



Travel medicine in Basel - 450 years before CISTM18

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ABSTRACT

Concern for travellers' wellbeing and safety is as old as humankind. Historic documents offer insights into how a safe journey was prepared or travel ailments treated based on the prevailing knowledge of body and (dys) function. In 1561, Guilhelmo Gratarolo published a comprehensive book on what we call today 'travel medicine'. Many then problems are still today's travel malaises. How they were dealt with 450 years ago is uncovered in his fascinating publication.

1. Commentary

Few participants of the recent International Conference of Travel Medicine (CISTM18) in Basel may have been aware of this city's role in travel medicine centuries ago. Here, in 1561, Guilhelmo Gratarolo (1516–1568) (Fig. 1) published his 'Regimen for Travellers' [1] (Fig. 2)

Born in Bergamo/Italy, the occultist and philosopher studied medicine in Padua and Venice. A vocal Protestant, he attracted the attention of the inquisition and was sentenced to death by beheading and burning the body [2]. Preferring not to serve his sentence, in 1552 he fled to Basel, then a popular exile for likeminded Italians. He briefly moved to Marburg/Germany in 1561 as Professor of Medicine but returned to the University of Basel (his 'Alte Universität' still stands on the banks of the Rhine) where he became Dean of the Medical Faculty in 1566. Gratarolo died in 1568, possibly of epidemic typhus [3]. Throughout his life, he wrote widely, including on alchemy, wine, physiognomy, the plague, or how to preserve and restore memory [4]. He was well-known for treating people of consequence with great success [2].

The University Library of Basel provided a unique opportunity to view the original in its historic setting. Printed in a variation of a Nicolas-Jensen-style Antiqua (19 × 12 cm, 152 pages), the first part comprises 19 chapters, the second, with five chapters, focuses on sea travel and proposed land itineraries. A fold-out table of measurements and an erratum conclude the work. To facilitate readability and translation, a digital (facsimile) version of the entire book was transcribed and typed into modern font, abbreviations (used to save precious paper) restored, embellishments and smudged print cleaned, spelling errors corrected, questionable end-of-line-hyphenations adjusted, and errata corrected. To put this work in perspective, Hippocrates' four humours were still guiding thought, and symptomatic rather than curative means

addressed imbalances with purging, bleeding, blistering and various preparations. Vesalius had just published his anatomical atlas, Galileo had yet to be born, and Harvey's closed blood circulation was still a century away.

Gratarolo's advice rests on his own travel, but where he has no personal experience or expertise (*nam expertus non sum*), he cites more than 25 others from Hippocrates to Avicenna, Cardanus, Galen, or Pictorius (whom he copies extensively), or refers to his previous books for more information. Considering treatment options at the time, the work is full of very detailed recipes, their ingredients, precise preparation, and time and mode of application of medications based on what was available, and understood or assumed to work. An enormous range of plants, many today unknown, but also powdered coral, pearls, blood, fox (and other) fat, breastmilk, ground donkey hooves, donkey or rabbit gall, smegma, ass's milk, earwax or precious stones produced drinks, syrups, washes, ointments, poultices and enemas, almost always with some form of wine, as water was deemed impure. Space constraints preclude naming them in their respective chapters, and offering more than glimpses of a book packed with fascinating detail.

The 'Regimen' starts with a lengthy pious letter to Protestant Lord Egenolf III of Rappoltstein (85km north of Basel), a powerful patron, to whom Gratarolo dedicates this book, written as he had not yet seen anything on travel health to this extent (Pictorius had published his shorter Raiss Büchlin in 1557 [5]). He is prepared to defend his work (*ad quam paratus sum*) and includes past authorities' advice so that people do not have to read them themselves, but one should also consult a qualified physician.

The first chapter prepares travellers according to their dominant humours so that a balance be achieved in preparing a journey; exertion with an impure body may dislodge fluids, sending them to the wrong

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Fig. 1. Guilielmo Gratarolo (Creative Commons).

body parts. Following this assessment, bloodletting, or diverse potions minimise ailments on the road. The next chapter deals extensively with food, starting with, if possible, eating 'foreign' food at home to get accustomed. During travel, lunch should be light as movement hinders digestion leading to obstruction, putrefaction, and fever. Drinking from a spring can cause stomach and spleen pain: best to only gargle, keep the mouth closed, and speak little. In hostels, avoid cold cooked fish stored for a long time, especially if cooked in copper pots, as it turns to poison. These detailed instructions, Gratarolo writes, are for those who care about their health, not those for whom their belly is God. He shares a secret recipe to make absinthe as the real thing is often unavailable. A separate chapter deals with hunger and thirst during travels and suggests foods for the road, such as roasted liver and violet oil balls, marzipan, or German 'krafftbrod' which all keep for a long time and nourish even in small quantities. Unless fresh, rainwater must be boiled, ale creates excessive humidity in the body, beer intoxicates longer due to its thicker vapours (German authors can advise more), choosing the right wine is important. A great trick: cut bread into cubes, bake it, while still hot put it in good wine, cool it down, dry and bake it. Put it in some water, eat the bread and enjoy the pleasing bouquet of wine! Chapter 4 manages thirst and dry tongues by not talking much, carrying a piece of coral or crystal in one's mouth, consuming diverse liquids. It offers instructions on how to purify or filter water of differing qualities (drinking water through bread filters out leeches, worms, and other small nuisances). Recipes are given for restoring appetite and dealing with 'burning stomachs' of travellers who don't do as they are told.

