Dear reader of this book,

165 years have passed and a lot of things have happened since the start of the Applied Earth Sciences program in 1842 as a Mining engineering specialization under Chemical Engineering. This book will give a brief overview of the most important milestones until now.

After digging along the timeline a very important issue remains, namely:

What is the future of Applied Earth Sciences?

This is a very relevant question, because if there is no future, we have to be seriously worried. In order to analyze this, I will first proceed to cut the title of our course program into its three components: Applications, Earth, and Sciences (Techniek, Aarde, Wetenschap) and I will discuss why all three aspects are relevant for our societies, even in the far future. It follows logically then that the combination of the three must be even more relevant.

Applications: Our industrial and post-industrial societies pose a tremendous burden on planet Earth. Mankind is about to exploit all available natural resources, organic or not. Increased population densities put an enormous pressure on land, water and food resources, and increasingly dense infrastructures push natural land areas increasingly into more and more isolated areas. It can be considered a principal task of engineers and scientists to develop solutions that minimize the footprint of mankind on the planet. Smart engineering can contribute to a better, more efficient use of natural resources without putting unnecessary burdens on our planet.

Earth: As Applied Earth Scientists, we must strive to understand the principal working mechanism of the planet we live on. When we read in newspapers that the increase in CO^2 in the atmosphere is a catastrophe for the Earth, our inner warning sensors must immediately get triggered. It is a catastrophe for man, not for the planet. The Earth was just fine some 80 million years ago, when the CO^2 concentrations in the atmosphere were not just a little higher, but more than an order of magnitude above the present concentrations. We must accept the responsibility to exploit these resources in a responsible and efficient way. So let's be less ambitious: let's just be as responsible as we possibly can with our planet.

Science: And finally, we have to make sure that our activities are not just innovative and responsible, but also scientific. As Applied Earth Scientists, we have to combine many different sciences, from geology to chemistry, physics, mathematics, fluid dynamics, and much more. We cannot go very deep in each one of them, as the beauty of our field is in the combination and integration of these disciplines with regard to their relevance to the Earth. Rigorous science - as taught by Darwin in the case of evolution - is the only acceptable way, both in the way we teach our students in our field, and the way we should use our knowledge in practice and academia.

Best wishes and a heartfelt "Glück auf"!

Prof. Dr. Stefan M. Luthi
Department Head, Geotechnology

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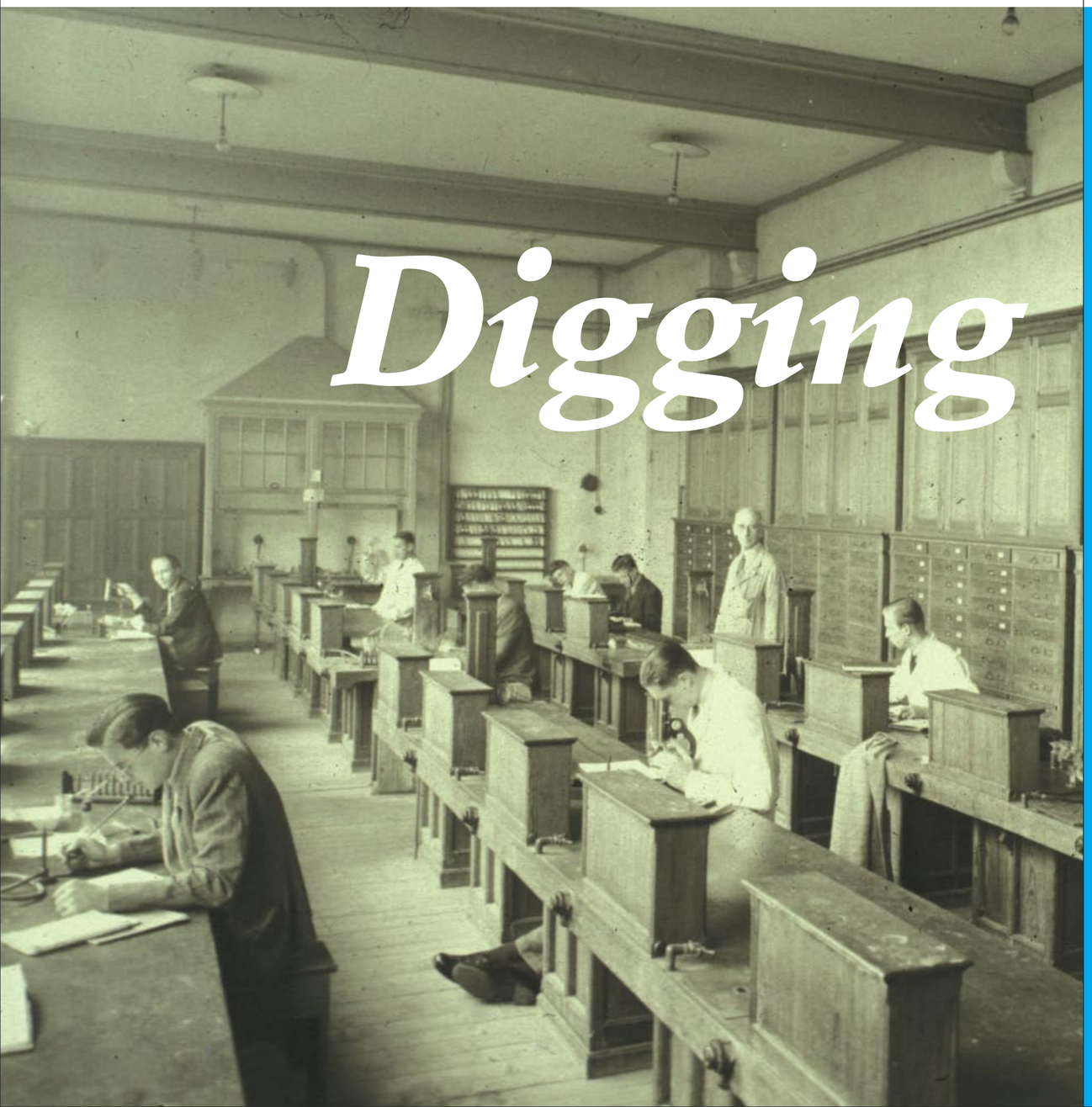
www.tudelft..nl

