

# ***Inebriantia*: an early interdisciplinary consideration of intoxicants and their effects on man**

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HOLMSTEDT, BO & SCHULTES, R. E., 1989. *Inebriantia: An early interdisciplinary consideration of intoxicants and their effects on man*. A translation is given from the original Latin and a Swedish rendition of the thesis *Inebriantia* (1761) by Olof Reinhold Alander, a student of Linnaeus, together with a foreword.

ADDITIONAL KEY WORDS:—Alander - Linnaeus.

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### FOREWORD TO THE TRANSLATION

Inasmuch as we have both been long associated with the ethnopharmacological, botanical and chemical study of hallucinogenic and other psychoactive plants, our interest has naturally tended towards the early history of these agents which, it seems, have been a part of human cultural development from earliest times. As the famous German toxicologist Louis Lewin has written in his book on narcotics and stimulants (Lewin, 1964):

“From the first beginning of our knowledge of man, we find him consuming substances . . . taken for the sole purpose of producing for a certain time a



feeling of contentment, ease and comfort . . . These substances have formed a bond of union between men of opposite hemispheres, the uncivilized and the civilized . . . The motives for the occasional or habitual use of these drugs are of greater interest than collections of facts concerning them. Here all kinds of human contrasts meet: barbarism and civilization, with all their various degrees of material possessions, social status, knowledge, belief, age and gifts of body, mind and soul".

The really basic standardization of modern botany can be said to have started with the work of the Swedish naturalist-physician, Carl von Linné or, as he is better known by his Latinized name, Carolus Linnaeus. The starting point of modern botanical nomenclature is taken as 1753, when he published his book *Species Plantarum* in which he gave Latin binomials to some 10 000 species of plants. A professor at the University of Uppsala, Linné had a large number of students, many of whom presented an academic dissertation: he supervised no fewer than 509 students to whom are attributed 186 dissertations (Strandell, 1982). These many dissertations have been preserved and copies are available. There is a complete set, for example, preserved in the Linnean Society of London. It is believed that Linné himself wrote wholly or in part some of his pupils' theses.

The thesis *Inebriantia* is typical of its period because of the allegorical treatment of the subject. At that time, alcoholism in Sweden was a major social and health problem as a result of over-consumption and household brewing and distillation. Household preparation of alcoholic liquors was eventually prohibited by royal decree. The extent of alcoholic consumption may be judged by the fact that it is estimated that in the mid-18th century there were 732 bars in Stockholm, or one for every 79 inhabitants. Sick people were given 5.5 litres of beer per day! (Ryytty, 1985). It is known, for example, that a number of Linné's students ended up as alcoholic derelicts, particularly those who followed a military career (Strandell, 1982). It is interesting to note that Alander must have been an exception because of his gradual promotion in the military establishment and his long life. In view of the excessive alcoholism prevalent at that time, it is not surprising to find Alander's thesis so heavily devoted to the use and effects of alcoholic drinks.

Alander came from a middle-class family. During his years at the university, he tutored children in several families in Uppsala to meet his expenses. He dedicated his dissertation to several influential people in Köping and to relatives who helped support him; and he made a special dedication in French to Martin Louis Örschöld, a wealthy landowner and industrialist who belonged to a noble family. We have been unable to learn any details concerning the kind of support that came from Örschöld.

We assume that in Uppsala he took the usual courses, including lectures and demonstrations by Linnaeus.

At this time in Sweden there were several steps towards degrees (Drake af Hagelsrum, 1939). According to university regulations up to 1850, everyone who aspired to become a candidate in philosophy (which also included medical sciences) had to write a thesis in Latin and defend it in Latin for the *pro exercitio* (they were not always a model to be taken as an example of the language), in Linnaeus' own words, "so that the faculty could be convinced that the candidate

had not only read humanities but also had acquired a general or at least a superficial knowledge of medicine". Most of the dissertations were taxonomic. A few—like the one that we have translated—are devoted to ethnobotanical subjects. Later, the candidate had to pass a theoretical and practical examination to become a licensed physician. Finally, he could write a second thesis to be defended *pro gradu*; if the thesis were successful, he then was awarded the degree of *doctor medicinae*.

Alander, as many other students of this period, never went beyond the stage of the preliminary dissertation *pro exercitio*. We do not know the reason for his leaving the university and joining the navy in 1763. It was, however, not uncommon, according to Strandell, for pupils of Linnaeus to join the armed forces; sometimes this dropping out of the university was related to problems of alcoholism (Strandell, 1982), although we know that Alander's orderly way of living argues against this possibility in his case.

During Alander's military service, he spent an appreciable amount of time at the fortress of Sveaborg outside of Helsingfors. In that period, it was not only a military post, but was larger than the city of Helsingfors and was a cultural and social centre of importance (Grönroos, 1936). He took part in 1788 in the war between Sweden and Russia and saw active service as captain of one of the warships. In 1791, he retired to Köping for good and died in 1810 of old age.

Alander was unmarried and died without issue. The inventory of his belongings enumerated a considerable sum of money, valuable silverware, a horse and carriage, books and a diary (which seems to have disappeared). This inventory shows that he died a respectable and successful citizen.

Alander's *curriculum vitae* (Fig. 1) states the following:

- 1739: Born in Köping, Sweden, October 15, son of a civil servant in the city.
- 1759: Entered the medical faculty of the University of Uppsala, becoming a pupil of Linnaeus.
- 1761: (1762) Dissertation—defended, April 7.\*
- 1763: Joined the Royal Navy in Stockholm where he slowly advanced.
- 1775: Became lieutenant.
- 1777: Became captain.
- 1788: Saw active service in war with Russia as commander of a ship.
- 1789: Became an official of an organization equivalent to the coast guard.
- 1790: Worked ashore.
- 1810: Died in Köping.

