

The Background of G.A.Escher, Hollander Engineer who supported J.de Rijke for 40 years*

— Based on 61 volumes of Ir.G.A.Escher's memoirs —

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Abstract

Hollander Johannis de Rijke worked at the Public Works Department, the Ministry of Home Affairs, Japan, as an engineer for around 40 years, and rendered remarkable services to the improvement of large rivers and Sabo works during his stay in Japan. He was initially assigned to the position of a 4th ranked engineer because of the lack of his technical education at school. However, the Government of Japan promoted him in 1876 with the treatment of equal rank of an official appointed by the Emperor's approval and further to the rank of an official appointed by the Emperor in 1891. J.de Rijke had been supported by George Arnold Escher who graduated from Royal Academy at Delft and had worked in the Bureau of Public Works, Holland (Rijkswaterstraat) as an elite engineer. By this paper, the background of G.A.Escher, his personality and profile on J.de Rijke, Hollander engineer C.J.van Doorn, will be presented according to his memoirs.

Introduction

Hollander engineer Johannis de Rijke was invited by the Japanese Government. He arrived at Osaka in Sept. 1873, and ranked as a 4th class engineer (Yonto-koshi) because he had no technical education at school. He engaged in comparatively simple works like the estimation and supervision for execution of public works. He, however, provided the distinguished services. The Japanese Government promoted him in 1891 to the equal rank of an official appointed by the Emperor's approval. J.de Rijke had lead the administration in the conceptions and plans of new Osaka sea Harbour, new Yodogawa Channel excavation and improvement works of large rivers like Kisogawa River and Chikugogawa River by using high engineering and know-how.

After his return to Holland, he succeeded in completing Hoganpoo River Channel Improvement for navigation in Shanghai and gained fame world wide as an excellent hydraulic engineer.

Hollander engineer Ir. George Arnold Escher, who had been invited by the Japanese Government as a first class engineer (Itto-koshi), a graduate of Royal Academy at Delft and an elite officer engineer who passed the difficult examination for service, arrived in Osaka together with J.de Rijke under suspension from service without salary and on an indefinite term.

He worked first 3 years with J.de Rijke for the Yodogawa

River basin in the field of planning and design of public works.

He was then requested by the Government to supervise, advise and design the public works for local Governments. According to the Governors of prefectures of Tottori, Fukui, Niigata, Yamagata, Fukushima, Tochigi, Akita, he supervised and gave advice on the design not only for river improvement of Sendaigawa River, Kuzuryugawa River, Tonegawa River, Sinanogawa River, Aganogawa River, but also for construction of road, bridge, tunnel etc.

He returned to Holland in 1878 and joined again Holland Government service after a long absence. His official position was advanced finally to Chief Engineer General at Department of Public Works, Ministry of Home Affairs. His son Maurits Cornelis Escher is world-famous artist as a Magical Printer who had described the 3 dimensional infinitive in the 2 dimensional plan.

J.de Rijke wrote many letters to Ir.G.A.Escher. Ir.G.A.Escher replied to J.de Rijke's letters concerning engineering, administration and his private matters as well.

This paper introduces the background of Ir.G.A.Escher before coming to Japan (1843-1873), and how he had thought about J.de Rijke, C.J.van Doorn et al, according to his memoirs vol.1 and 2 for they are useful for studies on them.

1. The purport of the Japanese Government invited the service of Hollander Engineers

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(1) Request for engineers by the Japanese Government

English and American engineers had been invited by the Japanese Meiji New Government, they had been skillful in the construction of infrastructure like railways, bridges which needed many irons, but the Government found that they were not skillful in the field of river improvement, harbour construction etc. by using hydraulics.¹⁾

Department of Public Works, Ministry of People (Minbusho-Dobokutukasa) decided to employ the engineers from Holland in the field of hydraulics in 1870.

