nicotine*), then ambassador of France at the Court of Spain, sent the herb to France, where it soon became generally praised by the physicians of that day, so that it obtained the name of the holy herb—*la sainte herbe*—and was, among other things, employed with the object of curing Catherine of Medicis of a megrim she was subject to. For this cause it was also called *herbe de la reine*.

So extensively has the use of tobacco spread in France in three centuries, that a few years ago it required 25,000 acres of the best land in France for its culture, and the quantity raised was about 24 millions of pounds of tobacco. M. Barral, at the Paris Exhibition of 1866, calculated that Germany grows 18,000,000 kilograms; Austria, 29,000,000; Russia, 14,000,000; Cuba, 23,000,000; Turkey, 45,000,000; and America, 75,000,000 kilograms of tobacco. "In Holland," it is said, "more money is spent on tobacco than on bread" (*Hahn's Natur-diät*, 1859). And, mark, all of this for the consumption of males only; since, I am glad to say, women, in Europe, with few exceptions, have hitherto not spent any time or money on tobacco.

The constituent part of tobacco, which makes it at once so agreeable and so dangerous to health, is nicotine—a liquid alkaloid, discovered so recently as 1809 by a French chemist. So deadly a poison is nicotine, that one-tenth of a grain of it will kill a middle-sized dog in three minutes; and, as the per centage of nicotine in dry tobacco varies from 2 per cent. in Havannah, to about

7 per cent in Virginian tobacco, it has been calculated that in a single cigar there is enough nicotine, if given pure, to kill two men; and, in about a quarter of an ounce of tobacco, there may be as much as two grains of this very dangerous poison. A smuggler, mentioned by Namias to the Academie des Sciences, was dangerously poisoned by covering his naked skin with tobacco leaves, in order to escape paying duty. The great danger of chewing tobacco will thus at once be evident. Taylor (on Poisons, p. 749) mentions that the volatile vapour of tobacco given off in the process of manufacture has been shown to have an injurious effect on tobacco operatives. The first results are headache, nausea, languor, loss of appetite, and sleeplessness, followed by a general disturbance of the health. A Melsens chemist said he had collected 30 grammes of nicotine from 4,500 grammes of tobacco-smoke, which he conveyed through water. The analyses made by Eulenberg and Vohl (*Ann. d'Hygiène*, April, 1873, from *Vierteljahrsch für ger. Med.*) seem, however, to controvert the old theories that the injurious effects of tobacco-smoking are due to the presence of nicotine in the smoke; but attribute them rather to the alkaloids produced by its decomposition, and which have many similar physiological properties. The smoke from tobacco in pipes and cigars was passed first through a solution of potassic hydrate and then through one of dilute sulphuric acid. The former solution was found to contain a mixture of carbonic, hydrocyanic, sulphuric, acetic, formic, metacetic, butyric, valeric, and carbolic acids, creasote, and several hydrocarbons. The acid solution contained rosolic acid, ammonia, traces of ethylamine and many of the pyridine bases, to the last of which the injurious action is due. The bases found were pyridine, C_5H_5N , which is more abundant in pipe than in cigar smoke, picoline C_6H_7N , lutidine C_7H_9N , collidine $C_8H_{11}N$, which is more abundant in cigar than in pipe smoke, parvoline $C_9H_{13}N$, coridine $C_{10}H_{15}N$, rubidine $C_{11}H_{17}N$, and a residue corresponding to viridine $C_{12}H_{19}N$. As will be seen, the more volatile of the bases, as pyridine, were most abundant in pipe smoke, while the less volatile, as collidine, were most abundant in cigar smoke.

The physiological action of these bases was not tested separately, but only that of a mixture of those which volatilize under 160° C., and of those which volatilize between 160° and 250° C. Both of these sets of bases like nicotine, produced contraction of the pupil, difficult respiration, general convulsions, and death; and, upon *post-mortem* examination, the respiratory passages and lungs were found congested. They do not act as rapidly as nicotine. Those volatile at a low temperature were more active than those which were only volatile at a high temperature, which explains the fact that a larger amount of tobacco can be smoked in the form of cigars than in a pipe.

