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Eban Clarkson

"On the actions of Tobacco."

Lately a great deal of attention having been drawn to Tobacco by what has been styled "The Tobacco Controversy" I have determined to make it the subject of my Thesis- but the various conflicting statements that have been promulgated by those who took part in this "Controversy" will render the subject by no means an easy one- and even if nothing of this sort had occurred, to investigate the subject thoroughly would require far more experience and time than a young student of Medicine can possibly have or can afford- Many of these statements can be explained on the grounds of the writer coming to conclusions either on personal experience alone, or from the observation of a limited number of cases- and perhaps in not a few cases from his having formed preconceived ideas which have led him in some way or other to couple with Tobacco nearly all the cases of disease he has met with- This mode of coming to premature and hasty conclusions on the evidence of a limited number of facts would seem to be a great source of the uncertainty of our Science- for in ours far more than in any other do we require a careful and extensive acquisition of well-authenticated facts before we can form any just conclusion

and in this respect we see the remarkable difference between Medicine and the purely physical sciences. in the latter there is a perfect uniformity of phenomena, and the rules and results of these phenomena having been once ascertained it can be calculated with confidence that they will continue to observe the same order. but it is far different in Medicine. here we continually find a want of uniformity both in the characters and progress of disease. and in the action of external agents on the body whether as causes of disease or as remedies. At present we are to examine a small item of the latter branch of the science. viz the action of external agents on the body. and we might quote many examples here of this want of uniformity in the phenomena both in regard to its former and latter sections. Of the former viz the action of external agents as causes of disease the various effects produced on different persons by exposure to Cold appears a familiar but striking example. Of the latter viz. the action of external agents as remedies in disease unfortunately examples of uncertainty of action in our drugs are too numerous. thus we often find. that one case yields almost immediately on the application of a remedy. another, apparently

exactly similar, goes on to a fatal termination in spite of the same remedy - whilst perhaps a third which was apparently equally formidable may end favourably without the employment of any remedy whatever. Abercrombie in speaking of this uncertainty of the phenomena in Medical Science says "Hence just conclusions are arrived at slowly, and we may be obliged to go on through a long course of observations before we arrive at any results which we feel worthy of confidence". And as I said before from having neglected these rules have arisen the very opposite opinions that have been so lately expressed on the subject of Tobacco in our Medical Journals and in various monographs that have been published. Let us now however go on to our subject without further comment. In writing on any subject it is necessary, both for the sake of convenience and that some sort of order be preserved throughout, that it should be divided into certain heads. The following is the arrangement which I proposed to follow as closely as possible in this paper - viz.

I To consider the Chemical Constituents of Tobacco.

II Its Physiological & Therapeutical actions. and

III To Consider Tobacco as a luxury - and under this

head briefly to notice the influence of Habit on the actions of some of the persons.

I The Chemical Constituents of Tobacco.

Tobacco has at different times been made the subject of examination by many eminent Chemists. and from the results of these analyses we find that it contains ready formed two principles. Nicotianin and Nicotine. we shall examine each of these separately.

Nicotianin was first discovered by Vauquelin and he, believing it to be the active principle, gave it the name of Nicotine. but the further investigations of M. Posselt and Reimanns proved this to be merely the essential oil and not the true Nicotine. it was accordingly named Nicotianin. It is obtained by simply distilling the leaves with water. It is a solid at ordinary temperatures. it has the odour and bitter taste of Tobacco without its acridity. and it produces on the throat and mouth a sensation similar to that produced by Tobacco smoke. when taken internally it causes giddiness, nausea, and an inclination to vomit. One pound of the leaves yield by distillation two grains of this fatty substance.

