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Hygiene in Roman law – burials, sewers, and water system

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Abstract

The paper maps legal acts that emerged in Roman Law from its beginning to the early years of the principate and had an impact on the general health of the population by taking measures that should in general contribute to preventing the spread of infectious diseases, especially by securing appropriate hygiene via disposal of the dead bodies, waste and providing water for drinking or baths. Along with laws that were created for the city of Rome, the article also deals with any legal regulation that was dedicated to other territories occupied by the Romans.

Keywords

Roman law, epidemics, hygiene, burials, water, sewer

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Securing a sufficient level of healthcare and preserving public health can be seen, at first, as significant for maintaining a certain level of comfort, but as the Covid-19 crisis has shown, insufficient legal regulation and action of a state in time of health crisis can have far-reaching consequences for the state and its society as such, which affects every sphere of society, starting with personal relations and ending with economic crisis due to loss of income and workforce.

In past, the economic consequences may well be the most noticeable, when various diseases could wipe out half the population. Logically, it must have resulted in the decrease of the workforce and overall production. Mc Neill event considers the plague that raged during the time of Emperor Justinian lasting fifty-two years as an indirect cause of his failure to restore the unity of the former Empire, as well as the decrease in resources with which the empire disposed and relied on[1].

One of the first conditions for securing the health of a population is securing a sufficient level of hygiene as a measure to prevent an outbreak of epidemics. In the past, many diseases spread thanks to the lack of basic hygiene among the population, and even today, in our current situation, we see that following basic rules of personal hygiene along with suitable sanitation is the primary prevention from contracting infectious diseases. A hygienicallyg clean environment can be secured by various measures, while the most common for us today is the availability of clean, fresh, running water, and a functional sewage system ensuring that the population will not be exposed to contaminated feces. Equally important is to ensure a secure manipulation of dead bodies, since those can also be a source of various diseases, which is related to the question of the capability of society to stop its spread in case of an outbreak. During its time, the Roman Empire suffered from many, even regularly appearing epidemics (*pestilentia*). One of them was the yearly occurrence of malaria, which was due to the fact that Rome was actually built on marshes.

[1] McNEILL, William H. *Plagues and Peoples*. New York: Anchor, 1976, s. 123-128.

In the paper, we want to introduce Roman legislation from the time of the Roman Republic and early Principate that regulated burials, sewers, and the use of water as means of maintaining basic hygiene and prevention from the spread of infectious diseases.

Concerning the character of previous historical periods, the opinion of the public is often that everything before our modern times was a dark undeveloped age with no mark of progress, and all that we enjoy today was only discovered during the twentieth century and later. A picture that paints history in such colors is distorted if not false. In the paper, we want to introduce Roman legislation from the time of the Roman Republic and early Principate that regulated burials, sewers, and the use of water as a means of maintaining basic hygiene and prevention from the spread of infectious diseases. Concerning the theme of the paper, of course, the level of healthcare and hygiene today is much more advanced than it was in Roman time, but the basis for today's living standards can be found in civilizations as old as that of Ancient Rome.

Roman works of various kinds are still the object of admiration of scholars, whether it is a literary work,[2] legal heritage, or structures preserved until today (either in whole or their remains), in which we can encounter the genius of the Roman spirit. The preserved remains of the Roman aqueducts and sewers with their technological advancement are the ones that inspire awe even today. Although their contribution to securing a higher level of hygiene wasn't great eventually, the failure cannot be ascribed to them, but rather to insufficient knowledge in medicine and biology. In general, the hygienic situation of Ancient Rome can best be described as follows:

A seventeenth-century Londoner existed in conditions that would hardly have been tolerated by a first-century Roman. But they met on one common ground, for neither knew the cause of disease. If the seemingly clear water that flowed along the Roman aqueduct happened to come from a contaminated source, then the Roman was as much at risk as the Londoners who drew their supply from the muddy Thames.[3]

IN GENERAL ON ROMAN *PESTILENTIA*

An epidemic (*pestilential*) can be characterized as an infectious disease that affects a lot of people in the same place[4]. In antiquity, various pestilences or natural disasters were usually seen as the result of an interference of a higher power, very often because of a god's wrath and as a result, it was necessary to earn the god's favor, asking one of the gods, or even a foreign god for help. Turning to supernatural forces in face of a crisis then wasn't just a religious gesture of an individual but a formal act of the Roman Senate that followed a complex official procedure. The historical records show us that the senate often claimed the authority to end epidemics in Rome via religion and the interpretation of the epidemics as bad omens or punishment from gods can be understood as a reaction of a political system to uncertainty caused by the imminent threat of disease[5].

Ancient authors describe a total of 27 various epidemics only during the time of the Roman Republic and early years of the Empire, dated between the years 472 BC to 22 BCE, while only in three cases the senate did not react to resolve the situation as a religious issue[6].

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2 Works of *Marcus Vitruvius Pollio* living in 80/70 BCE – 15 CE, as well as the work of *Sextus Julius Frontinus*.

3 CARTWRIGHT, Frederick F. – BIDDISS, Michael. *Disease and History: From Ancient Times to Covid-19*. Borough: 2020, 253 p.

4 THOMAS, Clayton L. *Taber's Cyclopedic Medical Dictionary*. Philadephia: F A Davis Co., 1997, p. 654.

5 WAZER, Caroline. Between Public Health and Popular Medicine: Senatorial and Popular Responses to Epidemic Disease in the Roman Republic. In HARRIS, William. V. (ed.) *Popular Medicine in Graeco-Roman Antiquity*. Boston/Leiden: Brill, 2016, p. 126-127.

6 See WAZER, ref. 5, p. 134-135.

The first big pestilence to break out in Rome is dated to 472 BC and it seems that it affected mainly pregnant women who suffered miscarriages as the result of the illness. In the course of the fifth century BC, other pestilences followed being resolved by prayers or on some occasion even turning to foreign cults[7]. The tendency to turn to foreign cults gained new significance in the year 433 BC when as a result of plaque raging in Rome a decision was reached to build a temple in the city, in the Campus Martius, to a god called Apollo Medicus[8], a god of sun, light and originally also a god of health[9], while healing and cleansing were considered to be his most prominent functions[10]. This was the first case when the Romans officially imported a foreign cult into their city and culture.

Another great epidemic broke out around the year 400 BCE, and it was identified by scholars as malaria. This pestilence is interesting concerning its description offered by ancient authors Varro and Columnella. Varro describes nearby marshes as the place of origin of small invisible creatures that enter into people's mouths and nostrils causing the disease[11]. Columella also warns the people from building their dwellings near marshes that are the source of stinging insects spreading mysterious diseases that are beyond the understanding of physicians[12]. What is even more striking, is Varro noticing that these invisible creatures can be destroyed by their removal from damp environment and exposure to sunlight. The fact that he is talking about invisible creatures even suggests that he had a notion of what today is called microscopic pathogens[13].

The next major epidemics that resulted in importing a foreign cult broke out in Rome in the year 293 BCE. According to the Roman tradition, an emissary called Quintus Ogulnius Gallus was issued by the senate to introduce the cult of the Greek god of medicine Asclepios after consulting the Sibylline oracles revealing that the only way to end the crisis is by gaining the support of the god[14]. The cult was imported from its main center in Epidaurus and it is said that a snake (the symbol of the god) boarded the ship of the emissaries and upon their return to Rome marked the island in river Tiber as the place for building the temple for Asclepios[15]. The priests in Epidaurus were supposed to advise the emissaries that it would be more hygienic when the infected persons were removed from the urban part of the city. The temple built on the island was supposed to serve this purpose since as a result of its erection crowds of inflicted people started to stream to the temple seeking recovery[16]. Aicher states that temples dedicated to Asclepios were usually built on the edges of cities for symbolic as well as hygienic reasons while

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7 Ibidem, p. 136-138.