The Meiji New Government did not directly negotiate with Holland Government but requested Naval surgeon Doctor Anthonius Franciscus Baudouin to choose suitable engineers for river improvement and harbor construction, and at the same time commanded Ambassador Naonobu Samejima in France to go through formalities with Holland Government.²⁾

(2) Selection of suitable engineers in Holland

The task of finding Hollander Engineers was given to Dr. Baudouin. The assignment had been for a while in the hands of the Referendary, Head of Division of Public Works of the Department of Home Affairs and also of Prof. van den Berg at Delft.³⁾⁴⁾ But van den Berg could not find anyone in the Division of Public Works of Dept. of H.A., though he recommended Cornelis Johannes van Doorn as a Principal Engineer and military engineer I.A.Lindo as a hydraulic engineer.

2. Outline of how C.J.van Doorn was engaged by Japanese Government

(1) Background of C.J.van Doorn before coming to Japan

C.J.van Doorn entered and graduated from Royal Academy at Delft a few years later than the same age students, and after graduation he worked in surveying for railway as a section engineer on Java Islands and was transferred to Alkmaar for construction of National railway Amsterdam – Alkmaar – Nieuwediep – Helder.⁶⁾

He was a very good engineer, but worked under a famous engineer A.J.van Prehn, of a very little cheerful look, who was no more younger at age and he took care of his former position on Java Islands. He had looked forward to being a mathematics teacher of High school of civil engineering at Maastricht and was registered in 1866, however was not glad to be a teacher.

His cousin Dirks who had been the Engineer of Department of Public Works and temporary Principal Engineer at the Amsterdam Canal M7, presented him a position as engineer at this M7 in 1867.⁷⁾

Amsterdam Canal was planned to connect Amsterdam with the North Sea for the shortest navigation, and M7 was permitted to be constructed by the Government in Jun.1863. Oranje Locks at M7 located at Amsterdam site were constructed for the canal in 1867-1872.⁸⁾

C.J.van Doorn seemed to have lost his position at M7 in 1873 and had never experienced hydraulics engineering like river improvement and harbour construction before coming to Japan.

3. Outline of why Ir.G.A.Escher and J.de Rijke were invited to Japan

C.J.van Doorn and I.A.Lindo arrived in Japan in Feb.1872. They worked energetically in Japan. High government officials recognized C.J.van Doorn as an excellent engineer for his many theoretical achievements on hydraulics engineering in short term.

He proposed the plan of the New Osaka Harbour in Nov.1872,⁹⁾ but it was not accepted by the Government because of expensive cost. He recommended the Government to invite 3 Hollander engineers Ir.G.A.Escher, A.Thissen and Johannis de Rijke for construction of a Sea Harbour in Osaka bay.

Ir.G.A.Escher had been a good friend of C.J.van Doorn, because they studied together at Royal Academy at Delft and also worked for National Railway, lodging at the same house in Alkmaar.¹⁰⁾

C.J.van Doorn was asked before coming to Japan¹¹⁾ by Ir.G.A.Escher to remind of him in case additional personnel would be needed in Japan, and knew well that Ir.G.A.Escher had experienced many constructions and administration on rivers, harbours, and roads etc.

C.J.van Doorn knew of J.de Rijke as a Head Supervisor of construction of Amsterdam Canal M7, in which office J.de Rijke had co-operated in the construction of the Oranje Locks in the Lake IJ at Schellingwoude near Amsterdam.

4. Outline of background of J.de Rijke (1842 – 1903)

(1) Birth¹²⁾ (5 Dec.,1842)

Name : Johannis de Rijke Jannetje Pieter Nella Nollestalle
Place : Kolijnspraat North Beveland Zeeland
Father : Pieter de Rijke (Dikeworker) 27 years old
Mother : Anna Catharina Liefbroen 27 years old

(2) Residences in Holland¹³⁾

1842-1847 : Kolijnspraat North Beveland Zeeland
1847 : migrated to Borsela South Beveland Zeeland
29 Jul.1863 : returned to Kolijnspraat North Beveland Zeeland
13 Mar.1865 : migrated to Durgerdam North Holland
2 Jul. 1868 : registered their marriage at municipal office of Amsterdam
15 Nov.1871 : migrated to Amsterdam
26 Aug.1872 : registered to Zwollerkerspell Overijssel

(3) Academic background

The details of the academic background of J.de Rijke have not been found out yet. It is possible to guess a little through

the Japanese Government decoration documents of J.de Rijke¹⁴⁾ and Ir.G.A.Escher's letter to his mother in Holland in 1875.¹⁵⁾¹⁶⁾

He was taught mathematics, dynamics hydraulics etc. by Mr. J.Lebret who had been an engineer of Division of Public works of Department of Home Affairs and a lecturer of hydraulics at Royal Academy at Delft of which G.A.Escher had been a student in 1859-1863.¹⁷⁾

It seems that he might have been 16 years old when he had been taught by Mr. Lebret.

