Diagnosis

Within the framework of the doctrine of diseases as outlined above, the principal goal of medical diagnostics was to determine with precision the physical causes of a disease, the disease process, and the nature of the morbid matter within the body so as to target, fight, and eliminate the morbid matter in question. By contrast, the act of labeling an illness with a specific name, something that is often taken to be at the heart of diagnostics today, was of secondary importance at the time. Writing in his practice journal, Hiob Finzel often took no recourse to a specific disease name. For his purposes, it was sufficient to refer to the suspected causes of the complaints, such as rawness (“cruditas”), an obstruction of the mesenteric veins, and so on. Further, when Finzel did use established disease names – and the same is true of Handsch – these were predominantly terms like “catarrh”, “suffocation of the womb”, and “tertiana” (literally: “third-day fever”) and “quartana” (“fourth-day fever”). These, as we will see, were closely connected with specific ideas about the underlying disease processes.

The Patient’s Narrative

Except in the case of serious injuries, the physicians could not look inside the patient’s body, in this time long before x-ray imaging, endoscopy, ultrasound, MRI, and other modern medical imaging techniques. For this reason, a physician’s conversation with patients and, depending on the situation, with relatives, was in some respects even more important than it is today. The patients’ account of the history of their illness and of their current complaints provided the physician with crucial information about the nature of their disease. The physician therefore had to listen to the patient’s narrative “patiently and attentively”, as young Handsch learnt from one of his textbooks. Supplemented by the physical appearance of the patient, what the physician learned in conversation about the patient’s earlier illnesses and how they had been treated, about the patient’s present way of life and exposure to potentially disease-causing external influences, helped him gauge the person’s susceptibility to certain diseases as well as the likelihood of success with different types of treatment. Thus, according to Amatus Lusitanus, the “good practitioner” (“bonus practicus”) had to ask

196 For contemporary advice on how the physician should take the patient’s history see e.g. Capivaccia, De modo interrogandi (1603).
197 Cod. 11200, fol. 56v.
about the duration of past diseases and whether they had been acute or intermittent, about medications the patient had taken and the effect they had had, whether his bowel movements were easy or whether he suffered from constipation, whether he had had bloodletting done and, if so, whether he had tolerated it well or had fainted. All of this was to make sure that he would not weaken or indeed kill him with purgatives that were too strong or with excessive bloodletting. At the sickbed, Handsch not only inquired about current complaints such as the quality of a patient’s headache, but also about previous diseases and the person’s way of life. He was very clear in his opinion that this kind of knowledge made it easier to identify a given disease and morbid matter.

In his notebooks, Handsch wrote down the sometimes very detailed questions which his teachers, colleagues, and he himself asked. In some cases, he even recorded short conversations between the physician and patient or relatives, with both questions and answers. When he was consulted by an old man who had suffered from genital discharge (“gonorrhea”) for fourteen years and, at the beginning, from hair loss as well, Fracanzano, for example, inquired not only about the general symptoms of the French disease but also about the color the discharge left behind on the man’s shirt, which was sometimes yellow, sometimes green. He wanted to know whether the man sometimes felt a burning sensation on the palms of his hands or on the soles of his feet, whether his complaints worsened in the summer and whether he sometimes coughed up blood.

In the case of acute fevers, the physician could ask: “Do you sometimes feel a sting or pressure in your sides?” or: “Do you feel something in your sides?” to check for the symptoms of pleurisy. Especially with head complaints, Handsch intended to always ask whether it sometimes “came up” against the patient’s eyes and whether she or he sometimes heard a “whistling” in the ear. If kidney or bladder stones were suspected, he not only asked about pain and about sand or small stones in the urine, but also about a frequent urge to urinate, a burning sensation during urination, and reddish urine. The answer in such cases could be, for example, “It’s in my loins, and sometimes there is a jerking pain toward the front, too”. With women, asking about their period, whether it was regular and what color, was a cardinal point. And the physician might hear as an

---

198 Amatus Lusitanus, Introitus (1552), pp. 1–6.
199 Cod. 11205, fol. 265r; Cod. 11238, fol. 125r.
200 Cod. 11238, fol. 130v; presumably on the same case: Cod. 11206, fol. 78v.
201 Cod. 11205, fol. 258v; similarly ibid., fol. 265r.
202 Ibid., fol. 325r.
203 Ibid., fol 262v and fol. 403r.
204 Cod. 11206, fol. 32r.
answer, “It’s not red but grayish, whitish; if it came as red blood, I’d be con-
forted.” With older women, it was important to know for how long they had not
had their period. If a woman suffered from white discharge, Handsch would ask
about further signs of a phlegmy, obstructed or “spoiled” uterus, about swollen,
heavy feet, for example, heaviness in the belly, pain in the loins, shortness of
breath when climbing stairs, and a tingling sensation in the arms or legs. Handsch
learned from Lehner that if the physician suspected worms in a child, he
could ask whether the child rubbed his nose or had bad breath.

Physicians even attributed diagnostic meaning to the dreams their patients
told them. Following Galen, they believed that some dreams came from the hu-
mos and the movement of humors within the body. When the Baroness of
Hungerkasten dreamed of soft cheese under her bed from which maggots came
crawling out and into her bed, Handsch interpreted this as a sign of impurities
in her body. When the mother of Thomas Mitis, who suffered from an eye
complaint, dreamed of water, he considered this an indication that her head
was filled predominantly with watery, phlegmy matter. Handsch sometimes
specifically asked patients to tell him their dreams, and some patients told
him their dreams without being prompted, that they had dreamed of fire and
fish, for example.

Conversations with sick people and their relatives could also be helpful to
earn the patients’ trust: when the physician asked about complaints the patient
had not even mentioned, this demonstrated the physician’s diagnostic acumen.
Yet we must not overestimate the significance of the conversation for early mod-
ern diagnostics in a stricter sense, the way medical historiography has so often
done in the past. Quite consistently, the diagnosis was also or indeed primar-
ily based on “objective” procedures. Such procedures provided physicians with
valuable information beyond the scope of patients’ oral or written communica-
tion. They could even be employed against the patient’s will, when he or she
wanted to keep something secret, a possible pregnancy, for example. Today, we

\[205\] Ibid., fol. 475v.
\[206\] Ibid., fol. 448v.
\[207\] Ibid., fol. 31v, fol. 107r and fol. 289r.
\[208\] Ibid., fol. 245r.
\[209\] Ibid., fol. 448v, referring to Galen’s treatise *Quod animi mores corporis temperiem sequan-
tur*; Cod. 11183, fol. 265r.
\[210\] Cod. 11205, fol. 499r.
\[211\] Ibid., fol. 583r.
\[212\] Ibid., fol. 554v.
\[213\] Cod. 11183, fol. 139v.
\[214\] See, e.g., the influential paper N. Jewson (Jewson, Disappearance (1976)).
may consider most of the “objective” diagnostic procedures that were common at the time to be of little value. From the perspective of the day, however, they promised crucial insights.

**Uroscopy**

By far, the most important objective diagnostic procedure was uroscopy (Fig. 5). Usually when people fell ill in the sixteenth century, the first thing they or their relatives would do was send urine to a physician or another healer. By looking very carefully at the urine, the uroscopist, at most assisted by the report of a messenger, was to make his diagnosis and prescribe a suitable treatment. When a physician was called to attend a patient, it was likewise expected that he examine the urine very closely at the bedside, then and at follow-up visits as well.  