We became interested in the thesis entitled *Inebriantia* as a result of our own research into narcotic plants in general. As we read this thesis, it occurred to us that, as it is probably the earliest interdisciplinary monograph on intoxicating plants in the Linnean era and possibly in European literature, the thesis ought to be made available to the English-reading audience. It was originally written in Latin. A Swedish translation appeared in 1963 (Boerman & Fredbärj, 1963). We have made our English translation from both the original and the Swedish versions.

\*The original printed title page cites 1761 (MDCCLXI). In most copies of the document the date has been changed by hand to 1762 (MDCCLXII) with the addition of a Roman I. The date April 7 by hand. This alteration seems to indicate that the thesis defence was delayed. See Parker (1977:5).



Our translation was made, for the most part, whilst we were in the Peruvian Amazonia in 1977 on the scientific ship of the Scripps Oceanographic Institute—the Alpha-Helix. We carried out our translation together in the evening hours after long days of field and laboratory work on biodynamic plants of the Amazonian forests—a most unusual geographical location for the translation of a thesis on intoxicating plants of the world presented in 1762 for a degree in a university in northern Europe!

In 1977, at the time that we translated *Inebriantia*, Dr Henry H. Parker received his Ph.D. with an excellent thesis entitled “Linnaeus on Intoxicants: Pharmacology, Sobriety and Latinity in Eighteenth-Century Sweden”. He received his degree at the University of Illinois at Urbana-Champaign. In this critical and mainly historical—linguistic thesis, Parker offered a translation of *Inebriantia* in English (Parker, 1977).

We are also aware of a translation in Spanish done in 1976 by Tarcisio Herrera Zapién of the Universidad Nacional Autónoma de México, a manuscript copy of which is in our hands. We have not been able to learn of any date of its publication.

The dissertation *Inebriantia*, in addition to its early date, is impressively inclusive of those psychoactive plants and vegetal products known in the late 18th Century. Alander discussed the following:

<i>Papaver somniferum</i>	<i>Peganum Harmala</i>
Crocus	<i>Cannabis sativa</i>
Nutmeg	<i>Hibiscus Sabdariffa</i>
Datura	
	<i>Hyoscyamus niger</i>
Areca	<i>Hyoscyamus physaloides</i>
	Atropa
	<i>Achillea Millefolium</i>
	Sclarea
	Nepenthes
	Melissa
	Allium
	Lolium
	Alcohol
	Tabacum

As mentioned above, the major part of the thesis deals with the effects of various alcoholic beverages. At the time, beer contained several additives—including deliberately henbane and unintentionally Lolium (von Hofsten, 1960; Fühner, 1925; Uggla, 1958)—the effect of the latter experienced by Linnaeus himself during his travels on the island of Gotland.

The adulteration of beer was a major concern, particularly in Germany. As early as the 15th century, local German dukes were issuing edicts on the acceptable ingredients for beer, and soon each town or principality had its resident Bierkieser who would pass judgement on the quality of the local beer.

Today, German brewers still pay reverence to the Reinheitsgebot, Duke William IV of Bavaria's edict, promulgated in 1516. The world's first pure-food act decreed: “From now on, in all towns, markets and on the land, nothing

should be taken and used for any beer other than barley, hops and water." Fewer than half a dozen countries still observe that law.

Linnaeus was strongly against the widespread use of alcohol and in 1748 had written a paper on the use of distilled beverages (bränn-win), which may be regarded as a forerunner of the discussion on alcohol in *Inebriantia* (Bryck, 1922). Figure 2 shows the title page of *Inebriantia*.

