

by *Ruth Harvey, PhD*

THE JUDGEMENT OF URINES

*If a man let his owne uryrn drop upon his feete
in the mornynge, it is good agaynst all evyll.*

An earnest physician of Renaissance England counted this as one of the minor benefits of urine. His other jottings concluded that it is an excellent fertilizer for apple trees — it improves the apples' taste, apparently — and does a fine job treating gout and many kinds of skin ailments. But the main virtue of urine, for Dr. Robert Record and all the physicians who practised in Europe and the Near East for the preceding 1000 years, was as a diagnostic tool. It was one of the few methods they had of studying the condition of a patient's interior organs.

While the symbols of a modern physician are the stethoscope and white coat, their medieval counterparts usually appeared in a long furred robe, proudly holding a flask of urine. The picture of Chaucer's "doctor of physik" in the most famous manuscript of *The Canterbury Tales* even shows the physician wielding his loaded urinal while on horseback — it was the easiest way to indicate his profession. The chief task and skill of early medicine lay in correctly "reading" a urine: arriving at a full diagnosis and competent prognosis by gazing studiously at an ample specimen.

Medieval medicine was very bookish. Lengthy and complicated textbooks were traded around between west and east, and translated back and forth between Greek and Arabic, Latin and Hebrew. The fundamental writers on urine reflect the history of medieval medicine. A mysterious Byzantine character called Theophilus Protospatharios, who may have lived in the 7th century, compiled the scattered sayings found in the writings of Galen and Hippocrates into a short but fundamental text. Isaac the Jew, writing in Arabic in the 10th century, enlarged and clarified the work of Theophilus, while Giles of Corbeil distilled the essentials of medieval uroscopy into 352 lines of Latin verse in or around 1200. In the 14th century, physicians across Europe were attempting to reproduce the doctrine in the clumsier vernacular languages. Collections of manuscripts written between the 14th and 17th centuries contain an enormous number of texts on uroscopy. These range from crude diagrams of rows of tinted flasks with lists of diseases scribbled beside them to 200-page accounts of every aspect of this crucial skill.



Urinalysis 101

It was axiomatic that the first thing to be shown to the physician was the contents of the chamber pot, and there are manuscript pictures of the doctor enthroned before a line of people bearing their flasks for him to pronounce upon.

Doctors of the era were taught how urine should be collected, how it should be studied and how it was to be interpreted. It was best, they were told, to collect the complete contents of the patient's bladder in a bladder-shaped urinal so that it would, as far as possible, assume the same configuration as it had inside the body. The urinal was to be carefully stoppered and studied 3 times: once fresh and hot, once after it had cooled for an hour or so, and the third time when it was completely cold.

Holding urine up to the light was also an important part of the process. The practitioner first gauged the urine's "thickness" by holding one hand behind the urinal. If he could see the joints of his fingers through the specimen, the urine was thin. Otherwise, it was thick.

He then assessed the colour. Tradition asserted that urine came in 20 different shades, ranging from clear, like water, through milky and grey to yellow and red, followed by purple, dark green and black. Some colour descriptions must have seemed rather unhelpful to northern Europeans. *Karopos*, which refers to the colour of camel hair, provoked this desperate comment: "And I have learned of them that have seen thousands of camels

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in the countries of Rome and beyond that all camels are either grey or dun or else white-grey.”

Some medieval medical manuscripts helpfully supply a kind of paint chart or colour wheel to demonstrate the fine distinctions between shades. What the colour essentially told the physician was the state of the patient’s digestive processes, which were charmingly described as an internal cooking process. The stomach was set above the liver like a cauldron over a fire, and the food was “cooked” there until it was turned into the substrate of blood. The liver was in charge of the process, but if it failed to cook the food sufficiently or overdid the process and burned it, all sorts of dire internal consequences ensued. The patient’s urine faithfully reported on all of them.

“The pissing evil”

Undercooking showed up in the paler colours of urine, overcooking in the darker ones. Bright gold urine was held to be the best. A good example of undercooked urine is the very plentiful, thin, clear stuff produced by “the pissing evil,” diabetes. It essentially indicated a failure of the digestive and retentive powers of the body.

