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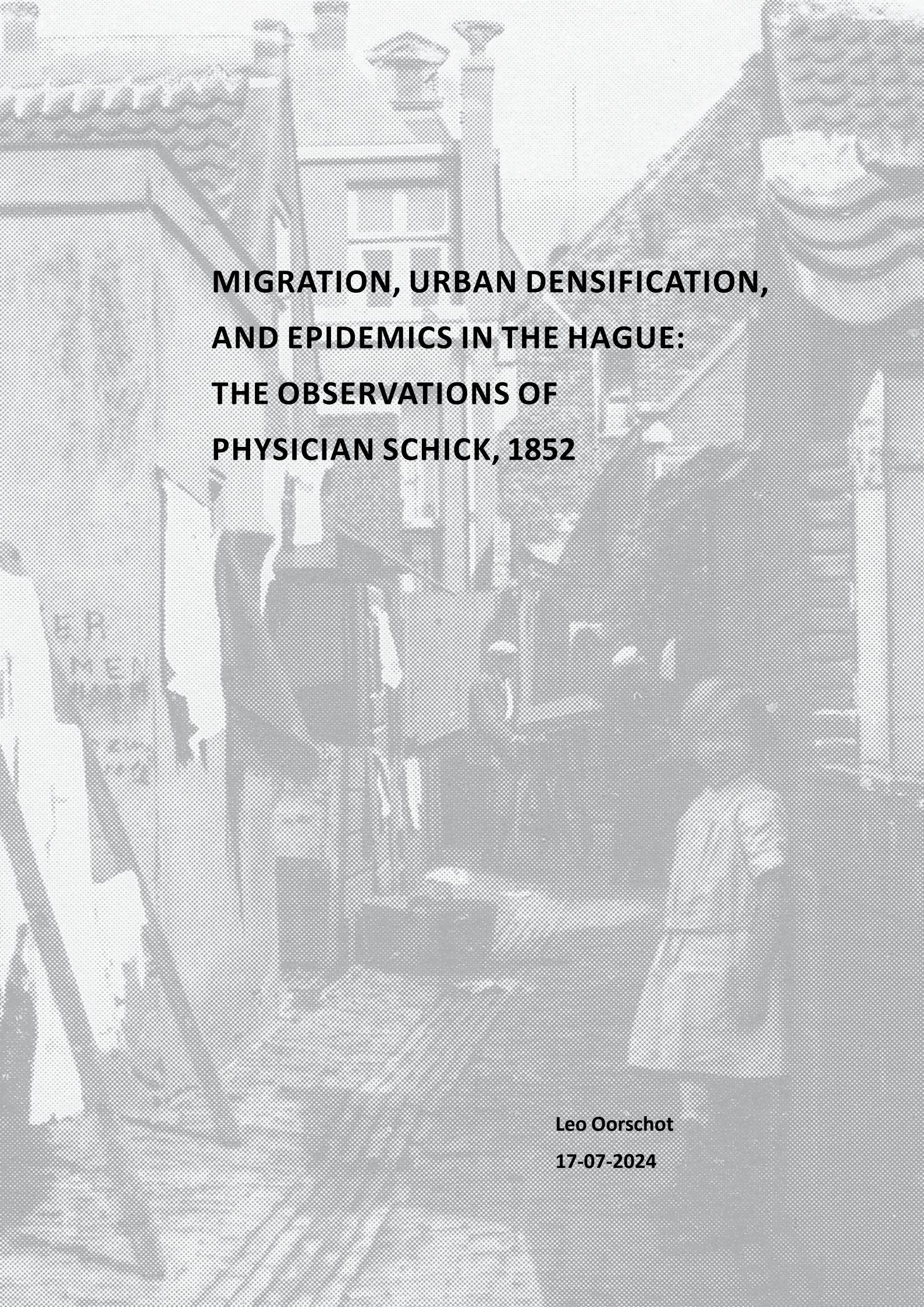

MIGRATION, URBAN DENSIFICATION, AND EPIDEMICS IN THE HAGUE: THE OBSERVATIONS OF PHYSICIAN SCHICK, 1852

Leo Oorschot

17-07-2024



Figure 1.
Dr. Johannes Wilhelmus Schick (1818-1853)
lithograph door Adolf Hohneck.
Source: The Hagie Municipal Archives.

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“All those wheelbarrows belong in Paddemoes (St. Jacobsstraat), Bezemstraat, Langegracht, and Voldergracht. In numerous narrow, slippery corridors that lead to dark alleys, dwell those industrious peddlers, whose hoarse guttural sounds echo through the streets all day long. At the entrance of the slums, you sometimes see their wives and children crouching or leaning. The shabby duffel of the girls and women makes their dark, sparkling eyes and beautiful black hair stand out even more. Even their posture betrays a certain grace seldom found among the lower classes of Christians.”

Johan Gram, Haagsche schetsen, 1900: 228

1 Introduction: The Hague Then and Now

1.1 Migration, Densification, and Epidemics

This article discusses the research conducted by physician and hygienist Johannes Wilhelmus Schick (1818-1853) in 1852 on the victims of the cholera epidemic of 1849 in The Hague. The situation during the COVID-19 crisis in The Hague is comparable to that of the period from 1830 to 1870 (Stokvis, 1987). Due to migration, housing division, and rooming, the city has become considerably densified in recent years (PBLQ, 2020). Apartments were bought up on a large scale and rented out at extortionate rates to newcomers in the city and on the housing market, without affordable new construction.

Even after the French Period, there was strong growth in population and densification, especially among migrants from the Dutch countryside, Germany, and the Southern Netherlands. Dilapidated mansions were provisionally split into small units, and courtyards were hastily filled with one-room houses.

These newcomers were hit hardest by epidemics such as cholera and typhus, just as today's newcomers are affected by COVID-19. Today's municipality executive's face the same challenges as they did around 1850, when densification and poor hygiene within the existing city led to miserable conditions with diseases such as cholera and typhus. The relevance of this research lies in the comparability of the situation in the city then and now.

1.2 Paradigm Shift

Schick's research work was published in 1852 as *Over den gezondheidstoestand van 's Gravenhage* (On the Health Condition of The Hague). The claim in this article is that Schick's research, for the first time, related the fields of pathology, statistics, and site conditions, placing health at the center of urban reception. Schick was thus at the forefront of a movement of hygienists, a group of like-minded individuals who strived for better sanitation and healthier cities and homes. In addition to doctors, the hygienist movement was broadened by Schick's research to include engineers and architects. This research led to many new initiatives and legislation in the second half of the nineteenth century in the fields of housing, urban planning, and the construction of facilities such as drinking water systems and sewers to eliminate disadvantageous location factors.

Schick's research testifies to a paradigm shift from the pre-modern city to the modern city, where hygiene and facilities such as drinking water, sewers, and healthy housing are central. Schick made a connection between epidemics and the densification of the city within the canals, with large groups of vulnerable newcomers after the French Era. The paradigm shift took place seemingly silently, but in retrospect, it clearly divides the reception of cities in the period before and after Schick. It is no coincidence that Schick's research took place during a time of major administrative changes in the Netherlands, with Thorbecke and the implementation of parliamentarism.

This period is a watershed, marking the transition from the old city to the modern city, where political reforms, hygiene in the planning of new neighborhoods, and the construction of new houses became increasingly central, culminating in the adoption of the Housing Act by parliament in 1901.

This paradigm shift is also evident in city maps. On the municipality maps of Van der Poth (1812), Zürcher (1817), Zeger Reijers (1833) (figure 2), and Belinfante (1847), the representative city was depicted with all the important buildings, while everything within the building line was not drawn or shaded. In 1868, hygienists from The Hague commissioned surveyor Last and mapmaker Lobatto to create a city map on which slums were meticulously indicated, thus underlining the significance of Schick's work (figure 3). Schick's insights would become the guideline for hygienists, urban planners, and architects in The Hague until the Second World War.

The questions addressed in this article are: Who was physician Schick? What does his research entail, and what were the consequences of his research?

The structure of this article is as follows: paragraph 2 provides a reconstruction of Schick's life, paragraph 3 discusses the conditions that determine health, paragraph 4 covers natural and artificial conditions, and paragraph 6 concludes with attention to the victims themselves and a sketch of the slums.



1 Grote of St Jacobs Kerk.



2 Paleis van Z. M. in het Bosch.



3 Paleis van de Prins van Oranje.



4 St Konings



7 Paleis van Z. M. op het Plein.



9 Ministerie van de Marine



11 Wacht aan de Kon. Brug



13 Diaconie Huis



15 Oranje Cazerne



17 Pavilloen van de Koningin te Scheveningen.





19 Waalsche Kerk.



20 Badhuis te Scheveningen.



21 Loterij Zaal.



22 Gebouw van de Staten-Generaal.



23

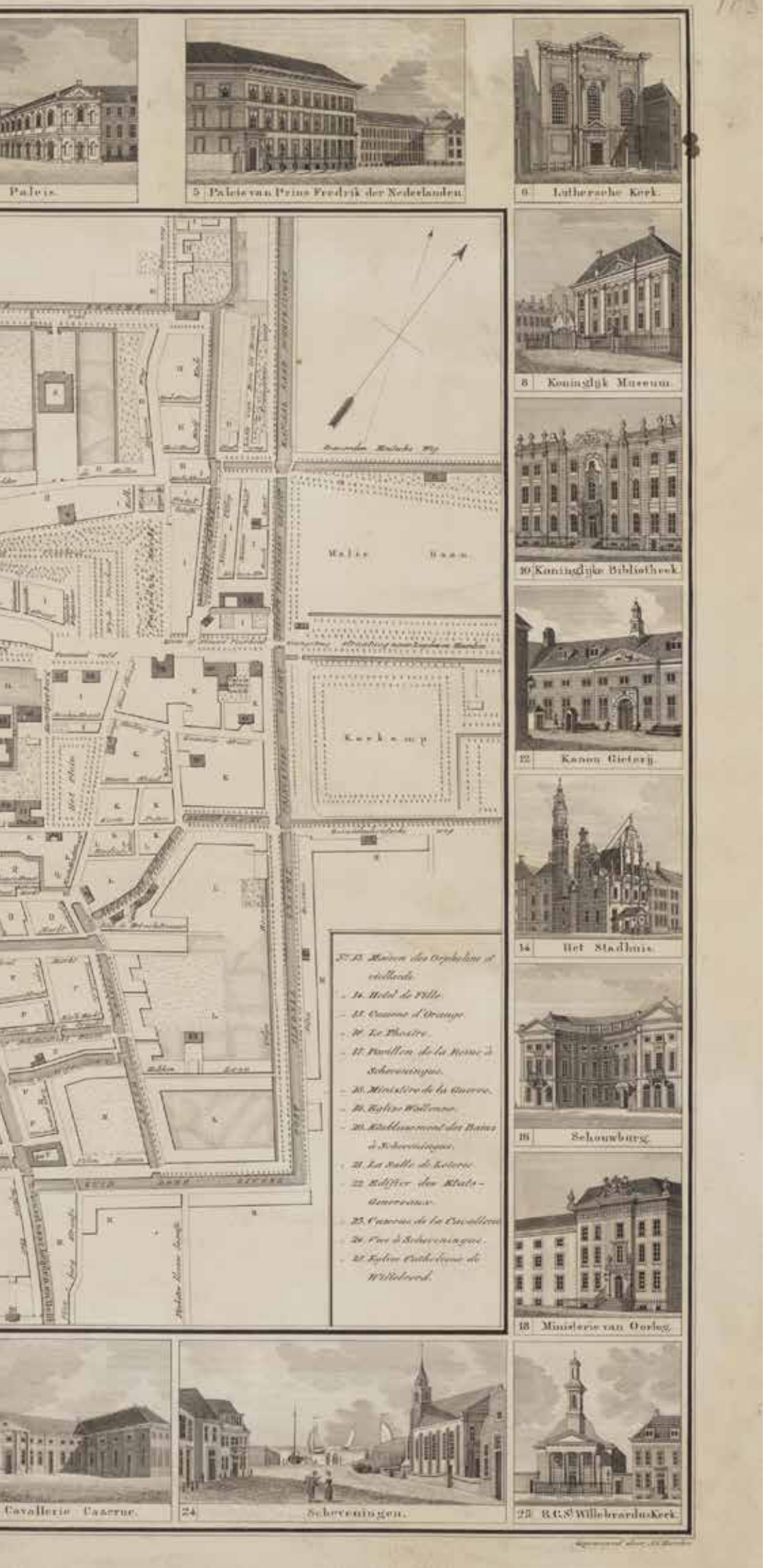


Figure 2.
City map by the municipal and Zeger Reijers from 1833.
Source: The Hague Municipal Archives.