1840 1850 1860 1870 1880 1890 1900 1910 1920 1920 1930 1940 1950 1960 1970 1980 1990 2000

TU Delft



Digging *in the Past*

The history of the Applied Earth Sciences programme in Delft

8 January 1842
King William II of the Netherlands decides to set up the Koninklijke Akademie (Royal Academy) in Delft. Mining is set up as a sub-department of the Chemical Technology faculty.

1860
First geological map of the Netherlands is developed by W.C.H. Staring.

1840 1845 1850 1855 1860 1865 1870 1875

1848
C. de Groot graduates as the first mining engineer in Delft.

1849
The Prince of Ashanti, Kwasi (Aquasi) Boachi, graduates as the second mining engineer in Delft. In 1997 Dutch novelist Arthur Japin wrote a biography of his life entitled 'De zwarte met het witte hart' (published in English as 'The Two Hearts of Kwasi Boachi').

20 June 1864
The name 'Koninklijke Akademie' changes to 'Polytechnische School' (Polytechnical School).

1 October 1892
'Mijnbouwkundige Vereeniging' (Mining Engineering Association) is founded.

1906
The draft budget from the Minister of the Interior includes an item for the building of a new mining engineering laboratory at the Rotterdamseweg.

1875 1880 1885 1890 1895 1900 1905 1910

1899
Dr C.J. van Loon appointed as university lecturer. He writes a comprehensive memorandum about the thorough restructuring of mining engineering teaching.

1901
The Dutch government decides to exploit the coal reserves in South Limburg. This causes interest in mining education to increase sharply. Alongside the Dutch East Indies, Limburg becomes the most important operational area for Dutch mining engineers.

22 May 1905 The name 'Polytechnische School' changes to 'Technische Hogeschool van Delft' (Delft Institute of Technology).

1842-1910 > The first steps

Particuliere Collectie

In 1860 the Leiden geologist W.C.H. Staring developed the first scientific map of the geological origins of Dutch territory entitled 'Schoolkaart voor de Natuurkunde en de Volksvlijt van Nederland' ('Shool Map for the Physics and Public Industry of the Netherlands'). The original map – which was actually coloured by hand – is currently in the possession of the Mineralogisch Geologisch Museum.

Dr S.A. Bleekrode

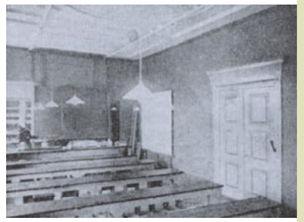
- Obtained doctorates in medicine and obstetrics and mathematics and physics.
- Professor (1846-1862) in the mining subjects mineralogy, geology and metallurgy.
- The programme's first professor, who arranged the entire subject's teaching for Delft mining engineers in the early years.

Dr H. Vogelsang

- Professor (1864-1874) in mineralogy, geology and mine exploitation (at the age of 26!).
- Organised regular geological excursions for students during holidays.
- Due in part to his efforts, Delft acquired a leading position in microscopic petrography.