8 It was built beyond the pomerium, which was the official city line since it was a foreign cult. HILL, Phillip V. The Temples and Statues of Apollo in Rome. In *The Numismatic Chronicle and Journal of the Royal Numismatic Society*, 1962, vol. 2, p. 125–126.; RICHARDSON, Lawrence. *A New Topographical Dictionary of Ancient Rome*, London: JHU Press, 1992, p. 12.

9 ZAMAROVSKÝ, Vojtech. *Bohovia a hrdinovia antických bájí*. Bratislava: Perfekt, 2002, p. 53.

10 HORNBLOWER, Simon – SPAWFORTH, Antony – EIDINOW, Esther. *The Oxford Classical Dictionary*: Vol.1. Oxford: Oxford University Press, 2012, p. 119.

11 Var. 1.12.2.

12 Col. 1.5.6.

13 See MICALLEF, Milton J. The Roman Fever: Observations on the understanding of malaria in the ancient Roman world. In *The Medical Journal of Australia*, 2016, Vol. 205, p. 501.

14 RENBERG, Gil H. Public and Private Places of Worship in the Cult of Asclepius at Rome. In *Memoirs of the American Academy in Rome*, 2006/2007, Vol. 51/52, p. 87-89. HORNBLOWER – SPAWFORTH – EIDINOW, ref. 10, p. 1034–1035.

15 Van der PLOEG, Ghislaine. *The Impact of the Roman Empire on the Cult of Asclepius*, Leiden/Boston: Brill, 2018, p. 65-66.

16 CILLIERS, Louise. Public Health in Roman Legislation. In *Acta Classica*, 1993, Vol. 6, p. 2.

the island in the Tiber offered such an isolated place[17] and Davies even states that besides the temple, also hospital was built on the island[18]. We can find a reference to this temple in *D. 40.8.2.* (*Servo, quem pro derelicto dominus ob gravem **infirmitatem** habuit, ex edicto divi Claudii competit **libertas**.*)[19] that includes a regulation introduced by emperor Claudius according to which if a slave coming to the temple to recover from a serious illness is abandoned, he is to be freed in case of recovery. *Plutarch* also refers to the location of the temple on the island. According to him the place was healthier (*υγιετερος*) and followed the example of Epidaurus, in which the temple was also placed outside the city[20]. In placing the temple *Festus* emphasized the access to freshwater as an important factor while treating the inflicted[21]. As a result, the island could truly be chosen as a place suitable for the temple for several reasons as the isolation (either because of sanitary precautions or as a result of tradition), healthier environment, separation from the health risks of the city (Rome, in general, was quite overcrowded with not enough living space available in the tenement houses[22] for the poorest of its inhabitants) as well as the access to freshwater since later a well was placed on the island[23].

The first epidemic from the time of emperors appeared at the very beginning of Augustus's reign in years 23 – 22 BCE and caused lesions on a person's skin but otherwise, the treatment was more dangerous than the disease itself, which cannot be said about the epidemics during Nero's rule in 54 CE described very dramatically by Tacitus as a plaque that killed people of all ranks and with indifference to status[24]. The next epidemics then appeared in 79 – 80 CE and according to Suetonius, it killed 30 000 people[25]. Dio Cassius states the cause of the disease (terrible infectious disease) to be the eruption of Vesuvius and the ash that spread from it carrying the disease[26]. Thus, in the first hundred years of the principate, at least three major epidemics broke out.

The second century was a witness to even greater calamity caused by epidemics. In 125 CE the so-called plague of Orosius spread to Italy from Africa (Numidia and North Africa) that was said to have caused around a million death, however, the death toll can be exaggerated[27]. In the second half of the second century, the plague of Antoninus broke out which is possibly the greatest epidemic the Empire had to face. The pestilence appeared in the year 165 CE during the reign of Emperor Marcus Aurelius Antoninus and it seems that it was brought to Rome by soldiers who contracted it during a campaign in the East (Parthia, Mesopotamia)[28]. The "plague" afflicted the Roman Empire until the year 180 CE with a reoccurrence in 189, which was shorter but affected dramatically Rome[29], as according to Dio Cassius 2 000 people would die daily[30].

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17 AICHER, Peter J. *Rome Alive: A Source Guide to the Ancient City*, Illinois: Bolchazy-Carducci Publishers, 2004, p. 267.

18 DAVIES, Robert W. Medicine in Ancient Rome. In *History Today*, 1971, Vol. 21, p. 770.

19 The meaning of the regulation with direct reference to the temple of Asclepios is explained in Suet. Claud. 25.

20 Plut. Quaest. Rom. 94.

21 Festus, De sign, verb., 110 M.

22 Referred to as insulae.

23 RENBERG, ref. 14, p. 96-97.

24 Tac. Ann. 16. 13: "...in qua omne mortalium genus **vis pestilentiae** depopulabatur, nulla caeli intemperie quae occurreret oculis".

25 Suet. Nero 39: "**pestilentia** unius autumni, quo triginta funerum milia in rationem Libitinae uenerunt;"

26 Dio Cassius 66. 24: "ἡ μὲν οὖν τέφρα αὕτη οὐδὲν μέγα τότε κακὸν αὐτοὺς εἰργάσατο ὕστερον γὰρ **νόσον** σφίσι **λοιμώδη δεινὴν** ἐνέβαλέ."

27 RETIEF, Francois P. – CILLIERS, Louise. Epidemics of the Roman Empire, 27 BC – AD 476. In *South African Medical Journal,* 2000, Vol. 90, No. 2, p. 268.

28 Ibidem, p. 268.

29 See CARTWRIGHT, Frederick, F. Disease and History. In ERDKAMP, Paul (ed.). *Cambridge Companion to Ancient Rome.* Cambridge: Cambridge University Press, 2013, p. 52.

30 Dio Cassius 73.14.3: "γέγονε δὲ καὶ **νόσος** μεγίστη 1 ὧν ἐγὼ οἶδα: **δισχίλιοι** γοῦν πολλάκις ἡμέρας μιᾶς ἐν τῇ"

The spread of disease was especially problematic if it occurred in the army since Romans mostly engaged in conquests and they depended on the army to hold the Empire they created since the Punic Wars. Studies show that until the twentieth century, more soldiers died of diseases than in combat fighting an enemy[31]. Belfiglio states that it was the excellent health care available in the Roman army (compared to other civilizations of the age) that helped build the vast Empire that Rome controlled. In general, the health care applied in Rome was more of a preventive character as they were more sufficient in staying off the disease than treating the actual symptoms[32]. In the army, this was ensured by building latrines, drains, and sewers, and obtaining water from the uncontaminated source, while also trying to avoid the contamination of the water source by the content of the latrines. While caring for the injured or sick soldiers they regularly cleaned the bedsheets and in case of infectious diseases, they isolated the inflicted individuals by creating isolation tents near the infirmaries. The infirmary was regularly disinfected with a mixture of ammonia, water, and vinegar[33].

BURIALS

Burial rituals in Rome, just like in other cultures even today, were influenced by culture and perception of death and the existence of a person's soul after death, the eternal life, within a specific set of beliefs that were consistent with the religion practiced in the area[34]. Concerning the theme of hygiene, we could point out the notion that the contact with a dead body may pollute a person (in a cultic sense). Although according to Robinson[35], it is not very likely that in the case of laws concerning burials, the reason for such regulation was to secure hygiene, later scholars tend to support such an interpretation and they claim that the process of disposing of the dead bodies, as well as the legislation issued concerning this matter, were in fact influenced by practical concerns related to hygiene[36].