The alkaloids are soluble in the mucus of the mouth and air passages; and thus smoke condensed and mingled with water is easily taken into the blood. Hence, when cigars or pipes are smoked, even out of doors, a notable quantity of poison is taken into the system. But, when smoking takes place in a small room, the air taken into the lungs also gives its share of poison through the fluids of the air passages; and persons who remain in smoking-rooms, even if not themselves smoking, cannot escape a certain amount of poisoning. A plea for women who wait in public bar-rooms and smoking saloons is not out of place here; for, though not themselves of the smoking sex, they cannot avoid the poisoning caused by inhaling smoke continually. Surely gallantry, if not common honesty, should suggest the inference from this proposition.

Acute poisoning to a slight extent takes place usually when smokers commence their apprenticeship to this vicious custom. The first cigar or pipe of tobacco produces nausea, spasmodic vomiting, hiccough, oppression of breathing, extreme prostration and fatigue, coldness of the extremities, cold sweats, and slow and intermittent pulse. This first step, which costs so much at the time and afterwards, is the most disagreeable; and the smoker suffers less and less each time he smokes, until his nerves and stomach get accustomed to the poison, and become, as many do to other noxious stimuli of the nerves and conscience, more or less callous. Nature, in short, withdraws

the monitor when the warning goes unheeded. Invalids, however, very often find they cannot look at a pipe or a cigar, and bouts of smoking may at any time lead to a fatal termination, as in the case of a young man mentioned in *L'Igea* of November, 1871, who died with all the symptoms of poisoning after smoking ten cigars for a wager.

With regard to the physiological effects of tobacco, experiments have shown (Ed. Smith, British Association, 1864, &c.) that smoking makes the heart beat much more rapidly, from the paralyzing effects of nicotine on the minute vessels of the system, which no longer offer their usual resistance to the force pump of the circulation.

Nicotine, as for convenience the poisonous principle of tobacco may be called, can enter the body by the stomach, the lungs, and by the skin, and its effects are uniform by whatever gate it enters the system. Dr. Edward Smith found that when his pulse was 74 per minute before smoking it rose after smoking eleven minutes to 112. The effect produced by tobacco on the heart is caused by its paralyzing effect on the minute vessels of the capillaries. These, being relaxed, can no longer offer effectual resistance; and the heart, freed from this control, increases the rapidity of its strokes. The increase of the heart's action caused by tobacco results partly also from the paralyzing effect of the drug upon the pneumogastric nerve which supplies the stomach and lungs with nerve influence.

It appears also from experiments made by Blatin that small doses of nicotine accelerate the number of respirations, whilst a large dose diminishes them. This same experimenter administered nicotine in small doses daily to a dog, and found an increased dryness of the mucous membrane of the mouth, and inflammation of the throat to result. We may conclude that nicotine is a poison of the heart and vascular system. The circulatory system presents, in chronic smokers, similar symptoms to those seen in acute poisoning. The most noticeable of these is the intermittent pulse, of which many cases have

been collected by Decaisne and others, which are supposed to be due to the influence of tobacco on the sympathetic nerve. From its influence on the vagus nerve, the use of tobacco causes in small doses a more rapid secretion of the gastric juice, and increased action of the stomach walls. Hence the smoker's habit of taking an after-dinner pipe to aid digestion—an aid which gradually becomes less and less powerful, and requires larger and larger doses. The appetite then fails, and dyspepsia becomes habitual.

Tobacco poisoning is divisible into two classes, acute and chronic. The first is the result of a large or unwonted dose: the second is the accumulated result of small doses. Druhen relates the case of a boy of fourteen, who died from smoking 15 centimes worth of tobacco for tooth-ache, and similar cases of acute poisoning are related in various works on medicine.

Chronic poisoning by nicotine is the common and every-day form met with in practice; and it is usually only after years of smoking that the *accumulated* effects on the system become apparent. The experiments of Morin (New Sydenham Society, 1861,) show that nicotine can be detected in the tissues of the lungs and liver after death. Blatin made experiments on dogs by mixing two or three grains of tobacco with their food and administering this twice or thrice daily. This caused the heart's action to become feeble and irregular, the animals lost appetite, had diarrhoea, swelling of the gums, loosening of the teeth, followed by palsy of the hind legs, blindness, deafness, and death from weakness. The mucous membrane of the throat and mouth were often so dry during life as to cause some difficulty in deglutition.