Uroscopy takes up considerable space in Handsch’s notes about medical practice. He brought it up in hundreds of entries – sometimes only marginally, but frequently in connection with diagnostic and prognostic assessments that vary in their degree of detail. As we have seen, students at the leading universities of the time such as in Padua and Bologna were given extensive training in the art of uroscopy. In the early seventeenth century, Antonio Negro in Padua was even obliged by decree to take his students to the Ospedale di San Francesco after his lectures to examine the urine of patients with them. 

It is important to realize that uroscopy did not merely serve to diagnose diseases of the efferent urinary tract. Rather, it was considered the royal road in diagnostics and could be used to pinpoint all kinds of illnesses. According to the teaching of that period, all diseases, or at least nearly all inner diseases, with the possible exception of epilepsy and a few other outliers, could be identified from the urine. From the way urine changed with time, physicians could furthermore draw important conclusions about the development of a disease and the effect of the treatment. And so, Handsch’s message to sick people and their relatives was, “A physician cannot correctly judge from the urine unless he observes it several days in a row, because the urine often changes”.

The general principles of uroscopy were taught in lectures and scholarly treatises, which were sometimes aided by color plates that provided a succinct summary of the diagnostic significance of the different color shades. There were

215 For a detailed treatment of this topic see Stolberg, Harnschau (2009).
217 Cod. 11206, fol. 20r.
Fig. 5: Statue of St Cosmas, with urine glass, Wellcome Collection, London.
three urinary properties that needed to be determined: color, consistency or density, and visible admixtures.

Consistency and density were closely linked. Physicians could observe how thin or thick, and thereby also how transparent the urine was, by holding the urine flask up toward the window. If, looking through the full matula, the crown glass in the window (“orbiculi”, “circuli”) could not be made out, the urine was considered thick (“crassus”). The physician could also compare the urine with other liquids. Handsch filled a glass with light-colored beer from Prague and placed it next to a female patient’s urine. Looking through the beer, the crown glass was much more difficult to make out than looking through the urine.

An experienced uroscopist had to be able to distinguish and correctly interpret at least twenty different colors. They ranged from white or transparent like spring water to saffron yellow all the way to cabbage green, leaden, and black. Combined with the consistency, the color was thought to indicate mainly the degree of the urine’s “concoction”. This in turn was a reflection of the strength of the person’s vital heat, which was decisive for a successful assimilation of nourishment and, as the case may be, for the concoction and excretion of morbid matter. Light-colored, thin, “raw” urine, or even urine that looked like “well water” indicated a weak concoction and thus weakened inner heat, which caused impure, raw, and phlegmy substances to accumulate in the body. Dark and in extreme cases black urine, by contrast, was considered an unmistakable sign of excessive heat in the urine. The primary cause for this was the unnatural, pathological heat of fever. It could, however, also result from excessive heat that had developed in individual organs, above all the liver. The urine in this case was a vivid illustration of what was simultaneously going on in the blood and the humors: they were burning or at least assuming a harmful, caustic acridity from the heat.

Not uncommonly, admixtures could be seen in the urine with the naked eye. Settling on the bottom of the urine flask were blood, sand or small rocks, or pus; pus, an important indicator of an ulcer in the efferent urinary tract, formed a deposit more easily than phlegm. Bellocati referred to a thick sediment as “burnt matter”. Sometimes a cloudy or stringy haze could be seen or, when the light was dim, tiny grains, also called atomi. Volatile, vaporous
substances settled as foam on the surface. To gain better insight, especially about the sediment, physicians would swirl the urine in a circular motion. In the case of a patient who experienced pain in her shoulders and loins, this made it easier to see the sandy admixtures.\footnote{Ibid., fol. 264r.} When Handsch found some rather coarse elements (“puncta”) in his own urine, he used a circular motion to get them to settle as red sand at the bottom.\footnote{Ibid., fol. 227r.} Handsch saw how Lehner used brushwood from broommaking to stir the urine, presumably to test if mucus would cling to it.\footnote{Ibid., fol. 257r.} If necessary, physicians poured the liquid portion out and examined the sediment more closely, stirring it with a stick\footnote{Ibid., fol. 230r.} or rubbing it between thumb and forefinger to better assess its consistency.\footnote{Ibid., fol. 230r.}

The physician’s findings were often finely nuanced. With a young man who suffered from a strong fever, Handsch repeatedly observed “inflamed”, red urine, sometimes with foam on the surface.\footnote{Cod. 11210, fol. 92v.} The urine of a nobleman who suffered from colic had a “beautiful, correct color”, but there seemed to be small mucous particles floating in it.\footnote{Ibid., fol. 454v.} And his colleague Bacchus said about the urine of a patient that it was “a bad water”, to which Handsch added for clarification that the blood was “spoiled, phlegmy, burnt, thickened”.\footnote{Cod. 11206, fol. 25v.}

In the contemporary understanding, sediment could indicate the successful concoction and excretion of waste and morbid matter. Its presence was not necessarily a bad sign. Rather, clean, pure sediment in combination with a healthy, straw-like urine color indicated strong vital heat that was able to concoct food and other preternatural matter sufficiently.\footnote{Cod. 11205, fol. 69r.} Especially on the so-called “critical” days, physicians were hoping to find sediment, an indication that morbid matter was being successfully excreted. Lehner thus asked the young Handsch to check the urine of a patient carefully for sediment on the seventh day of the patient’s illness.\footnote{Ibid., fol. 12v.}

The uroscopist further had to take the temperament and the physical constitution of the patient into account. With a hot temperament that was governed by yellow bile, for example, somewhat pale, thin urine could already indicate a massive, pathological weakening of vital heat. With an older woman dominated
by phlegm, the same kind of urine was not thought to signal danger because of the different temperament.

Not least of all, the uroscopist had to be familiar with findings that might be deceiving. He had to know that some foodstuffs changed the color of urine. And he needed to account for external factors that might cause changes: if the urine flask was not clean, residues from an earlier use could lead to a misdiagnosis. Handsch noted that matulas had to be cleaned with lye ("lixivium") or one could put ashes in them and then wipe them clean with a small bundle of straw.\(^{234}\) Urine could also be spoiled by cold temperatures. In the worst case, it could freeze.\(^{235}\) If the urine was taken from the patient’s house to the physician, it was inevitably shaken up. In such a case, the physician had to be careful not to mistake the foam on the surface as an indication of a disease. Moreover, according to Handsch, some women were embarrassed when they passed water "like a cow". They would send only some of their urine and pour the rest out.\(^{236}\) If the physician was unsure of his assessment, factors like these that compromised the results could of course serve as a welcome excuse. "The glass was left open, the vapors have gone out", he could say if urine was delivered in an open vessel, and "furthermore you travelled yesterday; nothing clear and discriminate can be seen because it is mixed together from shaking."\(^{237}\)

The diagnostic judgment which Handsch and his colleagues made based on examining urine usually corresponded to uroscopic textbook knowledge. If urine was pale, Handsch concluded that there was raw, insufficiently concocted matter in the stomach, and perhaps this would be corroborated if the patient brought up slimy vomit.\(^{238}\) If pale urine had foam on its surface, this pointed to raw, unconcocted matter and vapors that rose from it, liquifying in the head and producing catarrh.\(^{239}\) Considering the pale and phlegmy urine of a Prague patient, Handsch ventured to diagnose not only unconcocted matter in the stomach but also the white genital discharge that was often bashfully concealed by women, which the patient quickly admitted.\(^{240}\) By contrast, when urine became cloudy only in the course of a disease, this indicated the successful concoction and excretion of morbid matter.\(^{241}\)