(4) Last business experience in Holland

The construction of Oranje Locks at M7 was executed in 1867-1870, and finally completed in 1872. J.de Rijke worked as a Head Supervisor of the construction in 1867-1872 and removed to Zwollerkerspel side of Amsterdam on 26 Aug.1872.

It is not clear whether J.de Rijke had lost his work at the end of construction of Oranje or not Locks when to decide coming to Japan in Aug.1872—the first half of 1873.

(5) Outline of main business in Japan

a) At Yodogawa Branch Office of Bureau of Public Works

Ir.G.A.Escher and J.de Rijke belonged to Bureau of Public Works of Ministry of Finance in 1873. However, Bureau of Public Works, Ministry of Home Affairs was established in Feb.1877 which had before belonged to Home Affairs.

① Co-operation with G.A.Escher, 1st class engineer (salary : ¥450) (1873—1875)

Ir.G.A.Escher had served mainly in the field of planning, surveying and designing meanwhile J.de Rijke (salary : ¥300) had served mainly in the field of estimating the cost of construction and supervising the execution of construction.

Nov.1873 : supervision of the designing and execution of Sabo (erosion protection) dams at Seta district in the upper reaches of Yodogawa river.

Sep.1874 : test execution of fascine cribs for low water channel in the Yodogawa River.

Aug.1875 : survey on Hoganpoo River Channel Improvement in Shanghai.

② Promotion to the treatment of equivalent rank of an official appointed by the Emperor's approval (soninkan) (salary : ¥400)¹⁸⁾

When J. de Rijke was engaged again on 25 Sept.1876, he was promoted to the treatment of equivalent rank of an official appointed by the Emperor's approval (soninkan atsukai). He was in charge of constructions in Yodogawa River improvement and Sabo Works in the basin of Yodogawa and Kisogawa.

③ Supervision of the construction of Mikuni Harbour Improvement¹⁹⁾

Improvement of Mikuni Harbour which was designed by

Ir.G.A.Escher,²⁰⁾ was started under J.de Rijke supervision on 24 Nov.1877, and the opening of harbour was celebrated in 14 Dec.1880.²¹⁾

④ Planning of Kisogawa River Improvement and Yodogawa down streams Adjigawa-Kizugawa River Improvement.

When J.de Rijke and Ir.G.A.Escher worked together for planning of Kisogawa River Improvement, J.de Rijke was also requested to make a plan for Adjigawa and Kizugawa Rivers Improvement located at the down streams of Yodogawa River.²²⁾

b) Service at the Bureau of Public Works of Ministry of Home Affairs (1882—1903)

After death of J.de Rijke's wife Johanna Maria Alida on 8 Jun.1881, he return to Holland, during Oct.1881 to May 1882.

He was recommended to live and work in Tokyo by Shoichiro Ishii, Director General of Public Works of Home Affairs Ministry²³⁾ and decided himself to do so in Jul.1882.²⁴⁾ He settled down in Tokyo and worked at Home Affairs Ministry as a Technical Adviser.

① Formulated a plan of new excavated Yodogawa Channel and construction of new Osaka Sea Harbour.

J.de Rijke was requested by Osaka Prefecture Governor Gozo Tatenno to formulate a plan of new Osaka Sea Harbour,²⁵⁾ and proposed a comprehensive plan including new excavated Yodogawa Channel²⁶⁾ which was useful to protect the sands going to Osaka Harbour, namely the prototype of Osaka Harbour and New Yodogawa.