Nicotine which is the other substance that Tobacco contains was first discovered by M. Posselt and Reimanns. Barral

gives the following process for its preparation or extraction
nearly. "Digest the leaves for three days in water acidulated
by Sulphuric Acid, distil the expressed liquor along with
lime to one-half. remove the Nicotine from the distilled fluid
by agitation with ether, distil the residual liquor again
with the calcareous residuum. and again remove the
Nicotine with ether from the distilled fluid. expel the ether
and water from the ethereal solution by a heat rising
gradually during 15 days to 250°F. and finally distil
the impure Nicotine from lime in an apparatus filled
with Hydrogen gas, to prevent the access of atmospheric
air, and heated to about 340°F. in an oil bath" Dr. Gregory
in his "Handbook of Organic Chemistry" gives a simpler
and shorter method for obtaining Nicotine. his process is
the following. "Distil the concentrated infusion of the
leaves along with Potash. the distilled liquid which
contains Nicotine. water. and Ammonia is to be neut-
-ralised by Sulphuric Acid and the neutral solution is
to be dried up. add Alcohol which dissolves the Sulph-
-ate of Nicotine and leaves undissolved the Sulphate
of Ammonia. and lastly by distilling the Sulphate of
Nicotine with Potash we obtain Nicotine." When obtained
it appears in the form of an oily colourless liquid. it
is strongly alkaline. neutralizing acids and forming

generally crystallizable salts. it has the odour of Tobacco and an acrid burning ~~persistent~~ taste which is so intense that it is perceptible in 10.000 parts of water. The evaporation of a single drop will render a room almost uninhabitable. Dr Gregory says that it is probable that Nicotine, besides being found in the fresh leaves, is produced in larger quantity during the fermentation to which the leaves are subjected in the manufacture of Tobacco. and there is also reason to believe that it is produced by the action of heat as in smoking. It poss-esses narcotic and very poisonous qualities, a single drop is sufficient to kill a dog. In the dried leaf the proportion varies from 2 to 8 per cent.

Besides these two principles which exist ready formed in the leaf there is another called the Empyreumatic Oil which is produced when Tobacco is burned as in the pipe of the smoker, or when it is distilled alone in a retort. This is an oily substance having an acrid disagreable taste and possessing narcotic and very poisonous properties. it causes convulsions. coma and death without affecting the heart. From the re-searches of Dr Morries and of Melsens this appears to be the alkaloid Nicotine in combination with some true volatile oil. when Acetic Acid is added to it it loses its

poisonous properties.

These three that I have now mentioned are to be regarded as the really active principles of Tobacco. but from the analysis of M. Vogel and Reimann in 1828 we find that the leaf contains many other substances. which. though unimportant as regards its action on the system, must still be mentioned amongst the "Chemical Constituents of Tobacco". the following is the proportion in which these are present according to the above-mentioned Chemists. "The fresh leaves contain in 10,000 parts 1172 of solid matter - of which 287 are bitter extractive. 174 gum. 27 resin. 26 albumen. 185 amylaceous glutin. 133 organic and inorganic salts. 497 ligneous fibre. 6 of Nicotine - and 1 of Nicotianin." The last two of these we have already considered - and the other being unimportant we shall not enter more fully into them.

a tabular form

I do not think that it will be out of place to notice under this head (which in order to include this might have been styled the "Chemistry of Tobacco") the means we have for detecting its presence & the presence of its active poisonous principle in the body when it has been used as a poison. D^r Christison in his "Treatise on Poisons" gives us the process by which D^r Ogston of Aberdeen successfully detected the presence of Tobacco

in the contents of the stomach of a man who had been poisoned by it. and which according to D. Christison "appears to supply a convenient and conclusive process for the detection of Tobacco." the process is as follows. The contents (of the stomach) consisting of a pulpy fluid, were acidulated with acetic acid, digested and filtered. the liquid was treated with dis-acetate of lead, filtered again, freed of lead by hydrosulphuric acid, filtered a third time, treated with caustic potash and then allowed to settle. The supernatant fluid, which had the taste of tobacco-juice, was separated and distilled to half its volume. The distilled liquor had a strong tobacco odour and taste, and some acridity, and gave a precipitate with infusion of galls. The residuum in the retort presented oily particles on its surface, and when heated in an open basin filled the apartment with a vapour which had a strong odour of tobacco smoke, and caused in several persons present a sense of acridity of the throat, watering of the eyes, and a tendency to sneeze. Other experiments confirmed these results.