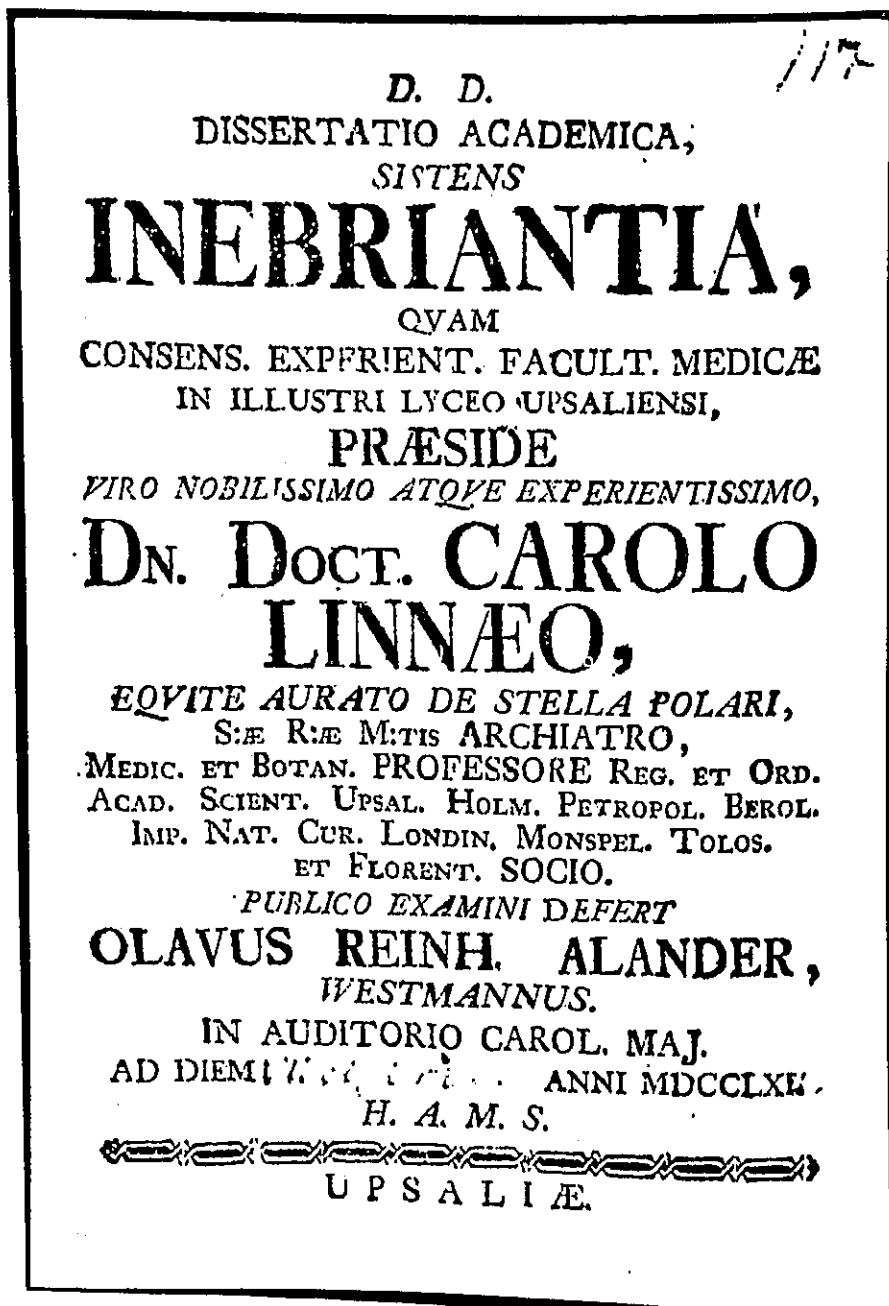


Figure 2. Title page of *Inebriantia*.

TRANSLATION OF ALANDER'S *INEBRIANTIA*

The human body is made up of two parts: the *nervous system*: that is the brain, the spinal chord and the nerves; and, in addition to that, the *solid* fibrous parts and the liquids contained therein. These solid and liquid components provide nourishment for the nervous system; while the nervous system gives strength, movement and activity to the solid fibrous parts. Insofar as our various foods are concerned, each one effects both parts in accord with its properties.

So that animals may be able to choose their food, the organs of taste and smell are located in the very orifice of food intake, enabling the animals to distinguish accurately amongst the various compounds responsible for taste and smell. The tasting compounds act upon the solid and liquid parts and alter them, but they do not act upon the nervous system. The volatile, aromatic compounds act upon the brain but, at the same time, they do not change the solid and liquid parts: that is, if not indirectly, then by causing movement in the nervous system<sup>1</sup>.

One of the wonders of nature is that when we eat things sweet or sharp, sour or bitter, sticky or salty, oily or harsh, watery or dry, there is not the slightest change in our thinking; but if we take in volatile—that is fragrant, ill-smelling or alcoholic constituents—we judge almost everything in a different way. We find the after-effects very obscure and hard to explain, since the physiologists have not been able sufficiently to explain the mode of action of the nervous system. But when we start reasoning backwards, so to speak, and investigate the effects of inebriants through experience, we find highly marvellous phenomena.

## 1.

By inebriants, we usually mean those constituents that act upon the nervous system in such a way that it is changed not only in its function but also in regard to consciousness. This action is the result of very fine and delicate entities which, like a vapour, emanate from certain plants or compounds which have been refined through chemical fermentation and are called spirits. How these act upon and stimulate the nerves is daily evidenced by those who have swooned and lie as though dead but who, if one puts below their nostrils spirits of ammonia, vinegar, wine or aromatic herbs, are called back to life as if from the doors of the underworld, when the superficial nerves in the nasal cavities are revived and stimulated. Similarly, when some part of the body is hurt, bruised or inflamed, surgeons apply diffusing principles—mainly spirits and fragrant volatile compounds which, through evaporation, penetrate the body, reviving the half-dead nerves. Thus health is restored by re-establishing the vital functions in this part of the body. On the other hand, if a person suffers from excruciating pain and insomnia, doctors give ill-smelling agents such as a poppy preparation (*Papaver*) or apply them externally, such as dill (*Anethum*), saffron (*Crocus*), nutmeg (*Myristica*), to bring back sleep.

## 2.

But here there opens a field too wide for me to wander across and penetrate into every nook and cranny looking for every possible example. For the moment, let it suffice briefly to examine the wonderful effects of the inebriants themselves. There is hardly any people who do not have inebriants. They usually brighten

the mind of the tired, weak, sorrowful and depressed and stimulate the body. These agents quickly revitalize the strength of both body and soul. Food can serve the same purpose, but it acts more slowly and in a way which is round-about and not so thorough. For as soon as an inebriant is consumed, strength immediately increases, the pulse beats faster, weariness is dispelled, the body becomes warm, the mind is brightened and willingness to work is heightened.

## 3.

We Europeans use primarily fermented inebriants, such as beer, wine and distilled spirits and, in this way, try to give such agents pleasant tastes. But other peoples, particularly the orientals, who are slaves to inebriants, pay less attention to the condition of the intoxicant.

There are many well known inebriating agents in nature. Some still are not known, but they may exist in most of the fetid herbs.

Opium is the sun-dried latex from the scarified, unripened capsule of *Papaver somniferum*. For opium production, many acres are planted in Turkey and neighbouring countries. The Turks misused opium previously more than now, and are accustomed to take it in amounts from one grain to a drachma<sup>2</sup>. After prolonged use, the habit becomes part of their nature. It dispels grief, sorrow and fear of danger and calls forth gaiety, laughter, forgetfulness, foolishness and rage. Because of this action, their emperor is accustomed to give one drachma of opium to each of his soldiers before a major battle to enable them to attack the enemy without fear. But in too high a dose, it causes constriction of the pupil<sup>3</sup>, reddening of the face, stuttering, hiccoughs, dropping of the jaw and other symptoms. Those who have abused this heroic compound become lazy, careless, foolish, lose the power of speech, grow emaciated, downcast and are beset with the tremours of old age before their time. Used wisely, however, it is a wonderful drug, increasing the appetite better than anything hitherto known. No other drug gives more peace of mind. Jones: *The Mysteries of Opium* . . .<sup>4</sup>

According to Belon's travel accounts, *Peganum Harmala*, the seeds of which are sold in the market and are consumed by the Turks, induces drunkenness<sup>5</sup>. This account tells how the emperor Soliman used to eat the seeds without knowing what they were, because they gave him a feeling of great lust and blotted out the memory of unpleasant events<sup>6</sup>. It may be that the cake which Kaempfer ate during a feast amongst the Persians was made of this seed<sup>7</sup>. With this cake, he was filled with an inexplicable and novel happiness followed by hugging, laughter, jokes, etc., which lasted throughout the meal. He then mounted a horse, and the strength of the drug made him believe that he was sitting on Pegasus, had flown through the clouds and a multicoloured rainbow and had eaten with the gods; the following day, he had forgotten everything that had happened.