② Planning of Kiso-sansen Rivers Improvement

J.de Rijke was requested by Director General of Public Works Bureau to make a whole plan of Kiso-sansen Rivers Improvement, and performed it with Japanese assistants who graduated from new universities and new colleges of Japan. The works of Kiso-sansen Rivers Improvement were started in 1887 under 2 graduate engineers, one was Ituki Shimizu, 5th class and the other was Atsumune Sacki, 6th class belonging to 4th Public Works Office of Home Affairs Ministry.²⁷⁾

③ Member of Central Council of Sanitary Bureau of Home Affairs

J.de Rijke was appointed a Member of Central Council of Sanitary Bureau by Minister of Home Affairs.²⁸⁾²⁹⁾

④ Investigation of Joganjigawa River

J.de Rijke made an on-site inspection for all rivers in Toyama Prefecture which was exhaustively damaged by floods in Jul.1891.³⁰⁾

⑤ Return to Holland

J.de Rijke departed Tokyo on 18 Jun.1903, stayed in Yokohama one night, went to Tailien via Shanghai and arrived his home in Arnhem at midnight of 24 Jul. by way of the Siberian Railway recently constructed.³¹⁾

5. Outline of background of Ir.G.A.Escher³²⁾ (1843–1940)

(1) Birth (10 May 1843)

Name : George Arnold Escher

Place : Korte Poten den Haag

Father : Berend George Escher (lieutenant 1st class)
37 years old

Mother : Johanna Cornelia Pit 29 Years old

(2) From kindergarten to grammar school (Gymnasium)
(1848–1859)

a) Kindergarten

He entered the English kindergarten of Mrs. Freeman at Vlissingen in 1848.

b) Elementary school

He entered the lowest animal school in 1849, where Mr. van Walseur was the principal and a few years later changed to private school of Mr. Sandberg and changed again to private school of Mr. Nijland at Utrecht.

Teachers of three languages

French : French Mr. Bandet

German : German Hirgen

English : English Teuning

(3) Junior high school

He attended division B of Gymnasium at den Haag, which was one of those with 6 school-year system as a preparatory course for university in 1856.

a) Encounter with Japanese

He met a few Japanese mission people who spoke Dutch in those days.

b) Selection of profession

He considered himself apt to study the mutual relations of the physical phenomenon's and of the artificial structures based on the physical phenomenon's. He decided to enter the Engineers Academy at Delft. At that time there existed only mechanics and technology at Delft, and no opportunity for civil engineer (nor electrical engineer).

(4) College (1859–1863)

He was admitted to the Royal Academy at Delft in Sept. 1859.

a) Major of study field of 281 students (in 1862)

Persons 138 : Civil engineer and Public study

6 : Shipbuilding

3 : Verification and excise - duty's

99 : East - Indian officer 2nd class (home administration)

38 : East - Indian officer 1st class (judicial officer for Ministry of Justice)

b) Classmates

C.J.van Doorn, S.J.Vermaes, W.F.Leamans et al

c) The teaching staff

W.K.H.Vrolik : President

W.J.Kempers : geometry, geometrical drawing, algebra

Dr.C.T.Burger : higher algebra, cosmography, theoretical astronomy

Dr.G.van Wieringen Borcki : Dutch language, Dutch literature

Mr. van 's Gravesande Guickerot : Political economy

Mr.R.H.Amtzimus : English language, English literature

D.Buddingh : High German language, High German literature

G.J.F.Guffroy : French language, French literature

Paul Peter van Elven : free-hand drawing

Prof.W.L.Overduin : Physics

Dr.R.W.van Goens : analytical and descriptive geometry

G.Reuvekamp : civil structural engineering

P.J.Morre : civil engineering

Prof.R.Lobatto : higher mathematics (differential-and integral calculus), statics, dynamics

Dr.L.Cohen Stuart : geodesy, applied mechanics

M.Simon G : hydraulic indications

J.Lebret : hydraulics

J.G.Perwinkel : architecture

Dr.Dibbets : chemistry

Prof.S.Bleekrode : botany, zoology

Reuvekamp : wood-turner

Prof.D.J.Storm Buysing : hydraulics

Dr.C.H.C.Grinwis : physics

d) Philosophy of life

His principles were liberal in religions as well as in social respect, and he had held them for the rest of his life.