\(^{234}\) Cod. 11183, fol. 333v.
\(^{235}\) Ibid., fol. 399r.
\(^{236}\) Cod. 11205, fol. 676v.
\(^{237}\) Ibid., fol. 109r.
\(^{238}\) Cod. 11183, fol. 40v.
\(^{239}\) Cod. 11206, fol. 29v.
\(^{240}\) Cod. 11206, fol. 33v.
\(^{241}\) Cod. 11183, fol. 494v.
One practical detail that we do not find as such in the standard uroscopy treatises of the time but is frequently mentioned by Handsch is the importance of collecting samples of urine at different times of the day.\textsuperscript{242} While, in Italy, people used smaller matulas and had the physician make his diagnosis based on only one flask, Handsch found that patients in Germany used more appropriate flasks and collected separate urine samples. And so, Handsch repeatedly described two matulas with urine from the same patient, which he compared with each other, one containing the evening urine, collected before midnight, and one with the morning urine.\textsuperscript{243} Sometimes, he even made an explicit note if a patient’s urine had been delivered or shown to him in only one flask.\textsuperscript{244} In these cases, he resolved to tell people that it “should be two flasks; one before midnight, the other after [midnight].”\textsuperscript{245} He would add that his uroscopic examination would be incomplete if they emptied everything in one vessel.\textsuperscript{246}

Morning urine promised more reliable information about the strength of a person’s vital heat. As, during the night, the vital heat could for the most part concentrate on concoction, physicians could expect that morning urine was well concocted by comparison and therefore took on a stronger coloration.\textsuperscript{247} Sometimes, Handsch described the urine in both flasks as identical, for example as thick, whitish, and slimy (which suggested kidney or stone complaints). Sometimes physicians observed significant differences. For example, the urine could be light and clear in one flask but cloudy in the other,\textsuperscript{248} or the first urine was colorless and showed foam on the surface, while the second had an intense coloration and showed a lot of reddish sand at the bottom.\textsuperscript{249}

On the basis of the urinary findings, physicians and patients sometimes engaged in a lively communication, which helped the physician further refine his diagnosis. With one patient, for example, Handsch observed a red, quite thick, almost buttery urine. Looking through the urine at the bottom of the matula, he could make out no more than the whitish outlines of his fingernail, and he found no admixtures. He explained to the patient, “your liver is obstructed; this

\textsuperscript{242} Ibid., fol. 87v.
\textsuperscript{243} Occasionally, for example in the case of Philippine Welser, Handsch mentioned three glasses, perhaps because patients also got up in the middle of the night (Cod. 11204, fol. 1v, “vidi urinam in tribus vitris”); in the case of a nobleman with fever Handsch even referred to four glasses (Cod. 11205, fol. 637v).
\textsuperscript{244} E.g. Cod. 11205, fol. 448r.
\textsuperscript{245} Ibid., fol. 210v.
\textsuperscript{246} Ibid., fol. 19v.
\textsuperscript{247} Ibid., fol. 17r.
\textsuperscript{248} Cod. 11183, fol. 450r.
\textsuperscript{249} Cod. 11205, fol. 257v.
is one root of your disease. This is why you sometimes have complaints in the pit of your stomach as well as in your side”. The woman answered in the affirmative, “yesterday I almost suffocated and today I have stitches in my right side, and sometimes between the shoulders”, which, to Handsch’s mind, confirmed his diagnosis. The sick woman added, “I’m coughing and my chest feels weighed down; I can’t expectorate”, which led Handsch to conclude that vapors also rose from the liver to the windpipe, taking her breath.  

Uroscopy also allowed physicians to offer their patients visual proof of pathological changes in their bodies. Handsch wrote that one could tell women that their uterus or blood had become polluted and could ask them to collect their urine in a matula for three days. When the urine then became foul and spoiled, he could explain that this impurity was found in their blood. His sister Sabina had in fact asked him to come see her so she could show him. Other physicians, too, so he heard, sometimes showed bystanders a patient’s urine, if only so they could see that it was sufficiently “concocted”.  

This brief overview already shows us that the diagnosis of an illness based on urine was a demanding process. It required a great deal of experience to identify the many natural and pathological variations and from there to correctly conclude which disease processes were happening in the body. Learned physicians agreed that, even with a lot of experience, errors in judgment happened easily. The contemporary medical literature warned emphatically of the dangers involved in a shameful false diagnosis and prognosis.  

Researchers in the history of medicine have sometimes misunderstood these warnings as a blanket criticism of uroscopy as such and have concluded that uroscopy had fallen into disrepute among physicians. The skepticism and criticism were, however, not aimed at uroscopy per se, but rather at the widespread practice of diagnosing diseases based on an examination of urine alone, without seeing the patient, even without taking into account any additional information about his or her physical condition, medical history, and present symptoms.  

Pieter van Foreest complained that if you asked the peasants who brought the urine about the sick person in question, they simply stood “like a stick, just as if they were mute”. When they did say something after a while, they explained that they had wanted to hear it from him, had hoped “you would see it in the water, and this is why we came to see you.” Handsch took the same line: “The cow doctors and itinerant practitioners have gotten the common

---

250 Ibid., fol. 78r.
251 Cod. 11206, fol. 32r.
252 Cod. 11205, fol. 566v, on a certain doctor Abraham.
253 Foreest, Uromanteia (1620), pp. 228f.
people used to thinking nothing but that one can see this and that and the
other thing in the water, but people like us, who have spent their money at high
schools for many years and stay at one place, have to go by reason instead of
pulling the wool over people’s eyes and then moving on the following day like
the itinerants do.”

In Handsch’s experience, messengers sometimes even lied to the physician
and deliberately obscured the patient’s identity, for instance, when women were
unsure whether or not they were pregnant or when widows were embarrassed to
consult a physician because people might say, if she “had a young man, she’d
soon be well again.” Handsch thought that he had to be on high alert when
messengers claimed that the urine was “from the country”, “from the village”, or
had been “dropped off”. Physicians even had to consider the possibility that pa-
tients were pretending to be the messenger only when really they were bringing
in their own urine.

Handsch experienced these kinds of deceptive maneuvers personally. For
several days, he had been treating the Baroness of Hungerkasten, who suffered
from the symptoms of suffocatio uteri. When he visited again, he was handed
some urine with the demand: “See if it is a man’s or a woman’s”. He knew that
his patient’s son was also sick, and the urine seemed to him of a deeper color
and “more feverish” than that of the female patient, so he stated that it was the
urine of a man. The women laughed at him, because it was the urine of the mis-
tress after all. Commenting on the event, Handsch wrote, “I turned very red”. At
least he had a chance to get his revenge. The next day, following his request,
his stepmother got a woman to take her urine to a lay healer, a converted Jew,
and had her tell him that the urine was from a farmer in the village. The healer
concluded that the supposed patient had a whole range of serious complaints
and conditions and noted them down on a piece of paper: “the water shows a
disease that he has had for a long time and that is still stubborn, not wanting to
let off; he has complaints of the stomach, which is burdened with bad humor of
the phlegmatic kind; he also has pain in his left side, is short of breath, has con-
sumption of the lung, of the spleen, is sad and strangely dim in the head because
of the vapors that rise from the stomach into the head, like a daze; the fluxes also
fall back into the arms and legs, cause him pain; he has a fever and chills [?],
which is soon followed by heat, tightness, fainting and he is even getting very
thin.” Handsch’s stepmother did not suffer from any of these complaints.