Platte Grond
van
'S GRAVENHAGE,
VERVAARDIGD OP LAST VAN DE VEREENIGING TOT ONDERZOEK NAAR DE MIDDELEN
TOT VERBETERING VAN DEN GEZONDHEIDS-TOESTAND IN GEMELDE GEMEENTE
Met het Kadaster overeengebracht en van perceelen voorzien
DOOR C. E. LAST, LAND-MEYER EN HET KADASTER
Gemeenschap van Geneeskundige door J. Lobatto R. Z.
1868.





Figure 3.
City plan from 1868 measured by C.E. Last, surveyor at the land registry and drawn and put on stone by J. Lobatto on behalf of the ***Association for research into the means to improve the health condition of The Hague*** *(1866-1872). Fragement above is the Jewish quarter and fragment below is the neighborhood that is lowest in the polder with the most typhus victims.*
Source: The Hague Municipal Archives.

1.3 Previous Research

Schick never left The Hague, and previous research into his work was conducted in different periods with varying motives. In the second half of the nineteenth century, hygienists from The Hague further developed Schick's program for the city, focusing on legislation, good housing, and sanitary facilities. Schick legitimized the project of creating a healthy city and housing. The first urban planner, Isaac Lindo, began to lay out infrastructure such as sewers, drinking water systems, streets with sidewalks, rails, and electricity on a large scale. During the interwar period, his successor, Piet Bakker Schut (1939, 1948), with reference to Schick, continued the project with decent hygienic and affordable housing.

With post-war suburbanization, the focus on migration, urban densification, stagnation of construction, and epidemics faded. Suburbanization led to a new kind of urban planning with self-evident hygienic housing. In recent years, Schick's study has mainly been examined from a historical perspective. Local historiography pays attention to Schick, with Stokvis (1987) describing the situation in the nineteenth century in detail. Houwaart (1991), Lintsen (1993), and Van der Woud (2010) also discuss Schick, placing him in a broader context.

As point out, with the arrival of many migrants, densification of the city through splitting and rooming, the failure to build affordable housing, and new epidemics, Schick's historical work has come to be seen in a new light.

2 Who was dr. Schick?

2.1 Migrant Workers in The Hague

Johannes Wilhelmus was born in 1818, was a physician in The Hague. He was a descendant of a German family of furniture makers who had established the company J.A. Schick & Co in The Hague after the French period. His grandfather, Johannes Abraham Schick (1750-1829), was originally from Neukirchen, North Rhine-Westphalia, a village near Duisburg. The family arrived in The Hague because they were commissioned to make the furniture and furnishings for Noordeinde Palace on behalf of King William I, who had lived in the palace since 1817.

On May 11, 1820, the ***Rotterdamsche Courant*** reported that many pieces of furniture made by J.A. Schick & Co could be seen in their house on the Hoogstraat (District E, no. 347). Around 1822, Johannes Abraham settled permanently in The Hague. His son, Johannes George Schick, took over the company from his elderly father in 1823. The ***Rotterdamsche Courant*** (October 23, 1841) and the ***Middelburgsche Courant*** (October 19, 1841) mentioned the location of the furniture warehouse a few years later. It was in one of the most beautiful buildings at Noordeinde 138-140: 'the very renowned and extensive Warehouse of AMEUBBLEMENTS of the Lords J.A. Schick & Co' was located there, and the furniture was sold by notary Van der Haak. Apparently, the building at Noordeinde 138-140 (Neighboorhood F, no. 62) was used by the company, which was dismantled in 1841 (sources: Delpher & The Hague Municipal Archives).

The parents of Johannes Wilhelmus were Johannes George Schick (1790-1862) and Johanna de Thoméze (1785-?), who married on December 9, 1812, in The Hague. Johanna is listed in the population register as a pensioner from Culemborg. Whether his father was actually a furniture maker is questionable. Perhaps he ran the family business on the side or inherited the business. According to openarchieven.nl, his profession was listed as Geometric Engineer at the Land Registry, which might explain his son's interest in geography and mathematics.

Between 1819 and 1840, after the birth of Johannes Wilhelmus, the family had several children who are registered as deceased in the municipality of The Hague. Of the children, only Johannes Wilhelmus and Maria Jeanette Henriette reached adulthood. There are no birth or death certificates for either of them in the municipal archives of The Hague. On July 4, 1862, Johannes George Schick died in Paris (***Algemeen Handelsblad***, March 18, 1863). He left behind a valuable collection of paintings and a marble statue that were auctioned by a notary at the Venduhuis in The Hague. Johannes George also appears on the list of the highest taxpayers (The Hague Municipal Archives).

Johannes Wilhelmus witnessed his sister's marriage to Willem Jozef Andries Jonckbloet (1817-1885) in 1848 in The Hague. His sister's family remained childless, and Johannes Wilhelmus was not married and also childless. There are no descendants of the Schick family left in the Netherlands (Krul, 1892).

The migrant Schick belonged to the new elite of The Hague and stood outside the old order of the Reformed administrative elite. It is unclear what religion or philosophy they adhered to, though they

may have hoped for the changes that the liberal Thorbecke would bring. This was the family environment in which physician Johannes Wilhelmus Schick grew up.

Schick and his brother-in-law Jonckbloet likely knew each other from The Hague gymnasium, which was renamed Stedelijk Gymnasium in 1838. Jonckbloet studied there from 1831 to 1835. Both then continued their studies in Leiden, where Thorbecke was a professor advocating for the reform of constitutional law and the constitutional system. Jonckbloet's parents were Johannes Reinier Jonckbloet, a courtier to the king, and Susanna Diehl, a lady-in-waiting. It is believed that his biological father was King William II. One of Jonckbloet's early works was the untitled ***Physiologie van den Haag door een Hagenaar*** (Physiology of The Hague) from 1843. Jonckbloet was an influential man of letters, professor, and liberal politician. He authored a comprehensive history of Dutch literature and advocated for a Dutch theory grounded in science. Jonckbloet served as a member of the House of Representatives from 1864 to 1877, focusing particularly on education legislation and aligning with another prominent liberal, I.D. Fransen van de Putte. The Puttians criticized Thorbecke's colonial policies.

Schick obtained his doctorate in medicine from Leiden University on October 28, 1843, and established himself as a doctor of medicine in The Hague in 1845. In the autumn of 1851, he purchased the large building at Noordeinde 138-140, where his family's business had once been located, indicating his considerable wealth. In early 1851, Schick visited Vienna with a group of physicians to view a collection of optical instruments by J. Reis. In December 1852, he was appointed inspector of the municipal pharmacy. He also briefly served as a physician at the Zeebadinrichting in Scheveningen (Krul, 1892).

2.2 Schick's Position within the Hygienists

Schick's position within the hygienists' movement is characterized by his method of localism, as described by Houwaart (1991). Localism views the health of a population group as a result of specific local conditions, contrasting with the traditional focus on pathology in medical studies. During Schick's time, mortality was typically attributed to factors such as dietary patterns among different social classes. The localism approach, however, provided a more suitable explanatory model by calculating the number of deaths per unit of time relative to the population size at each location. This metric, termed the 'mortality ratio' or 'mortality number', reflected the proportion of deaths to the living population.

By analyzing the ratio of deaths to births over time and across different locations or cities, Schick identified problematic areas. Once identified, further investigation could pinpoint specific causes. Schick introduced French and English insights to the Netherlands, linking mortality rates directly to local conditions. This approach originated in the Enlightenment and gained prominence between 1830 and 1850 in France and England. In the Netherlands, however, it was not until the latter half of the nineteenth century that this approach gained significant influence (Houwaart, 1991; Lintsen et.al., 1993).

Although Schick did not explicitly mention him, it was likely physician C.J. Nieuwenhuijs who, with his work ***Proeve eener geneeskundige plaatsbeschrijving (topographie) der stad Amsterdam*** (1816-1820), first connected epidemics to the quality of the living environment in the Netherlands (Van der Woud, 2010: 235). However, Nieuwenhuijs' work lacked the statistical method at the district level that Schick later employed. Schick did reference a French Enlightenment source that conducted similar research.

An essential role in the activities of hygienists was played by the Royal Dutch Society for the Promotion of Medicine (NMG), established in 1848 and becoming Royal (KNMG) in 1849, an organization for doctors in the Netherlands with local branches in cities. Notable hygienists and contemporaries in The Hague included physician T.H. Blom Coster (1817-1904), who practiced in The Hague from 1843 and served as city physician until 1897. One of the founders of the NMG was J.C.G. Evers (1818-1886), who became chairman of the Hague branch from 1850 and co-founded The Hague Medical Society. Evers conducted medical-statistical research in The Hague during the cholera epidemic of 1848-1849. After retiring as a professor of medicine in Leiden, he served as a counselor in The Hague from 1874 to 1884. L.H. Verwey (1816-1875), a doctor of medicine, was active in The Hague from 1839 and advised Minister Thorbecke on public health regulations. Casper Pieter Pous Koolhaas (1831-1893) earned his doctorate from Leiden between 1856 and 1858, settled in The Hague two years later, and became a prominent advocate for sanitary reform.

According to Houwaart, Schick was the first, following physician E.C. Büchner (1812-1882) from Amsterdam, to elucidate the deteriorating state of health attributed to increasing pollution and living conditions in the city. Büchner, from 1852 until his death,

chaired the Salerno Workers' Building Society and advocated for the improvement of workers' housing. He was also a longstanding member of the city council. Büchner collaborated closely with physician Samuel Sarphati (1813-1866), and together they made significant contributions to public health and urban development in Amsterdam. Interestingly, in a book review of Büchner and C.G. van der Post's work, which included their exploration of the role of statistics in medical research, Dr. P.F. Otten had already referenced Schick's publications (***Algemeen Handelsblad***, December 13, 1852).

Schick's study garnered significant attention, with numerous newspaper reports highlighting its importance. Two prominent hygienists, Schimmel and Voorhelm Schneevoogt, extensively discussed Schick's work in ***De Gids*** (Volume 16, 1852: 522-525). They emphasized that his work deserved the attention of physicians, city councils, and the emerging field of statistics.

Many hygienists of that time were associated with Thorbecke, who was instrumental in political reforms and fostering a period of political enlightenment. Apparently, Schick also had connections with the national government, much like his brother-in-law. On September 22, 1852, Schick attended a congress of physicians in Brussels along with Von Baumhauer, as reported in the ***Nieuwe Rotterdamse Courant*** on September 24, 1852. Among the other delegates were liberal politician Mr. W. de Sitter from Groningen, philanthropist and prison reformer W.H. Suringar, and chemist Professor E.H. von Baumhauer from Amsterdam. At this congress, Schick was appointed vice president.

In 1852, Schick published a report titled "Report of the delegate of the Society concerning the European Congress of Hygiene" in the ***Journal NMG 3*** (1852: 185-212). This report detailed the proceedings of the congress, where Dutch delegates were sent by the government, indicating the influence of Thorbecke's liberals.