His character was gentle and truth-loving, so that he had been often annoyed by others' harshness, roughness, nonforbearance and insincerity. He was not so quick-witted and smart he was averse from witness or had to let, among others, slynesses and jokes pass by. He thought about how to evaluate those matters freely and generally not to be isolated.

He admonished himself never to avoid the persons who were acceptable to him, and nor to follow others blindly.

e) Qualification

He passed the final oral examination and acquired at the age of 20 the diploma of Civil Engineer with many of his school fellows on 22 Jun. 1863.

(5) National Railway (1863–1867)

a) Entrance

While he was waiting for the opportunity to give an employment examination for the Division of Public Works of Department of Home Affairs, he visited the Head-Office of National Railway at Alkmaar, on 1 Sept. 1863 to engage in the construction works of national railway lines Amsterdam-Alkmaar-Nieuwediep-Helder under the Senior Engineer A.J.van Prehn.

b) Stuff of engineer

A.J.van Prehn : former Captain of the Royal Engineers
 A.L.van Gendt : Section Engineer
 M.E.C.Plomp : assistant engineer
 J.J.R.Grinwis : assistant engineer
 G.L.Gendt : anti-certificate
 J.van Asperen : the construction and mechanician 3 class.
 C.J.van Doorn : civil engineer

c) C.J.van Doorn
 Later C.J.van Doorn came to Alkmaar to join and lodge with Ir.G.A.Escher, who had ever worked as a section engineer in survey for railways on Java Islands.

d) Treatment
 4 Mar.1864 : Supervisor 5 class 700 Guilders / year
 1 Sept.1865 : Supervisor 4 class 900 Guilders / year
 1866 : Assistant Engineer 1000 Guilders / year

e) Work
 Daily inspection of structures of small bridges.
 Works at railway-yard of Alkmaar station.
 Arrangement for structures of station at Castricum.

f) Encounter with the Japanese students abroad
 He saw some Japanese people among young people he met at Nieuwediep. They were stuff of naval officers and naval surgeons, namely Akamatsu who was poor at mathematics (ship-building), Hayashi with title of Baron.

g) Success in competitive examinations for Division of Public works of Department of Home Affairs
 He took competitive examinations for supernumeraries on 15 Oct.1863 and in Sept. 1864, but he could not pass them.
 Late in 1866 was again an examination, he took it by advice of Hogerwaard, who had easily passed as Assistant Engineer at Alkmaar before he entered Division of Public works.
 He passed it fortunately this time. He thought that it was because he had studied the administrative law which he did not learn at Delft.
 At the end of 1866 he thus left Alkmaar where he had lived so pleasantly, and existed the construction of National Railway, where he obtained especial know-how of execution of works.

(6) Division of Public Works of Department of Home Affairs (Rijkswaterstaat)

a) Division of Public Works at den Haag (1866-1870)
 Appointed as an officer of Division of Public Works on 1 Jan.1866.
 Salary : 700 Guilders / year
 work : collecting provisional technical datum for their Public Works based on topographical maps, scale 1/50,000.

b) Stuff of engineers
 Principal Inspector : F.W.Conrad
 Engineers 1 Jan.1867 ~ : van der Maaten
 ~ Sep.1867 : W.H.Hubrecht

1 Oct.1867 ~ : J.A.E.Musquetier
 ~ 31 Dec.1868 : D.N.Labrijn

c) Extra ordinary river representative (Feb.1870)
 He went to Vreeswijk station as an extra ordinary river representative under Principal Engineer at Utrecht with B.van Reede van Oudshoorn during the breaking-up and drifting period of the ice.

d) Reference Guide on Japan by Geerts
 He was fascinated with some descriptions in the Reference Guide on Japan by Military Pharmacist Mr. Geerts who had served at the Japanese Government in Nagasaki. It was an opportunity for his going to Japan.

e) Working hours
 in the morning : 10:30~12:00
 in the afternoon : 13:00~16:00

f) Translation of foreign engineering periodicals
 He translated the foreign engineering periodicals to report the Royal Institution of Engineers.