The smoker's sore-throat, hoarse voice, &c., are but trifling affections in comparison with the gradual saturation of the whole system with nicotine, which causes pallor, trembling of the hands, and debility. A physician of one of the hospitals of London lately was so constantly affected with trembling and palpitation after smoking that he was forced to abandon it at once. Intermittence of the pulse is not uncommonly an effect of chronic nicotism; and a

French physician, Beau, mentions cases of a frightful disease, angina pectoris, caused by chronic smoking.

The fact shown by physiological experiments on animals, that nicotine lowers the temperature of the body, is an important one; and I have constantly noticed that smokers are apt to become more chilly and less able to stand extremes of cold or heat than they were before they adopted the habit. Smokers are also very frequently dreamy and nonchalant: and not so fresh and energetic as they used to be.

Among the diseases caused by the use of tobacco, must be enumerated the ulcerations of the lips of malignant character caused by the irritation of the pipe. Cancer of the lip is rarely seen except in men who smoke; and I have, moreover, published cases where men contracted a contagious disease, syphilis, from using pipes in a public-house. This has been also noticed in numerous cases by other observers. Passing into the cavity of the mouth, it is distressing to see, in many cases, the miserable condition of the smoker's teeth. Black stumps and spongy gums are very commonly the effects of habitual and excessive smoking; whilst chewing makes the mouth of its votary a horrible sight in many instances among those of the operative classes, who care little for their appearance. Several diseases of the tongue are caused by the use of the pipe and the cigar. There can be no doubt, I think, that a malignant disease of the tongue is occasionally the result of the long irritation caused by the presence of the irritating fluids from tobacco pipes; and smokers are subject to a number of slight ulcerations of the tongue and lining membrane of the mouth. I saw a man at my hospital, aged fifty-eight, a short time ago, who had a long white patch on his tongue, which I am convinced was caused by the extravagant way in which he had consumed tobacco for twenty years past.

There seem to be three periods in affections of the tongue caused by tobacco-smoke. The first is merely simple erythema, and the mucous membrane becomes red, and loses its polish. If carried on further, the epithelium

becomes white, thickened, and softened, and comes away in scales, presenting a whitish patch, rather like syphilitic mucous plates. Lastly, these patches become cracked, and an ulcer, painful, and with greyish base and irregular edges, is seen. The edges may become hard, so hard as even to simulate, in rare cases, hard sores. There can be no doubt, too, unfortunately, that such patches occasionally are apt to degenerate into epithelioma. Many cancers of the lips and tongue are due to smoking. Who can deny it? Women are infinitely less subject than men to white patches in the mouth (psoriasis). Is this not an additional proof that tobacco is an exciting cause of such patches? Consider the acidity of the juice of tobacco-smoke, the heat of the short pipes used, the use of spirituous liquors, &c., so frequent in all smokers, and the deplorable condition of their teeth in so many instances.

The influence of tobacco upon the eyesight is now well known. One of the symptoms produced in acute poisoning by tobacco is blindness; and chronic poisoning gives rise to similar symptoms. Mackenzie, of Glasgow, first noticed that male patients affected with one species of amaurosis were mostly great lovers of tobacco in some form. Sichel, of Paris, found some cases of blindness easily cured by cessation from the use of tobacco. Hutchinson narrated, before the Royal Medical and Chirurgical Society of London, thirty-seven cases of a species of amaurosis, where twenty-three of the patients were great smokers; and Wordsworth has confirmed these views of Mackenzie and Hutchinson. In one week I saw in (1874) at the Royal London Ophthalmic Hospital, two cases of tobacco amaurosis in young men, neither of whom had attained the age of thirty. The first had chewed continually; and the second smoked the enormous quantity of one ounce of shag tobacco daily. Both were completely and irretrievably blind from this dangerous habit. But weak sight is also commonly caused by snuffing as well as by smoking and chewing. Tobacco amaurosis is much commoner now than it used to be. Mr. John Couper, of the Royal Ophthalmic Hospital, says, that patients with

tobacco amaurosis describe themselves as always living in a dim light, even at noon-day. Mr. George Critchett, the great London authority on diseases of the eye, tells me that he is constantly consulted by gentlemen for commencing blindness, caused solely by great smoking. He condemns, therefore, smoking in most unqualified terms, as most dangerous to human health.