Concerning the disposal of the dead bodies, an important statute can be found in The Law of the Twelve Tables[37] dated the years 451 – 449 BCE[38] stating that it is forbidden to burn or bury cadavers in the city of Rome[39]. Another statute, although this one did not concern the city of Rome, is an example of regulation created for the purpose of Roman colonies is *Lex coloniae Genetivae Iuliae seu ursonensis*[40] (the Charter of Urso[41]) created for settlement in Urso, Spain, by Julius Caesar in 44 BCE. In paragraph 73 we found a clause that forbids bringing a dead person, burying or cremating a dead person within the boundaries of the city, colony, or within an area marked by a plow (*qua aratro circumductum erit*[42]). Within these areas, it is equally forbidden

31 GABRIEL, Richard A. – METZ, Karen S. *A History of Military Medicine*, New York: Praeger, 1992, p. 29.
32 WAZER, ref. 5, p. 126-146.
33 BELFIGLIO, Valentine J. Control of Epidemics in Roman Army. In *International Journal of Community Medicine and Public Health*, 2017, Vol. 4, No. 5, p. 1388-1389.
34 RETIEF, Francois P. – CILLIERS, Louise. Burial customs and the pollution of death in ancient Rome: procedures and paradoxes. In *Acta Theologica*, 2010, Vol. 26, p. 128.
35 ROBINSON, Olivia. The Roman Law on Burials and Burial Grounds. In *Irish Jurist,* 1975, Vol. 10, p. 176.
36 LINDSAY, Hugh. Death-pollution and funerals in the city of Rome. In HOPE, Valerie M. – MARSHALL, Eireann (eds.). *Death and Disease in the Ancient City*. London: Routledge, 2000, p. 152-172. BODEL, John. Graveyards and Groves: A Study of the Lex Lucerina. In *American Journal of Ancient History*, 1994, Vol. 11, p. vii.
37 XII Tab. 10.1.
38 JOHNSON, Allan Chester at al. *Ancient Roman Statutes*. Austin: the Lawbook Exchange, Ltd., 2012, p. 9.
39 "*Hominem mortuum* ***in urbe ne sepelito*** *neve urito*," See BRUNS, Carl G. *Fontes iuris Romani antiqui*, I., Tübingen: I.C.B. Mohr, 1887, s. 34.; Cic. de Leg., II, 23, 58; Isid., Orig., 15, 11, 1; Serv. Ad Aen., 5, 64; 6, 162; 11, 206.
40 CRAWFORD, Michael H. *Roman Statutes*, London: Institute of Classical Studies, School of Advanced Study, University of London, 1996, p. 393-454.
41 JOHNSON at al., ref. 38, p. 99.
42 CIL II_2, 5, n. 1022.

to build monuments for burial purposes and the transgression of the prohibition is punished by a fine of 5 000 sesterces, while aediles and duumvirs are obliged to have such monuments demolished and in case a dead person was already placed in it, they are also responsible for the expiration of the city since the presence of dead bodies within a city polluted the city. Paragraph 74 then forbids building crematories near cities in a distance smaller than half a mile, transgression of which is subjected to equal punishment.

Since the prohibition of burial in cities can also be found in legislation concerning other territories than the city of Rome, we can deduce, that the Romans considered it especially important. The regulation concerning the burial of dead bodies certainly reflected religious scruples, but although some scholars might disagree, the religious reasons cannot exclude the practical reasons based on the observation that contact with a cadaver can result in contracting an infectious disease or eating a cadaver can result in health issues. Similar regulations can be found in the Torah concerning dead bodies of animals according to which even touching them results in cultic impurity (*Lev. 11: 8*[43]) or concerning the contact with human corpses (*Num. 5:2; 19:11; 31:19*). It cannot be excluded that rules beneficial for a society for other than purely religious reasons (like health, social justice) were introduced to the masses as something demanded by a deity. The hygienic reasons for regulation concerning handling and disposal of dead bodies can also be seen in the light of the prohibition found in the Law of the Twelve Tables in table 10, paragraph 8 according to which women are forbidden to tear their faces with their nails as an expression of grieving[44]. Such self-harm could be a hygienic risk in a contact with a dead body.

That is why the cemeteries were created outside the city borders and these could be found in two forms, as *loca religiosa*, or formal cemeteries, and *loca publica* that were intended for the general population. In Rome, such a place was the Necropolis, which was situated near a gate called *Porta Esquilina* and the area was named *Campus Esquilinus*[45]*.* This area was allocated for mass graves for the burial of dead bodies that were found on the streets during the day and it was impossible to identify them, also for the executed or those who were denied burial, and that place was in general considered an extremely unhygienic and even terrifying area[46]. Horace mentions horrible soil covered with white bones, where thieves and wild beasts would wonder and witches would do their rituals[47]. Besides the poor, also prominent inhabitants of Rome were buried there. The cemetery ceased to exist during the time of Emperor Augustus when Maecenas changed it to a garden[48]. The oldest graves are dated as far as the eighth century BCE and the youngest ones to the fourth and third century BCE, while an interesting fact is that there are no graves to be found from the fifth century BCE[49].

Regulation concerning the burial place on the Esquiline Field can also be found in *Edictum praetoris de Campo Esquilino* from 80 BCE[50] which forbade creating a place for the cremation of dead bodies or throwing manure or corpses near city borders[51]. The prohibition of cremation

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43 In this case eating and touching is mentioned, while both activities could have fatal consequences. Concerning the animal, this obviously applied to carcasses that would be found, not animals killed for the purpose of eating.

44 "Mulieres genas ne radunto, neve lessum funeris ergo habento," XII Tab. 10.4.

45 PLATNER, Samuel B. *A Topographical Dictionary of Ancient Rome.* London: Oxford University Press, 1929, p. 435.

46 RETIEF – CILLIERS, ref. 34, p. 134-135. (38)

47 Hor. S. 1.8.

48 RICHARDSON, ref. 8, p. 64.

49 RYBERG, Inez S. The Esquiline Necropolis in the Fifth Century B.C. In *American Journal of Archeology*, 1937, Vol. 41, p. 100; RICHARDSON, ref. 8, p. 64.

50 JOHNSON at al., ref. 38, p. 68.

51 "Nei quis **intra terminos propius urbem** ustrinam fecisse uelit neiue stercus cadauer iniecisse uelit. Stercus longe aufer, ne malum habeas," See GIRARD, Paul F. – SENN, Félix. Les lois des Romains, Napoli: Jovene, 1977, p. 346-347.

near the city is not so much a matter of hygiene than precaution to prevent fires in the city, as many houses were built of wood, and as the incident during the reign of Nero shows the threat of burning the city was imminent. That is also why in 7 BCE Augustus created a unit, combining the duties of police and fire departments, that was supposed to keep the city safe from arsonists in Rome (*vigiles*).

Although the Romans did not possess today's knowledge of prevention from infectious diseases the regulation concerning dead bodies, while being based on religious reasons, certainly helped to keep the population safe from the diseases that could spread from the decaying bodies. The concept of death pollution cannot be understood only in a religious sense, but it certainly had its health benefits as it helped prevent the contraction of various diseases, and the modes of how the death pollution could occur show that the Romans were able to differentiate between various situations when a person would be in presence of a dead body. As a result, exposure to a dead person from a distance or for a very short period did not result in serious death pollution (such cases were combat or gladiator games) in comparison to undertakers who had to manipulate the bodies to a much greater extent[52].

SEWERS

An extremely important technological achievement for securing hygiene is the invention of a functional system of sewers, along with access to freshwater suitable for drinking. Amulree is asking very aptly, why Edwin Chadwick had to come up with a program of securing the construction of sewers and water distribution systems in the nineteenth century as something new and revolutionary when these were already known in ancient Rome[53].

One of the main factors endangering the comfort and mainly health of individuals is inappropriate disposal of waste (especially human waste) in areas with no appropriate facilities for this purpose. This is due to the fact that a great number of various organisms causing diseases can be found in the faeces of inflicted individuals, or even individuals that appear to be healthy.