g) Private life
 He had piano lessons by a famous singer, Mrs.Offeraano van Hore, and sometimes went to see French Operas.
 His sister, Marie, married Willem Rooseboom who became Admiral of East India later.

h) International Exposition at Paris
 He visited the International Exposition at Paris with R.O.van Manen and Mulock van der Vlies in the summer of 1867 where Mr. R.O. van Mannen gave a lecture on the Mahovos which described the energy for train in a valley.

i) Family travel to Switzerland
 He traveled to Switzerland with his mother, his sister Johanna, his brother Arnold where he saw the falls of Handech, in Aug.1869.

j) promotion to Candidate engineer
 He was promoted to candidate engineer, on 1 Nov.1868. His salary rose to 900 Guilders / year and bonus was 400 Guilders.

k) Promotion to engineer with independent responsibility at Middelburg.

① He was promoted to 3rd class engineer on 1 May 1870 at Middelburg and was responsible for the services of district Walcheren and North Beveland. (Salary : 1,000 Guilders)
 He received another bonus 100 Guilders and gotten representative's allowance of 500 Guilders.

② Responsibility of business
 Circumstances were changed completely such as: his own office where many officers had worked, and financial responsibility and accountability for his business.

③ Outline of work
 National harbour : at Vlissingen and Veere
 Road : maintenance and improvement of ferry causeway and steps between Walchheren and North Beveland,

between this island and South Beveland.

Reporting : Permissions, approvals, and authorizations for the private activity on Public objects such as the defending of dikes and shores of banks.

Maintenance and planning : National and Provincial structures and telegraphic lines, recording water-stage gauges.

Administrative guidance : project management and advice for the free polders such as the Big Polder Walcheren.

Planning : measures for navigation channel like Walcheren Canal, deepening at Veerdt including the works of National Railway between Walcheren Canal and the river mouth at Veere.

The works of these railway and canal gave him the best opportunity of broadening his views.

④ Composing General Regulations for tender

He was ordered by the Principal Engineer Conrad to compile the General Regulations for tender, execution and maintenance of works of sea-walls and defense at the shore of Calamiteuse polders or water board districts.

⑤ Staff of National Railway

Head Registered Engineer : M. Simon G2

Section Engineer : A.C.Broekman (at Vlissingen)

M.A.van Idsinga (first at Vlissingen, later at Middelburg)

B.A.S.Deenik (at Middelburg)

G.C.Buijskes (first at Vlissingen, later at Arnemuiden)

Supervisor of Division of Public Works : Neijt.

⑥ Social Clubs

There were various classes of people in Middelburg and all the clubs for High classes. The highest circle was the club for nobility and notable (patrician) Zeeland families and the second was the Noord straat club. He was members for both with de clereg. Bouvin and Deenik.

⑦ Technical Lesson circle

He accumulated as much engineering knowledge as possible with colleagues and railway engineers in Zeeland as well as in Alkmaar.

(7) Chance for journey to Japan³³⁾³⁴⁾³⁵⁾ (1872—1873)

a) Advice of Ir.G.A.Escher's superior

On hearing of the request by the Japanese Government, Ir.G.A.Escher discussed his wish for Japan with his superior, Principal Engineer Conrad, who recommended him to go after it, and was taught the assignment would be for a while in the hands of the Referendary, Head of the Division of Public Works of the Department of Home Affairs and also of Prof.van den Berg at Delft. He went to Prof.van den Berg and to their Referendary J.F.Boogaard, who knew him well from the Hague times, to talk about it and learned that

unfortunately they had not found anyone for the Principal Engineer's function among the staff of Engineers of Public Works, which were considered first, and that Dr.Baudouin was again in charge of the selection.

b) Visiting Dr.Baudouin

He visited Dr.Baudouin in Utrecht and told him about his wish, who informed Ir.G.A.Escher that he had just designated for the position of Principal Engineer, C.J.van Doorn, and for the position of Engineer he had still been in negotiation with military engineer I.A.Lindo : He regretted that Ir. G.A.Escher had not contacted him earlier.

c) Personal contact with C.J.van Doorn

Next, he inquired with his friend from Alkmaar, C.J.van Doorn, how the situation was, and came to know that both C.J.van Doorn and I.A.Lindo had accepted.