The ordinary process for obtaining Nicotine may also be used for its detection. it consists in distilling the suspected substance with caustic potash, neutralizing the distilled liquor with sulphuric acid, concentrating the product to a thin syrup, exhausting this with etherized alcohol,

evaporating off the solvent, and distilling the extract with strong solution of potash. Nicotine passes over and may be recognised by its sensible and chemical properties.

Prof. Stas of Brussels has lately introduced a method for detecting the organic alkaloids. and this process has been very highly spoken of and successfully used by many of the most eminent Toxicologists of the present day. it is a very long process to describe so that I shall only give its leading features. it essentially consists in separating the foreign matters in the suspected liquid by means of successive treatments in Alcohol and water, and obtaining in small bulk a solution in which the alkaloid may be found. we then add a base to set the alkaloid at liberty and at the same time to keep it in solution. and then by the addition of Ether it is taken up. and may be obtained pure by the evaporation of the Ether. Such is a brief outline of this very important process. and by it Prof. Stas tells us that he was enabled to detect Nicotine in the Blood of a dog that had been poisoned by two cubic centimetres (equal to 31 grains Troy weight) of Nicotine being introduced into its Esophagus.

And now having shortly considered the Chemical Constituents and also the modes for the detection of Poisons, let us pass on to the second division of our subject.

II. The Physiological and Therapeutic actions of Tobacco.

From what has been already said, when speaking of the Chemical constituents separately, it may be inferred that Tobacco is a potent and deadly poison. and of this there can be no doubt. it has been proved by repeated experiments on the lower animals and by not a few cases in men himself where it has been used by accident. homocidally. suicidally. or lastly incautiously, as a Therapeutic agent. According to D^r Christison Tobacco is locally a stimulant and remotely a narcotic, sedative, emetic, laxative, diuretic and antispasmodic. and in large doses internally it is a potent narcotic poison. Its stimulant action is seen in its effects on the mucous membrane of the nostrils when applied to it in the form of powder. and on the salivary glands when smoked or when the leaf is chewed. In small doses it is a diuretic and laxative, and on account of the former action it has been used in Dropsy. but as a Therapeutic agent its principal use has been as an antispasmodic in strangulated hernia, and intestinal obstruction. and in retention of Urine from obstruction in the urethra or ureters. as a sedative it is especially useful in acute peritoneal inflammation. D^r Christison tells us that "it empties the bowels, moderates reaction, and dispels tympanitis".

the clysters is the form in which it is used in all these cases. and the utmost caution must be used in its administration for it is here that the fatal accidents formerly alluded to have most frequently occured. but we shall return to this part of the subject when we come to consider some of the fatal cases that have occured from Tobacco in whatever way or with whatever intent it has been used. various opinions have been expressed as to the medium through which Tobacco manifests its poisonous action. whether through the Brain or Heart. and many experiments have been performed on the lower animals to determine this point. Mr Blake, from his experiments, thinks that it has no direct action on the heart. but that it acts on it indirectly by obstructing the capillary circulation in the lungs and so preventing the return of the blood to the left auricle. he found that laboured respiration always preceded any sign of depressed action of the heart, that forcible action of the heart often returned after its first cessation and that its contractility was retained after death. Sir B. Brodie found that a strong infusion injected into the veins of a dog caused death in ten minutes by paralysing the heart. whilst the Empyreumatic oil did not affect the heart but acted on the brain causing convulsions and coma-

in his "Treatise on Poisons" mentions two cases of death occuring in this way. in one a strong decoction was applied as a lotion for ring-worm of the scalp in a child. the other is that of a man who used a decoction for the cure of an eruptive disease and who died in three hours. In "Beck's Medical Jurisprudence" a case is mentioned where the expressed juice applied to the head of a boy proved fatal in three hours. Dr Beck also relates another instance of the poisonous action of Tobacco when applied to the skin, but which did not prove fatal. a man and his wife fomented their bodies with a strong infusion in order to remove the itch. symptoms of poisoning supervened, but they were relieved by judicious treatment. The symptoms produced, when the decoction is applied to the scalp for ring-worm are, according to M. Orfila, vertigo, violent vomiting, faintness, extreme prostration, and a staggering walk. I may mention a case where I saw a strong decoction produce poisonous symptoms in a dog. a small spaniel I had became, whilst I was residing at the sea-side, very much infested with fleas, which, as the dog was a great pet, I was anxious it should get rid of. I consulted an old rat-catcher on the subject who advised me to wash it in "Tobacco water". I accordingly procured two ounces of strong