Travellers' insomnia responds to drinking and washing with preparations (including a little opium) or tying liniments on forehead and temples. The poor can use a drop or two of rabbit gall in a spoonful of wine. Excessive drinking of wine does not bring good sleep, and he dislikes the saying: 'he who drinks well, sleeps well; he who sleeps, does

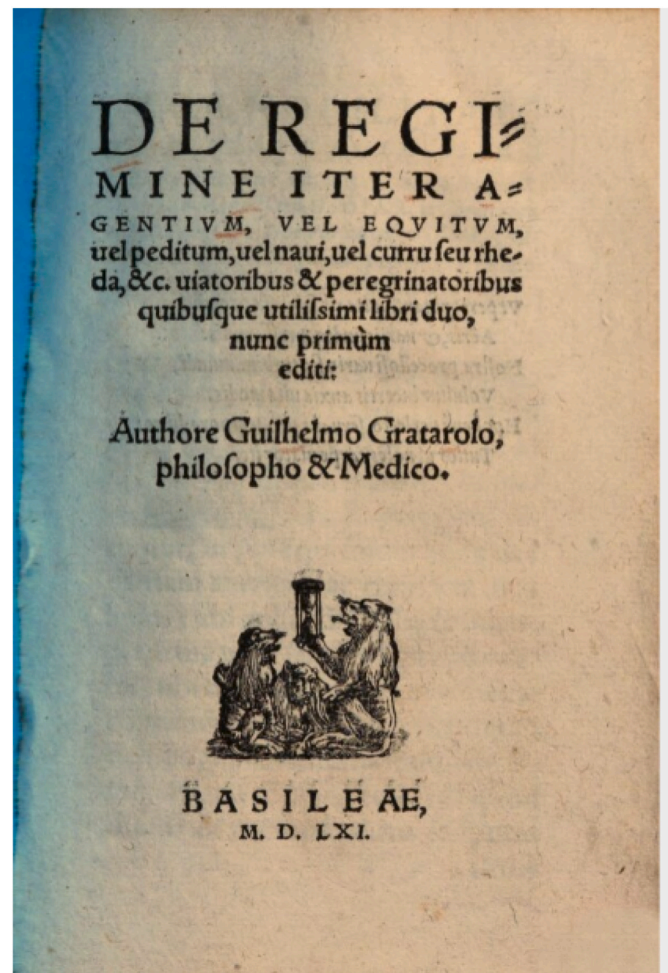


Fig. 2. Titlepage

not sin'. Wine drunk in moderation brings cheerfulness, especially in the elderly. Chapter 6 elaborates on fatigue and weakness, especially in travellers on foot, with detailed instructions including Avicenna's eight points with which Gratarolo concurs wholeheartedly based on his own experiences, so that one can reach one's lifespan as appointed by God. Next comes advice on traveller's diarrhoea and constipation with recipes for oral and rectal applications as well as post-diarrhoea diet. Red coral powder in ointment smeared on the abdomen works well (Fig. 3).

Headaches in travellers have many causes: exertion, internal vapours, too much drink or sun, and are treated with corresponding methods. Cold cabbage leaves tied around the head help hangovers. Inhaling the smoke of herbs cooked in red wine alleviates headaches from cold wind. Longstanding headache asks for bloodletting of the forehead.

Bloody urine requires wide-ranging treatment methods from food/drink to anger management and sleeping positions. Nosebleed, from heat or exertion, can be stopped by smelling camphor, a wet cloth tied around the neck, or cupping over the liver or spleen depending on the side of the bleed. Alternatively, bloodletting at the elbow of the respective side, or blowing substances, e.g., burnt eggshells, into the nostrils helps. Chapter 10 offers treatments for various fevers caused by bad air but also disordered movement and overindulgence, such as cooling herbs, cool rooms, and anger avoidance. Bloodletting cures persistent fever, plantain-water prevents tertian and quartan fever. Drinking one's own urine cures phlegmatic fever; 3-4 drops of ass-blood in wine keeps daily fever away.