The maslac of the Turks and the bangve of the Persians are made of the pollen sifted from the staminate flowers of hemp (*Cannabis sativa*) prepared in the form of small cakes either with saliva or in the following way: two handfuls of finely powdered hemp leaves are allowed to set in cold water in a covered vessel; they are then squeezed repeatedly, and fresh water is added. The powder washed in this way is transferred into a glazed earthenware pot, stirred with a pestle with the addition of water from time to time; this liquid is passed through linen cloth

and served after filtration, when its colour is green. When up to half a pound is eaten, it causes gaiety and drunkenness<sup>8</sup>.

The bangoe of the Indians is made in the same way from the leaves of *Hibiscus Sabdariffa* (according to Hermann in *Mater. Med.*<sup>9</sup>) or else pulverized and boiled with rice and butter to serve the same purpose<sup>10</sup>.

The seeds of *Datura* (thorn apple), of which there are many species with differing properties, are frequently used by Turkish women and, when consumed in a certain way, cause such an inebriation that these women do not heed all the lechery that they commit and which they cannot remember when they are sober. If a person is intoxicated with this poison, a thief can boldly plunder a travelling bag in the presence of its owner without his noticing that anything untoward is happening; nor will he be able to recall it afterwards. Thus fornicators dare to ravish the wedding bed, whilst the husband looks on, quite safe from the groom's wrath and memory. There is a story of a harlot who employed an infusion of this seed to intoxicate virgin girls of noble birth and who gave them over to lustful young men; later, the virgins found themselves pregnant with no recollection of the cause. When this activity was discovered, the harlot received her just punishment by being burned at the stake<sup>11</sup>.

*Pinang*. The most common quid of the Indians is made of the leaves of *Piper* (pepper), rolled up funnel-shaped into which are put a slice of unripe *Areca*-nut and lime. This quid increases the flow of saliva, strengthens the mucous membranes of the mouth, reddens the teeth and gives the breath a pleasant odour. The unripened *Areca*-nut stimulates the brain<sup>12</sup>.

The roots of *Hyoscyamus niger* (henbane), harvested in the spring and consumed together with parsnips, has made men drunken, raging and mad, according to their individual susceptibility<sup>13</sup>.

*Hyoscyamos physaloides*, which grows in eastern Asia, can be mixed with sundry drinks. Those who have taken this mixture are said to tell, without thinking, whatever is asked of them, even though it be the most secret things, according to Heinzemann's account<sup>14</sup>.

*Belladonna*, a toxic species of *Atropa*, has attracted the attention of many children who love berries. Upon eating these fruits, they suffered attacks of rage and screeching, similar to the effects of the berries of *Actaea* (bane berry)<sup>15</sup>.

*Millefolium* (yarrow or milfoil), which, together with hops, is added to beer, makes the beer inebriating to the drinkers who become nearly mad. (*Flor. Svec.*, Ed. 2, No. 770.)<sup>16</sup>

*Sclarea* (sage) and *Melissa* (lemon balm or bee balm) are added to beer in Germany and England and produce the same effect<sup>17</sup>.

*Crocus* (saffron) is known from ancient times for its noble properties to induce happiness and incessant laughter; this effect has likewise been observed in more recent times<sup>18</sup>.

*Lolium* (rye grass or darnel) is an annual species which is added to barley in making beer and which causes blindness, foolishness and drunkenness in those who drink it<sup>19</sup>.

*Tabacum* (tobacco), as is well known, causes vertigo, drunkenness and other conditions when smoked by inexperienced people.

The eggs of *Barbus Cyprinus* cause, according to some authors, drunkenness and staggers when eaten; but since these eggs are unknown to us, we will not consider them further<sup>20</sup>.

## 4.

Artificial or secondary inebriating agents include all those alcoholic drinks that have been prepared by fermenting the juices of plants which of themselves do not induce drunkenness.

Drinks, such as beer, with malt of every kind—those made from barley, wheat or similar grains, boiled or fermented—are commonly used by Europeans.

Wine is the expressed and fermented juice of grapes or other succulent fruits, including cider from apples, pears, plums, the berries of the mountain ash, beam tree, hawthorn, myrtle, Cornelian cherry, dogberry, mulberry, pomegranate, figs, buckthorn, lotus, St. John's bread, cashew<sup>21</sup>, etc., as well as the fermented sap of birch, palm, etc.

Spirit drinks are distilled from fruits and especially from sweet smelling plants, always after previous fermentation.

## 5.

The action of these alcoholic drinks is as remarkable as it is extraordinary, since they can achieve what nothing else can and, indeed, if they be correctly used, nothing can equal them. For this reason, poets have surrounded them with an aura of mystery.

*Nectar*, the drink of the gods, must be imbibed with caution. It cures shivering, weariness, tremours; it even dispels anxiety, worry and grief. It improves the appetite, digestion, circulation of the blood, sleep, temperature of the body, complexion, the state of mind and understanding. If it be drunk without control, though, the muscles fail to obey but shiver and shake; excessive laughter is provoked, things are seen double and not in their right places but farther away or closer than in reality. If one ignores all modesty, the drink gives rise to foolishness, stammering, hiccoughs, vomiting, drowsiness, stupour, until, at last, movement of the limbs, faculty of speech and functions of the body cease, and the most serious physical injury goes unfelt.