There is very little evidence in the legal sources about the construction of sewers and aqueducts in the time of the Roman kingdom and early republic. Concerning the sewers (lat. *cloaca*), the oldest mention can be found in *Lex Aquilla de damno iniura dato* dated to the year 286 BCE concerned with injury made on someone else's property. The original text of the law was not found, but its content was reconstructed from the Digest of Justinian[54] and one of the clauses describes a situation when someone knocks coins out of another person's hand and the possession of the coins cannot be recovered as they fell into a river, seas, or a sewer[55].

Other sources directly mention the construction of the sewers, although not in Rome itself, but in subjected territories. The first mention can be found in the *Lex municipii Tarentini*, the charter of the Greek city of Tarentum dated to the year 89 BCE (pr 45 BCE as it is very similar to Caesar's municipal legislature)[56]. The law assigns to officials (quattuorvirs, duumvirs, and aediles) to construct sewers (besides them also roads and ditches) for public welfare under the

52 RETIEF – CILLIERS, ref. 34, p. 142.

53 AMULREE. Lord. Hygienic Conditions in Ancient Rome And Modern London. In *Medical History*, 1973, Vol. 17, No. 3, p. 244. On the hygienic purpose of Cloaca Maxima as a sewer see HOPKINS, John N. N. The Cloaca Maxima and the Monumental Manipulation of Water in Archaic Rome. In *The Waters of Rome*, 2007, Vol. 4, p. 1-15.

54 D. 9.2.27.21; WATSON, Alan. *The Digest of Justinian. Vol.1*. Pennsylvania: University of Pennsylvania Press, 1998, p. 285.

55 "Si quis de manu mihi nummos excusserit, Sabinus existimat damni iniuriae esse actionem, si ita perierint, ne ad aliquem pervenirent, puta si in flumen vel in mare vel in **cloacam** ceciderunt," see D. 9.2.27.21.

56 JOHNSON at al., ref. 38, p. 64.

condition that property of private individuals would not be injured by the endeavor[57]. Almost identical text can be found in the charter of Urso, *Lex coloniae Genetivae Iuliae seu Ursonensis*, created by Julius Caesar and dated to the year 45 BCE[58]. Just like the previous charter, the Charter of Urso states that roads, ditches, and sewers are to be constructed if a private property would not be injured by the construction[59]. Paragraph 100 of the charter should also be mentioned here, as it mentions the decision process in case a colonist wishes to conduct wastewater to his own private property, which can be allowed under the condition that the property of private individuals would not be injured by such an action[60].

Although the sources of the Roman law that have been preserved until today, tell us very little about the legal regulation of the construction of sewers, nevertheless, they do confirm the fact that a system of sewers was built in the Roman Empire, which is also confirmed by archeological discoveries, while one of the most important artifacts proving the existence of sewer system in Rome is the *Cloaca Maxima* built in the sixth century BCE stretching from the Forum to the river Tiber[61] and conducted the waste from private and public latrines, however few there may have been. Conducting the waste, however, was not the original purpose of the construction but at first, it was built as an open canal to conduct freshwater that would enable the draining of the surrounding area, which was later turned into *Forum Romanum*. In its early stage, the *Cloaca Maxima* had already been a monumental building project, as the extent of the construction (the great stone blocks used to pave it) was not necessary to fulfill its purpose. It wasn't just a drainage canal, but also the demonstration of the power of its constructors, the Tarquin royal dynasty[62].

The sewer system as a drain had its importance in draining the nearby marshes not only for construction purposes but as we have already mentioned, the marshes were detected as a source of disease, as Varro[63] mentioned around the year 400 BCE. Therefore, the construction of the canal was also important in preventing the spread of diseases. The change of the canal to an underground sewer was the result of later development of the city that grew in its area, as well as population, and it was necessary to solve the problem of waste disposal to ensure a certain level of health of the city's population.

Gowers states that very little is known whether the sewer served to dispose of the human waste and only a few of the private houses had latrines that were connected directly to the public sewers, while cesspits were rather rare, not necessarily connected to the public sewers. On the other hand, the lack of information may be caused by an ambivalent meaning of the word *stercus* that means "waste" in general and the Romans did not necessarily have to differentiate among

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57 "Magistratus quei exegerit dimidium in publicum referto, dimidium in ludeis, quos publice in eo magistratu faciet, consumito, seiue ad monumentum suom in publico consumere uolet, liceto idque ei sine fraude sua facere liceto. sei quas uias fossas **clouacas** IIIIvuir IIuir aedilisue eius municipi caussa," see CRAWFORD, ref. 40, p. 305.

58 The charter was published by Marc Anthony after Caesar's death. JOHNSON at al., ref. 38, p. 99.

59 "Si quas uias fossas **cloacas** IIuir aedilisue publice facere inmittere commutare aedificare munire intra eos fines, qui coloniae Iuliae erunt, uolet, quot eius sine iniuria priuatorum fiet, it is facere liceto," see CRAWFORD, ref. 40, p. 404.

60 "Si quis colonus **aquam** in priuatum **caducam** ducere uolet isque at IIuirum adierit postulabitque, uti ad decuriones referat, tum is IIuir, a quo ita postulatum erit, ad decuriones, cum non minus (quadraginta) aderunt, referto. si decuriones, maior pars quitum atfuerint, aquam caducam in priuatum duci censuerint, ita ea aqua utatur, quot **sine priuatim iniuria fiat**, ius potestasque esto," see CRAWFORD, ref. 40, p. 408.

61 DAVIES, ref. 18, p. 770-778.

62 See HOPKINS, ref. 53, p. 1-15.

63 Var.1.12.2.

wastes of various kinds in their texts[64]. Concerning the public latrines that we have information about, we know that water was conducted into them via aqueducts and a small fee was charged for their use, while these were often heated and decorated by marble seats and statues. An alternative to the latrines were chamber pots that were emptied into various cisterns, cesspits, or directly to the public sewers[65]. The reservation in the taping into the sewer system might have been the result of a concern that its content would spill in a household in case of rising of the level of the river Tiber, into which the waste was conducted[66].

We can find more information about the Roman sewers in the Digest of Justinian, especially in D 43.23[67] called *De Cloacis* containing Ulpian's commentary to a Praetor's edict concerning the sewers, where also commentaries of earlier lawyers on the subject can be found. The part is dedicated to an interdict prohibiting the use of force against anyone who has the right to repair or clean the sewer that is shared by his house and the house of the person who would use such force. The interdict concerns private individuals and private sewers, but we could presume that these sewers were attached to the public system at some point to conduct the waste from the houses, although the fragment tells us nothing about how common such practice was. Fragment in D 43.23.1 then tells us that the care of the public sewers was entrusted to officials[68]. Concerning health and hygiene, a few fragments from the text in the Digest need to be mentioned, the first being paragraph 2 explicitly stating that cleaning and maintenance of the sewers are directly connected with the health and protection of cities[69]. Relating to this is the mention in paragraph 7 according to which keeping the sewers in the appropriate state is considered public welfare[70]. Concerning the question of connecting to the public sewers, paragraph 9 can be of help stating the opinion of Labeo[71], according to whom the person who wishes to tap the public sewer is to be protected from the violence that would prevent him from doing so[72]. This opinion is also supported by Pomponius[73] living during the reign of Hadrian. Therefore, we can see that connection to the public sewer was not the reality of every household, and as the archeological discoveries show us, only a few individuals used the option, however, the legislation did not prevent such efforts and if the fragments citing Labeo and Pomponius are to be considered, they may even suggest that it was encouraged.

The interdict also protects against the use of violence those would wish to build a sewer in a public space. Such protection is mentioned by Labeo, Trebatius, and Ofilius both living

64 GOWERS, Emily. The Anatomy of Rome from Capitol to Cloaca. In Journal of Roman Studies, 1995, Vol. 85, p. 27; See also KOLOSKI-OSTROW, Ann Olga. *The Archaeology of Sanitation in Roman Italy. Toilets, Sewers, and Water Systems*. University of North Carolina Press, 312 p.