Those who travel without faithful food-tasters or cooks learn how to avoid being poisoned by enemies, how to recognise poisons and

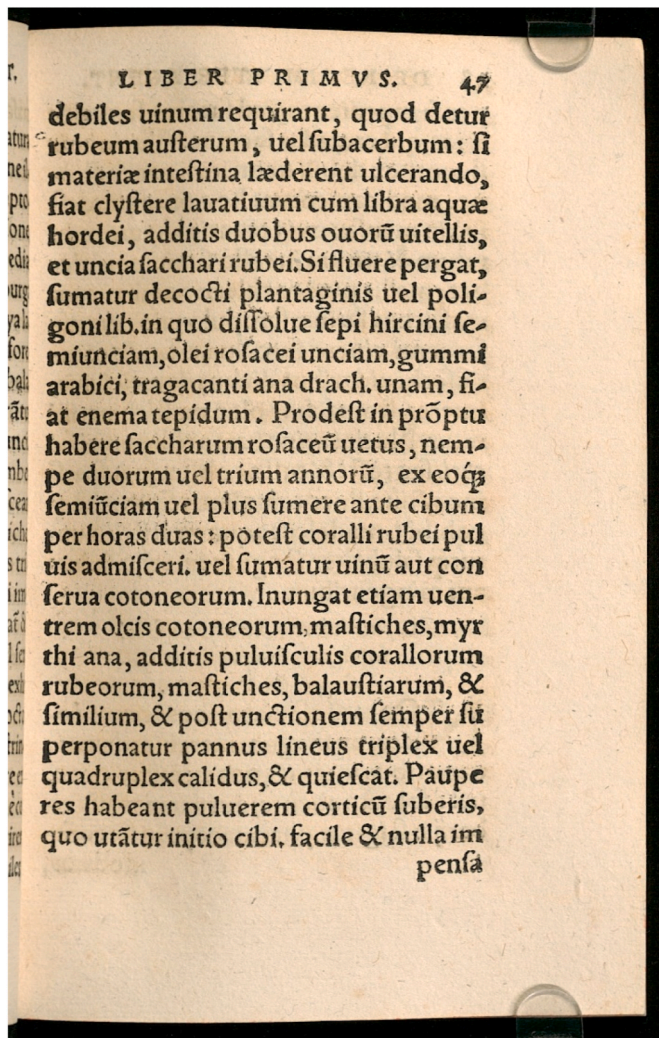


Fig. 3. Treating traveller diarrhoea.

symptoms of poisoning, and how to treat all kinds of poisoning, e.g., roasted onions bound under feet draw poisons to lower parts of the body. A miracle powder protecting against all poisons concludes Chapter 11. Travellers, especially in hard and tight shoes, suffer from sore, cracked, or swollen feet; prevention and treatment are suggested. Wounds on hands and feet, caused by the cold, respond to ointments. If horsemen's feet get frozen, the feet need to go into cold water – like a frozen apple that returns to its natural state but gets destroyed in warmth. Snow blindness, the destruction of 'seeing spirits' by whiteness, can be cured by covering eyes with black cloth. Some smear bird's gall into the eyes which protects them wonderfully. Diseases of the cold and frostbite are difficult problems. Very cold horsemen need to be warmed up very slowly, rubbed with oils and put to bed. However, a black limb must be amputated to avoid further infection. Oil/milk on hands and feet may block the pores to prevent the cold from entering. Freezing to death starts from the genitals; warm them with good hot wine.

Chapter 15 speaks against drunkenness. Few know the harm of drunkenness to body, soul, and spirit, yet men drink excessively, to no one's advantage and their own detriment. It is a small step from gaiety to drunkenness. Prevention be not denied: raw or roasted sheep-lung lowers interest in wine. Cabbage stalks prevent wine-vapours rising to the head (Aristotle recommends olive oil to the same effect). If already drunk, vomiting, or eating pig trotter gelatine helps. Before going to sleep, testicles should be wrapped up in cloth soaked in hot vinegar. A nasty infliction of long-term travellers, especially the poor, is the

infestation with lice caused, among others, by putrid vapours or unclean underwear and clothes, a matter of disgust and shame. Pharmacies sell cheap ointments; Gratarolo offers better recipes. Boiled garlic-water drives lice away from the entire body. Broad lice, Italians call them 'piatolas', Germans 'filtz leüs' (Filtzläuse), in eyebrows or beard are covered with hard egg-white so that they exit the skin, ready for collection. Cotton dipped in turpentine carried in pockets kills lice. Lice on eyelids and lashes succumb to honey or specialty wines. Prevention and treatment of sunburn and hot wind injury rest on a multitude of preparations to be used on lips, face, and neck, from plants, deer marrow, goat and goose fat, smegma, earwax or spiderwebs. Egg white on the face preserves one's natural colour. Heatstroke requires gradual cooling with cold water, and face and chest are smeared with various preparations.