2.3 Structure and Method of Schick's Study

The reason behind Schick's research was the cholera epidemic of 1849. Despite advancements in medical science, he observed a deterioration in health conditions and an increase in infant mortality in The Hague. This city posed a persistent anomaly that Schick sought to investigate through his study. Schick's study is structured into main parts:

First of all, an introduction with the main question, approach, concepts such as 'mortality rate' and 'lifespan', and the method he uses. He then discusses similar domestic and foreign studies. The population archive compares the cause of mortality from the period 1755-1773 and 1830-1848, showing the deteriorating state of health after the French period in The Hague. Furthermore, he concluded that The Hague was an exception compared to other cities. In Table A (figure 4), he presented mortality ratios from these two periods in The Hague. In short, a convincing problem. His research question is: "What is the current state of health of our city compared to the past? What are the changes that have taken place? What are the causes? By what means can the good be preserved and the evil and harmful be removed and destroyed?" (Schick, 1852: 2).

The second part deals with circumstances or causes of certain epidemics in relation to air, water, soil conditions, daylight, and densification of plants, animals, and people.

Thirdly, Schick discusses the case of The Hague: epidemics and densification are then given a face. Schick then described the Cholera epidemic of 1849. In it, he investigated various aspects of the neighborhoods, showed the major differences, and identified causes.

Lastly, he described the measures that should lead to improvements in a healthy city with facilities such as sewers and drinking water system, and healthy housing.

There had long been suspicions of a relationship between specific places and health. Schick therefore begins his study with a quotation by Johan Beverwijck from the ***Schat der Gesontheyt*** from 1636, in which the relationship between polluted air and places where the air is always unhealthy, and where people cannot afford to leave these places, is discussed. Beverwijck's recommendation to the readers is to improve this 'quade Air' as much as possible. This early form of localism shows that the relationship between place and health was suspected much earlier. The Roman architectural writer Vitruvius also made the connection between health and place.

The other sources Schick used show that he was well-informed about foreign studies. In particular, the mortality tables drawn up by the mathematician Antoine Duparcieux in France in 1745 were an example for him. Presumably, Schick was referring to ***Essai sur les probabilités de la durée de la vie humaine*** (1746), a study of human lifespan from France. In

TABEL A.

Leeftijd.	Sterfte volgens den ouderdom op 10,000 overledenen.		Overblijvend getal.		Verschil.
	1755—1773	1830—1848	1755—1773	1830—1848	
Beneden 1 jaar.	2414	2819	7586	7181	405
1 — 5	1624	1497	5962	5684	278
5 — 10	409	312	5553	5372	181
10 — 15	174	138	5379	5234	145
15 — 20	169	223	5210	5011	199
20 — 25	240	352	4970	4659	311
25 — 30	285	334	4685	4325	360
30 — 35	280	303	4405	4022	383
35 — 40	383	333	4022	3689	333
40 — 45	315	312	3707	3377	330
45 — 50	384	313	3323	3064	259
50 — 55	374	309	2949	2755	194
55 — 60	445	364	2501	2391	113
60 — 65	436	402	2068	1989	79
65 — 70	490	483	1578	1506	72
70 — 75	472	464	1106	1042	64
75 — 80	432	475	674	567	107
80 — 85	348	332	326	235	91
85 — 90	203	173	123	62	61
90 — 95	80	46	43	16	27
95—100	33	14	10	2	8
100—105	7,5	1,8	2,5	„	2,5
105—110	2,6	„	0,4	„	0,4
110—115	0,4	„			

Figure 4.
Table A in which Schick shows the mortalityin The Hague in two periods. Source: Schick, 1852:6

Schick's time, the densification of cities, epidemics, lack of good housing, and urban facilities were also described in the literary works of Charles Dickens and in the observations of Friedrich Engels (1845). Schick did not mention them by name, but he does describe similar cases as Engels.

Schick's study was pivotal in linking local environmental conditions and statistics with health outcomes, contributing significantly to the emerging field of urban hygiene and public health in the Netherlands during the mid-19th century. His structured approach and methodological rigor laid the foundation for future studies in this field. From now on, health in cities is not only a concern for doctors but also for administrators, urban planners, and architects.

3 Conditions that Determine Health

3.1 Deteriorating Health Situation in The Hague after the French Period

Schick compared The Hague Population Archives from the periods 1755-1773 and 1830-1848, revealing a significant deterioration in the state of health. Infant mortality up to the age of 5 and mortality between the ages of 15 and 35 stood out in particular. Schick observed that: "Of 10,000 born in this century, only half would remain after 20 years, while in the last century half would have died only after 25 years." (Schick, 1852: 7). The average human lifespan had dropped from 30 years and 351 days to 29 years and 29 days. However, as Schick also observed, the difference in lifespan among individual neighborhoods varied.

When Schick excluded smallpox, which was prevalent in the first period but rare in the nineteenth century, from the mortality list, the difference in lifespan in The Hague appeared to worsen by 3.5 years. Schick concluded that the mortality rate among young children had greatly increased, fewer people were reaching old age, and both the probable age and average lifespan had decreased. According to Schick, The Hague had clearly deteriorated in terms of mortality and longevity.

In Table A, he summarized the data on mortality in The Hague for the two periods. He calculated the number of deaths per 10,000 births per age category. He compared the period 1755-1773 with 1830-1848.

Despite considerable advancements in medical science over the years, other cities both domestically and internationally showed significant improvements in health status.

The mortality ratio was defined as the ratio of the number of deaths to the number of inhabitants. In the period 1622, Amsterdam had a mortality rate of 1:24.5 (1 death per 24.5 inhabitants), while from 1830 to 1850 it was 1:28. Schiedam in 1747 had a rate of 1:26.6, which improved to 1:34.8 around 1850. Haarlem's mortality rate was 1:26.3 between 1745 and 1756, increasing to 1:33.5 around 1850. All other cities showed similar increases in longevity. Schick also noted mortality ratios for foreign cities: London was 1:23 in 1685 and improved to 1:40 around 1850, comparable to figures in France. In Paris, the rate was 1:20 at the beginning of the eighteenth century and 1:32 around 1850. Vienna also showed significant improvement. The Hague, with its deteriorating health conditions, was an anomaly in comparison to these trends.

3.2 Difference in the Quality of Neighborhoods and the Absence of Government

Schick also found that the mortality ratio varied significantly among neighborhoods. Interestingly, some cities also tracked the mortality ratios in different residential areas, shedding light on the quality of individual neighborhoods.

For instance, In York, the mortality ratio was 1:28.22 in the period 1771-81 and improved to 1:43.90 in 1821-1831. In the best neighborhoods the ratio was 1:54.23, in mediocre neighborhoods 1:47.08, in less favorable neighborhoods 1:43.91, and in the worst neighborhoods 1:32.15. Life expectancy in the best neighborhoods was 35.32 years compared to 22.57 years in the worst neighborhoods.

In parishes in Manchester and Chorlton-upon-Medlock, the mortality rate decreased from 1:32 to an average of 1:39 after the construction of sewers and pavement in the streets. In better streets, the ratio was 1:46, in average streets 1:39, and in poorer streets 1:27. Mortality rates were 1:52 in better housing, 1:40 in average housing, and 1:29 in poorer housing.

Similarly, in the most impoverished parts of Leicester, the mortality ratio decreased from 1:14 to 1:24 after the construction of better pavements.

Schick also mentioned the Prince Albert's Exhibition Model Houses for Families that were constructed next to the Crystal Palace at the 1851 World's Fair. In homes where only adults lived, the mortality rate was 1:100 over four years, and in homes where children under the age of 10 lived, it was 1:40. This was considerably better than the overall mortality rate in London, which was 1:19.2.

Schick highlighted New Orleans as an example of poor conditions. The death toll was as high as 1:17, quoting a foreign hygienist: "An embankment, seven feet higher than the ground of the city, protects it from the floods of the Mississippi; it is surrounded by swamps; half the streets are unpaved; There are no sewers. the open gutters often present the most disgusting spectacle; several clearings on ground that are lower than the streets have been flooded in wet weather; Stagnant water is found under the floors of many houses; etc." (Schick, 1852: 18).

Schick also described two other areas noted by hygienists: the islet of Westmannou south of Iceland and the island of St. Kilda in the Hebrides. On these islands, eight out of ten children died between the eighth and twelfth day of their lives, contrasting sharply with clergymen who lived in healthier environments and did not lose any of their children.

For Schick, these examples underscored the importance of examining differences in quality between different neighborhoods. He also highlighted the repercussions of governments failing to implement necessary health measures, which directly impacted the health of citizens.

3.3 Population Situation and Local Conditions

Schick's statement from 1852 reflects his understanding of how human nature is shaped by environmental factors such as climate, location, and lifestyle. Here's a refined version of the quote:

"The nature of humanity varies according to the circumstances in which individuals find themselves. Climate, location, and way of life exert significant influence on both physical health and mental state. When the conditions surrounding individuals change, there is a corresponding alteration in their well-being. Differences in the state of populations between two places suggest variations in local conditions. Similarly, changes in the condition of a population over time within the same place indicate shifts in local circumstances." (Schick, 1852: 19).

This passage underscores Schick's recognition of the dynamic interaction between human health and the environment, emphasizing the importance of environmental factors in shaping public health outcomes.

Schick concluded that the condition of the human body and mind varies and is intricately linked to environmental circumstances such as climate, location, and way of life. Changes in local circumstances have direct consequences for individuals. Disparities in population conditions between two different places indicate differing local environments. Similarly, if the condition of a population changes over time in a particular place, it suggests that local conditions in that area have also undergone change over time. This encapsulates Schick's understanding that human health outcomes are not static but are deeply influenced by the evolving environmental conditions in which people live.

In these circumstances, Schick identified that the causes of diseases can be categorized into general and local causes. General conditions affect larger areas and populations, encompassing factors like urban densification and advancements in medical science. On the other hand, local conditions are specific to certain places, influencing health outcomes within those particular environments. Schick's distinction highlights how both broader societal changes and specific local factors contribute to the health status of populations.

Of this, Schick stated:

"To this end, the causes which alter the health and mortality of a population must be investigated. These may be of a general or local nature. General causes exert their influence over a larger extent, affecting entire populations or multiple regions. Local causes, on the other hand, are attributable to specific local circumstances and impact only a confined area." (Schick, 1852: 20)

"That local conditions really exert a powerful influence on health, mortality, and longevity, we find proof of this in a comparison of mortality in different places. Thus, it can be seen, for example, that the mortality ratio tends to increase in proportion as the accumulation of the population increases. It is well known that in the same region, mortality in the rural municipalities is more favorable than in the towns. The local situation, the nature of the soil, etc., exert a predominant influence." (Schick, 1852: 22)

"Scarcely will we find two places where the ratio of mortality is perfectly equal, but we see that cities

which show great similarity in the natural and local conditions also come near to each other in the ratio of deaths, and that there is a very close connection between such conditions and mortality." (Schick, 1852: 23)

3.4 Circumstances that Led to the Cholera Epidemics

Finally, Schick identified the local conditions, causes, or deficiencies that contributed to the cholera epidemic of 1849 as:
Atmospheric contamination caused by:

- noxious fumes emanating from stagnant canals and ponds filled with decomposing matter;
- consequences of an inadequate sewer system;
- excessive clustering of dwellings;
- overcrowding within houses;
- poor placement and arrangement of houses;
- inadequate street cleaning, etc.

And use of contaminated water, spoiled by:

- significant impurities in canal water and water connected to wells;
- effluents from faulty sewers;
- organic matter saturated soil.

The first factor is air quality. Many diseases, such as typhoid, swamp fever, certain forms of dysentery, and possibly cholera, are caused by airborne toxins entering the lungs. In the slums of The Hague, there was a severe lack of fresh air and ventilation, and the damp soil emitted fumes that caused houses to become moldy and residents to fall ill.

The second factor is soil conditions and flooding. Rainwater and well water were typically used for consumption. In the case of well water, new water continually replenishes when water is extracted. However, the water quality depended on filtration processes occurring as rainwater percolated through the ground and groundwater flow. According to Schick, filtration involves both mechanical and chemical processes. Minerals in the soil bind various substances, rendering them insoluble in water. The hydrodynamics of the soil also play a crucial role in draining substances; stagnant water can lead to the accumulation of contaminants in the soil.