tobacco which I boiled in about an quart of water and with this I thoroughly washed the dog and allowed it to dry of itself. in about half an hour afterwards I noticed that it was continually making efforts to vomit and when these ceased that it lay still as if sound asleep. and on being roused and made to walk about that it seemed very unsteady on its legs. These symptoms however entirely passed off in an hour or two. and I can account for them in no other way than that they were the slight poisonous effects of the Tobacco. I did not notice at the time whether the dog had any abrasions of the skin. Next Tobacco has produced fatal results when administered in the way of injection by the rectum. and very many instances of this can be quoted. Dr Christison mentions six. the first of these is that recorded by Dr Grahl of Hamburgh, where one ounce boiled for fifteen minutes in water, and injected produced death in three quarters of an hour. vomiting, violent convulsions and stertorous breathing coming on in two minutes after the injection. In the next case a decoction of two ounces produced death immediately. M. Tavignot relates a case where death resulted in eighteen minutes in a strong healthy man from the injection of an infusion prepared with two ounces and one drachm. in seven minutes he was seized with stupor,

headache, paleness of the skin, pain in the belly, indistinct articulation, and slight convulsive tremors at first confined to the arms but afterwards general - extreme prostration with slow laborious breathing ensued, then coma, which proved fatal. But as much less dose than any of these now quoted may prove fatal, and of this Dr Christison also mentions instances. Thus he tells us that in the Edin: Medical & Surgical Journal a case is related where a patient died in convulsions an hour or two after the administration of an injection composed of two drachms infused in one ounce of water. Even one drachm may cause death and of this Dr Christison mentions two instances. one, of which there is an account in the Acta Helvetica, in which pain in the belly, anxiety, faintings and death in a few hours resulted from an injection made with one drachm only. The other occured in Guy's Hospital London, death being occasioned in thirty five minutes by a similar quantity. In "Beck's Medical Jurisprudence" another fatal case is mentioned as occuring in this way. The quantity used in this case to make the decoction is not stated, but most probably it was large as death resulted in fifteen minutes. In "Taylor's Medical Jurisprudence" we have a very interesting case which was recorded by Mr Ladd. it was that of a

girl aged eighteen who injected a decoction made with three drachms of common shag tobacco in one pint of water. in half an hour she complained of faintness and feeling sick, in another half hour she became quite collapsed, with cold sweats, vomited, was slightly convulsed, and died in an hour and a half from the time the injection was used. These cases sufficiently shew that when Tobacco is used as an injection it should only be with the greatest caution. more especially as we find Dr Christison saying "that a minor degree of its poisonous effects seems indispensible to its therapeutic operation". as to the dose necessary to produce this and at the same time to be safe the same authority says "that of good tobacco it ought not to exceed a scruple at first, if this fails, which seldom happens, it may gradually be increased". a drachm is the dose usually recommended but we have already given cases to prove that this may and has proved fatal. even half a drachm has caused death. Again the injection should not be allowed to remain longer than five minutes in the bowels. and if the sedative action seems too great or too lasting stimulants should immediately be given. We now come to the last of the modes in which we said that Tobacco has proved fatal viz when administered by the mouth. but under this head