254 Cod. 11205, fol. 408r.
255 Ibid., fol. 326r; for the context see the chapter on the suffocation of the womb.
256 Ibid., fol. 326r and fol. 436r.
257 Ibid., foll. 437r–438r and foll. 441v–442r.
When Handsch’s brother-in-law once sent only his urine, Handsch replied that he had a “stitch in his left side”, adding, however: “Examining the water is only half of what needs to be done; you have to add in the oral account. [. . .] I certainly see something in the water but also tell me what ails you and I will be all the more able to counsel you thoroughly and, with God’s mercy, help you.”

Handsch remarked disparagingly of the uroscopic diagnoses – silly and worthless in his eyes – which his colleague Johann Willenbroch made without any knowledge of the symptoms and the particular circumstances.

Yet, a physician had to think twice about whether he could afford to deny giving a diagnosis based on urine alone, while many lesser educated healers did so every day, satisfying their clients. It might easily be interpreted as incompetence if he refused. Patients and their relatives could expect a good physician to be able to identify a person’s sex and diseases from the urine alone. Even a renowned court physician like Andrea Gallo was sometimes willing to diagnose diseases based on nothing but the urine that was sent to him. It was Handsch’s firm intention to make no judgment without knowing whose urine he was examining. But he, too, repeatedly gave in to the wishes of his patients and their relatives. For example, he concluded from a whitish urine alone that the “person” had a “bad stomach” and “complaints in the limbs”. In another case, he stated, “The water shows that the person has an unclean stomach and does not feel like eating.” As we will see, he sometimes even just pretended that he was making a diagnosis based on the urine.

Apart from all of this, it is evident that we must not assume, based on their objections, that physicians were universally contending with a refusal on the part of messengers to give them information. We can see from Handsch’s notes that many relatives were quite willing to tell the physician the patient’s identity and symptoms. For example, a worried husband who took his wife’s urine to Handsch told him she had “pain in the body and in the area of the loins”. She had not eaten in three days and felt hot at times. She was wondering if she might perhaps be pregnant. And a messenger who delivered the urine of a young husband with a suspected case of the French disease said that, starting a year ago, the

---

258 Cod. 11206, fol. 12r.
259 Cod. 11205, fol. 459r.
260 Ibid., fol. 210v.
261 Ibid., fol. 459r.
262 Ibid., fol. 210v.
263 Cod. 11206, fol. 25r.
264 See Part III.
265 Cod. 11183, fol. 11v.
patient had suffered particularly at night “from pains in the limbs and around the hips”. The following day, the patient even appeared in person.\textsuperscript{266} In some cases, patients would also send a short letter along with their urine.\textsuperscript{267}

At the sickbed, when they had the patient in front of them, learned physicians continued to value uroscopy as one of the very best diagnostic procedures. This is amply illustrated by the countless urinary findings preserved in Handsch’s notes. Handsch thought that physicians were well advised, even if there was no medical reason, to inspect the urine very carefully when in the presence of laypeople, to swirl the liquid in a circular motion and to examine the sediment. This would increase the esteem for their uroscopic abilities.\textsuperscript{268} He wrote about a Paracelsian who inspected the urine of a patient again and again in the course of half an hour, apparently entering the sick room with the matula in his hand and exiting the same way.\textsuperscript{269}

The importance of uroscopy in everyday medical practice declined only slowly in the early modern period. It was still in widespread use even among eighteenth-century physicians.\textsuperscript{270}

**Coproscopy**

Urine was especially well suited for diagnostic purposes because it was voided regularly several times a day and was transparent, allowing for easy detection of changes and admixtures. In many cases, however, an inspection of other excretions also promised important insights. Ranking first here was stool. Known as coproscopy, the diagnostic inspection of feces had a long tradition. Its value had been pointed out as early as in the Hippocratic writings.\textsuperscript{271} In the early modern period it was among the aspects of medical practice that physicians experienced as particularly unpleasant and a threat to their dignity. Yet, coproscopy was also a recognized procedure, one that was valued as revealing diagnostic tool in many cases. Stool, too, showed many shades of color, varied more strongly than urine in its consistency, and, like urine, could exhibit admixtures that shed light on the nature of a disease.

\textsuperscript{266} Ibid., fol. 460v.
\textsuperscript{267} Ibid., fol. 139v.
\textsuperscript{268} Cod. 11205, fol. 324r.
\textsuperscript{269} Cod. 11183, fol. 158r.
\textsuperscript{270} Stolberg, Decline (2007); Kinzelbach/Neuner/Nolte, Medicine (2016), p. 112.
\textsuperscript{271} Knoedler, De egestionibus (1979).
As a student, Handsch noted succinctly: “We have to examine the excre-
ments.”\textsuperscript{272} And in Brünsterer’s student notes we read, “We inspected the excre-
ments.”\textsuperscript{273} We thus must picture the professor and his students standing in a
circle around a sick person’s chamber pot, solemnly inspecting its contents. Dark
stool that was blackened by black blood, Handsch wrote in his notes from Padua,
was a very bad sign.\textsuperscript{274} Mucous admixtures or worms sometimes made the cause
of the disease immediately apparent.\textsuperscript{275} “He inspected the stool and recognized a
weakness of the stomach”, a student of Benedetto Vittore’s noted.\textsuperscript{276}

Coproscopy was a diagnostic procedure that patients and their relatives ex-
pected their physician to do. Without being prompted, they kept their stool –
sometimes several stools\textsuperscript{277} – in a bowl or chamber pot, or put a sample on a
piece of paper for the physician to inspect during his next visit.\textsuperscript{278} If any instruc-
tion was needed at all about the best way to collect the stool, Mattioli had to tell
a patient explicitly to stop putting his stool in water in future but instead into a
clean vessel to allow for a better assessment.\textsuperscript{279} With an “ad cautelas”, Handsch
highlighted how a sick tutor had praised his physician with the words, “I like
that you inspect the stool”. If necessary, physicians could request a twig to lift
the stool and could state, for example, that it looked like frog or toad spawn.\textsuperscript{280}

Lay healers looked at their patients’ stool as well. Apparently finding the
wording useful, Handsch even noted down what one of them, a monk, had said
to a man with a cold stomach: when the stool was lifted with a twig, it began to
“jiggle”.\textsuperscript{281} At the court of Ambras, old Anna Welser, too, used coproscopy. She
made a knot at the end of a piece of brushwood that she used to stir the stool,
which made it easier to lift the mucus from it.\textsuperscript{282} And so, even venerable profes-
sors like Handsch’s teacher Comes de Monte alias Panfilio Monti were unable to
forgo inspecting feces, stirring the stool, as we learn from Handsch’s detailed

\textsuperscript{272} Cod. 11210, fol. 59v.
\textsuperscript{273} Universitätsbibliothek Erlangen, Ms 911, fol. 36: “Inspiciebamus excrementa”.
\textsuperscript{274} Cod. 11238, fol. 74r-v; the doctrine of the so-called “spontaneous generation”, of the emer-
gence of (lowly) creatures from putrefaction, was still widely accepted at the time, even though
Handsch, already as a student, noted the doubts that Aristotle had expressed (ibid., fol. 74v).
\textsuperscript{275} Biblioteca comunale Aurelio Saffi, Forlì, Fondo antico, Ms. 94, fol. 21r.
\textsuperscript{276} E.g. Cod. 11205, fol. 124v.
\textsuperscript{277} Cod. 11205, fol. 524ar, “in charta, erat mera viscida pituita”.
\textsuperscript{278} Cod. 11207, fol. 139v.
\textsuperscript{279} Cod. 11205, fol. 169v; Cod. 11205, fol. 524ar, “in charta, erat mera viscida pituita”.
\textsuperscript{280} Cod. 11204, fol. 71v.
description, with a small stick or brushwood and lifting a part of it to check if it contained mucus.\textsuperscript{283}