He asked them to keep him in mind in case additional personnel would be needed in Japan.

d) A letter from C.J.van Doorn at Osaka in Japan

At the end of 1872, C.J.van Doorn and I.A.Lindo left for Japan. During the first half of 1873, he received a letter from C.J.van Doorn in Osaka, to the effect that 3 Hollander engineers were needed for the construction of a harbour in that place and that C.J.van Doorn recommended for those positions Ir.G.A.Escher, the Civil engineer Thissen and J.de Rijke, the last that C.J.van Doorn had known as a Head Supervisor at the Amsterdam canal M7, in which J.de Rijke co-worked in the construction of the Oranje Locks in the IJ meer at Schellingwoude near Amsterdam.

The contract was for 3 years : Ir.G.A.Escher's salary was to be 450 gold yen (at approx. 2.50 Guildars) per month, with traveling expenses back and forth and cost of equipment paid.

(8) Decision and Preparation for Japan

a) Decision

There was nothing more to be desired for Ir.G.A.Escher and accepted this offer and requested therefore leave of absence for an indefinite period from Holland Public Work Service, without pay. This request was approved to him, without loss of seniority, by Royal Decree beginning on 4 July. The then Minister was Mr. Geertsma. Bekaar became his successor.

b) Preparation

He began to prepare himself for Japan, among others by taking some more horse-riding lessons. At Seelheim's he learned a little about geology and mineralogy, and was recommended to read the booklet by Hamm and Prokomy about meteorology and biology, which he bought and studied with much pleasure on his way to Japan. In addition to miscellaneous equipment, he acquired some professional books, among others, Hagens "Wasserbau", Stevenson "On Harbours", Japanese grammar, and "Shop Conversation" by Hoffmann.

He requested the Secretary General of Home Affairs, Mr.

Hubrecht, to give him a selected collection of specifications and estimates of various hydraulic projects and constructions of railways.

Later he enlarged his collection of books from Japan, among others, with Hütte "des Ingenieurs Taschen buch", Spon's Dictionary of Engineering, "a subscription to Engineering," De lagrené "cours de Navigation Intérieure".

(9) Departure for Japan

a) From Utrecht in Holland to Marseille in France.

After having made the acquaintance of A.Thissen and J.de Rijke and having taken leave from his family and friends, he departed on 29 July.

In Roosendaal he met J.de Rijke and his wife, sister-in-law Miss Elza Hassholt and 2 children and bricklayer Arnst, his wife, also hired by C.J.van Doorn, by way of J.de Rijke. A.Thissen would be leaving a month later with his just married wife Augustine Besier.

During his short stay in Marseille, he bought a small craft of very good vermouth and good cognac, which were later very useful in Japan.

b) From Marseille to Nagasaki in Japan

They sailed in the morning of 3 August by the Ship Irraouaddy from the bastion de la Joliette.

The de Rijkjes traveled by 2nd class, the Arnstes by 3rd and G.A.Escher by 1st class.

On 5 August they were anchored at Naples from 5 to 8:30 a.m., enough time to do a little shopping for small girl Anna de Rijke, who had been ill.

On 8 August he made the acquaintance of 2 Hollanders and an Irishman as well as of 3 Japanese, Furukawa, Moumari, and Yamanaka, who spoke respectively French, German and English, and were from Port Said. On 10 August they departed there. Farther on the Lake Bitter, they suffered from NNE wind with fine desert drift sand, which impeded visibility and darkened the sunlight so that steering was not possible.

On 11 August they steamed out on to the Suez, and into the Red Sea. On 15 August very hot at 105° F, on 16 August in Aden, they visited a Parsee restaurant with a court full of camels dromedaries, goats and don-keys, and the large tanks in the ravine.

On 30 August, in Singapore. They were not allowed to disembark because of the occurrence of cholera. On 3 September, they arrived in Saigon, french colony, where one of the graineurs, Guillaume Tell invited the de Rijke's and Ir.G.A.Escher for dinner at his restaurant. The French colonists looked very pale.