The noble *Nepenthes* causes one to forget sorrow and to become forgiving<sup>22</sup>. According to Pliny (*Hist. Mund.* XXV 2:11), it was a drink among the ancients and was similar to our inebriants—perhaps it was one of them. Queen Helen, having lost her kingdom, husband, children and all belongings, travelled on foot to King Proteus of Egypt, complaining that she was the most unfortunate of beings. It was impossible to console her. The King then ordered a bath for her body and gave her a little nepenthes to drink. She forthwith began to forget her pain, detesting the futility and emptiness of the world and taking up laughter and joviality. Homer. *Odys.*

Presently she cast a drug into the wine whereof they drank, a drug to lull all pain and anger and bring forgetfulness of every sorrow. Whoso should drink a draught thereof, when it is mingled in the bowl, on that day he would let no tear fall down his cheeks, not though his mother and his father died, not though men slew his brother or dear son with the sword before his face, and his own eyes beheld it<sup>23</sup>.

\*S. H. Butcher & A. Lang (Translators), 1909. *The Odyssey of Homer*, Vol. 22: 51. Harvard Classics. New York: P. F. Collier & Sons Corp.

*Medea* restored the aged Aeson to youthful strength, perhaps with the same drug<sup>24</sup>.

*Circe*, who transformed Odysseus' travelling companions into pigs and other beasts, is described by the poets, because they wanted to give a picture of drunkenness among those who are inexperienced with potions. The men captured by her acted like dirty animals and did not care to continue their travels. But Odysseus, protected by garlic or Mercury's moly, escaped the intoxication<sup>25</sup>.

## 6.

The followers of Pythagoras believed in *Metempsychosis* or transmutation, and some still believe in it: that the soul leaves the human body and enters some animal at the moment of its birth. Finally, after much wandering, it returns to the human being. Therefore, they regard it as their most important duty to prevent the killing of all animals by anyone, even the lowliest insect, because they fear that their ancestors or the souls of their ancestors may have taken up residence in them. They have perhaps come to this belief, because many people—above all those who paint human forms—imagine that they can see in the human face likenesses to some animals: a lion, a tiger, a bear, a dog, a hawk, etc. This theory was prevalent for a long time with the old "physionomists", who firmly believed that the facial expression had its roots in a soul that had come from an animal to a man.

The alchemists of old took great pride in their panaceas which were supposed to give elderly men back their youth. If anything could have been wrought with this type of power, it must have been an agent of this kind. And, indeed, if we could change into a youth an old man on the brink of the grave in a permanent way so that the change would not, like the drink itself, disappear, then we would have reached a goal which would have been possible if we accept the suggested hypotheses. We, therefore, draw the following conclusion: that old age consists not so much of stiffness of the solid parts but instead of slackening and weakness of the nervous system.

It is assumed that the stairway of life has seven steps<sup>26</sup>:

Elderly	cold	lethargic	forgetful	abstinent	sorrowful
Middle age	reasonably warm	robust	wise	temperate	settled
Unmarried young man	hot	strong	thinking	drinking	gay
Youth	transpiration of the humours	agile	talkative	lustful	joking
Boy	lukewarm	sprightly	retentative	hungry	playful
Child	sweating	tottering	stuttering	inexperienced	unpredictable
Foetus	bathing	swimming	unknowing	sleeping	

Consequently, if you give an old man a mouthful of *Medea's* medicine, you will see him come down the same stairway that previously he went up: the final step brings him back to childhood.

## 7.

As physicists build their dogmas on experiments, medical men likewise perform experiments and observations to support their theories. Now to

experience the wonderful effects of inebriants, I ask my reader to go with me to a theatre, where he will see with his own eyes the scene painted in bright colours.

Therefore, dear reader, accompany me into a wine cellar! Here I meet in front of the door the honest old man, Somebody or Other. I hug him, and, because he has previously been generous with me, I thank him and tell him that I was about to look him up. I ask him if he would be kind enough to go with me into a neighbouring house, where we could talk peacefully. He asks me what kind of house it is, and I reply that it is the Temple of Bacchus, which is covered with hanging ivy and that it contains the sculpture of an opulent Bacchus, behorned, goat-footed and sitting on a wine cask. My old man who limps on his left leg, finds it hard to follow me into Bacchus' secret chamber, where we can sit alone and talk in a familiar way.

Upon entering, I ask the old man to sit down, because he is weary with years, grief, trials and sickness; his head is stooping, his hand is trembling, his mind is sluggish, his nose is dripping. He slowly relaxes. I ask him: "What is new from Africa, and what do the newspapers say?" He answers that it has been a long time since he read them, since they only give bad news, such as the detestible confusion of wars, destruction of nations and shameful murder of innocent people.

(a) I call for Medea, the girl in charge of the wine cellar and ask for the drink of nectar with which she transformed the ageing Aeson to a youth and tell her to fill up a cup for each of us. The old man refuses the drink, but I tell him that this nectar does no harm at his age, but that, on the contrary, if used sparingly, it will be most beneficial to the heart. Upon saying this, I empty my wine glass to the last drop, proposing his health. Only after much persuasion, however, does he respond and empty his glass. Hardly had an eighth of an hour gone by in prattling before the old man's nose dries, his head and hands grow steady, his mind becomes gay and the wrinkles of age are smoothed out. In other words, from the seventh step he has descended to the sixth. And he starts to talk about the war which is now upsetting Europe, indicating how desirable it would be if warring nations made peace, because the war has long since decimated the citizens of the countries, impoverished the treasuries and driven prices of all wares out of reach.

(b) I ask Medea once more to fill our cups with her nectar, and I empty my glass in honour of the old man's wife. At first, he refuses again, saying that one cup is enough for him and that he usually does not take more than one. However, upon my insistence, and at least in appreciation, he again drained the full tankard. And then I see the pale cheeks of the old man becoming rosy, his mind and judgement grow stronger, his body gets warmer and his mentality springs to life. He walks back and forth and speaks about the King of Prussia and his drive and courage and about the slow and neglectful but calculated manoeuvres of the imperial marshal Dauns<sup>27</sup>. He adds that this wine is really noble and superior to that usually sold in the wine-houses. For now, he steps down to the fifth level.