In his extensive notes about the treatment of sick people in Prague, and later Innsbruck, Handsch brought up coproscopy less often than uroscopy. Nevertheless, it was firmly established in everyday medical practice. Handsch relied on coproscopy as much as the court physicians Andrea Gallo and Johann Wileenbroch. He would note down, “We inspected a stool; it was rather large, dense, and yellow”.\textsuperscript{284} In the case of a jaundiced patient, Handsch checked if the stool was white. Still today, this is considered an important clinical sign for an occlusion of the bile duct, one of the main causes of jaundice.\textsuperscript{285}

Like uroscopy, coproscopy made it possible for physicians to trace the course of a disease along with the effects of their treatment, especially after they administered a laxative. We learn from Handsch’s notes, for example, that Adamus Bohdanzyk, after he ingested rhubarb, produced a voluminous stool shot through with seed-like grains. A subsequent stool, by contrast, was liquid, and when they lifted it with a forked twig, a lot of mucous matter clung to it.\textsuperscript{286}

\textbf{Sputum and other Excretions}

In the contemporary understanding, urine and stool were part of a whole spectrum of excretions whose appearance and/or smell offered important insights into the internal bodily processes of a sick person in general and into the nature of the morbid matter in question in particular. As we have seen, physicians at the time linked a number of secretions and excretions and even hair to the function of ridding the body of impure, harmful substances during times of health, and of morbid matter in times of sickness. Some of them could also be used for diagnostic purposes. A rather unappetizing coated tongue, for example, was a further recognized route of excretion for morbid matter and also contributed to the diagnosis.\textsuperscript{287}

In patients with diseases of the respiratory organs, the sputum held much information about the nature of the disease. Purulent sputum, for example, pointed to an ulcer in the lung. The explanation was that the sick body used this pathway to rid itself of the morbid matter. As Hippocrates and Galen had

\textsuperscript{283} Cod. 11238, fol. 88v, on a visit to an old patient he made together with Comes de Monte: “Prima visitatione aspexit feces et cum baculo movit ad marginem”.
\textsuperscript{284} Cod. 11205, fol. 555r.
\textsuperscript{285} Ibid., fol. 575v.
\textsuperscript{286} Cod. 11183, fol. 90r.
\textsuperscript{287} Ibid., fol. 120r.
stressed, Handsch wrote, physicians needed to observe and know how to classify nuances and changes in the sputum. To do this correctly required years of experience. The sputum of a consumptive patient, for example, whom Da Monte visited with his students at the hospital, proved to be “non-uniform, foamy, delicate, and partly concocted”. The thicker, greenish, purulent part came from one side of the lung, explained Da Monte, the foamy part from the other. Da Monte also claimed that the foam arose from an admixture of the vital spirits, which were unable to enter the thicker, foul, and purulent portions. The green color indicated that the substance was of a raw and malignant nature. During a visit to a patient with an empyema, a localized collection of pus in the lungs, Musa Brasavola taught his students in Ferrara a little trick that helped determine whether the sputum contained pus, which, he explained, was mostly the case with consumptive patients. The students were to have the patient spit his sputum into a glass filled with water. If the sputum consisted only of phlegm, it would float on the surface. Pus, however, would soon sink to the bottom, even if it was mixed in with mucus. Handsch found this “experimentum” in Musa Brasavola’s commentaries on the Hippocratic aphorisms.

Hematoscopy

In the prevalent conception of the day, one could expect that with many diseases morbid matter was getting mixed in with the blood or that the blood itself was pathologically altered. Blood could normally not be observed by physicians, except when it left the body in the form of a nosebleed or other bleeds. However, when a physician had bloodletting done on a patient in his presence or was shown the blood in a bowl afterward, he could examine it thoroughly and draw his diagnostic conclusions.

Handsch learned early as a student that the constituent parts of blood could be distinguished if one let the blood sit in a vessel for some time. The serum, which was somewhat similar to urine, rose to the top. Yellow bile formed a foam, black bile sank to the bottom, blood and phlegm remained in the middle.

288 Da Monte, Consultationum (1565), coll. 459f.
289 Biblioteca Ariostea, Ferrara, Collezione Antonelli, Ms. 531, foll. 17v–20r.
292 Cod. 11210, fol. 54v.
When a disease was in progress, certain changes could become visible. For example, Handsch described the blood of one of Trincavella’s patients who had tertian fever as “black”, which indicated pathological heat in the body. The patient was a peasant (“rusticus”) who had worked in the hot sun. After the blood had sat for a while, a small amount of a light, grayish liquid became visible, and it seemed as if a little pus had settled on the coagulated blood. At such occasions, students also learned some practical tricks. In the case of a young melancholic man, for example, Handsch noticed that Comes de Monte poured off the watery portions that had collected in the upper part of the vessel. He showed Handsch some yellow-tinted foam on the remaining blackish mass, which he interpreted as an admixture of yellow bile. Separating the black, coagulated mass, he was able to see something “atrabiliary” in it.

It was with good reason that Handsch was already instructed in the art of hematoscopy when he was a student. In everyday practice, a close examination of let blood promised important insights which, in some cases, could go significantly beyond what could be observed in the urine and feces.

As bloodletting was usually performed by a barber, physicians were often absent and did not have the opportunity to inspect the blood personally. Nevertheless, Handsch in his notebooks wrote down hematoscopic findings for a whole array of patients, some of which he had observed personally and some of which were based on the reports of others. The color of the blood already yielded important information. The topmost portion of let blood could be “yellow and watery”, whitish, grayish, or greenish. Blood that was too watery could indicate impending dropsy. But most importantly, if blood looked “burnt”, blackish (“subniger”) and in individual cases even pitch black, this pointed to an excessive heat in the blood and the inside of the body as a whole, something that was especially typical for someone ill with fever. Blood taken from the gravely ill Katharina von Loxan was even collected in three portions, each in a separate small bowl, to ascertain possible differences in color, apparently between the

---

293 Cod. 11238, fol. 71r.
294 Ibid., fol. 125r.
295 Cod. 11207, fol. 210v.
296 Cod. 11183, fol. 433v.
297 Ibid., fol. 399r.
298 Cod. 11205, fol. 138r.
299 Cod. 11206, fol. 177r.
300 Cod. 11183, fol. 46v, fol. 72r, fol. 450v; ibid., fol. 453r, “erat niger, nam calebat febriliter”; Cod. 11205, fol. 668v; Cod. 11207, fol. 92v; ibid., fol 152v, on the black blood of Martinus, the teacher of noble boys, which, according to his own account, was evacuated by bloody cupping.
blood that came from the area near the bloodletting site and the blood that subsequently flowed from deeper inside the body.\textsuperscript{301}

As in coproscopy, practitioners also commonly dipped brushwood, small twigs, or a piece of wood into the bowls with blood. They wanted to see how the blood stuck to it, which allowed them to conclude how “viscous”, “phlegmy”, or “congested” the blood was in the body.\textsuperscript{302} When the Duke of Ferrara had bloodletting done on himself during his stay in Innsbruck, his court physician, as Handsch noted with interest, caught the draining blood on pieces of paper to judge its color and consistency.\textsuperscript{303}

Sometimes admixtures and coatings could be noticed, which indicated the nature of the morbid matter. A young man, for example, had very “inflamed” or “ignited” (“inflammata”) urine. He said that a woman had let his blood and that it had been “as black as frogspawn”, with large yellow bubbles on the surface.\textsuperscript{304}