Tobacco has no food value; and nicotine merely stimulates, but adds no force to the economy. Smoking causes undue fluidity in the blood and pallor in the skin. It produces debility, nausea, and sickness of the stomach. It causes weakness and irregular action of the heart. It causes enlargement of the tonsils, sore throat, and blackens the teeth and makes the gums spongy and red, and also the mucous membrane of the mouth, throat, and air-passages. Hence, it tends to produce bronchitis and cough, from the irritation of the mucous membrane of the lungs. Great smokers are not often in thoroughly good health, in my experience. Thus, I once took two hundred consecutive cases of great smokers appearing before me as out-patients at the Metropolitan Free Hospital, confining myself to such as had for years smoked at least half-an-ounce of tobacco (usually shag tobacco) daily. Most of these men were more or less subject to some of the symptoms found to occur in animals when artificially slowly poisoned by nicotine. A great proportion of them were subject to dyspepsia, vomiting, diarrhoea or constipation, palpitation of the heart, nervousness and tremulousness. In young men who commence smoking early, pallor of the face is often well marked and great debility frequent; whilst palpitation of the heart is often bitterly complained of.

Factories.—Dr. Kostrál, physician to the Royal Factory of Tobacco at Iglau (*Ann. d'Hygiène* pub. 1871) brought before the Medical Society at Vienna, in 1871, some statistics relating to the workers in that government tobacco factory. It seems that there are 1,942 of these workers, of ages from thirteen to fifty-six years. They are only taken into the factory if likely to live there for twenty years. The workshops are well arranged and ventilated; but during their ten hours of work the operatives are

exposed to an atmosphere charged with the dust of tobacco and the vapour of nicotine. This is found to be especially noxious to young workers recently entering, or to those convalescent from sickness. Thus the majority of deaths among the children and work-girls in the first month is attributed to narcotic poisoning. Of a hundred boys, from twelve to sixteen, recently entering the works, seventy-two fell sick in the first six months. Their sickness lasted from two to twenty-eight days, and consisted especially in congestion of the brain, different nervous affections, pains in the region of the heart, palpitation, pallor, inflammation of the stomach, intestines, and lining membrane of the eyelids, with fever, lassitude, cold sweats, want of appetite, and sleeplessness.

Some kinds of tobacco, very rich in nicotine, are found very hurtful to the workers in the Iglau factory. Ulcers on the limbs favour such poisonings; and old workers in the factory have a yellowish hue and white gums, with the colour of tongue and flabbiness of that organ described by Erlenmayer as peculiar to smokers. The work-girls have frequent perturbations in their menstrual functions: and are frequently affected with chlorosis (green sickness). Among the mothers there is often noticed inflammation of the breasts, and the milk has a marked odour of tobacco. Abortions are common among these women. Of 506 births which took place in three years, Dr. Kostral found that 11 children were born dead, and 206 of them died afterwards: of these 101 died of disease of the brain with convulsions: 110 died in the first three months of life, 160 in the first six months, and 181 in the first year. It was a notable fact, that the majority of these deaths among infants occurred from two to four months old, at the time when their mothers recommenced work, and gave their children milk impregnated with nicotine.

It is such facts that tempt one to say in the words of Brodie and others, that if a community of both sexes, whose progenitors were healthy, were to take to smoking early, and intermarry only with smokers, the race would be sure to deteriorate greatly. I am convinced that

smoking tends to the production of rickety and delicate children: and rejoice that mothers are not so misguided as to smoke. I agree with Sir William Jenner, that smoking is apt to produce in the long run palpitation of the heart, prolapse of the lower bowel, and impotence. With Brodie, I am sure that very few smokers do not suffer harm from the practice to a greater or less extent, whether in being made lazy and listless, low in spirits, and hypochondriacal: or even affected like spirit drinkers, occasionally with delirium. Toothache and various kinds of neuralgic pains are in my experience frequently produced by the presence of nicotine in the blood.