(c) Medea pours the third cup (I order that my glass now and in the future be filled with water), and the old man says that he now goes beyond a modest use of the gift of Bacchus, but that seldom has he been offered such a remarkable wine and that, therefore, it makes little difference how much he drinks. We wish his family all possible happiness. The old man becomes warm and happy; he

describes in detail the events of the war and the advantages that fighting men enjoy; he walks back and forth in a lively fashion, joking with the waitress. He finds himself, therefore, already on the fourth level.

(d) We drink yet another glass in honour of friends not present, and the old man declares that wine has not had such a good taste in many a year. He tells about his youth and about the games that he played in his childhood. He talks incessantly, but only about pleasant and happy things. He does not give himself a moment of rest, and his face is quite flushed, since he has now stepped down to the third level.

(e) The girl pours the fifth cup which one should drain with a toast to all the best for the future. After having emptied this cup, the old man wants to sit down, because his gait is staggering, and his speech is uncertain and confused. He is in reality now on the second level.

(f) The girl comes with a cup with a toast to gratitude, which he immediately drinks. The old man becomes pale, sits without speaking, then falls backwards and vomits what he has drunk. He has to be carried home, because he is unconscious and cannot speak. He cannot stand up and is unable to take care of himself, because he has arrived at the first level.

When later on we turn to the right side of the entry, then we enter Bacchus' public theatre; and there we shall see where his holy services are celebrated. Outside the door, I hear the echoing of mooing, neighing, shrieking and grunting. Unnoticed, we have to steal in and take our place behind the curtain lest we be torn to pieces by the animals. We see them all sitting around a big table. Mrs Circe, who walks around on the stone floor, has changed them all to animals so thoroughly that, with the exception of their outer appearance, there is hardly a trace left of their former human nature. Two entertainers are present. One of them is Ovid. He sings the following:

Wine gives courage and makes men apt for passion; care flees and is drowned in much wine. Then laughter comes, then even the poor find vigour, then sorrow and care, and the wrinkles of the brow depart\*.<sup>28</sup>

The other, Horace, sings:

Thou unlockest the thoughts of the wise and their secret purpose by merry Bacchus' spell; thou restorest hope to hearts distressed and addest power and courage to the poor man who after thee trembles not at the crowns of angry kings or soldiers' weapons<sup>†</sup>.<sup>29</sup>

The one who is presiding at the table you will find transformed into a wild horse, who, with an extended neck and broad chest, believes himself superior to the others and neighs with a loud laughter. The next one is a fierce looking bull with hanging forelocks, who surveys those opposite him and mumbles evil thoughts. The third is a pig drinking greedily, loading himself with everything that is put in front of him. The fourth, a dirty dog, sits in a corner and vomits on himself and all who are near him. The fifth is a cock who displays his accomplishments in loud tones, incessantly singing his own praises. A talkative

\*J. H. Mozley (Translator), 1969. *Ovid in Six Volumes. II. The Art of Love and Other Poems*. London: William Heinemann Ltd.

†C. E. Bennett (Translator), 1968. *Horace—the Odes and Epodes*. London: William Heinemann Ltd.

macaw, the sixth, speaks without stopping about herself and others. She goes on both about what she knows and does not know, revealing carelessly things that should be kept secret. A nightingale, the seventh in the company, sings indecent songs in praise of wine and love and believes that it has no equal so far as its voice is concerned. The eighth looks disdainful, a cuckoo who regards the others with raised eyebrows but is not a grain wiser. The ninth is transformed into a gadfly who flits around stinging everyone in the nose. Everyone swats him with his fists, but care must be taken that he not be hurt; his insolence knows no limits. The tenth is changed into a stinking billy goat who chases the serving maid.

It is disgusting to look at the others, for they all look like as many different animals as they look like men.

The nymph of the drinking hall shouts and declares that it is time to take an oath of allegiance to Bacchus, so that this festive day will always be remembered. Therefore, they all throw themselves on their knees. She herself explains why the cups should be drained and invites all the drinking companions and revelers to join in the name and unity of brotherhood. The one who dares not to join in, she continues, will be whipped to death. Then she says to the drinkers:

Night, love and wine fosters neither modesty nor sense<sup>30</sup>.

History ends with such a postlude which is called a bacchanalean orgy, because some of them have the opinion that it is below the dignity of the brotherhood to swear an oath to Bacchus for eternal remembrance of their depravity. Upon this, the lights are put out, the tables are turned over, the chairs are tipped back and the windows are smashed. All of them fight, scratch, bite and trample; bodily injuries happen; clothes are torn apart; there are shouts, curses and moaning; and there occur bruises, wounds, blood and vomiting. Finally, all are thrown out of the house, carried home or taken by force to prison. The following morning, they wake up with bruised bodies, scratched faces, clothes covered with vomit, empty pockets, trembling hands, aching heads, dry throats, fever and heaviness of mind, with a miserable memory of what happened, but now thinking about it in a completely different way from yesterday.

### 8.

The nervous system we consider to be the brain, the spinal chord and the nerves that arise from them. In this way, animals differ from plants. Animals have feelings and movement which are lacking in plants. This is all due to the nervous system.

Tasty or purely tasteless compounds, sweet or sharp, sour or bitter, sticky or salty, oily or harsh do not change the sense of feeling or of movement in animals. But compounds with odours, such as volatile or spirituous ones, are the only kind that change the sense of feeling and of movement in animals and, consequently, act upon the nervous system.

Ammonia-smelling salts, vinegar, wine, aromatic compounds can pull the unconscious from the jaws of hell. Saffron, salvia, bee balm make sad people happy and gay. Wines stimulate and strengthen the tired, make the shy bold, wake up the drowsy, turn the stiff supple, warm the cold one with a more rapid pulse, increase sweating and other secretions. Yes, they even change the sleepy

and forgetful into individuals with reason and good memory.

Many people define age only as the increasing stiffness of the solid parts of the body. When then the spirit drugs used by the ancients re-establish lost agility, joy, sex urge, memory, etc., it is obvious that old age and its trials are more to be sought in the nervous system than in the solid parts of the body.