65 BOND, Tom at al. Ancient water and sanitation systems - applicability for the contemporary urban developing world. In *Water Science & Technology*, 2013, Vol. 67, No. 5, p. 938.

66 SCOBIE, Alex. Slums, Sanitation, and Morality in the Roman World. In Klio, 1986, Vol. 68, p. 413-417.

67 See WATSON, Alan. *The Digest of Justinian. Vol.4*., Pennsylvania: University of Pennsylvania Press, 1998, p. 115-116.

68 "Hoc autem interdictum propositum est **de cloacis privatis**: publicae enim **cloacae publicam** curam merentur." See MOMMSEN, Theodore – KRUEGER, Paul. Corpus iuris Civilis. Volume 1: Institutiones and Digesta, Cambridge: Cambridge University Press, 2014, p. 697.

69 "Quorum utrumque et ad **salubritatem** civitatium et ad **tutelam** pertinet." Ibidem, p. 697.

70 "Quia autem cloacarum refectio et purgatio ad **publicam utilitatem** spectare videtur." Ibidem, p. 697.

71 The mention is important because Labeo was a lawyer living at the turn of the era and the fragment then refers to a situation from the end of the republic or the beginning of the Empire.

72 "Idem Labeo etiam eum, **qui privatam cloacam in publicam immittere velit**, tuendum, ne ei vis fiat." Ibidem, p. 697.

73 Stated in the same fragment.

during the first century BCE[74]. Ulpian's commentary[75] also states that it was forbidden to damage the sewer in any way or throw anything into it that would affect its use.

As Scobie states, the archeological discoveries in various cities (Pompei, Cosa, and Rome) show that although private houses had latrines available for the use of the household, only a few of them were connected to the public sewers and most preferred cesspits, which provided a very low level of hygiene and risk of the spread of infectious diseases was high. Besides the already mentioned risk of spilling the waste from the sewers when the river level rose, another possible explanation for the uninterest in connecting to the sewers might have been the risk of the explosion of gasses that would be released from the waste in the canal. Concerning the flush toilets, these were probably considered as unnecessary waste in relation to water that would be used, as well as the waste that was also used as a fertilizer[76]. Vespasian even introduced a system of collecting and storing urine, which was later taxed (*vectigal urinae*) and sold as an additive in laundering[77].

Besides the regulations concerned with the construction and maintenance of the sewers, it is also important to mention those sources that throw the light onto other ways of keeping the city clean and maintaining a certain level of hygiene. The collection of excrements is also mentioned for example in D 33.7.12.10 concerning the question of what can and cannot be considered equipment (*instrumentum*) for a certain activity, in this case, carts used to transport manure. D 22.1.17.5.[78] mentions interest being collected in case the person is slow in payment for those who keep public privies and are supposed to pay rent or a tax to the state. Carrying excrements out of the city is mentioned in *Lex Iulia de municipalis* dated to the years 80 - 43 BCE stating that the purpose of the law is not to prevent carts carrying the excrements to leave the city before the tenth hour in the morning[79]. Concerning the cleanliness of the streets, in D 43.10.1.5. Paninianus mentions that aediles are obliged to prevent any dirt, dead animals, or skins from being thrown onto the streets[80]. In D 47.11.1.1. Paulus mentions injury against good morals which is caused when someone throws manure on another person or smears him with mud. He also mentions injury to the public that is caused by defiling water, canals, or reservoirs (these just examples, so other actions against public interest may be considered here)[81].

Despite the existence of public latrines, and an attempt to keep the streets clean, it seems that many people would use the cover of the night to throw their excrements gathered in their chamber pots out of the window, or they would relieve themselves directly on the streets[82]. Lack

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74 D 43.23.2: "Labeo ait, ne facienti cloacam vis fiat, quia eadem utilitas sit: praetorem enim sic interdixisse, ne vis fieret, quo minus cloacam in publico facere liceret: idque ofilio et trebatio placuisse." Ibidem, p. 697.

75 D. 43.23.1.16: "Hoc interdictum ad publicas cloacas pertinet, ne quid ad cloacam immittas neve facias, **quo usus deterior sit neve fiat**." Ibidem, p. 697.

76 SCOBIE, ref. 66, p. 413-417.

77 BOND at al., ref. 65, p. 938.

78 The imperial treasury does not pay interest on its contracts but receives interest. It does so from **latrine contractors** or tax farmers who pay late ("*ut solet a **foricariis**, qui tardius pecuniam inferunt, item ex vectigalibus.*") see MOMMSEN – KRUEGER, ref. 68, s. 286. But if it has succeeded to a private person, it pays interest. WATSON, Alan. *The Digest of Justinian. Vol.2*. Pennsylvania: University of Pennsylvania Press, 1998, p. 179.

79 "Quae plostra noctu in urbem inducta erunt, quo minus ea plostra inania aut **stercoris exportandei** caussa/ post solem ortum h(oram) (decimam) diei bubus iumenteisue iuncta in u(rbe) R(oma) et ab u(rbe) R(oma) p(assus) mille esse liceat, e(ius) h(ac) l(ege) n(ihilum) r(ogatur)." CRAWFORD, ref. 40, p. 355-391.

80 "...*μηδὲ **κόπρον** ἐκβάλλειν*." See MOMMSEN – KRUEGER, ref. 68, p. 686. Slovo **κόπρον** znamená výkal, lajno, trus, hnoj, ale je možné ho použiť aj vo význame prach alebo špina. See PANCZOVÁ, Helena. *Grécko-slovenský slovník. Od Homéra po kresťanských autorov*, Bratislava: Lingea, 2012, p. 732.

81 "Fit iniuria contra bonos mores, veluti si quis **fimo** corrupto aliquem perfuderit, caeno luto oblinierit, **aquas spurcaverit**, fistulas lacus quidve aliud ad iniuriam **publicam** contaminaverit: in quos graviter animadverti solet." MOMMSEN – KRUEGER, ref. 68, p. 785.

82 SCOBIE, ref. 66, p. 417.

of latrines in private houses and especially the tenement houses (insulae) would contribute to such behavior along with the insufficient knowledge in the are of infectious diseases and at least, but not least, low standard of living of the population in Rome was also a very significant factor.

WATER

Besides the sewers, probably the most important element securing health of population is access to water suitable for drinking, as well as for personal hygiene and washing in general. Just like in in case of sewers and burials, this notion is not something newly discovered in the twentieth century, but the Romans already acknowledged the need for continual access to water, especially concerning the still growing city of Rome where the people no longer had various springs or rivers of fresh and clean water available, as it was before when these along with shallow wells and the river Tiber were at their disposal. Soon these were defiled and insufficient for the growing population[83]. This led the Romans to building aqueducts that would conduct water from the surroundings spring to Rome from the fourth century BCE and in the first century CE there were nine aqueducts available in Rome[84].

Public aqueducts were the property of the state that regulated the possibility of connecting to them, excluding someone from their use, withdraw a right of connection, maintenance, as well as alienation of a right, while bestowing a right to tap an aqueduct was either a sign of honor, or it was available for a fee[85].

The need for fresh water and ways how to identify the propped source of it are described by Vitruvius in his work *De Architectibus* from the year 27 BCE where in the fourth chapter dedicated to water, he mentions that it should look clean, be transparent, and without any algae or moss. He even mentions a way to improve the water quality for drinking using filtration and salt[86]. Vitruvius also comments on the use of lead pipes that were used to conduct water from aqueducts to the public fountains and recommends the use of clay pipe, since lead is harmful to human body[87]. In general, the process of determining whether a water source was suitable for drinking was very primitive and left only to human senses such as smell and sight, since the decisive criteria was appearance (visibly clear), presence of odors, taste and temperature[88].