Air, water, and soil conditions together constitute a unified whole that, according to Schick, contributed to the unhealthy local conditions. Additionally, the general circumstance of neighborhood densification, where there are an accumulation of plants, animals, and people amidst organic pollution within cramped and unhealthy housing, creates an unhealthy environment for the residents. Schick argues that it is precisely the combination of general and local causes that precipitates epidemics.

Schick stated: "It is evident, therefore, how closely intertwined are the relations among air and water, our primary necessities, with the soil, the habitation, and the cultivation of the land. Where there is no vegetation, where no animals reside—on bare rock, naked dune, or sandy heath—there is no cause for concern. However, as vegetation flourishes, as animals and humans gather, so too will the detrimental effects manifest if no measures are taken to mitigate them..." (Schick, 1852: 37).

Schick identified several local conditions in slums that contributed to the spread of diseases: polluted air, contaminated water, poor soil conditions, lack of daylight and ventilation, inadequate housing space, and the concentration of plants, animals, and people. He emphasized that the absence of effective city governance, which could have implemented improvements, was also a significant local factor. Schick criticized the indifference towards addressing these issues, which exacerbated the unhealthy living conditions in urban areas.

"How often is it seen that houses have been built in such a way as if they had tried to unite the most unfavorable conditions. The houses may be too low; or on a soil which retains the moisture too long, such as clay soils; or the water is too easily supplied, as are peat layers. As a result, the homes become damp and consequently unhealthy. The streets may be in an unfavorable direction in relation to the cardinal points and the position of the sun, and they may be too close in proportion to the height of the houses; This prevents air exchange, harmful fumes and vapors linger and are kept back. Inadequate furnishings of houses for lighting, ventilation, and heating may be highly detrimental to health and life, as may inadequately soil and poor building materials, which promote humidity. Finally, the number and size of the houses may be too small in relation to the population. Overcrowding of dwellings is also a main cause of disease. We have seen how a certain amount of oxygen is indispensable to health. Where many dwells together in a confined space, there the oxygen is consumed; In its place is the dangerous carbonic acid, which is constantly expelled by the lungs and through the skin; At the same time, human and animal exhalations mingle with the air, all of which causes their inhalation may even render fatal. The terrible consequences of the clustering of several people into small spaces are seen in the miserable condition of the negroes in the slave ships. Constant

air change can eliminate to a large extent the dangers of excessive population and humidity. Therefore, the good ventilation of dwellings is a matter of the highest importance. Light, and especially sunlight, is also a necessity for health; not only because it acts as a moral stimulus on the mind, but also because of the immediate influence which it probably exerts on the body itself, but certainly on the substances around us, air, water, etc." (Schick, 1852: 38, 39).

4 Natural Conditions that could have been Artificially Improved by the City

4.1 Natural and Artificial Conditions at Places

After determining the various circumstances that explained the high mortality rate in The Hague, Schick changed his perspective. He no longer looked at the living environment from a pathological point of view but considered the local conditions and their pathological consequences. From this new perspective, he distinguished between natural conditions (such as location, soil conditions, and water flows) and artificial conditions (such as habitation and building types). A city government can artificially improve these natural conditions.

Schick mentioned that the location should allow air to enter freely and avoid proximity to shallow stagnant water and marshes, while proximity to the sea and lakes is usually beneficial. The soil must be raised to a sufficient height above the water level because organic components in the soil water affect health. The supply and drainage of water streams should be enough and simple, and drinking water system should be pure and healthy.

The artificial conditions that would have allowed city governments to modify natural conditions are: "Establishment of airy, dry, spacious, and well-equipped dwellings. A good ratio between the height of the buildings and the distance between them. A proper ratio between the number and space of the houses and the population. Immediate removal of all uncleanliness, garbage, excrement, etc. Proper installation of water pipes, gutters, sewers, wells, etc. Provision of good drinking water and an abundant supply of fresh water for purification. Prevention of all harmful consequences of handicrafts, factories, and factories. Maintenance of plantations." (Schick, 1852: 42, 43).

Specific to the circumstances in The Hague were the soil conditions, with a watertight clay layer in the sand, Schick noted. That was the cause of the high mortality rate. From a medical and architectural point of view, therefore, correct knowledge of the soil was necessary for healthy well water and for the laying of gutters and foundations.

Regarding the natural conditions, the sea air was beneficial for The Hague on one hand. On the other hand, The Hague was located against the dunes on a beach ridge in the upper corner of the Delftland Water Board (Hoogheemraadschap Delftland). Streams ran between beach walls running parallel to the sea, and there was peat growth. The dunes between The Hague and the coastline had already been largely sanded down. The Binnenhof and the village of The Hague are located on old dunes (Laag van Voorburg) with a peat layer (Hollandveen) in between and a clay layer (Wormer deposit) underneath on the southeast side of the city. From two water sources in the dunes, streams run between the beach walls to the Hofvijver. In the Middle Ages, the connection from the Hofvijver to the Vliet, the Spui, was dug.

The flow of water was already moderate to poor due to The Hague's high location in the polder. Although the dunes drained, the situation became disastrous after the Water Board raised the basin level in 1827. Additionally, the densification of the city with the construction of slums for newcomers exacerbated all the problems.

"As far as the location of The Hague is concerned, there are not a few who think that, from a medical point of view, it is not very fortunate. How often are inlanders afraid of the proximity of the sea, of the cold and damp winds, and of the rapid changes of temperature which they attribute to it? How frightened are others of the evil vapors they think they see rising from Bosch." (Schick, 1852: 45).

4.2 How did the Densification take place?

How did densification take place in The Hague in the past, according to Schick? He compared two periods using Jacob de Riemer's thorough archival research, Beschryving van 's Graven-hage, from the years 1730, 1739, and 1743, and the associated city maps. Gerrit van der Giessen produced these maps as "Haga-Comitis in Hollandia" in 1570 and 1730. The 1570 map was a copy of a painting from that year, and a copy of that painting from 1663 still hangs in the Historical Museum of The Hague.

On the 1570 map, the open spaces, bleaching fields, and gardens in the courtyards are still clearly visible, and the canals around the village and the harbors had not yet been constructed. By 1850, everything was crammed with courtyards and slums. Because The Hague is a village and never received city rights, it had no medieval city walls, gates, towers, or canals.

The city structure was not very organized; it followed the roads to other cities or villages such as Wagenstraat to Delft, Westeinde to Loosduinen, Noordeinde to Scheveningen, and Lange Poten to Leiden. The streets and roads are wide apart with urban blocks consisting of small houses and spacious courtyards. Some of these courtyards were initially cloisters. After the Reformation, the four monasteries had disappeared.

At the beginning of the seventeenth century, the canals were constructed. Until 1860, The Hague grew within the canals, with only a few houses just outside them. Significant growth occurred only during the Golden Age, followed by stagnation until after the French Era. The zone between the village buildings and the spaciously laid out canals remained largely empty, especially Kortenbos, Spijkermakerskwartier, parts of the current Rivierenbuurt, and the area behind Lange Voorhout.

During the French period, The Hague turned into a raw garrison town, full of billeted soldiers and squares where soldiers with horses arrived every morning for roll call. The prominent population fled the city. From 1808 to 1814, 554 houses were demolished, including prominent city palaces and residences, to avoid paying taxes to the French. The population decreased dramatically, and many houses were left empty (Stokvis, 1987). Until 1860, The Hague grew inward. Large empty houses were split up, courtyards filled with one-room houses in the slums, and exploitation courtyards appeared in the zone between the canal and existing buildings.

It was not until the second half of the nineteenth century that the first suburbs were built outside the canals in The Hague (Oorschot, 2014). Bakker Schut (1948: 7) created models to illustrate the various stages of densification prior to the remediation in the interwar period.

The first phase of urban densification involved the irregular filling of courtyards between about 1600 and 1870. Typically, a row of one-room houses was built in the yard behind a house, accessible via a one-meter corridor and a gate on the street, or often a gap between two houses. In the second phase, exploitation courtyards were built on the still-empty sites of the city, such as in the low inland polders and on the outskirts of the city, during the period 1869-1880, when the agricultural crisis caused a significant migration to the city.

How reliable are the figures on which Schick based his decision? Stokvis (1987) conducted archival research and came up with similar numbers. In 1795, there were 42,365 inhabitants; in 1840, there were 63,556 inhabitants; and in 1849, there were 72,225 inhabitants. Van der Woude (2010) also reports these numbers of inhabitants. All three used The Hague Population Archives as a source.

Years	Houses	Inhabitants	Inh/ ha***
1600	2.400	-	
1622	-	17.430	85
1680	4.744	-	
1730	6.000	-	
1790	8.800	50.000	244
1796	-	39.800	194
1814	8.624	42.000	205
1831	8.600	56.000 *	251
1840	8.953	63.556	310
1850	10.780	72.467 **	324
1980		9.591	47
1990		15.783	77
2000	10.825	17.418	85
2010	11.271	17.245	84
2020	12.632	20.300	99

* Including 4,500 inhabitants of Scheveningen
** Including Scheveningen with 1,342 houses and 6,053 inhabitants
*** The Hague within the canals (district center) is 205 hectares, according to Schick's data a very small part of the population lives outside the canals.
Data up to and including 1850 is the source: Schick, 1852: 48. Data from 1980 is the source: denhaag.incijfers.nl

After Schick, the population growth would explode: by 1889, there were already 206,002 inhabitants, while only a small amount of construction was being done outside the canals, and by 1920, there were 354,987 inhabitants. This explosive growth in population was also an anomaly compared to other cities. As a result of the archival research and the spatial layout

used in city maps, Schick relied on the layout introduced during the French period.

4.3 Administrative Division of The Hague

To understand Schick's research, it is necessary to describe the administrative division of the city during the French period. Between 1797 and 1858, The Hague was divided into Westeindekwartier, Hofkwartier, Spuikwartier, and Prinsegrachtkwartier. The maps by Van der Poth (1812) and Zürcher (1817) show this distribution. Each quarter was divided into districts indicated by a capital letter. Initially, the Hofkwartier had its own administration, while the other three quarters were collectively called the village. It was not until the French period that The Hague was granted city rights, merging the village and Hofkwartier into one entity.

The oldest streets also served as divisions between the quarters: the Noordeinde-Wagenstraat (formerly called Zuideinde) and Westeinde-Lange and Korte Poten. The Westeindekwartier, with districts A, B, C, D, and E, occupied the top left corner of the city. Hofkwartier, with districts F, H, I, and K, was in the top right corner. Spuikwartier, with districts L, M, O, P, Q, and R, was in the bottom right corner, while Prinsegrachtkwartier, with districts N, S, T, U, V, and W, occupied the bottom left corner.

Some neighborhoods had specific characteristics. For example, the shabby Spuikwartier included district R, the Jewish quarter, and district Q, the red-light district (Stokvis, 1987). The Hofkwartier around the Vijverberg, Lange Voorhout, and the Plein housed wealthy citizens and nobility in city palaces. The Westeindekwartier, with its workshops, was home to craftsmen.

4.4 The Conditions in the Three Low-lying polderss (figure 5)

After the canals were dug in the seventeenth century, the empty spaces within them were filled up. Typically, peat was excavated first, and the building sites were then elevated using sand sourced from the nearby dunes. This sand was transported via the newly constructed canals and sand canals. However, in the eighteenth century, economic stagnation led to a halt in growth and housing construction. According to Schick, as a consequence, the peat in three inland polders within the canals was never excavated, and the terrain was never raised.

The first polder was bordered by the Herengracht, Fluwelen Burgwal, Nieuwe Haven, Zwarteweg, and Zuid-Oost-Binnensingel (Uilebomen), roughly corresponding to district L.

The second polder was bordered by the South-East Binnensingel (Uilenbomen), the Lamgroen, the Ammunitie- and Nieuwe Haven. The Nieuwe Haven, dug around 1660, divided this polder into two parts, which are now part of district M. Both polders are located in the current Rivierenbuurt.

The third polder was bordered by the Prinsegracht, Brouwersgracht, Zuid-Westsingel, and Westsingel, and was part of district V. Today, it is known as the Spijkerkwartier. Schick also noted the buildings in the polders outside the canals, in the current Rivierenbuurt and Stationsbuurt, which were never raised.