Because the dietetic drugs refresh both body and soul, various people have sought consolation in them. But since these drugs are of a volatile nature, their action is also volatile and lasts only for a moment. If any mortal could make volatile mercury solid, he could rightfully believe that he had found the philosopher's stone and the true panacea. But all mortals to date have looked for it and are likely to search for it forever in vain.

Since the power of these drugs forces the nervous system more or less to contract, they also weaken the nervous system when their action ceases, much as a tightly stretched tendon when released becomes more limp. Therefore, people who abuse such heroic drugs too much and expose themselves to the storms of drunkenness begin too early in life to tremble and weaken. When they no longer receive stimulation from a new flood of inebriants, their weakened inner organs can no longer function, if they are not imbued with a fresh flood. Yes. They become unable to fulfil their daily tasks and are therefore obliged repeatedly to take the drug without which they absolutely cannot continue. As Boerhaave says in *Comment. 2, p. 137*:

"In those people who do not abstain from drinking, a fatal drive to repeat comes about. Not without the deepest sympathy have I seen a young man who, when he was awakened in the morning, was pale, with weakness, trembling hands and palpitations. He could hardly move a limb, let alone dress himself, before swallowing several ounces of spirits. Struggling against his habituation, he became helpless, so that against his will he had to use this alcohol, until he died in the flower of youth"<sup>31</sup>.

This inebriant acts also like a mighty fire which gradually pleases, warms, burns and consumes. A goblet of Rhine wine rightly is considered a strong heart stimulant, but a cup of alcohol or spirit distilled from it becomes a deadly and instant poison. Therefore, one and the same drug can strengthen or weaken, cause wakefulness or induce sleep, revive life or strangle it—in other words, it has opposing effects.

Abuse of these drugs, consequently, is to be condemned. It leads to early senility, so that you seldom see people who abuse strong distilled drinks reach the age of fifty. On the contrary, however, many who use a weaker form of the same drink pass that age.

9.

We who love to see their fragile thread  
of life prolonged,  
Why do we then let luxurious living  
shorten it?

Owen<sup>32</sup>

One shrinks with disgust when one looks at this miserable and revolting habit in the case of the educated man who, through excessive drinking, forsakes noble

human behaviour and becomes a beast. Therefore, the Saviour Himself says in Luke 21:33-34: "Heaven and earth shall pass away: but my words shall not pass away. And take heed to yourselves, lest at any time your hearts be overcharged with surfeiting and drunkenness and cares of this life, and so that day come upon you unawares"<sup>33</sup>. And Solomon in Proverbs 23 observes:

"Who hath woe? Who hath sorrow? Who hath contentions? Who hath babbling? Who hath wounds without cause? Who hath redness of eyes? They that tarry long at the wine; they that go to seek mixed wine. Look not thou upon the wine when it is red, when it giveth his colour in the cup, when it moveth itself aright. At the last, it biteth like a serpent and stingeth like an adder."

But this subject we put aside from our pulpit and leave it to the theologians, although many have succumbed through abuse of this fire water rather than as a result of fate. Let us remember only the words of Allen.

"O happy temperance which can never be too highly praised or admired! When in youth you have been careful about your behaviour and have protected your health, you are really your own advisor and are rewarded, as was seen once in the golden age of Saturn; and you will forever be honoured and be deserving of honour on the part of pure and pious souls. You lead your friends on the straight path to a long and pleasant life, to old age, with a mild, youthful and delightful outlook. Eventually you will be held in high esteem because of your honour by those who witness your strength. They would worry themselves sick if they saw it vanish"<sup>34</sup>.

#### NOTES

1. Linné divided the tastes, as well as the odours, into five contrasting groups.
2. 1 grain=0.06 g; 1 drachma=3.7 g; 1 ounce=29.7 g; 1 libra=360 g. Maximal dose of opium 0.15 g. *Collegium diaeticum* (Linné's dietetics, ed. by A. O. Lindfors, Uppsala, 1907: 94): "This [opium] is used by the Orientals consuming it every morning in big quantities. But you scarcely dare to give one grain, as 3 grains is lethal. It is used by us in the most serious illnesses, because it fights melancholy. It causes intoxications also as do spirits. The Turks use it to the excess. In the battle field, it makes them so jolly, that they do not fear anything".
3. Linné has here written "dilatation of the pupil" by mistake.
4. Jones, John. *The Mysteries of Opium* reveal'd. London, 1700.
5. *Colleg. diaet.*: 95: "Bellonius states that Emperor Soliman and several aristocrats chewed a kind of seed, undoubtedly *Peganum Harmala* (Hort. Ups. p. 144) related to *Ruta*, from which he became happy, forgetting all his troubles and getting into a paradisiac state."
6. Belon, Pierre, *Plurimarum singularium et memorabilium rerum in Graecia Asia . . . observationes*, Antw. 1589.
7. Kaempfer, Engelbert, *Amoenitatum exoticarum . . . Lemgo 1712*.—The following story also occurs in *Colleg. diaet.*: 95.
8. *Colleg. diaet.*: 94: "Maslach is prepared from an herb in Turkey, the same one as our hemp . . . Sap (Juice?) is preserved and is drunk, from which one feels satisfied and happy. Half a "libra" consumed of this drink has the same effect as the spirits of wine."
9. Hermann, Paul, *Cynosura Materiae Medicae*, Argentorat, 1726.
10. *Colleg. diaet.*: 95: "Bangve is used by the Indians and is prepared from Hibiscus (Fl. Zeyl.: 262, n.5) in the following way: "The leaves are minced, and butter and some rice are added".
11. *Colleg. diaet.*: 95: "Daturae semina is used in Turkey by thieves, though on pain of death, because one becomes apathetic from it, sits gaping, gives away what is requested and thinks this is quite correct. When the intoxication is over, one does not remember anything. A whore in Paris gave this to aristocratic ladies, and they became violated without noticing it: because of this she was burned".
12. *Colleg. diaet.*: 95: "Pinang is a kind of chew which the Indians use daily in their gatherings and is made in the following way: they take the leaves from a kind of pepper (Fl. Zeyl.: 27) and the unripe nut from a palm tree, called *Arachis* (Fl. Zeyl.: 392), Teufel (Devil) in the pharmacies, and cut them in pieces, and lime