The first aqueduct built in Rome was *Aqua Appia* in the year 312 BCE under the impulse of censor Appius Claudius Caecus and subsequently during the time of republic another three

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83 HANSEN, Roger D. Water and Wastewater Systems in Imperial Rome. In *Journal of the American Water Resources Association*, 1983, Vol. 19, p. 264.

84 AMULREE, ref. 53, p. 244.

85 BANNON, Cynthia. Fresh Water in Roman Law: Rights and Policy. In *Journal of Roman Studies*, 2017, roč. 107, p. 71.

86 If these cisterns can be made double or triple, so that they can be used successively in filtering, they make the water supply much more healthful and flavorful, for if there is a place where the mud suspended in the water may settle, the water itself will become clearer and conserve its flavor without odor. Otherwise, it will be necessary to add salt and filter, see Vitruvius, translation by ROWLAND, Ingrid D. – HOWE, Thomas Noble - DEWAR, Michael. Vitruvius: Ten Books on Architecture. Cambridge: Cambridge University Press, 1999, s. 106. ("Parietibus calcatis, in medio quod erit terrenum, exinaniatur ad libramentum infimum parietum. hoc exaequato solum calcetur ad crassitudinem, quae constituta fuerit. ea autem si duplicia aut triplicia facta fuerint, uti percolationibus transmutari possint, multo salubriorem et suaviorem aquae usum efficient; limus enim cum habuerit, quo subsidat, limpidior fiet et sine odoribus conservabit saporem. si non, **salem addi necesse** erit et extenuari"), see Vitr. 8.6.15.

87 "Primum in opere quod si quod vitium factum fuerit, quilibet id potest reficere. etiamque multo salubrior est ex tubulis aqua quam per fistulas, **quod plumbum videtur esse ideo vitiosum**, quod ex eo cerussa nascitur; haec autem dicitur esse **nocens corporibus humanis**. ita quod ex eo procreatur, si id est vitiosum, non est dubium, quin ipsum quoque non sit salubre." Vitr. 8.6.10.

88 See HANSEN, ref. 83, p. 268.

aqueducts were built, *Anio Vetur* in years 272 – 269 BCE, *Aqua Marcia* in year 144 – 140 BCE, and *Aqua Tepula* in 126 – 125 BCE[89]. In important figure concerning the construction of Aqueducts was later Marcus Agrippa living approximately sine the sixties of the first century BCCE until 12 BCE who not only had some of the older aqueducts repaired but also built three new while holding his office, *Aqua Julia*, *Aqua Virgo*, and *Aqua Alsietina*[90].

Water was conducted via aqueducts to the city in enclosed pipes usually placed under ground from the water source using gravity.[91] The moment water entered Rome it was then conducted to a settling tank called *castellum aquae* or *divisorium* from which it was then divided and conducted to specific parts of the city[92] almost exclusively using pipes (either made of lead or clay) and the water stream could be regulated by being stopped or restored again using brass stopcocks[93].

Most of the city population lived and densely inhabited tenement buildings and they could only access fresh water or wastewater in public facilities[94]. The main source of water was either a well or a cistern, while houses or tenement buildings would have one of those and fountains reserved for public used were placed all over the city to ensure access to water[95]. Only the elite had the luxury of private access to water conducted by pipes, however, illegal connections were not a rare occurrence[96], as can be seen from the need to regulate process of dealing with them.

Concerning the quality (cleanliness) of the water, its flow could keep the pipes relatively clean from sediments of algae and weed, which cannot be said about the reservoirs that distributed the water to its end users and had to be cleaned regularly. This meant that individuals drawing water from these were in greater health risk, than those whose water was conducted directly into their households using a system of pipes. If the quantity of water provided, however, was considered Rome was very well supplied also with help of great number of public fountains[97].

From the time of republic, we have as little information concerning the securing of the access to water as in case of sewers. In general, the ones responsible for managing and maintenance of the water distribution system were the aediles, praetors, and censors[98]. The oldest legal source from the time of republic is *Senatus consultum* (*SC*) dated to the year 116 BCE, which however, was only preserved in the work of Frontinus on aqueducts. This document forbids illegal drawing of water, talks of confiscation of fields that would be illegally irrigated from the aqueducts, mentions conducting water to the *Circus Maximus*, which was only allowed upon the permission of aediles or censors, sets a fine for fraudulent change in the water flow, as well as for defilement of water. The *SC* also establisher control over water distribution[99].

One of the most important legal sources concerning water supply is *Lex Sulpicia Rivalicia* dated between the years 100 – 45 BCE directly concerning the city of Rome, since the phrase *montani paganiue* (*pagus montanus*) mentioned in its fragment refers to the Esquiline Hill[100].

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89 BRUNN, Christer. Water supply, drainage and water mills. In ERDKAMP, Paul (ed.). *Cambridge Companion to Ancient Rome.* Cambridge: Cambridge University Press, 2013, p. 298.

90 DEMING, David. The Aqueducts and Water Supply of Ancient Rome. In Groundwater, 2020, Vol. 58, p. 153.

91 EVANS, Harry B. Agrippa's Water Plan. In *American Journal of Archeology*,1982, Vol. 86, p. 402. For more on the technicalities of the aqueducts see HANSEN, ref. 83.

92 ROGERS, Dylan K. *Water Culture in Roman Society*. Leiden: Brill, 2018, p. 25.

93 WILSON, Andrew I. Hydraulic Engineering and Water Supply. In OLESON, John P. (ed.). *The Oxford Handbook of Engineering and Technology in the Classical World*. Oxford: Oxford University Press, 2008, p. 302-305.

94 BOND et al., ref. 65, p. 937.

95 DEMING, ref. 90, p. 154.

96 HANSEN, ref. 83, p. 265-266.

97 SCOBIE, ref. 66, p. 423-424.

98 MARIUS, Vladu A. Cura aquarum and curator aquarum – the Head of Rome's Water Supply Administration. In Romanian Journal of History and International Studies, 2018, Vol. 5, p. 74.

99 Front. Aq. 97, 1-8; BANNON, ref. 85, p. 73.

100 JOHNSON at al., ref. 38, p. 33, 61.

The law states that the inhabitants of this city precinct are supposed to distribute water using pipes[101].

Specific mention of aqueducts can be found in the already mentioned *Lex coloniae Genetivae Iuliae seu Ursonensis* where in paragraphs 99 and 100 the charter is concerned with the choice of land through which the aqueducts should be conducted and states that no one is to prevent the construction of aqueducts [102].

More information with a bit greater density of legal documents can found in sources from early principate, especially the rule of Augustus. Here we have three especially important legal sources, *Edictum Augusti de Aquaeductum Venefrano* from the years 17 – 11 BCE, *Senatus consulstum de aqueductibus* dated to 11 BCE (reconstructed again from Frontinus's *De Aquaeductu Urbis Romae*), and at last, *Lex Quinctia de Aquaeductibus* dated to the year 9 BCE.

The oldest of these documents is concerned with regulating the construction of an aqueduct in the colony of *Venafrum* in Italy established by Augustus. At the beginning, the Edict states that any operations carried out in relation to construction repair or any king of maintenance of the aqueducts are to be continued in the same manner in the future by the workers and no private structures can be built in a way that would impede the water flow. At the same time the estates belonging to Quintus Sirinius and Lucius Pompeius Sulla are not to be disrupted except for necessary maintenance, such as repair or inspection of the conduits[103]. Quite striking is the clause that sets something that could be called a protection zone serving as an access for repairs, as well as to prevent any damage to the structures used for conducting water in the colony. The zone was set to 8 feet on both sides of the waterflow, as well of the structures conducting water (Conduits, aqueducts), while persons through whose estate the water was conducted had the right of passage but were forbidden to damage the structure or steal water from them. In comparison to Rome, water at *Venafrum* was distributed for a fee and according to the law the water was supposed to be conducted exclusively using lead pipes to the distance of 50 feet from the main conduit. The conduit system itself was supposed to be conducted solely under ground which then had the status of public road or pavement, and the permission of the owner was necessary on case it was conducted through private estates[104]. Authority to decide the matters of disposing with aqueducts was entrusted to duumvirs.