Schick calculated that one-seventh to one-eighth of the houses, with a population of ten to eleven thousand inhabitants, are situated in low-lying polders. Approximately four to five thousand of these residents live within the canals. According to Schick, hundreds of homes have recently been built in these low-lying polders. These areas often consist of slums with one-room houses in cramped courtyards, or slightly more spacious courtyards with back-to-back houses. Due to very poor water flow, these locations were the least healthy to inhabit.

In earlier times, much more water flowed through these areas via the Beek, but this influx had significantly decreased. To improve water circulation, the King Willem II steam pumping station was constructed at the Hanenburg farm. It pumped water from the Loosduinsevaart into The Hague's water system, aiming to enhance the flow. However, this effort was insufficient to prevent mud and dirt from accumulating in the canals.

"The quantity of water that can be discharged in this manner, however, is disproportionately small compared to the mass of impurities that need to be carried away. This was evident in 1850 during the widening of the Chapel Bridge, when the water was pumped out for this purpose. In the middle, in front of and under the bridge, workmen sank into the mud up to their knees, where sediment accumulates due to the strongest current forces. It should be noted that a current's ability to transport solid objects depends on its speed. To move substances just slightly heavier than water, a velocity of 8 to 10 duimen [1 duim = 2,54 centimeter] per second is required." (Schick, 1852: 53).

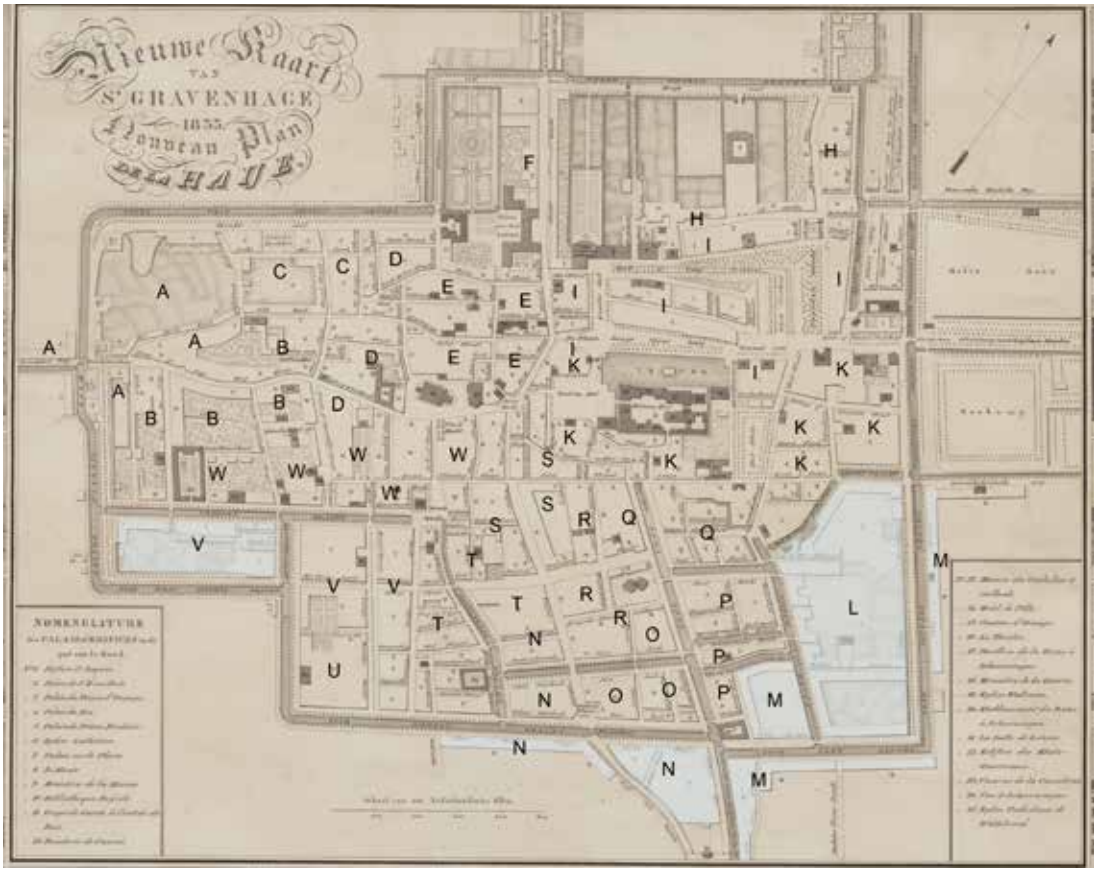
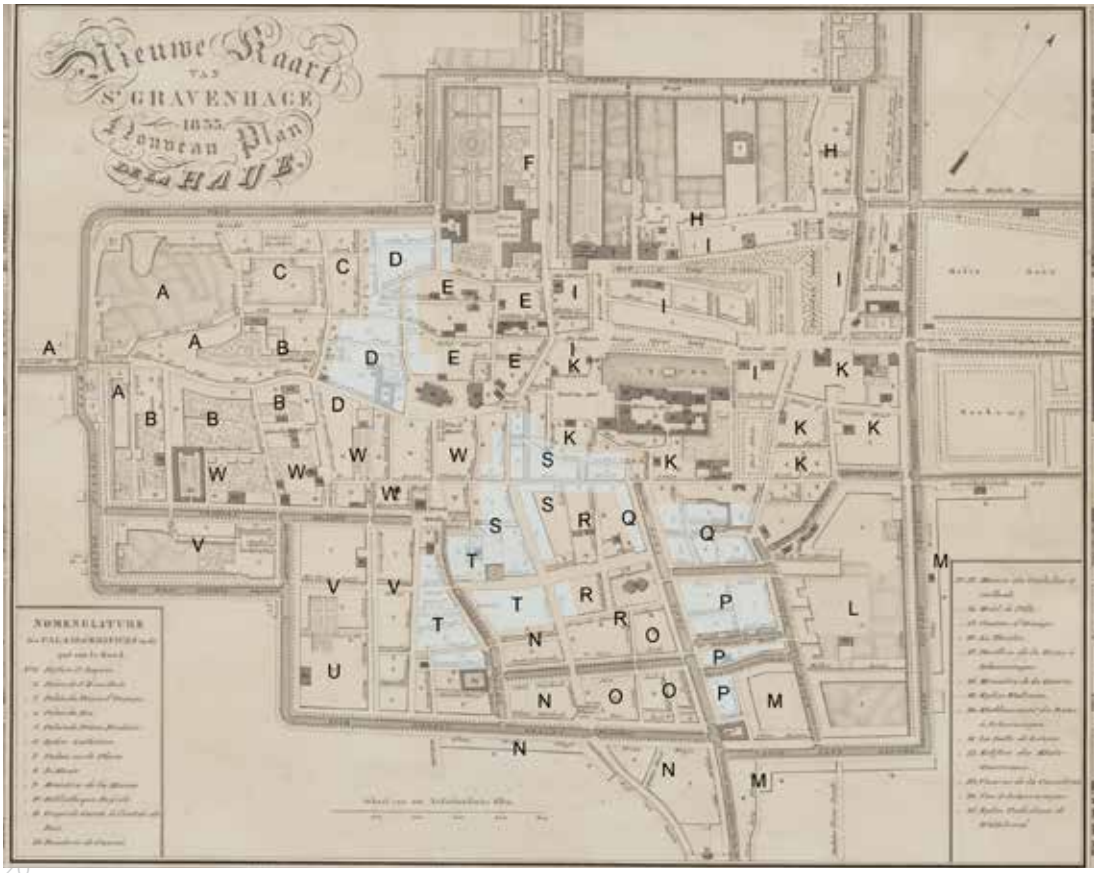


*Figure 5. Above the the **three low-lying polders**, neighborhoods L, M and V.*
*Figure 6. Under the **most densified neighborhoods** with the highest number of people per dwelling, neighborhoods P, Q, T, S, D.*

Maps were drawn by the author based on Schick's findings on the city map of Zeger Reijers from 1833.



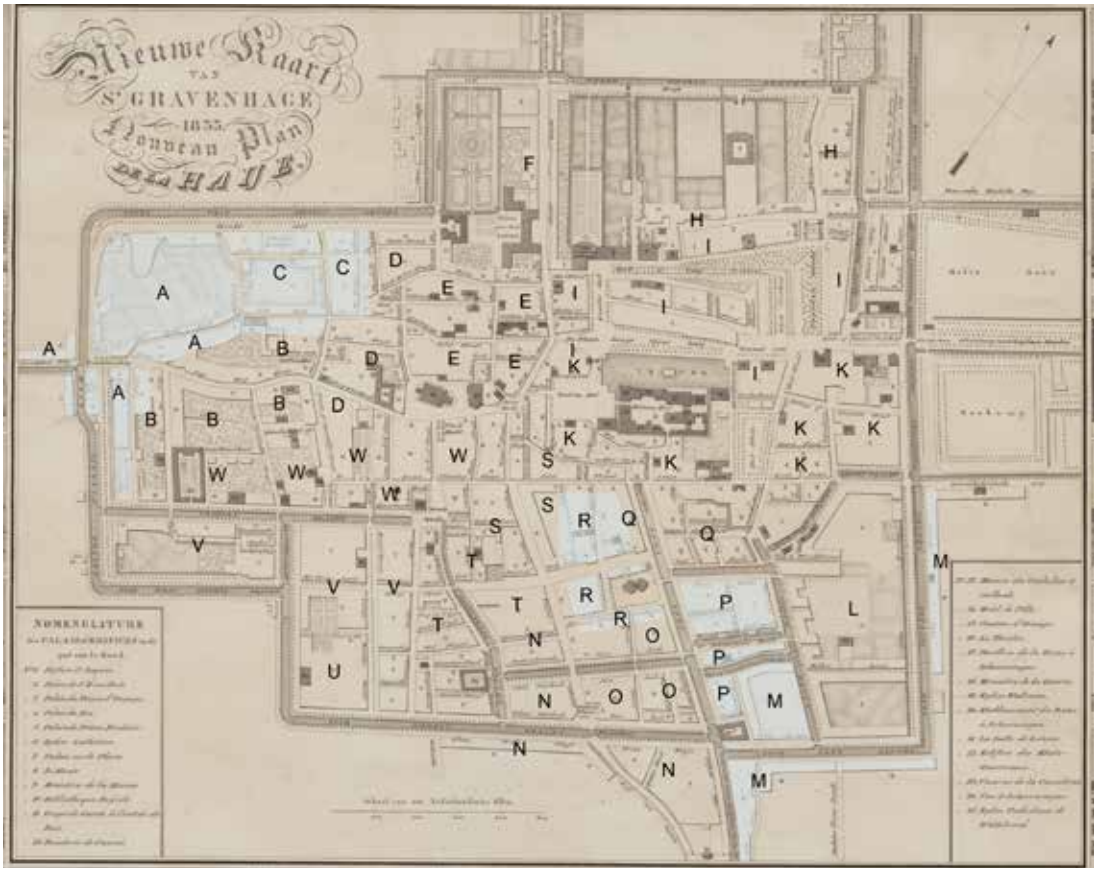
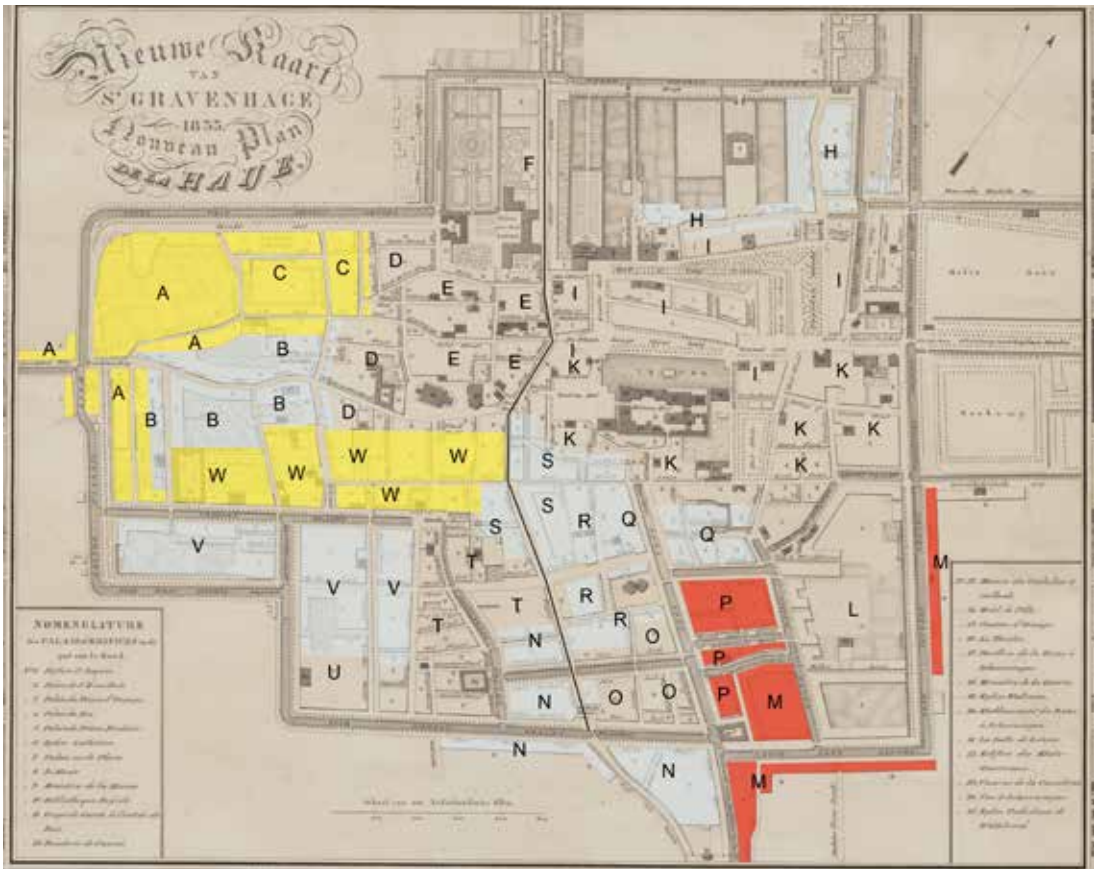