Dr. Richardson (Pamphlet, p. 72) says that smoking produces disturbances in the blood, causing undue fluidity and change in the red corpuscles: in the stomach giving rise to debility, nausea, and sickness; on the heart, causing debility of the organ and irregular action; on the organs of sense, causing confusion of vision, bright lines, luminous specks, and long retention of images on the retina, with analogous symptoms in the ear, such as inability to sharply define sounds, and the annoyance of a sharp ringing sound like a whistle or a bell; 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.

If Assurance Companies who take notes of the habits of their policy-holders, would devise some way of separating smokers who are teetotalers, from non-smokers who are also teetotalers, I feel certain that it would be found that smoking very seriously impairs longevity. This fact is not at all impeached by seeing some smokers live to be old and without much disease; for analogous exceptions are met with in persons who have indulged freely in intoxicating liquors. It is comparatively difficult to poison a fine constitution; but the majority of men, in towns especially, cannot stand much poisoning with impunity.

Smoking causes Paralysis and Insanity.—Professor

Miller of Edinburgh, speaking of smoking, (*Anti-tobacco Journal*, Oct. 1st, 1871), says: "As medical men, we know that it injures the whole organism, puts a man's stomach and whole frame out of order; but it acts mainly, as all these poisons do, on the nervous system. Not only is the physical effect most debilitating; it tends, in plain language, to paralysis; for the cases are not a few in which there is not only an approach to paralysis in the trembling of the hand, but I could talk of patients paralyzed in the lower extremities from no cause on earth but inveterate smoking. If you ever get a medical opinion in favour of a pipe, it is the opinion of the man who indulges in it. An unbiased and unprejudiced medical opinion in favour of tobacco is yet to come. When I am asked what is the effect of narcotics, mental and bodily, I can fairly testify that it is nothing but evil. I stand in a position of giving an experienced as well as an impartial opinion—an opinion founded on intelligent, personal, and practical observation. I am perfectly certain that I am standing on unassailable ground when I say that every man, woman, and child who uses tobacco unnecessarily, to any appreciable extent, is thereby injuring himself or herself morally, mentally, and physically, more or less."

Dr. Jolly (*Association Française contre l'Abus de Tabac*), mentions the strange coincidence of the increase of paralysis and insanity with the ascending figure of the simultaneous consumption of tobacco and alcohol in France. With regard to insanity, Jolly alleges that French statistics show that tobacco is a great cause of that disease. Thus, in 1830, when the amount of tobacco sold by the French Government was about 11,000,000 kilogrammes, there were 8000 lunatics in France; and, in 1862, when 28,000,000 kilogrammes were sold, there were no less than 44,000 lunatics in French asylums. "It is to be remembered," says Dr. Jolly, "that the tobaccos used by the Germans and other northern nations are very poor in nicotine, as is also the case with the tobacco of Turkey. French tobacco, such as that grown in Lot et Garonne contains sometimes 8

per cent. of nicotine, and its use causes deafness, anosmia (loss of smell), amaurosis, weak sight, and progressive palsy. Virginia tobacco (*shag, returns, &c.*) is very strong, and contains about 7 per cent. of nicotine. The English and French working classes, therefore, consume very dangerous kinds of tobacco." "Tobacco smoking," says Jolly, "formerly confined to the ruder classes, has now invaded all places: and even thrones and courts are now redolent with the fumes of tobacco smoke." Mantegazza speaks of Europe as becoming turned into a cigar divan.

The use of tobacco is far more prevalent now than it was at the beginning of this century. Before that time it was rare for the better educated classes to smoke: but now we find that the greatest smokers are to be found among wealthy and educated men, from whom we should expect an example of good habits to the rest of the community. The consequence of this is, that even boys at the best schools get into the habit of smoking, because it is fashionable and manly to do so; and not unfrequently because their tutors set them the example: and because no one seems ever to tell them of the very grave evil they may do to their health by the habit.