Another important aspect of hematoscopy, which it again shared with uroscopy, was that physicians sometimes let the blood sit for a while and observed how the different parts settled in different areas of the glass. After three hours, greenish black foam of a “repulsive” shade developed on the black blood of one sick person, for example.\textsuperscript{305} When Jacobus Camenicenus used a piece of wood to examine the blood of a patient with a growth on his testicle, he found that the blood had developed a thick skin, as if from suet or tallow. He thought that if one were to wash out all of the liquid, the skin would remain in the vessel like a bubble.\textsuperscript{306} With other patients, the blood assumed an unusually firm, gelatinous consistency after less than ten minutes, followed by the precipitation of a grayish watery liquid.\textsuperscript{307}

Ideally, physicians could show patients and their relatives the pathological changes in the collected blood, describing and explaining the changes as proof that the bloodletting had been necessary and that the diagnosis was accurate. “You have a heated liver”, Handsch explained to a jaundiced patient, “and the [blood] letting did you good, otherwise we would have had to worry that it

\textsuperscript{301} Cod. 11183, fol. 411r.
\textsuperscript{302} Handsch repeatedly mentioned a diagnosis of “obstructed” blood; e.g. Cod. 11205, fol. 207v and fol. 406v.
\textsuperscript{303} Cod. 11183, fol. 470v.
\textsuperscript{304} Cod. 11207, fol. 196r.
\textsuperscript{305} Ibid., fol. 93v.
\textsuperscript{306} Cod. 11183, fol. 218r.
\textsuperscript{307} Ibid., fol. 450v.
might develop into pox or an abscess or ulcer on the liver or lungs.” Handsch wrote down a whole range of phrases that he could use in this situation. He might say as a warning, “This is congested blood, spoiled, very bad blood; an abscess could easily develop from it”; or “The blood is heavy”; or calmly: “The blood is perhaps a little liquid and phlegmy but not too much, and otherwise its color and consistency is quite good; you might well become old with it” or: “The blood is not bad, only too abundant.”

Laypeople trusted in the possibilities of hematoscopy. They described the blood they had collected from bloodletting if the physician was unable to see for himself, or they quoted the assessment of the bloodletter. Their blood was “black”, they would tell the physician, for example. They even expected — as with uroscopy — that a skilled physician would be able to correctly identify the blood of a particular patient if they sent him the let blood of several different patients.

**Pulse Diagnosis**

Feeling for the pulse of patients played an important role in medicine, beginning with the medical training of students, and with good reason. Though in the final analysis its explanatory powers were limited, pulse diagnosis had a well-established place in everyday medical practice. Physicians examined the patient’s pulse not only when seeing him or her for the first time, but if possible on every subsequent visit so they could monitor the course of the disease and the effect of the treatment. Handsch underlined the importance of this approach to a noble patient, explaining that treating him without seeing him in person was very difficult because of the necessity of feeling his pulse regularly.

In hundreds of entries, Handsch wrote what he and other physicians felt when they took a patient’s pulse. There was “the greatest art in the pulse”, he noted in one entry. Anyone could feel if it was fast or slow, but there was much more to recognizing the “steadiness”, the “proportion” and similar pulse

---

308 Cod. 11205, fol. 576r.
309 Cod. 11206, fol. 121r.
310 Ibid., fol. 177r.
311 Ibid.
312 Ibid.
313 Cod. 11183, fol. 72v, “sanguinem ex aperta vena fuisse nigrum”.
314 Cod. 11206, fol. 109v.
315 Ibid., fol. 94v and fol. 149r.
qualities. The differentiated language used by physicians to describe pulse qualities is impressive and illustrates their efforts to register even very fine nuances. The pulse beat could be frequent (“frequens”) or rare (“rarus”); it could swell quickly (“velox”, “CELER”), increasingly (“subceler”) or slowly (“tardus”), and it could be hard (“durus”, “durusculus”), large (“magus”), “high” (“altus”), full (“plenus”), broad (“latus”) and strong (“validus”) or small (“parvus”, “parvulus”), subtle (“subtilis”), sluggish (“exilis”, “languidus”), empty (“vacuus”), tiny (“exiguus”) or even “quasi nullus”. If the pulse was “withdrawn” (“pulsus retractus”), it hid itself, so to speak, within the body. With a variable, irregular pulse (“pulsus inaequalis”), the quality of the pulse beats changed, with some being stronger or faster than others. In the case of several patients, Handsch described the pulse as vermicular (“vermicularis”) or as “convulsive”. He also observed a kind of double beat (“pulsus quasi bispulsans”).

Pulse irregularities drew special attention. Describing the pulse of the gravely ill Johannes Kekeritz, for example, Handsch wrote that it was “sometimes slow, sometimes fast, sometimes steady, sometimes skipping a beat”, and when the patient seemed to be nearing his death his pulse jumped. With another patient he observed three times that there was a pause after every fifth beat. In such cases, physicians could explain, “the pulse is strange and uneven, ruined”. Some patients complained about these kinds of irregularities of their own accord. “It seems to me as if my heart were trembling”, a patient explained. The pulse of Emperor Maximilian II, who suffered from palpitations, was described by the physicians who treated him as slow, rare, small, and intermittent. Handsch noticed such irregularities with himself as well. It could sometimes happen that his

316 Ibid., fol. 103r.
317 It is not certain that Handsch and the doctors he worked with consistently distinguished between a “fast”, namely rapidly swelling individual beat (“CELER”) from a “fast” (“frequens”) pulse in the sense of an increased pulse rate.
318 Cod. 11183, fol. 457r; Cod. 11238, fol. 123r.
319 Cod. 11238, fol. 128r.
320 Cod. 11183, fol. 421r.
321 Cod. 11205, fol. 159v; Cod. 11238, fol. 123r.
322 Cod. 11183, fol. 372v.
323 Ibid., fol. 24r, “inaequalis modo tardus, modo celer, modo continuus, modo intermittens unum tactum” and ibid., fol. 27r, “saltum elevationis”.
324 Ibid., fol. 269r.
325 Cod. 11206, fol. 162r.
326 Cod. 11183, fol. 99v.
327 Cod. 11158, fol. 1r.
pulse seemed to pause or that it even skipped every second beat, and sometimes he felt two fast beats in between, and then the pulse was slow again.\textsuperscript{328}

Handsch routinely took the pulse on both arms to detect possible differences.\textsuperscript{329} He did so in order to compare the two sides but also because he wanted to emphasize for the patients and their relatives how diligently he worked, as he admitted.\textsuperscript{330} One time, he believed he could feel an intermittent pulse on the right arm but not on the left.\textsuperscript{331} Another time, he was unable to feel any pulse on the right arm, but he admitted to himself that he might not have felt for it correctly.\textsuperscript{332}

The pulse mainly gave an indication about the vital force, the \textit{robur vitalis}\textsuperscript{333} or \textit{virtus vitalis}, and the power of the vital spirits, which, according to the prevailing teachings, flowed from the heart via the arteries to the rest of the body, vitalizing it.\textsuperscript{334} As such, the pulse was especially significant for prognosis in cases of diseases with complications. If the pulse was very weak or could no longer be felt, this often was a sign of impending death.\textsuperscript{335} Patients knew this. In the case of a sick chancery scribe, Handsch therefore refrained from feeling the pulse at great length. He did not want to give the impression that the pulse was about to disappear.\textsuperscript{336}