*Figure 7. Above the parts with **the poorest residents** in the neighborhoods P, M, R, A, C.*
*Figure 8. Among the neighborhoods **most affected by the cholera epidemic** of 1849.*
The red neighborhood P and M were hit hardest, followed by the yellow districts A, C and W. Then the light blue districts, the non-coloured districts (especially in the Hofkwartier) were hardly affected.
The relationship between poverty (and the associated lousy housing) and cholera is striking.



The system of privies and sewers, which discharge into the canals, constitutes a unified whole. Schick calculated the inflow of water and the number of solids and excrement carried along, which ultimately accumulated in the low inland polders, resulting in substantial dirt buildup. According to Schick, the only solution to this issue is a significant water supply capable of diluting these substances and carrying them away. However, such a remedy was lacking throughout The Hague.

"Taking into account human and animal excrement, all types of waste, and the amount of organic matter annually deposited into the ditches and absorbed into the soil, the total is estimated to be approximately 14,000 to 16,000 cubic ellen [1 el = 69,4 centimeter]." (Schick, 1852: 55)

4.5 Conditions in the Most Densely Populated Neighborhoods (figure 6)

Seventeenth- and eighteenth-century city plans often depict open courtyards adorned with beautiful gardens, while the areas between the canals and the village were largely undeveloped or used as bleaching fields. However, after the French Period, these courtyards ceased to be depicted, and the city map by Zeger Reijers (1833) or Belinfante (1847) illustrates that these edges were now extensively built up. The significant densification began after 1833, as argued by Schick. Finally, on the city map by Lobatto and Last from 1868, the proliferation of slums and exploitation courtyards is meticulously represented.

According to Bakker Schut (1939), between 1841 and 1871, the densification of courtyards and vacant meadows within the canals, devoid of streets, occurred due to Municipal Label Article 41, which was introduced in 1841 and remained in effect until it was replaced by the General Police Ordinance of 1871. The article was worded as follows:

"No one shall be permitted to erect a new building on the street or public road, adjacent to existing buildings, streets, or squares, unless the Mayor and Aldermen deem it beneficial upon presentation of a building plan or statement, under penalty of demolition at the owner's expense." (Bakker Schut, 1939: 6).

According to Bakker Schut, this article partly contributed to the problematic development of housing conditions in The Hague in the subsequent years. The "Class Separation" (Stokvis, 1987; De Nijs & Sillevis, 2005) thus also manifested as a spatial division, with distinguished streets and elegant squares reserved for residents of The Hague, contrasted with slums in unpaved, poorly lit courtyards.

Schick also pointed out that the lack of ventilation and daylight in the one-room apartments of the poor, situated along narrow one-meter-wide corridors, prevented moisture from escaping. He described these slums as follows:

"In the generally inadequate condition of the private houses, gases disperse into the dwellings where disease-causing factors are often present, thereby exacerbating health issues. The overall arrangement of these houses leaves much to be desired, especially for those who are less well-off. Entire districts suffer from being too low-lying. In many houses, peat has not been properly excavated and the ground has not been raised with sand, leading primarily to issues of humidity. In some places, water almost reaches the doorstep during winter, penetrating cellars in many houses, while unclean water is found just beneath the plank floors of living rooms and bedrooms in others. Moisture is absorbed by walls and floors, which struggle to release it." (Schick, 1852: 56).

Schick also calculated the population density in terms of residents per house across different neighborhoods. Initially, The Hague averaged 6.54 residents per house. After excluding Scheveningen, where the average was 4.5 residents per house, The Hague averaged 6.94 residents per house. However, houses in the city varied greatly in size. The city palaces in the Hofkwartier were enormous, while middle-class houses in shopping streets were also spacious. In contrast, slums in areas like Spijkermakerskwartier, Rivierenbuurt, Westeinde, and Kortenbos mostly consisted of one-room houses measuring sixteen to twenty square meters each. District P had 8.7 residents per house, District Q had 8.1 residents per house, and Districts S, T, and D averaged 8.0 residents per house.

As Schick noted: "The districts with the most unfavorable proportions are also those with the highest number of dwellings relative to the land they occupy." (Schick, 1852: 57).

It was striking that neighborhoods that were the lowest and were built up later did not have the highest density. The densely populated districts D, S, R, Q, and P had already been laid out in the sixteenth and seventeenth centuries and were home to craftsmen with workshops and shopkeepers with shops. For the population in the low inland polders, the most densely populated parts, and the poorest districts, Schick drew the conclusion that:

"Canals and ditches are open sewers, gathering places for all the impurities that a population of 70,000 souls can produce. Filled with dirty and stinking sludge, the black mud and the bubbling gas bubbles show the chemical reactions that take place incessantly. Thousands of cubic feet of gases, which we have come to know as so dangerous and deadly, are poured into the atmosphere and inhaled by us. More than half of the inhabitants drink bad and unhealthy water, and many wells are increasingly spoiled because they are not sufficiently separated from the sewers, or because the water from the canals penetrates them, so polluted with foreign matter that the action of the soil is insufficient to purify it. The latter is confirmed by the example of a number of pumps, which produce odorless and less bad water early in the morning, but the more water is used, the more impure it becomes, and especially the sewage gases are clearly recognizable. In winter, the water in such pumps is often better than in summer. In all these circumstances, one is sure to find sufficient causes for high mortality." (Schick, 1852: 59)

4.6 Water Management and Difference between Wet and Dry Summers

According to Schick, the local situation in The Hague had not deteriorated in all respects. Housing had generally improved, he noted. Even in the homes of the lower classes, there was considerable progress. In particular, the deteriorating condition of the canals, with the increasing pollution of the soil due to compaction and the stagnation of the flow, caused the high mortality rate. Schick saw more evidence of this, in particular, the change in the character of the disease, especially in warm years, in which the development and spread of the effluents of putrefaction was promoted.

Schick referred to an important historical source and study by The Hague physician Iman Jacob van den Bosch (1731-1788), published in 1776 on the occasion of a competition: "On the Diseases Arising from the Natural Condition of the Fatherland." Van den Bosch observed a change in the character of diseases in The Hague during the year that was not seen elsewhere in comparable cities, particularly regarding the difference between disease characteristics in wet and dry summers. Dry summers, when the water stopped flowing entirely, had a more detrimental effect on health than wet summers. For example, there was high mortality in the dry summers of 1842 and 1846. In the wet and rainy summers, such as those of 1841 and 1845, there were fewer diseases in The Hague. Another clue for Schick was the quality of the fishing water. To substantiate his theory about the quality of the water (and seabed), Schick consulted local fishermen who testified to a significant deterioration of the fishing water over the last 25 to 30 years.

Schick stated: "Experienced fishermen have assured me that 25 or 30 years ago, as much fish was found in the canals to the south and southeast of the city as there is now in the Delft canal beyond the 2nd mill. Older residents of The Hague remember how, in their youth (before 40 or 50 years ago), the Bierkade was often crowded with anglers in the summer." (Schick, 1852: 66)

The reason for this deterioration of fish, soil, and surface water was partly the considerable increase in the population, partly the discharge of sewers into the canals, and partly the raising of the basin level of Delfland around 1827. According to Schick, the filling in of smelly canals polluted the soil even more, so that the water in a number of pumps that used to provide good water was now completely spoiled.

4.7 The Cholera Epidemic of 1849 (figure 8)

Schick's archival research showed that districts P and M in the low-lying inland polders were particularly hard hit by cholera. In District P, the mortality rate was 1:33, followed by District M with 1:40. Furthermore, it was the districts on both sides of the Westeinde: District W had 1:76, District A had 1:88, and District C had 1:96, all with high mortality rates. Along with districts P and M, these were also the poorest districts of the city with the worst housing. This was followed by District Q with 1:115, Ward B and N with 1:120, District V with 1:123, District R with 1:127, District S with 1:140, District H with 1:150, District D with 1:208, and District T with 1:223.

The fact that districts P and M were hardest hit by the cholera epidemic did not surprise Schick at all. He says that: "… this part is entirely inhabited by laborers and the poor. In many gates and passages, a numerous population is heaped together; it is a soil on which all the seeds of disease germinate abundantly, and it was to be expected that there the cholera would rage fiercely." (Schick, 1852: 68).

But had all the neighborhoods with the less wealthy been affected by cholera, Schick wondered. When he checks this, he concludes that districts P and M are certainly included, and districts A and C are also included—all neighborhoods on the outskirts of the city, but especially where dirt and water accumulate. Schick comments on this:

"Behind the houses of the Lamgroen den Binnencingel, however, runs a hideous open sewer, which is only equaled by the ditch that receives the outgrowths of the inland polders on the Pinksterbloemlaantje. It is therefore not surprising that, of the small population of the Pinksterbloemlaantje, 17 people have died of cholera. Nowhere in any of the native or foreign cities known to me have such horrible sewers occurred as in the court city of the clean Netherlands." (Schick, 1852: 69).

4.8 Schicks Program for the City of The Hague

To improve the health status of the population, Schick drew up a program for urban facilities and housing.

1- To keep the air and water clean and to avoid, as far as possible, any mixing with foreign matter, he proposed the following measures:

- Dispose of feces and waste through receptacles and sewers; flush these sewers with water to dilute harmful substances; add substances that prevent rotting and gas formation; collect and dispose of waste; install watertight pavement.
- Do not tolerate stagnant water anywhere.
- Provide canals with fresh water and maintain flow through them.
- Prevent discharge from factories and workshops.
- Use tools to clean the air.

2- Good and healthy drinking water for everyone.

3- Building healthy homes, specific measures for housing included:

- Building houses according to a fixed (urban) plan, considering the height of the ground level, the nature of the soil, the direction of the streets, and the distance between the houses relative to their height.
- Ensuring good ventilation when furnishing the houses, including considerations for lighting, heating, construction, privies, sewers, and gutters.
- Adjusting the size of houses to accommodate the number of people living in them.