Another law that needs to be mentioned is *Senatus consultum de Aquaeductibus* dates to the year 11 BCE, whose content have been reconstructed from Frontinus's *De Aquaeductu Urbis Romae*[105]*.* The statute deals with various issues concerning the source of drinking water. In relation to the theme of the paper, the most important parts are the paragraphs 104 and the following. The section in 104 deals with privileges bestowed upon water commissioners, without telling us much of the office itself, however, the fact that such officials are mentioned shows us to what extent the Romans cared about securing the access to water for the population of Rome.

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101 "montani paganiue **sifis aquam diuidunto**: donec eam inter se diuiserint, ... iudicatio esto...," see RICCOBONO, Salvatore. Fontes iuris Romani antejustiniani, Vol. 1, Firenze: Barbera, 1941, p. 81.

102 "Quae **aquae publicae** in oppido coloniae Genetiuae adducentur, IIuiri qui tum erunt ad decuriones, cum duae partes aderunt, referto, per quos agros **aquam ducere** liceat. qua pars maior decurionum, qui tum aderunt, duci decreuerint, dum ne per it aedificium, quot non eius rei causa factum sit, **aqua ducatur**, per eos agros **aquam ducere** ius potestasque esto; neue quis facito, quo minus ita **aqua ducatur**" see CRAWFORD, ref. 40, p. 408.

103 "aliter diruatur tollatur, quam specus reficiundi aut inspiciendi causa," see GIRARD – SENN, ref. 51, p. 404-407.

104 "Quaeque aqua in oppidum Venafranorum it fluit ducitur, eam aquam | distribuere discribere uendundi causa, aut ei rei uectigal inponere consti|tuere.... dum ne ea aqua, quae ita distributa discripta deue qua | ita decretum erit, aliter quam **fistulis plumbeis** d(um) t(axat) ab riuo p(edes) L ducatur. neue || eae fistulae aut riuos nisi **sub terra**, quae terra itineris uiae publicae limi|tisue erit, ponantur conlocentur ; neue ea aqua **per locum priuatum** in|uito eo, cuius is locus erit, ducatur."

105 RODGERS, Robert H. *Frontinus de aquaeductu urbis Romae*. Cambridge, 2004, p. 102-114. The *SC* can be found in the second book in paragraphs 100, 104, 106, 108, 125 and 127.

The section also concerns the number of public fountains that is not to be raised nor diminished and the commissioners are supposed to ensure that all the fountains can provide water continuously in day and night. The paragraph 106 forbids private persons from drawing water directly from the conduits and those were given the right to do so, are supposed to draw it from the reservoirs. It also sets conditions under which private persons are allowed to build their own reservoirs for collecting water from the public ones, regulating also maximum perimeter of the pipes that can be used for conducting the water. In the paragraph 108 then the law speaks of granting the permission to conduct water in and outside the city, while previous grant is valid if the user can provide reason for such a grant, which does not apply to baths. Section 125 deals with repairs of already existing structures for distribution and collection of water stating that the material used for such repairs is supposed to be obtained from private individuals, where it is most appropriate without causing damage tot hem and the value of the material is to be compensated to them after setting the price by an honorable man. Such private individuals are obliged to cooperate at any time until the repairs are finished. The last-mentioned paragraph, 127, states that 15 feet wide area is to be left clear on both sides around springs, arches and walls outside the city (concerning the structures for conducting water) and 5 feet around the structure in the city from the moment the law became valid. This related especially to the building of tombs, structures, and planting trees while the trees that have already been planted around the water distribution structures within the said area were supposed to be torn out along with the roots, of course if they were not connected to other structure, and such action would cause damage to the structure. Trespassers of the regulation were subjected to a fine of 10 000 sesterces.

The last of the laws is *Lex Quinctia de Aquaeductus* from the year 9 BCE[106], containing the most prominent clause in its beginning stating that anyone who would damage the water distribution system in a way that its flow would be impeded (diminishing was enough) and the deed would be done with malice (with bad intention), the person would be subjected to a fine of 100 000 sesterces and would be obliges to secure restoration of these structures. The law also describes various forms of action that can cause such damage as well as outcomes of the damage and sites that can be affected[107].

Besides regulations concerning the construction of aqueducts, their maintenance, and rights to conduct water, equally important are the laws concerning the office of the water commissioners, since these supervised the state and manipulation with the aqueducts (whether the construction, maintenance, or right to draw water). The water commissioners carrying the title *curator aquarum* are mentioned in the *SC* of 11 BCE in relation to their privileges. Much more prominent legal document in this regard is the *Lex Quinctia de Aquaeductus*, where we can find various rights and obligations of the commissioners concerning the aqueducts and drawing water from them. The law states that the commissioner has following rights and obligation:

Whoever is curator of the water supply, or, if there is no curator, then the peregrine praetor, shall compel and coerce by fine or by seizure of pledges the proper execution of all these acts. The said curator shall have the right and the power of compulsion, coercion, assessment of

106 "Quicumque post hanc legem rogatam rivos specus fornices fistulas tubulos castella lacus aquarum publicarum, quae ad urbem ducuntur sciens **dolo malo** foraverit ruperit foranda rumpendave curaverit peiorave fecerit, quo minus eae aquae earumve quae queat in urbem Romam ire cadere fluere pervenire duci quove minus in urbe Roma et qua aedificia urbi continentia sunt erunt, in is hortis praediis locis, quorum hortorum praediorum locorum dominis possessoribus U. F. aqua data vel adtributa est vel erit, saliat distribuatur dividatur in castella lacus (in) mittatur, is populo Romano [HS.] **centum milia dare damnas esto** ; et qui d(olo) m(alo) quid eorum ita fecerit, id omne sarcire reficere restituere aedificare ponere excidere demolire damnas esto sine dolo malo," see RICCOBONO, ref. 101, p. 152-154.

107 JOHNSON at al., ref. 38, p. 119-120.

fines, and seizure of pledge on this account; if there is no curator, then the aforesaid praetor shall have this right and power[108].

They are also responsible for maintenance of the surroundings of the aqueducts and grant of the rights to conduct water from them. The water commissioner himself was the head of the office of responsible for the maintenance of the aqueducts, distribution of water and construction of new sections of the water distribution network, should the need arise. He also participated on the creation of a team of qualified workers that specialized in maintenance of the aqueducts, consisting of 140 slaves (*familia aquaria*), whose number increase during the reign of Claudius by 460 more (*familia aquaria Caesaris*). These were appointed by the *curator aquarum* who was also responsible for financing their upkeep. Other official in the office were *adiutores* as technical advisors, or *procuratores aquarum* responsible for the *familia aquaria Caesaris* as well as securing the distribution of funds needed for the maintenance of the aqueducts or granting permissions to use public water sources *in nomine Caesaris*.[109].

One of the most prominent commissioners was Marcus Agrippa who systematized the rights to draw water (dividing them to *publica opera*, *lacus* and *privati*) and introduced standardized pipes used for conducting water which allowed better regulation of conducting the water[110]. He also initiated the construction of three new aqueducts (*Aqua Tepula*, *Julia* and *Virgo*), while commissioning the repair of the already existing ones. Agrippa also created distribution schemes to better satisfy the needs of the city concerning demand for water[111]. Water from the aqueducts was classified according to its quality, although, as we have already mentioned, the process of determining its quality relied solely on the use of human senses and did not ensure that it was healthy enough for drinking. The water of worst quality was used for artificial lakes or irrigation and the water that had the best quality was meant for drinking[112] meaning that each aqueduct had its specific purpose.