Chapter 18 advises on diseases and accidents of horses, while into Chapter 19, Gratarolo seems to pack everything yet unsaid, predominantly warnings of all that can go wrong during travel. Based on his own experiences, he goes to great length discussing good and evil in man interspersed with religious observations, moral statements, and Bible verses. Travellers must be no fools as there are evil men around, without fear of God, hoping for easy gain from unwary travellers. He once lodged in a house in Milan, full of gamblers and swindlers, who put glass shards between the sheets of the bed he booked for his sole use, but he noticed in time. In 1559, near Brixen, he had an unpleasant experience about his purse; it is best not to tell or show anything. In Germany, almost nothing happened to him in cities, but villages abound of drunkards. If travelling on foot, one is treated worse unless one gives money to the maid or servant. He then advises on where to expect food shortages, on travelling in winter and over mountains, and which type of animals to choose (oxen over horses). He suggests how to flee or pursue quickly, how to calculate one's position in unknown territory, and which type of roads to favour. From one small mishap many inconveniences can follow: travelling in groups is safer. Finally, he shares a 200-year-old secret procedure for travellers to carry gold and silver safely without anybody knowing by changing the metal into something looking like earth and then changing it back to metal, especially important in times of tyrants, wars and the Antichrist.

The first two chapters of Part II deal extensively with seasickness, nausea and vomiting; resisting the latter is neither easy nor useful. A range of preparations of extraordinary flavours and smells attempt to prevent or alleviate seasickness, suggestions which today make one wonder if they were not making things terribly much worse. Some days before boarding a ship, food that strengthens the stomach should be consumed and, unless accompanied by a physician, suggested antiemetics brought along. On the first day, it is best not to look at the water or hold the head up, eat or drink. Sobriety and a happy mind will protect from unpleasantness. Doctors or surgeons may be available for hire at the wharf. The second chapter offers even more elaborate recipes and instructions against nausea. The poor may drink sea water as its saltiness and stickiness close the mouth of the stomach and so prevent vomiting. But vomiting cures or alleviates diseases such as leprosy or apoplexy. A strong mouth of the stomach prevents vapours from rising to the brain. The smell from the sea or the ship's bilgewater can affect soul and brain, but appropriate recipes are at hand. If fever occurs, either there is a physician on board or somebody else can request a special diet.

The next chapter explains at length why sea water is salty, the tides and the navigability based on a treatise of an unnamed philosopher (Cardanus?), whose work Gratarolo would love to publish if he could find a printer who won't charge him. Sea water can be made drinkable. But since many, him included (*in quorum numero sum et ego*), are not content with water, he advises on checking if the wine on board is good or spoiled. But there are tricks to restore turned wine or to prepare wine to last a long sea journey. Chapter 4 contains advice for army encampments, e.g., avoidance of swamps, cadavers to be buried, and water inspection. To test water, the finest whitest linen should be well moistened and hung in the sun to dry. If there are any coloured spots, the water is

bad, if not, it is clean. Fever and wounds, especially by poisoned arrow, rate a mention. Anything else should be the remit of an expert army physician. The closing chapter starts by clarifying a ‘mile’ based on different calculations of longitude, latitude, and earth’s circumference and how to calculate this oneself. Over forty itineraries are then listed, either travelled by Gratarolo himself or described by others in the years prior to this publication, omitting St Jacob’s journey printed in a German 3-page-poem, filled with nonsense and superstitions, which he detested. The places are given in local names so that travellers can understand and make themselves understood on the road.

This intriguing book raises many questions. Who was the intended readership? How many copies were produced? Is this something prospective Latin-literate travellers would have read? Will travellers have gone to a *medicus* to prepare a journey? Few will have travelled with a personal physician, but it also does not seem to be a travellers’ *vademecum*, as most instructions could not possibly be followed, especially without a major herbal kitchen and apothecary in the luggage. Was it perhaps for doctors along travel routes to treat travellers?

Concern for travellers’ wellbeing and safety is as old as humankind. We marvel at medical advances, but often fail to recognise on whose shoulders these achievements stand. Travel medicine, a youngster of three decades, has yet to excel in looking into its beginnings, from texts and clay tablets of ancient cultures to written information throughout the times. The speciality has come a long way since bloodletting was part of its repertoire, and ground hooves promised relief. Evidence then was if something happened to work; now it is research. Today, travel medicine is less magic and more science - even if some travellers prefer the former. Gratarolo showed us what travel medicine was like hundreds of years ago. He would have been thrilled that one day, in his city, a conference would be held on this very topic.

CRediT authorship contribution statement

Irmgard L. Bauer: Writing – review & editing, Writing – original draft, Visualization, Methodology, Investigation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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