Researchers from the Royal Institute of Engineers (KIVI) conducted research into the living conditions and published this in 1854 in the Report to the King on the Requirements and Furnishing of Workers' Housing (***Verslag aan den Koning, over de vereischten en inrigting van arbeiderswoningen***). The KIVI likely hoped that the aforementioned Prince Albert Model Homes would be imitated in the Netherlands. Also, in 1854, a committee of the city council was commissioned to write the Ordinance on Building within the Municipality of The Hague (***Verordening op het Bouwen binnen de Gemeente 's-Gravenhage***) and "the Making of a General Plan for the Development of the City, Including the Construction of New Streets, Squares, etc., in order to assess all subsequent plans and applications against that plan." (Bakker Schut, 1939: 6.7).

A number of prominent citizens and members of the KIVI were concerned about the plight of people in the slums. In 1854, they founded the first housing association in The Hague, the Association for the Improvement of the Homes of the Working Class (Vereeniging Tot Verbetering Der Woningen Van Arbeidende Klasse). The driving force behind this was Isaac Paul Delprat (1793-1880), an enlightened officer and engineer trained at the École Des Ponts Et Chaussées in Paris, who served as commander of the Military Academy in Breda and was also a board member of the KIVI. One of their major successes was the construction of houses on Van Hogendorpstraat in the Schilderswijk from 1862 to 1869.

In addition to housing, facilities such as a good sewerage system, drinking water system, water management, and city cleaning were installed at the end of the nineteenth century. Dr. C.P. Pous Koolhaas (who, like Bakker Schut, begins his publication with a quotation from Schick) continued Schick's work in The Hague with Means to Improve Health in Cities (***Middelen tot verbetering van den gezondheid in steden en meer bijzonder in 's Gravenhage***) (1862) and The Water Supply in The Hague (***De waterleiding te 's Gravenhage***) (1865). From 1890 onward, city architect Lindo would significantly advance the efforts toward creating a hygienic city, with Duinoord as the highlight (Oorschot, 2014).

In 1901, the Housing Act was passed by Parliament and came into force a year later.

5 Finally: The Hague Then and Now

5.1 Who were the Victims of the Epidemics?

In this article, not a word has been said about the epidemics in Scheveningen, the place where cholera probably first made landfall, according to Schick. In his article "The Cholera in Scheveningen in 1832" (***De Cholera te Scheveningen in 1832***) (1892) (1892), the

hygienist Dr. R. Krul describes the arrival of cholera in Scheveningen and its consequences for the city. Stokvis (1987) extensively detailed the social stratification of The Hague in the nineteenth century, each with its distinct living environments and residential neighborhoods. The Hague had a large upper class and a proletariat. According to Stokvis, this social stratification, with a relatively broad top and base, persisted in the second half of the nineteenth century and remains a reality in The Hague to this day.

The social stratification based on occupational status in 1849 was: upper class 6%, petty bourgeoisie 33%, and working class 66%. Based on direct tax assessment in 1842, the social stratification was: upper class 18%, petty bourgeoisie 43%, and working class 39% (Stokvis, 1987: 213, 214).

Pre-industrial cities such as The Hague around 1850 did not yet have a strict spatial separation between the working class and the upper class. Many maids and servants lived in city palaces, occupying attics and cellars. Barracks where farm boys were billeted were also located in the Hofkwartier area. It was not until the great migration to cities, prompted by the agricultural crisis in the last quarter of the nineteenth century, that segregation began. This resulted in residential parks for the upper class, middle-class neighborhoods, and working-class neighborhoods filled with slums. Nonetheless, the city palaces of the wealthy were clustered together on the spacious squares of the Hofkwartier. Shopkeepers were situated on the squares and main streets in the center, while the working class settled on the outskirts and in cramped courtyards (Oorschot, 2014). Each social class was given its own place in the city.

As mentioned, the city's population grew from 42,000 inhabitants in 1814 to 72,467 inhabitants in 1850. The identity of these newcomers remains unclear. Data for the period 1877-1919 shows that about 47% came from the Dutch countryside, 38% from South Holland, and 5 to 6% from abroad or the colonies. These outsiders were primarily Germans and Belgians, with a smaller number from the colonies (Stokvis, 1987: 172).

5.2 What did the Slums and Exploitation Courtyards look like?

In the nineteenth century, The Hague endured numerous epidemics. The cholera outbreaks occurred in 1832, 1849, 1853, 1854, 1855, followed by typhus outbreaks in 1856, 1857, and 1858 (Bakker Schut, 1939). However, not all neighborhoods and population groups were equally affected. Interestingly, the Hofkwartier seemed to have been spared from all epidemics.

The victims of the cholera epidemic of 1849 were primarily residents of the slums located on the outskirts of the city in Districts P and M (present-day Rivierenbuurt), as well as A and C (present-day Kortenbos). These areas were inhabited by poorly paid home workers or laborers who often worked long hours, either at home or in factories and workshops. Schick himself did not provide details about the backgrounds of the victims (Figure 9, 10, 11, 12).

Other sources provide additional insights into the nineteenth-century slums of The Hague. It was not until the interwar period that Bakker Schut (1939) extensively documented these areas with numerous studies, photographs, and descriptions. Stokvis (1987) highlighted specific neighborhoods such as the Jewish quarter (neighborhood R) with its shops, the red-light district (neighborhood Q), and Kortenbos (neighborhoods A, B, C) with its Catholic community and various activities.

Ies van Creveld (1989) provided a depiction of the life of the poor Ashkenazi Jewish community, many of whom were refugees from Poland and Germany and found simple shelter and existence in The Hague from the sixteenth century onwards.

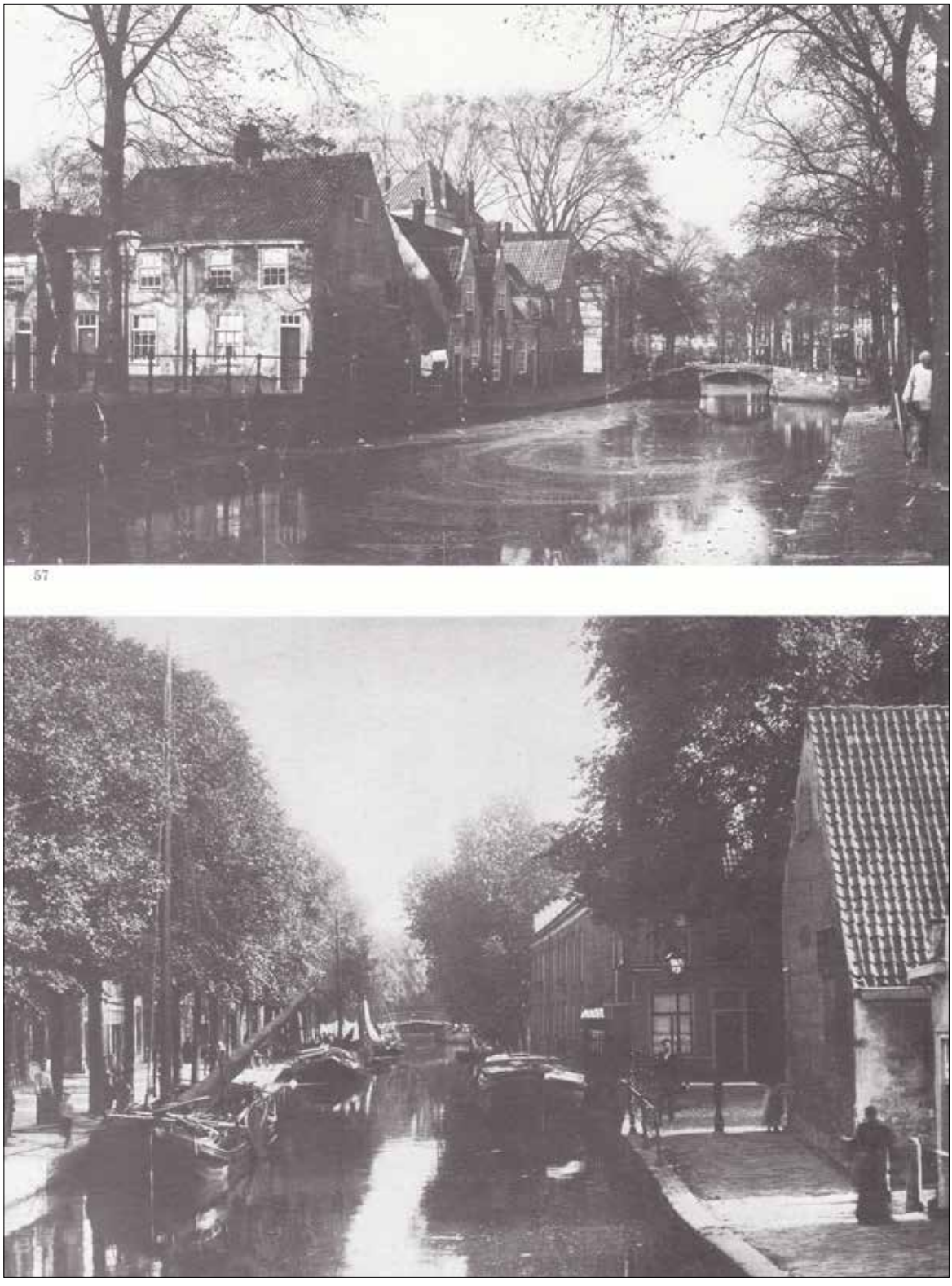
The residents of the working-class neighborhood Kortenbos (neighborhoods A, B, C) were studied by local historians Wuite (1990), Langerak (1984), and Langerak & Zomerveld (1993).

The red-light district was also explored in detail. The Dutch author Ferdinand Bordewijk (1884-1965), known for his evening walks through The Hague, portrayed the slums and alleys of the city in his writings. Under the pseudonym Ton Ven (1962), he depicted neighborhoods with poorly painted women in the eros walk (no.7). Additionally, works such as De Wingerdrank (1937) and Het Rode Paleis; ondergang van een eeuw (1936) provided disconcerting portrayals of the darker side of the city.

The Rivierenbuurt, the red-light district, the Jewish quarter, and the working-class neighborhood of Kortenbos have largely disappeared, leaving only a few fragments of buildings behind. Occasionally, one can still come across a slum or courtyard, serving as silent witnesses to the hardships of the nineteenth century.

On April 12, 1853, one year after the publication of his study On the state of health in The Hague (*Over den gezondheidstoestand van 's Gravenhage*), physician Schick tragically died of typhus at the age of thirty-six. Despite his passing, it feels as though his presence has never truly left The Hague.

Figure 9 and 10. A page from the book Den Haag en omstreken in 19de-eeuwse foto's. Amsterdam: Van Gennep (Nieuwenhuijzen & Slechte, 1975) with two rare photographs of the districts P and M. Above Nieuwe Haven and below the Ammunitiehaven around 1901. Photographer is unknown. Water from the canals is just below the level of the pavement.