To tell more accurately how strong the pulse was, and thereby the vital force, physicians increased the pressure of their finger on the vessel and checked if the pulse could still be felt.\textsuperscript{337} It was a good sign if this was the case.\textsuperscript{338} Physicians told an episcopal official that he would die – correctly, as it turned out – because they felt his pulse beat disappear under the pressure of the finger.\textsuperscript{339} In the case of a gravely ill young gardener at Ambras, Willenbroch advised that he be given his last rites because his pulse was as frequent and fast as never before and disappeared under the increased pressure of the fingers.\textsuperscript{340} Lehner shared with Handsch that, with seriously ill patients, he felt the pulse additionally at the

\textsuperscript{328} Cod. 11183, fol. 99v and Cod. 11205, fol. 217v.
\textsuperscript{329} Cod. 11205, fol. 319v, “utrumque semper exploro.”
\textsuperscript{330} Cod. 11206, fol. 149: “Ad ostendendam diligentiam tange ambos pulsus.”
\textsuperscript{331} Cod. 11183, fol. 137r.
\textsuperscript{332} Ibid., fol. 258r.
\textsuperscript{333} Ibid., fol. 488r.
\textsuperscript{334} Cod. 11210, fol. 80r; Handsch quoted Fracanzano.
\textsuperscript{335} Cod. 11183, fol. 123r.
\textsuperscript{336} Cod. 11205, fol. 319v.
\textsuperscript{337} Cod. 11183, fol. 406r; Cod. 11205, fol. 297v.
\textsuperscript{338} Ibid., fol. 441v.
\textsuperscript{339} Ibid., fol. 196r.
\textsuperscript{340} Cod. 11183, fol. 404r.
heel, because the parts that were farthest away from the heart died first. If he could still feel a pulse there, death was not imminent. If he could not, the patient was in great danger.\textsuperscript{341} Handsch resolved to follow Lehner's example.\textsuperscript{342}

Compared to uroscopy, however, feeling the pulse resulted far less often in a specific diagnosis. The fevers were the most important exception. Here, Handsch, without any additional characterization, was often content to describe a pulse as “feverish” (“pulsus febrilis”, “pulsus cum febre”), or he noted explicitly that the pulse was “without fever” (“sine febre”, “pulsus non febricitans”).\textsuperscript{343} The most distinguishing characteristic of a \textit{pulsus febrilis} was that it was accelerated. Physicians could explain the reason for this to patients, saying: “When the heart is overburdened with unnatural heat, the pulse cannot keep its natural pace but goes faster”.\textsuperscript{344} In many cases, the diagnosis of a fever was beyond doubt because the symptoms were so clear, with patients being hot to the touch and complaining about exhaustion, thirst and feeling hot, or having shivers. However, sometimes physicians diagnosed a febrile disease primarily based on the pulse,\textsuperscript{345} or pulse diagnosis allowed them to identify a specific type of fever disease, such as putrid fevers.\textsuperscript{346}

\section*{Physical Examination}

Generations of medical historians have claimed that early modern physicians did not touch their patients with their hands to examine them physically or that they did so only rarely, exceptionally. As we have seen in Part I, this is a profound misjudgment. In places like Padua and Ferrara, aspiring physicians were thoroughly trained in manual examination, in particular of the abdomen. Manual examination of the patient’s abdomen was common practice elsewhere, too. Handsch’s first medical teacher in Prague, Ulrich Lehner, instructed him at the sick bed that he “is to palpate the upper abdomen”.\textsuperscript{347} Later, Gallo likewise explained to him that “with all diseases, the upper abdomen has to be palpated”.\textsuperscript{348}

\textsuperscript{341} Cod. 11205, fol. 2r.
\textsuperscript{342} Ibid., fol. 13r and fol. 130r; Cod. 11207, fol. 15r.
\textsuperscript{343} E.g. Cod. 11183, fol. 88v, fol. 277v, fol. 282r, fol. 295r, fol. 373r, fol. 398v and fol. 409r; Cod. 11205, fol. 116r; Cod. 11207, fol. 17v.
\textsuperscript{344} Cod. 11206, fol. 129v.
\textsuperscript{345} E.g. in the case of sick Giulio Gallo (Cod. 11238, fol. 136r).
\textsuperscript{346} Cod. 11238, fol. 128r.
\textsuperscript{347} Cod. 11205, fol. 587r, “ut tangerem hypocundria”.
\textsuperscript{348} Cod. 11207, fol. 236v: “In omnibus morbis exploranda tactu hypocundria”.
Ultimately, Handsch resolved to examine patients with his hands as a matter of principle at the beginning of each sick call.\textsuperscript{349} Benedetto Vittore in Bologna used his own hands to ascertain that a patient’s liver was enlarged.\textsuperscript{350} To Heinrich Wolff as well – who studied in Montpellier – it seems to have been the most natural thing to palpate a patient’s upper abdomen, concluding from what he felt and from the patient’s account that the man could not be saved.\textsuperscript{351}

This appreciation of the possibilities of manual examination must be seen in the light of the contemporary doctrine of diseases, as detailed above. Localized accumulations of morbid matter as well as obstructions and indurations of individual organs were thought to play a key role in the development of numerous diseases. Insofar as the respective areas could be reached with the fingers, the manual examination was an obvious way to gain further insight.\textsuperscript{352}

In his notebooks, Handsch wrote about many cases in which he or Mattioli, Gallo, Willenbroch, Alessandrini, and other physicians in his professional environment did physical exams, touching and palpating patients with their own hands. Sometimes, expressions like, “while palpating” (“ad tactum”)\textsuperscript{353} or a simple summary of findings allow for the possibility that physicians only referred to the account of the patient or bystanders. With occasional findings that are expressed in German, such as her “left breast” is “hard and swollen”,\textsuperscript{354} it is even quite likely that they correspond to a patient’s or relative’s oral account. In most cases, however, verb forms such as “I palpated” (“tetigi”), “I palpate” (“tango”) or, referring to another physician, “he palpated” (“tetigit”) leave no doubt that physicians did these exams personally.

With fever diseases, physicians often only touched the surface of the skin, putting their hands on the patient’s head and forehead, hands, or the heart

\textsuperscript{349} Cod. 11205, fol. 561r.
\textsuperscript{350} Biblioteca comunale Aurelio Saffi, Forlì, Fondo antico, Ms. 94, fol. 87r-v, “tetigit tumorem” (23 November 1541); Vittore’s colleague Matteo Corti found a “manifest hardening” around a patient’s spleen, in turn, in addition to a large tumor which reached down to the pubic bone (Scholz, Consiliorum (1598), coll. 340–344).
\textsuperscript{351} Letter from Wolff to Johannes Posthius, 16 February 1571, ed. in Kühlmann/Telle (2001), pp. 646f.: “Tactis hypochondriis et visis urinis cum deploratum morbum esse viderem”.
\textsuperscript{352} Cod. 11207, fol. 136r, “oportet eam tangere” (“one has to touch her”), on the case of a woman with upper abdominal complaints which Gallo attributed to constipation rather than pregnancy.
\textsuperscript{353} E.g. Cod. 11183, fol. 23v, on the sick Johannes Kekeritz, who complained of “gravitas ad tactum” (“heaviness on touching”) on the right side of his chest; ibid., fol. 439r, on the sick janitor.
\textsuperscript{354} Cod. 11206, fol. 33v; see also Cod. 11207, fol. 211r, “si tanget, thut es ym wehe, wie es ym geschwuricht were” (“when he touches it, it hurts, as if it were ulcerous”).
region to check if it was heated.\textsuperscript{355} Sometimes Handsch could already feel the “emitted” heat when he was just approaching the skin with his hands.\textsuperscript{356} In addition, Handsch learned from Mattioli how one could use one’s sense of touch to tell measles from petechiae, the small red dots in the skin that occurred with a number of other illnesses. Measles felt uneven, while the petechiae in the skin could not be sensed with the fingers.\textsuperscript{357}

Touching the tongue was common as well. Handsch noted that as a rule the tongue had to be not only looked at but also touched with the finger and examined to see if it was dry or moist.\textsuperscript{358} He frequently wrote down his findings from this procedure.\textsuperscript{359} Andrea Gallo and the court surgeon Hildebrand, too, touched patients’ tongues with the finger because they wanted to know whether they were dry or rough.\textsuperscript{360}

If dropsy was suspected, physicians squeezed the abdomen with their hands from both sides and listened for the typical gargling noise, or they analyzed the sound produced by a soft tap of the hand.\textsuperscript{361} They also pushed one finger into the swollen limbs to see whether dimples remained visible for some time.\textsuperscript{362} These are all clinical signs that are still recognized in medical practice today.