we shall not speak of the cases in which Smoking has destroyed life. these will more appropriately come under consideration when we come to the third division of our subject viz the use of Tobacco as a luxury. which of course will refer more especially to Smoking. at present we shall only speak of it as producing death when swallowed in the form of powder or in the leaf. or lastly when its poisonous alkaloid has been used. D. Christison gives two cases of death and one nearly fatal resulting from the injection of large quantities of Tobacco. in one fatal case it was given by accident or at least with no intent to kill. but in the other a homocidal intent was existent. the former is the case of the French poet. Santeuil. who whilst dining at the Prince de Condés head. as a practical joke. the contents of a snuff box emptied into his wine glass. after drinking this the report says "he was attacked with vomiting and fever, and expired in two days amidst the tortures of the damned". The latter case happened at Aberdeen in 1834. an elderly man was seen to enter a brothel in perfect health. and in an hour afterwards he was carried out insensible and laid in a passage where he was found by the police unable to speak or move. in carrying him to the watch-house. which was close at hand. he was

observed to make efforts to vomit, but he expired immed-
-iately afterwards. There can be no doubt but that this was
a case of poisoning. it was ascertained that the poor
man had drunk both rum and whiskey in this house
and that something had been given him "to stupefy
him or set him asleep." and on Chemical analysis, as we
before mentioned, his stomach gave undoubted evidence
of the presence of Tobacco. unfortunately however there was
no evidence sufficient to criminate anyone in partic-
-ular of those who were with him in the brothel, so that
the case was not made the subject of trial. The case which
nearly proved fatal is that related by M. Caillard. it is that
of a lunatic who during one of his lucid intervals swallow-
-ed half an ounce of snuff. he was seized with vomiting
and afterwards with oppression, weariness, cold sweats,
a slow pulse pulse, and dilated pupils. he slowly recovered.
Last summer a case of Tobacco poisoning occured in this
city. a woman of intemperate habits was found dead
and a cup lying beside her which contained Tobacco-
juice, a bottle of which she had in the house, on making
a post-mortem examination and opening into the
stomach the odour of Tobacco was very evident. a quantity
of brown viscid matter similar to what was in the cup
was also adherent to the Esophagus and walls of the

stomach. he one was present to observe the symptoms before death. and no distinctive post-mortem appearances were made out. The poisonous alkaloid Nicotina (or Nicotin) has been used as a poison when seperated from the Tobacco. and of this we have a remarkable case recorded in the Annales d'Hygiene for 1851. Vol II. it is that of the Count Bocarmé who was tried and executed in Belgium for the murder of his brother-in-law. it appears that this Count Bocarmé went to Berlin. and there, under an assumed name, studied Chemistry. and having acquired a thorough Knowledge of the means for preparing Nicotina. he returned again to his brother-in-law's house. he then prepared a considerable quantity of this deadly poison. and. with the assistance of his wife (the murdered man's sister) he accomplished the deed by pouring some of it into his brother-in-law's mouth. who. being very sickly and almost deformed could offer little resistance. Prof: Stas detected the presence of the poison in the mouth and in the contents of the stomach of the deceased. and on the articles of furniture on which he had vomited. and all the above facts being fully proved as I before said he was executed. We have an account of the morbid appearances in three of the cases we have mentioned. viz. in those related by Dr Craik of Hamburgh.

and D^r Ogston of Aberdeen. and in that mentioned in "Taylor's Medical Jurisprudence" as recorded by M^r Eade. In the first of these two days after death. there was great lividity of the back, paleness of the lips. flexibility of the joints, diffuse redness of the omentum without purging of the vessels. similar redness with purging of the vessels both on the outer and inner coats of the intestines. in some parts of the mucous coat patches of extravasation, unusual emptiness of the vessels of the abdomen. the stomach was natural, the lungs pale, the heart empty in all its cavities, and the brain natural. In the second case the blood was found everywhere very fluid, and four ounces of serosity were collected from the lateral ventricles and base of the brain. no other unusual appearance was observed. In the third and last case where the morbid appearances are detailed. the only interesting point is in regard to the heart. thirty six hours after death it was found very flaccid and contained three drachms of fluid black blood in the ventricles. the brain was not examined. Such are the appearances observed in the only cases in which they seem to have been given. and in none of them have we anything characteristic on which we could rely. This finishes the second division of the subject. so that we shall now take up the third and last. viz.