M. Decaisne (*Comptes Rendus*, tom. 58 p. 1017) was struck by the large number of boys, aged from nine to fifteen years, who smoked, and he inquired into the connexion of this habit with the impairment of the general health. His observations were made on thirty-eight boys who smoked more or less: and in twenty-seven of them there were more or less distinct symptoms. Thus, in twenty-two there were various disorders of the circulation, anemic murmurs in the neck, palpitation, dyspepsia, weakening of intellect, and more or less increased desire for strong drink. In three the pulse was intermittent. Ten of the boys had disturbed sleep, and four suffered from ulceration of the mouth. Eight of the boys were of ages from nine to twelve; nineteen of them from twelve to fifteen.

Sir Benjamin Brodie, from the result of experiments upon animals, tells us that the poison acts by destroying the functions of the brain. Many observers on the Con-

continent have noticed the inferior attainments of students who smoke. Thus, Dr. Bertillon, the most eminent writer on medical statistics of the day, found in 1855, of the pupils then at the Polytechnic school of Paris, that one hundred and eight smoked, and fifty-two did not smoke. He arranged the one-hundred and sixty in eight divisions, according to the merit they showed in examinations, twenty in each rank ; and found that, of the twenty who stood highest, six were smokers and fourteen non-smokers ; of the next twenty, ten were smokers and ten not ; of the next twenty, eleven were smokers and nine were not ; thus showing how much higher the non-smokers stood intellectually than the smokers. He furthermore found, that the mean rank of the smokers, as compared with the non-smokers, deteriorated from their entering to their leaving the school. The *British and Foreign Medico-Chirurgical Review* for January, 1861, says, "We see with satisfaction that the Minister of Public Instruction of France has issued a circular, addressed to the directors of colleges and schools, forbidding the use of tobacco and cigars to students." All youthful indulgence in tobacco in any form is most dangerous to health.

If that very popular preacher, Mr. Spurgeon, knew of such facts, he would not, I am sure, speak one word in favour of tobacco again.

Can we not pause a little after hearing these and similar accusations against tobacco made by the greatest medical men of the most civilized States in Europe and America and ask—What is to happen if the habit of smoking be not checked in this and other countries ?* Let us look at the way in which the native Indians have faded away under the poison of alcohol, which has caused the parents to have a degraded and imbecile progeny, prone to the same vicious indulgence. Let us remember the history of the modern Turks, who were once the terror of Christendom, from the fierce energy they possessed by abjuring

* I am in these pages only dealing with the physical aspects of the question ; but, as showing how in multitudes of cases nicotism and alcoholism (the pipe and the pot) are inseparable, I may say, that a recent careful statistical investigation amongst the Good Templars has revealed the fact that their smoking members are seven times more liable to fall than the non-smokers !

the use of alcohol : but who have become lazy, lethargic, and effete, not, I suspect, because polygamous (since polygamy is confined to the rich), but solely because they have abandoned themselves more thoroughly to chronic nicotism than any other European nation.

The mission of the science of Hygiene is to secure to each person born into the world that length of life and that physical enjoyment, which is compatible with his original constitution, and, in the name of Hygiene, I denounce the habit of smoking, as opposed to happiness and health.

It must often, I am sure, have struck many of us with surprise that women are so seldom addicted to tobacco smoking ; and it is I think worth while to ask why this is so. I opine that, among other reasons for women not smoking, there is this one—men would not admire them nearly so much if they did. A pure breath is preferable to one tainted with tobacco smoke, and men would be sorry to see black teeth take the place of *pearls*, which are so ornamental at present in healthy women. Neither would men like to find women becoming lethargic and nonchalant, and losing that vivacity and emotional impressionability, which are such agreeable features in the female character. Let us hope that their love of healthy children and their desire to be attractive and of a good complexion may keep them secure from the seductions of tobacco. Women live longer than men I believe, partly if not mainly, because they do not smoke tobacco.

This is not a mere national question. It applies to the whole of civilization. Germany is a great country *in spite* of excessive smoking, as many of its greatest physicians protest at present. France and Italy are groaning under the same difficulties as ourselves : and the sallow countenance of the Yankee smoker has become a well-known picture in many of the works we read concerning the United States. I sincerely rejoice, therefore, to see that a strong and vigorous protest is now commencing throughout civilization against that foetid herb, which has so overrun the world in three centuries : and I have steadfast hope that the word of science is now too powerful to be despised or its warnings neglected by the masses.