- from shells. They roll this together and keep it in the mouth as we do with tobacco. The pepper causes one to spit, the teeth become red and rotten which the Indians regard as a fine embellishment, for they do not want to have white teeth like dogs; and the lime is astringent. From this mixture they get an agreeable breath in the mouth". Bettle-chewing is still a common custom in the Indian-Malayan civilized world, where the leaves of *Piper Bette* wrapped up with lime-covered nuts of *Areca Catechu* are chewed as a stimulant, especially for physical exertion.
13. Intoxication resulting from confusion of henbane root with parsnip was known to Linné from childhood and was pointed out in his seminars and botanical writings (Olof H. Selling, From Linné's native place *Swedish Linné-Society, annual, XLIII: 95-96 (1960)*).
  14. Heinzelmann, John. Friedr., a German-born military surgeon in Russian service, wrote a *Flora tatarica*, a copy of which Linné acquired through Sten Carl Bielke. It is now in the Linnean Society in London. No other publication by Heinzelmann is known (information from Arvid Hj. Uggla).
  15. *Colleg. diaet.*: 208: "If one eats 4 or 5 berries of (*Atr. bellad*) one becomes furious, undresses oneself and runs about quite naked. People who eat berries of *Actaea* become furious from it, as children in Danviken".
  16. *Flora Suec.*, Ed. 2, 1755: 299 (translation): "*Achillea Millefolium* is added to working beer, so that it becomes very intoxicating; especially amongst the Lima-inhabitants in Dalccarlia". It is there called the "mad drop" by the peasants.
  17. Owing to Linné's *Materia medica* *Salvia Sclarea* is a cardiac stimulant and *Melissa officinalis* revives and invigorates the heart.
  18. *Colleg. diaet.*: 184: "If the dose (of saffron) is too large, it produces hysterical laughter, as from tickling. Arch. Linnæus found this in Falun 1749. A girl having consumed too much of this saffron laughed hysterically; this is the reason why those who have consumed much of saffron should take care, lest such a crazy happiness become permanent".
  19. *Flora Suec.*: 38 (transl.): "Consumed in a beverage *Lolium temulentum* intoxicates and for some hours causes blindness; in bread it is milder". Linné reports the same fact in the Gotland voyage (July 7).
  20. *Colleg. diaet.*: 206: "Barhus is a species of Cyprinus, the egg of which makes one mad, causes rashes and other symptoms. A remarkable experiment of this phenomenon is seen in Aldrovandi *Ichthyologia*".—*Lectures on the animal kingdom* (ed. by E. Lönnberg, Uppsala, 1913): 190: "Cyprinus Barbalus has a poisonous egg; every other egg from fish can be eaten, but of this one spoonful is enough to cause cholera and death."
  21. In *Odys.*, 9: 94-97 it is stated that Odysseus came to the lotus-eaters who consumed the "honey-delicious" fruits that cause forgetfulness. The juice of the fruit of *Anacardium occidentale* (West Indies) was made into wine.
  22. *Colleg. diaet.*: 96: "Nepenthes was a kind of seed in ancient times; it took away grief and sorrow, was known only to aristocrats and kings. Menas was supposed to be the same as opium".
  23. *Odys.*, 4: 220-226, translation of S. H. Butcher & A. Lang.
  24. Medea poured a magic potion into the throat of the exhausted old man Aeson; it gave him back youth and strength (Ovid, *Metamorph.*, 7: 285-290).
  25. Odysseus received from Hermes (Mercurius) an antidote to Circe's magic potion which had turned his men to swine. It was called *moly*, was prepared from a mysterious herb with white flowers and a black root (*Odys.*, 10: 302-305).
  26. From ancient times, the life of man has been divided into seven ages. Linné described them in a diss. of 1764, *Diaeta per scalam ætatis humanæ* (Swedish translation in the Swedish Linné-Society Selected dissertations, no. 16). The nomenclature used in this dissertation is Linné's own (from the review in *Learned Journal*, 1763). In a dissertation of 1767, *Metamorphosis humana* (Swedish translation in Selected dissertations no. 22) Linné has 12 stages of age, associated with the months of the year.
  27. Allusions to the Seven Years War (1756-1763) in which Marshal v. Daun twice (1757 and 1758) defeated Frederick II of Prussia but otherwise contented himself with "observing the enemy".
  28. Ovidius, *Ars amatoria*, 1: 237-240, Elias Janzon's translation.
  29. Horatius, *Carmina (Oden)*, 3: 21: 17-20, G. Adlerbeth's translation.
  30. Ovidius, *Amores*, 1: 6: 59.
  31. van Swieten, Geerard, *Commentarii in Herm. Boerhaavii aphorismos*. Lugd. Bat. 1742 and several editions.
  32. Owen, John, *Epigrammatum*, Bratislava, 1655.
  33. Linné has here wrongly indicated Matthew. The quotation comes from *Luke*, 21: 34.
  34. Allen, John. *Synopsis universæ medicinæ practica*. Amst., 1749. The following quotation is translated by Arvid Hj. Uggla.

O blessed temperance, never sufficiently to be praised, never sufficiently admired, the glory and the protection of the primeval age, which thou madest golden; thine own advocate surely and thine own reward, seen formerly in the happy times of Saturn, revered in every age by pure and dutiful minds and still to be revered. Thou art leading thy worshippers straight on to a long and also pleasant old age, with a placid, youthful and pleasing countenance. Finally thou art adorned by the praises of thine own enemies, and thou wilt be considered lovable by them: "Let them observe Temperance as Virtue and pine away if they lose sight of her".

Glory to God Alone.

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