III Tobacco as a luxury-

Prof. Johnston in his "Chemistry of Common Life" traces the progressive wants of man through three successive stages. First. The necessities of his material nature are provided for- beef and bread represent the means by which this end is attained- Secondly he seeks "to assuage the cares of his mind. and to banish uneasy reflections". And this he does by the use of fermented liquors- And thirdly he desires "to multiply his enjoyments, intellectual and animal. and for the time to exalt them" And this he effects by the use of narcotics. And indeed it seems as if there was a universal instinct implanted in man to supply this latter want- for we find that every country has its own particular narcotic, but of all of them, whether Opium, Indian Hemp or the Betel nut used amongst the Eastern Asiatics. the Pepper plants used in the South Sea Islands. the Thorn Apple on the Andes and Himalayas. or lastly the Ledum and Hops in Northern Europe- most certainly Tobacco is in use over the largest area and amongst the greatest number of people- Into whatever country this plant has been introduced its cultivation, when that was possible, and its use have become almost universal. in use Tea alone can compete with it-

let us take for example its career in England. in 1584 it was first brought to this country from America. in 1689 160,000 lb. of Virginian Tobacco was imported. And now, little more than 160 years since that time, we find that it has increased to an almost incredible amount. The quantity imported in 1856 was 33,832,800 lb.!! And yet the Consumption in the United Kingdom is much less than in most other European Nations. Thus. in Britain in 1861 the Consumption was 1¾ Oz per head annually. in France about 18½ Oz. in 1848 in Denmark was 70 Oz. And in Belgium it was 73½ Oz or 4⅗ lb per head annually. but in some of the N. American states the consumption greatly exceeds this. amongst Eastern nations it is greater still. And in New South Wales it reaches the enormous consumption of 14 lb per head. Mr Crawford in estimating the average consumption by the whole human race of 1000 millions makes it about 70 Oz per head - and the total produce of Tobacco about 2000,000 tons annually. and this at 800 lb an acre would require upwards of 5½ millions of acres of land to be constantly kept under tobacco cultivation. And the more astonishing will these numbers appear when we consider what it has had to struggle with in different countries. Thus. in England 200 years after its introduction King James I

denounced it in the famous "Counterblaste to Tobacco"
in Persia Amurath the 4th made the smoking of Tobacco a
capital crime - in 1590 Pope Innocent XI and in 1624 Pope
Urban VIII excommunicated those who snuffed or used
Tobacco in the Church of St Peters - in 1634 smoking was
punished in Russia by amputation of the nose - in the
Canton of Berne it ranked in the Blue Regulations im-
-mediately under the prohibition against adultery.
And the tribunal instituted to carry this law into
effect continued down to the middle of last century.
As late as 1719 the Diet of Strasburgh prohibited the
cultivation of Tobacco. But notwithstanding all this
opposition and persecution - not to mention heavy
duties imposed when its use was not considered
absolutely criminal - both its cultivation and its use
have very rapidly increased - in fact the opposition
it met with only seemed to excite more general at-
-tention to the plant and to tempt people to try
its effects - Surely if half the diseases imputed to
the use of Tobacco are real thousands would have
perished and there would have been no lack of cases
to illustrate its evil effects - and yet we find Dr
Christison saying "that no very bad effect has ever
been clearly traced to it" - its rapid and almost

universal adoption would on the contrary point to some beneficial effects or at least to some kind of pleasure derived from it. Let us therefore now see what are the effects of its habitual use.

As a luxury Tobacco is used in three ways. viz. in Smoking. as a powder in Snuffing. and in Chewing. the two first of these are by far the most common. the last is the most disgusting and in this country at least is rarely seen except amongst sailors. to whom smoking is often a dangerous and forbidden luxury, and snuffing too expensive. besides less perfectly satisfying the narcotic appetite. but in whichever of the three modes it is used its effects seem to be the same differing only in degree. Smoking seems to produce the narcotic effect best and in the highest degree and accordingly we find that the greatest quantity of Tobacco is consumed in this way. What then are its effects? D. Pereira in his work on Materia Medica says "In habitual smokers the practice, when moderately indulged in, promotes thirst, increases the flow of saliva, and produces that remarkably soothing and tranquilising effect on the mind which has caused it to be so much admired and adopted by all classes of society, and by all nations civilized and barbarous". But in very few