On 8 September, they arrived at Victoria on the British Island, Hong Kong. Splendid location. On 12 September, they went to China Sea, a low barometric pressure occurred with now-and-then hard wind. The stern steering wheel was

connected to rudder. The center of the typhoon appeared to have passed approximately 75 miles north of their anchorage.

On 15 September they arrived at the mouth of the Shanghai River, the Whangpoo River, but could not cross the bar. On 18 September though the water rose a little with more wind, they passed there, Ir.G.A.Escher went ashore and visited their Consul Heukensveld Slaghek, on 19 September Ir.G.A.Escher met Holland Consul-General to China Ferguson, whom he knew in 1856.

On 20 September they left by the Ship Oregonian, an American paddle wheel steamer.

On 22 September they arrived at Nagasaki, and then Ir.G.A. Escher visited Holland Counsel van der Pot at Dejima, and met Keg and Cattenburgh who were both merchants. Furthermore Ir.G.A.Escher visited the Mr. Geerts and Dr.van Leeuwen van Duivenbods. As it was usual for them in Japan, Geerts lived with a Japanese lady, van der Pot mourned over the recent loss of Geerts.

c) From Nagasaki to Osaka

On 24 September they passed the Simonoseki strait and reached the Inland Sea, where a beautiful run of picturesque lands with villages and temples in the folds of the mountains and all this seemed delightful. In the evening they anchored in the bay of Hyogo (Kobe), where C.J.van Doorn had arrived to welcome them and Ir.G.A.Escher went ashore for dinner with him and other Hollander merchants Schut, Scheuten and Plate. Rappart, sub-agent of the Ned. Handel Mij, in Osaka, jointed them.

On 25 September the small boat Bujimaru took them across the bay of Osaka. They stayed temporarily at a Japanese hotel for Westerners, Jiutei, run by a Dutch-speaking Japanese. It was located on one of the many lower branches of the Yodogawa River.

d) Residence in Osaka

① C.J.van Doorn

C.J.van Doorn's residence was in Tokyo, but stayed temporarily in Osaka to prepare the plans for the Osaka Harbour and had been commissioned to execute some minor works, in Hyogo. His residence in Osaka was not far from the Settlement of the foreign concession, in Kawaguchi (river mouth), at a priest's near Buddha temple.

② A.Thissen and J.de Rijke

C.J.van Doorn had reserved houses for A.Thissen and J.de Rijke. The one of J.de Rijke, lying along the river branch, Dojimagawa, a little above the Settlement, with a garden, rice field in the back, was occupied on 7 Oct. by him and his family.

③ Dwelling at Office of Ir.G.A.Escher

It was one of the bungalows, or a small villa, of the settlement, which C.J.van Doorn had kept for Ir.G.A.Escher and his office. Ir.G.A.Escher rented it from its English

owner Bryner at \$30 per month : it was a lot at the Foreign concession of Kawaguchi No.4.

In conclusion

J.de Rijke was not educated in school as an engineer, but he learned hydraulics by J.Lebret and comprehended it well. However it seems that he did not know how to calculate the strain-stress of structure because he told Ir.G.A.Escher that he could not understand about the basic theory of reinforced concrete.³⁶⁾

J.de Rijke did not belong to upper class in Holland. He was recommended for the position of Engineer in Japan by his boss C.J.van Doorn who belonged to upper class in Holland, and came to Japan without any information of Japan.

On the other side, the parents of Ir.G.A.Escher belonged to the nobility, he was an engineer authorized by the Government, and also learned French, German and English in childhood, well educated principally in grammar school, and studied how to apply effectively science to engineering. Before coming to Japan he had had much experience for public works, knew the reasons why the Japanese Government would employ the Hollander engineers. He voluntarily prepared himself the plans and design of public works.

J.de Rijke and G.A.Escher were of the same school year. Their social positions and religions were different from each other. J.de Rijke had accumulated plenty of engineering experience in executing the public works. Ir.G.A.Escher had had theories and cultures which were required for planning, surveying and designing of public works.

In the process they had come to admit their forte each other for public works, to admire each other and to hold each other in high esteem.

There had been much support by Ir.G.A.Escher for the great achievement of J.de Rijke in Japan and Shanghai.

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