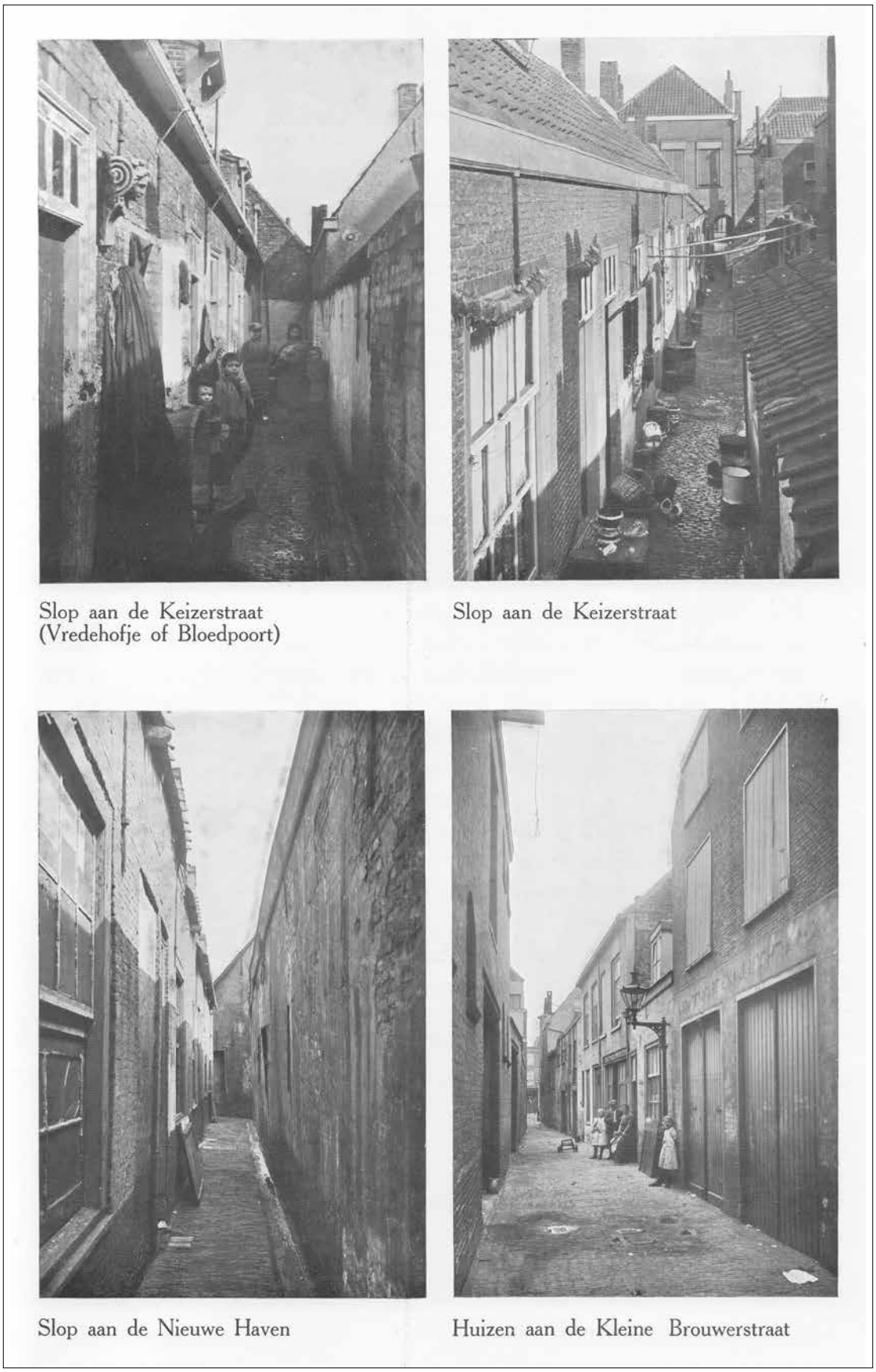


Figure 11. A page from the assessment by Piet Bakker Schut from the interwar period before the remediation. Source: De volkshuisvesting te 's-Gravenhage 1914-1939: vijf en twintig jaar overheidsbemoeiing met de volkshuisvesting (1939)

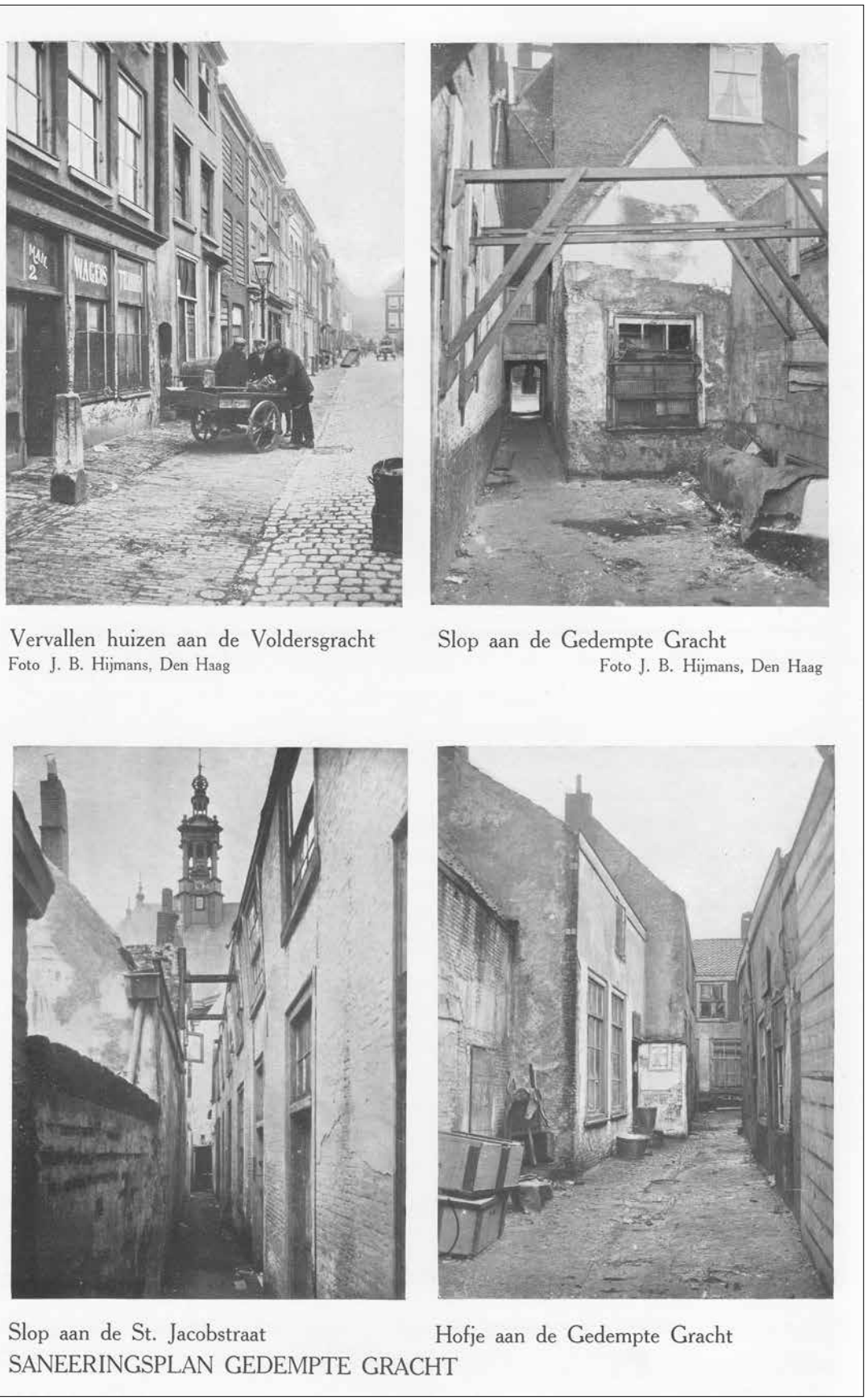


Figure 12. A page from the assessment by Piet Bakker Schut from the interwar period before the remediation. Source: De volkshuisvesting te 's-Gravenhage 1914-1939: vijf en twintig jaar overheidsbemoeiing met de volkshuisvesting (1939)

Bibliography

- Bakker Schut, P. (1939) De volkshuisvesting te ‘s-Gravenhage 1914-1939: vijf en twintig jaar overheidsbemoeiing met de volkshuisvesting. Alphen aan den Rijn: Samson.
- Ballegoijen de Jong, J.P.A. (1975) Hofjes in de Hofstad. Baarn: Wereldvenster.
- Crefeld, I.B. van (1989) De verdwenen Buurt. Drie eeuwen centrum van joods Den Haag. Zutphen: Walburg Pers.
- Dienst der Stadsontwikkeling en Volkshuisvesting (1948) Enige grondslagen voor de stedebouwkundige ontwikkeling van ‘s-Gravenhage. Den Haag: Uitgave van het gemeentebestuur van ‘s-Gravenhage.
- Dirkzwager, J.M. (1979) In den haag daar woont niet alleen een graaf: gedenkboek uitgegeven ter gelegenheid van het 125-jarig bestaan van de ‘Vereeniging tot verbetering der woningen van de arbeidende klasse’ te ‘s-Gravenhage. Delft: Meinema.
- Engels, F. (1845) De toestand van de arbeidersklasse in Engeland: naar eigen aanschouwingen en authentieke bronnen. Uitgave uit 1976, Moskou: Uitgeverij Progres.
- Gram, J. (1900) Haagse Schetsen. Amsterdam: Godert Cohen.
- Hoogstraten, D. van (2013) Koninklijke Haagse woningbouwvereniging van 1854: de bouwgeschiedenis van een kleine, onafhankelijke vereniging. Bussum: Thoth.
- Houwaart, E.S. (1991) De hygiënisten: artsen, staat & volksgezondheid in Nederland 1840-1890. Maastricht: Historische Uitgeverij.
- Koopmans, B. (2005) De Verborgen Stad, 115 hofjes in de Den Haag. Den Haag: Gemeente Den Haag Dienst Stedelijke Ontwikkeling VOM-reeks 2005 nummer 2.
- Krul, R. (1892) “De Cholera te Scheveningen in 1832”. In: Nederlands Tijdschrift voor Geneeskunde, 1892: 665.
- Langerak, G. T. (1984) Kortenbosch: geschiedenis van een wijk. Den Haag: Coene.
- Langerak, G.T. & Zomerveld, R. (1993) Kortenbos in beeld: voor en na de stadsvernieuwing. Den Haag: Coene.
- Lintsen, H.W. (red.) (1993) Geschiedenis van de techniek in Nederland: de wording van een moderne samenleving 1800-1890. Deel II. Gezondheid en openbare hygiëne. Waterstaat en infrastructuur. Zutphen: Walburg Pers.
- Nieuwenhuijzen, K. & Slechte C.H. (1975) Den Haag en omstreken in 19de-eeuwse foto’s. Amsterdam: Van Gennep.
- Nijs, T. de & Sillevis, J. (red.) (2005) Den Haag geschiedenis van de stad 3: negentiende en twintigste eeuw. Zwolle: Waanders Uitgevers.
- Oorschot, L. (2014) Conflicten over Haagse stadsbeelden. Van Willemspark tot Spuiforum. Delft: TU Architecture and the Built Environment.
- Oorschot, L. (2019) “De vroegmoderne stad als een balkon rustend op een stang van water: Bordewijk”. In: Literair Tijdschrift Extaze 29, jrg. 8, nr. 1 2019: 22-33.
- PBLQ (2020) EU-arbeidsmigranten in de provincie Zuid-Holland. Adviesrapport 007086 provincie Zuid-Holland.
- Schimmel, H.J., Voorhelm Schneevoogt G.E. (1852) “Over den gezondheidstoestand van ‘s Gravenhage, door Dr.J.W. Schick. ‘s Hage. Noordendorp, 1852”. In: De Gids. Bibliographisch album. Jaargang 16 1852: 522-525.
- Stokvis, P.R.D. (1987) De wording van modern Den Haag: de stad en haar bevolking van de Franse Tijd tot de Eerste Wereldoorlog. Zwolle: Waanders.
- Ven, T. (1962) Wandelingen door Den Haag en omstreken. Den Haag-Rotterdam: Nijgh & Van Ditmar (Ton Ven was een pseudoniem van de schrijver en Hagenaar Ferdinand Bordewijk).
- Woud, van der A. (2010) Koninkrijk vol sloppen. Achterbuurten en vuil in de negentiende eeuw. Amsterdam: Bert Bakker.
- Wuite, R. (1990) Het Kortenbosch: biografie vaan een Haagse arbeidersstraat van 1648 tot 1873. Den Haag: Migrantenuitgeverij Warray.
- Zweep, J. van der (2016) “Haagse groei versus Leidse krimp. Een vergelijking van de ruimtelijke ontwikkelingen in twee Hollandse steden tussen 1700 en 1870”. In: Bulletin KNOB 2016.4: 212-229