cases are these effects experienced. on the first trial of the narcotics, on the contrary except in a few rare cases of idiosyncracy the smoker must serve a sort of apprenticeship. and by no means a pleasant one, before he can really enjoy his pipe. we have given already the general results of a first attempt, and these are repeated at each succeeding trial but in a smaller form. it requires at least five or six trials in the majority of cases to launch the smoker and in many cases he is not secure even after having passed these ordeals. how comes it then that these unpleasant effects pass off. and that the novice gradually enjoys the pleasure without suffering the pain? this brings us to consider the subject of, the influence of Habit. for this is a very striking example of it.

The habitual use of some poisons, more especially the narcotics, has a tendency to lessen their effects, most wonderful instances of this have occured. through the influence of Habit some persons have taken doses of certain poisons which would most certainly otherwise have proved fatal. Such instances are more frequently met with amongst the Organic than Inorganic poisons, and most frequently as we said before amongst the narcotics. these acting through the medium of the brain and

nervous system. The most familiar examples we have are in the cases of Opium and Alcoholic drinks. Many instances might be quoted where enormous doses of the former have been habitually taken. Thus two and even seventeen ounces of Laudanum have been taken daily in this Country by Opium-eaters. We need not give any examples of the influence of habit on the latter (Alcoholic drinks) unfortunately they are too common. But still neither of these are always taken with perfect impunity. They produced not only some immediate effect. but by being frequently indulged in bring on certain diseases or at least caused a strong predisposition to disease. Tobacco on the contrary seems to have none of this cumulative effect. but may be smoked daily without producing any effect on the constitution. Amongst the Inorganic poisons we have very few instances of Habit lessening their effect on the system. The pure irritants, as the Mineral Acids, seem to lose some of their energy. Thus I have heard of cases, although I cannot answer for their truth, of drunkards who have progressed from Spirits to pure Alcohol and from that to Nitric Acid. Considerable doses of which were taken with impunity. Lately considerable discussion was raised by Prof. Johnston stating. on

the authority of D. Von Tschudi, that Arsenic was habitually used by the peasants in Styria to give plumpness to the figure, to improve the complexion, and to render the breathing easier in ascending mountains. for these effects he says it is used in about half-grain doses two or three times a week. since the publication of this in the "Chemistry of Common Life" further investigation has been made concerning it. and this has had the effect of throwing considerable doubt on these stories. at least they have never been thoroughly proved to be correct. and are altogether disbelieved by many eminent physicians, amongst whom is D. Christison. The same remarks apply to the marvellous story of Soleyman the old Dean of Constantinople who was said to have been in the habit of taking large doses of Corrosive Sublimate until his dose at last came to be 20 drachms daily. Amongst the various freaks of idiosyncracy we can hardly conceive of one allowing this. But although these two alleged cases of the power of habit may not be true, yet we have many undoubted facts which prove that Habit has the effect of lessening the power of some poisons. In explanation of this influence D. Christison says "that it is probably nothing more than an increased power acquired by the Stomach of

decomposing the poisons. just as it acquires an increased facility in digesting some alimentary substances which are at first very indigestible."

Let us now go on to consider what are the effects which Tobacco under the influence of habit produces. We would fancy that, considering its extensive use, we would be at no loss for descriptions of these effects, but we find on the contrary that very few can give any distinct account of the effects they experience. They say they find a pleasure in its use but they are unable to describe the cause of this pleasure. but there can be no doubt that it is chiefly because of "the soothing and tranquilizing effect on the mind" that Tobacco is so much indulged in. This pleasing effect is however never experienced by some. and with some constitutions smoking never agrees at all. I think there can be no better description of its effects on the bulk of mankind than we find in the work to which I am already so deeply indebted viz "Johnston's Chemistry of Common Life". he says. First. that its greater and first effect is to assuage and allay and soothe the system in general. Second. that its lesser and second yet after effect is to excite and invigorate, and at the same time to give steadiness and fixity to the