The third major consideration after substance (thin or thick) and colour was the “contents” of the urine. One 14th-century English physician carefully distinguished 19 different kinds of things that could be seen in the urine, ranging from oily stuff floating on the surface to things resembling dust, gravel or bran-flakes that formed a sediment. Here the theory of gravity, as the Middle Ages understood it, came into play. The lighter elements — fire and air — naturally tend to go upward, while water and earth sink down. Since the human body is a complex mix of the 4 elements, man’s very structure suggests that air and fire rise up inside the body and the heavier elements sink down, and this pattern is reproduced in the urine. So bubbles, foam or oil that float to the surface of the urinal signify the state of the head, whereas gravel or sand reflect trouble in the kidneys, or even gout or arthritis in the feet.

Let’s have a taste

After noting all these things, the physician began to shake the urinal, at first cautiously and then vigorously, and observed any changes in the behaviour of the sediment or foam. Some authorities suggested that the urine be tasted at this stage in order to test its sweetness or acidity. Finally, before arriving at a diagnosis, the physician should carefully weigh a number of external variables: every patient is slightly different, and it was very important to consider the individual circumstances as well as the wider world. Each living thing is made up of an individual blend of elements and everyone is affected

by the same elements in the world around them. A good physician must consider not just the age, sex, occupation and personal condition of the patient, but also the season of the year, the place of habitation, the prevailing wind and the astrological environment.

With all these variables in mind, the physician should also study a sequence of urines to observe any developments in the internal condition they reveal. The study of urines was a very elaborate art, a proud skill, a “fair and wonderful” science. It was also almost the only diagnostic tool available to a profession that had no firsthand experience with internal anatomy, no conception of electricity, germs or the circulation of the blood, and no instruments other than their own eyes (and taste buds) to explore the mysteries of the human body.

The only other means of access to the patient’s internal state was by taking the pulse, but that seemed a more superficial token of the inwardness of digestion. The “science” of reading urines lasted 1000 years and was supported, either explicitly or implicitly, in all the medical textbooks available to the Western world.

Why did it last so long? Part of the answer, I think, lay in the fact that medieval thinkers had their equivalent of the Holy Grail of modern science: a Theory of Everything. Science, philosophy and religion met in their conception of a universe made up of a stationary world composed of the elements of earth, water, air and fire. It was circled endlessly by the planets and stars, which were made up of the ether, or quintessence. Everything down here tries to go up or down — stones fall and flames rise — and everything down here always falls apart eventually, resolves into its elements or dies.

The principle of movement, of recombination of elements, of life, derives from the celestial bodies, which were set in motion by God. Man, as the most elaborate creation in the world, reflects the whole composition within himself: he is the microcosm, or little model, of the universe. The elements inside him have to be in balance for him to be healthy. Urine, as the product of a threefold digestive process, is the most informative messenger of what is going on.

The universe in a urinal

So to study urine is to study the microcosm, which in turn reflects the macrocosm, the universe. “Through this science I can show you the reasons of the whole universe,” a medieval author claimed. To reject the idea of the 4 elements and their balance in man would be to reject the whole elegant intellectual system, and that is the downside of a Theory of Everything. Besides, if you argued that you could not learn much from a visual inspection of urine, you would have almost nothing left. You would have to

admit that the best minds of more than 1000 years had no idea what the body was made of or how it worked, and no one is really comfortable with that kind of agnosticism.

Medieval urinalysis couldn't, by our lights, possibly have worked, but everyone believed in it. (There are references to a few vulgar sceptics, like the woman who sent Master Giles of Stafford a urine sample made up of her own urine mixed with that of her cow, just to try him out.) There must have been some cures, though, probably attributable to the placebo effect.

In medieval times, the whole technique of urinalysis must have seemed imposing indeed, for it was designed to generate confidence in the practitioner. But it also required physicians to pay considerable attention to their patients in all aspects of their lives. Henry Daniel, a 14th-century English friar-physician, instructed doctors, when they first went to see the patient, to "give him all the comfort that thou canst" while "sily" making close observations and deductions to fill out the diagnostic process. And there is an attractive side to the belief in the 4 elements: the fundamental premise of the system was that there had to be a balance among them, and the physician's job was to preserve this balance as long as possible.

This made medical theory in the Middle Ages essentially humane: it deplored fasting and gluttony, excessive labour or complete idleness, and it advocated a sensible diet, reasonable exertion and sex in moderation. Perhaps medieval physicians achieved cures because, even though they put great faith in their high science, their response to their patients was actually a blend of observation and experience — an art of medicine rather than a science.

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