Depending on the clinical picture, Handsch and his colleagues touched or palpated different body regions. In the case of injuries, they could search for a bone fracture. When Collinus was gardening and it seemed to him as if something had “burst in his chest, as if a rib had broken”, no fracture could be discovered by palpating the painful area.\textsuperscript{363} When a poor woman with a growing goiter came to see Hildebrand, Handsch palpated it and found it large and hard.\textsuperscript{364} In the case of a nineteen-year-old young man who had had sexual intercourse with a maid, Handsch not only looked at the man’s penis but even

\textsuperscript{355} Cod. 11206, fol. 102v: “Tangere frontem ad comperiendum calorem”, Handsch wrote as a motto; examples in Cod. 11183, fol. 78v; Cod. 11205, fol. 146r, fol. 159v and fol. 299r; Cod. 11206, fol. 171v; Cod. 11207, fol. 203v.
\textsuperscript{356} Cod. 11205, fol. 307r, “per evaporationem”.
\textsuperscript{357} Cod. 11207, fol. 190r; the term “petechiae” is still used today for small red spots in the skin, as they occur especially in disorders of blood clotting.
\textsuperscript{358} Cod. 11206, fol. 152r, “non tantum videnda, sed etiam digito attingenda, explorandaque an sit arida vel humida.”
\textsuperscript{359} Cod. 11183, fol. 196r; Cod 11205, fol. 299r.
\textsuperscript{360} Cod. 11183, fol. 341r; Cod. 11207, fol. 17r.
\textsuperscript{361} Cod. 11183, fol 443r.
\textsuperscript{362} Cod. 11207, fol. 98v, “remansit fovea post compressionem”; similarly Cod. 11183, fol. 425r and fol. 443v.
\textsuperscript{363} Cod. 11183, fol. 84r.
\textsuperscript{364} Ibid., fol. 383r.
pulled back the foreskin – apparently with his own hands (“reduxi”) – and found a white, dry secretion. With another patient, he palpated the painful groin area and the left testicle, which seemed to him to be larger and warmer than the right. Gallo, too, did not balk at palpating patients’ testes.

In the majority of cases, manual examinations focused on the abdomen, occasionally on the area around the navel, but mainly on the hypochondria just below the ribcage, that is on the upper abdomen. For this, patients had to lie down flat on their backs. Sometimes Handsch simply wrote, “I palpated the upper abdomen” (“tetigi hypocundria”) or simply “I palpated”, or, relating to other physicians, “he palpated”. But often Handsch also noted down specific findings: “I palpated the right upper abdomen and when I pushed on it, he said that it hurt”. With another sick person, he felt a resistance as if from a drumhead. A third patient felt pain when the base of his stomach was palpated and squeezed together. The physicians suspected an apostema, a localized accumulation of morbid matter, in the neighboring liver. A “lethargic” patient moaned when Handsch palpated his right upper abdomen, saying “how much it was hurting him”. With some patients, the upper abdomen was tense, or an induration of the upper abdomen was accompanied by a slightly swollen belly. The painful, swollen left upper abdomen of a jaundiced woman was indurated toward the navel; the entire abdomen of a patient felt hard. An induration might be palpated in the area of the stomach toward the left, or the area of the spleen might hurt under pressure from the outside and was somewhat indurated. When Mattioli fell ill himself, Willenbroch and Gallo palpated his upper abdomen thoroughly. They pressed in different places, one

---

365 Ibid., fol. 51v.
366 Cod. 11205, fol. 260r.
367 Cod. 11207, fol. 206r.
368 Ibid., fol. 196v.
369 E.g. Cod. 11205, fol. 539; Cod. 11207, fol. 75r and fol. 107v.
370 Cod. 11183, fol. 51v, fol. 118v and fol. 281r.
371 Ibid., fol. 107v; similarly ibid., fol. 296v; similarly Cod. 11205, fol. 447r, “tetigi in sinistro, iuxta fundum stomachi, ibi ad tactum dixit se dolere.”
372 Cod. 11183, fol. 412v.
373 Ibid., fol. 119v, “cum tangeretur et comprimeretur ei fundum stomachi, sensit aliquam aggravationem.”
374 Cod 11205, fol. 300r.
375 Cod. 11183, fol. 140r.
376 Ibid., fol. 220v.
377 Cod. 11207, fol. 201r and fol. 213r.
378 Cod. 11183, fol. 412r.
379 Cod. 11205, fol. 285r.
after the other, and compared. They arrived at the conclusion that the upper abdomen was not equally soft throughout and that a certain tension could be felt in the area of the liver.  

In uncertain cases, a manual exam could prove decisive in establishing a differential diagnosis. With a noblewoman, Mattioli at first suspected an apostema in the uterus, whereas Gallo thought the liver was obstructed. During another visit, Mattioli palpated the liver area and found pain on pressure, whereupon he assented to Gallo’s assessment. Negative findings as well were highly diagnostic. Handsch sometimes made a point of noting down that liver and spleen or the upper abdomen in general did not hurt during palpation, or that he had not felt an induration.

Occasionally, physicians found the result of their palpation confirmed by a postmortem dissection. In the case of a dropsical woman, for example, who had complained of pressure pain in the liver area, the liver proved to be large, hard and its surface was rough, and two pea-sized stones were found in the gall bladder.

Learned physicians were not the only practitioners who used their hands when diagnosing a patient. It was common practice also among the barber surgeons, and Handsch was open to learning from them. He owed the knowledge of how to sense with the fingers whether or not a swelling contained pus to one barber surgeon in particular. One had to push on the lump with one finger while holding another finger on the skin near the swelling to see if one could feel the gurgling movement of the pus flowing out. Lay healers also felt for the liver or the spleen sometimes. For example, one patient recounted that an old woman had palpated his spleen, which she found obstructed and indurated, and had stated that he was becoming dropsical. Patients and their relatives were very obviously familiar with the possibilities of manual examination. One patient’s husband, for example, described in surprising detail a “hardening” (“quaedam duricies”) that stretched out from the woman’s chest cavity to below the hypochondria and all the way to her navel. Also, the belly and loins were fuller than usual. He suspected her missed period was the cause.

380 Cod. 11183, fol. 160r-v.
381 Cod. 11207, fol. 22r.
382 Cod. 11183, fol. 80v, foll. 108v–109r, fol. 255v, and fol. 270v.
383 Ibid., fol. 289r.
384 Ibid., fol. 35v and fol. 429v.
385 Cod. 11205, foll. 220v–221r.
386 Cod. 11183, foll. 79v–80r; the husband, in his written account, may have only quoted the diagnosis of a local healer. The wife died soon afterwards.