It is also important to mention the laws that concerned access to water and its distribution outside the city of Rome, such as *Lex coloniae Genetivae Iuliae seu Ursonensis*, *Edictum Augusti de Aquaeductum Venefrano*, and *Tabula Contribensis* from the year 89 BCE. The last of the documents is of no great significance to the actual regulation, however, it mentions a dispute concerning a purchase of estates that would be used for building a public aqueduct. [113] The Charter of Urso and the edict concerning Venafrum, on the other hand, are significant in sense that they place the care for local aqueducts in the hands of local authorities, while in Venafrum the authority is the local citizen body (*coloni*) despite the fact resolving any disputes that would arise were reserved for *praetor peregrinus* in Rome.[114]

Water was distributed to the city of Rome not only for the purpose of drinking and in the time of the principate the greatest consumers of water were the house of the emperor (*nomine Caesaris* – gardens and palaces), public services (*opera publica* – such as baths), and public fountains (*munera*) providing water to the general population of the city. [115] Concerning the public use of the water besides drinking, the baths were very popular part of everyday lives of the Romans and were even recommended by the physicians as means for curing various diseases. The physician Celsus in his work *De medicina* mentions baths as the treatment for various diseases in many places and as an example, in chapter 17 he recommends the bath as the treatment for

108 Ibidem, p. 120.
109 MARIUS, ref. 98, p. 71-94.
110 BANNON, ref. 85, p. 75.
111 EVANS, ref. 91, p. 401-411.
112 HANSEN, ref. 83, p. 268.
113 BIRKS, Peter – RODGER, Alan – RICHARDSON, John S. Further Aspects of the Tabula Contrebiensis. In *Journal of Roman Studies*, 1984, Vol. 74, p. 45-73.
114 BANNON, ref. 85, p. 78.
115 MARIUS, ref. 98, p. 88.

fever to induce perspiration.[116] Going over various cases in which the bath is recommended for treatment we would see, that in many cases it involved highly infectious diseases such as typhus, malaria, dysentery or even rabies. Since the only place where the general population could perform some form of personal hygiene concerning the whole body were the baths, we can see that these facilities presented serious danger to public health. However, it seems that the Romans themselves noticed the risk of bathing of the sick and healthy people together and as Scobie mentions, the emperor Hadrian introduced a regulation according to which the sick were only allowed to use the bath in specific time during the day.[117] Besides, Seneca mentions in his letters that the pools in the baths were regularly cleaned the task to oversee the cleanliness of the baths was reserved to the aediles who were conducting the control of the baths in relation to its cleanliness, as well as the temperature of the water considering its use and health, while sources even mention the use of filtration.[118]

The preserved legal documents that were introduced in the time of Roman republic and early principate, however few they may be, show how important was securing access to fresh water to the Romans, and not only in Rome itself, but construction of such structures was also supported in other areas controlled by Rome, as some of the sources demonstrate. Although they did not have knowledge in the area of medicine that we have today, they observed the laws of nature and their surroundings carefully enough to formulate at least basic rules to determine whether certain water source if suitable for consummation, although it did not ensure that the water was sanitary enough to prevent any health risks. This basic knowledge was demonstrated in the use from the aqueduct *Aqua Alsietina* which was drawn from a lake (instead of a spring), as a result being considered unsuitable for drinking and was rather used for irrigation and *naumachia*.[119] No matter how successful the Romans were in preventing the spread od infectious diseases in reality (concerning the lack of necessary knowledge), it is without a doubt that the emphasis on personal hygiene was much greater than in later periods of history in Europe, which practically rediscovered water supply networks and sewers in the nineteenth century,[120] regular bathing being also considered a suspicious activity for a very long period of time.

CONCLUSION

We can conclude along with Scobie that despite the obvious limitations of hygiene in the city of Rome compared to current standards required by modern western industrialized civilizations, the Romans achieved a remarkable level of standardization concerning facilities such as public latrines or baths[121] and of course in securing the access to freshwater via aqueducts, as well as the system of sewers. Frontinus himself links the need for access to water not only with

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116 *Sudor etiam duobus modis elicitur, aut sicco calore aut **balneo***. Other references to bathing as a cure for a disease are in 3.6.14; 3.12.3; 3.22.1 - 6; 3.27; 4.2.8; 4.15.4; 4.18.1 – 6; 4.23.3; 4.24.2, 4.25.2; 4.26.2; 4.28.1; 5.27.; 5.28.; 5.6.; 6.11.

117 SCOBIE, ref. 66, s. 425; See also SCHEIDEL, Walter. *Disease and Death*, ERDKAMP, Paul (ed.). *Cambridge Companion to Ancient Rome.* Cambridge: Cambridge University Press, 2013, p. 54.

118 Ep. 86.10-11: Nam hoc quoque **nobilissimi aediles** fungebantur officio intrandi ea loca, quae populum receptabant, **exigendique munditias** et **utilem ac salubrem temperaturam**..... Non **saccata aqua** lavabatur, sed saepe turbida et, cum plueret vehementius, paene lutulenta.

119 **Alsietinam aquam**, quae vocatur Augusta, **non satis** perspicio: nullius gratiae, immo etiam parum salubrem ideoque nusquam in usus populi fluentem; nisi forte dum opus **naumachiae** adgreditur, ne quid salubrioribus aquis detraheret, hanc proprio opere perduxit et quod naumachiae coeperat superesse **hortis adiacentibus et privatorum usibus ad inrigandum concessit**. FRONTINUS. Complete works of Frontinus, East Sussex: Delphi Classics, 2015, p. 72-73.

120 AMULREE, ref. 53, p. 244–255.

121 SCOBIE, ref. 66, p. 400.

comfort but also with the health and safety of the city.[122] Of course, compared to contemporary standards of sanitation the level of hygiene would be less than sufficient considering the health risks presented by the Roman water distribution system (source of water and cleanliness of the structures) or disposing of human waste and handling the inflicted. However, the presented sources show that the Romans were to some extent aware of risks connected to lack of freshwater or system of sewers, and they even had some basic notion of how some of the infectious diseases spread. The deficiencies concerning hygiene were not so much the result of the lack of effort than the lack of knowledge.

Judging the level of hygiene and the success in preventing contraction of infectious disease and their treatment in case of an outbreak cannot be limited to the analysis of legislature only concerning the disposal of dead bodies, and the construction of aqueducts and the system sewers. Even if these were sufficient enough, there are other factors contributing to the inability to stay off any outbreaks of epidemics, such as overcrowding, inappropriate burial methods, causing parts of bodies being brought to cities by various animals, lack of knowledge considering what constitutes a healthy source of water and how to adjust such water for drinking, and at last but not least the environment where the population lives in relation to diseases being carried by various insects, such as surrounding marshes and malaria-infected mosquitos.

However, it is important to mention that Rome did have legal regulations, concerning the construction, and maintenance of sewers and aqueducts along with the regulation of who could tap such construction and under which conditions. Concerning the access to freshwater, although it might not have been sanitary enough, the main concern of the city was to provide all its population with enough water, which was the main reason for building the aqueducts. Rome also regulated keeping the city streets clean, which was the responsibility of the aediles, and as a result, we can conclude that the fact that people would throw their waste into the streets during the night shows that they were trespassing. The law also regulated the cleaning of the baths, which means that the Romans were aware that to leave them without proper maintenance for a long time was unsanitary. The fact that also visiting our would be adjusted for the sick and healthy also shows that they were aware of health risks of the risk and health bathing together, however, limited their knowledge was.

In conclusion, we could say that if the Romans followed their own regulation and insisted on providing the access to a public system of sewers to a much greater portion of Rome's population (the best would be for all), and cared for proper burials of dead bodies deep enough to be prevented from being dug out by animals, the health standard and overall level of hygiene in Rome would be much greater, and perhaps would even prevent contraction of infectious disease to some extent. In sum, Rome had the resources but did not care to implement the regulation enough.

[122] Front. Aq. 1.1.