powers of thought. If such are its effects we have at once an explanation of its rapid spread and extensive use. A few months ago a discussion arose as to whether smoking was injurious or not. and under the head of "The Weed Controversy" the medical Journals. and more especially the "Lancet," teemed with letters from writers medical and non-medical. according to some of these "all the ills that flesh is heir to" seemed in some way or other to have their origin in the pipe of the smoker. whilst on the other hand it had not a few defenders. Now is this the first or only "Controversy" that this same Weed has given rise to. we have had many such, in fact every few years since its first introduction there seems to have been a discussion on this subject. and yet these always seem to have ended much in the same way. viz. that no well-ascertained evil effects have been found to follow its moderate use. whilst on the other hand the abuse is very often attended with bad consequences. but because the abuse is injurious is this to be used as an argument against its moderate use? if so. many articles. besides Tobacco. that are in daily use must be dispensed with. As to what constitutes the use and abuse. this

must in a great measure be kept to the smoker himself to decide. As in some constitutions what would certainly be excess in most others produces or seems to produce no injurious effects whatever.
Some time ago whilst serving on board ship I had the opportunity of observing men who constantly used Tobacco in large quantities, I noticed at that time and they themselves told me, that almost always the first symptoms of excess were a trembling of the hands and lips (noticed more especially in the lips from its causing inability to hold the pipe steady). and symptoms of dyspepsia. Of course the symptoms of excess will vary in different cases but when these symptoms do occur it is a warning that should not be neglected either to abstain from Tobacco altogether or at least to restrict the quantity. When it is continued to be used in excess after these primary symptoms I have mentioned the trembling increases and we have some cases mentioned where general paralysis seems to have been the result. But we have some cases of death having resulted from great excess in those unaccustomed to smoking the effects may be very serious. Mrs D. M. Hall has recorded a case of a young man

who, when perfectly unaccustomed to the use of Tobacco, smoked two "pipes", in consequence of this he was seized with nausea, vomiting and syncope. Then stupor, stertorous breathing, general spasms, and insensible pupils. Next day the tendency to faint continued, and in the evening the stupor, stertor, and spasms returned, but from that time he slowly recovered. Emelin mentions two cases which however were not so fortunate in their results. in these instances death resulted in one case from seventeen in the other from eighteen "pipes" being smoked "at a sitting". Water impregnated with tobacco-smoke has also proved fatal. a case of this kind occured to Dr Levis of Philadelphia. where a child swallowed two ounces of water saturated with tobacco-smoke and died very shortly afterwards. Snuffing in excess has also its evil consequences. Thus Dr Christison mentions a case where the excessive use of snuff occasioned twice, at distant intervals, an attack resembling imperfect Apoplexy, united with delirium. Dr Cheyne says "he is convinced Apoplexy is one of the evils in the train of that disgusting practice". Lanzoni relates the case of a person who fell into a state of somnolency and died lethargic on the twelfth day in consequence

of taking too much snuff. No cases seem to be recorded of death or bad results following the truly disgusting practice of chewing. but one would fancy that, from the facility with which the "juice" might accidentally be swallowed that there must have been some cases of bad if not fatal effects resulting from this. One of the arguments brought forward against Tobacco was that the workmen employed in the Snuff manufactories were more subject to disease and consequently short-lived. but from the investigations of M. M. Parent-Duchatelet and D'Arcet this statement were found to be incorrect. They obtained statistical returns from all the great tobacco-manufactories in France and they found that the workmen very easily become habituated to the atmosphere of the manufactory, that they are not particularly subject to special diseases or to diseases generally. And that they live as an average quite as long as other tradesmen. Such then are the few imperfect remarks I have to make on this very important subject. but as I said before it would require more time and ability than I possess fully to discuss the arguments for and against Tobacco. for most undoubtedly much can be said on both sides of the

question. and many names well known to the scientific world are to be found both condemning and defending it.

E Clarkson -