Mining Engineering and Chemistry formed a department together and were located at the Westvest. The geological collections, which later grew into the Mineralogisch Geologisch Museum, were housed in the rooms above Café Bavaria (Binnenwatersloot, at the entrance to the Phoenixstraat).

1905 saw the first plans presented for new accommodation. Given the high costs of the new building, there was considerable discussion about the plans with the Ministry of the Interior. The forecast of the number of students expected was originally 105. This was later adjusted to 190 and eventually 250, plus around 35 members of staff. The new building was opened in 1912.



The mining engineering students wanted to broaden their academic education. The **Mijnbouwkundige Vereeniging (Mining Engineering Association) was therefore founded in 1892** by four students. The association initially occupied itself primarily with organising lectures for and by students. The association's objective has remained unchanged over the years: 'Promoting the interests of those studying Mining Engineering'.

Number of graduates 1848 - 1910

1848 — 1	1868 — 1	1894 — 1
1849 — 1	1870 — 1	1895 — 1
1850 — 2	1872 — 3	1896 — 3
1852 — 2	1873 — 1	1898 — 1
1853 — 1	1877 — 3	1899 — 1
1854 — 1	1880 — 2	1900 — 4
1855 — 2	1883 — 3	1901 — 6
1859 — 2	1885 — 1	1902 — 12
1860 — 3	1887 — 1	1903 — 11
1861 — 1	1889 — 1	1904 — 10
1862 — 1	1890 — 2	1905 — 14
1863 — 2	1892 — 1	1906 — 12
1866 — 1	1893 — 2	1907 — 5

1910
A Dutch delegation led by Professor Molengraaff undertakes a two-year expedition to Timor.

February 1913
Mining Engineering moves to the new building on the Mijnbouwstraat.

1917
The Mijnbouwkundige Vereeniging celebrates its 25th anniversary with a trip to a gas factory in The Hague.

1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925

24 April 1912
Separation of the Mining Engineering and Chemistry programmes by Royal Decree.

1914
First World War breaks out.

1918
End of the First World War.

1937
45th anniversary of the Mijnbouwkundige Vereeniging is celebrated exuberantly. Café Het Noorden is involved in the event for the first time. Het Noorden grew further to become the favourite haunt of the mining engineers.

1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940

1911-1939 > *Moving to the Mijnbouwstraat*

In addition to the Dutch East Indies and South Limburg, South America and the United States became an important operational area for the Delft mining engineers from the 1920s. South Africa became an additional operational area in the 1930s.

Dr G.A.F. Molengraaff

- Professor (1905-1930) in mineralogy and geology.
- First professor in the Netherlands tasked with carrying out education in general and practical geology, separate from related fields.
- Took the initiative in 1910 for a major Dutch Timor expedition due the island's considerable fossil wealth.

A place is also reserved in the new Mining Engineering building for a mineralogy and geology museum. The study collection of Professor Vogelsang formed the basis for the museum.

< The Mineralogisch Geologisch Museum in 2007

In February 1913, 85 students, 6 professors, 1 lecturer, 1 curator, 10 assistants, 1 caretaker, 1 draughtsman, 1 engineer, 2 laboratory assistants and 9 employees moved to the new building.
There was considerable squabbling over the high costs of the new building, right up to the parliamentary level. Because of high construction costs the building was not immediately completed, and for several years there were unpainted walls and bare floors.

The 45th anniversary of the Mijnbouwkundige Vereeniging is celebrated exuberantly. Café Het Noorden is involved in the event for the first time. In the 1930s beers were often drunk in Café Het Noorden in Delft's Noordeinde. By 1937 this had grown into a weekly event.

"At great length the speaker considered the history of the buildings, in which the various departments were accom-modated, broadly outlining the rich resources in educational tools of the mining engineering department with its museums for crystallography, mineralogy and geology."
Report on the address by the Rector Magnificus on the anniversary of the Institute of Technology. Delfise Courant, 8 January 1913

Number of graduates 1911 - 1939

1911 — 4	1921 — 20	1931 — 8
1912 — 7	1922 — 26	1932 — 13
1913 — 5	1923 — 16	1933 — 9
1914 — 1	1924 — 17	1934 — 2
1915 — 4	1925 — 29	1935 — 10
1916 — 13	1926 — 15	1936 — 17
1917 — 3	1927 — 11	1937 — 14
1918 — 14	1928 — 15	1938 — 9
1919 — 9	1929 — 15	1939 — 5
1920 — 10	1930 — 8	

1940
The Second World War breaks out in the Netherlands.

Early 1941
The Mijnbouwkundige Vereeniging officially dissolves itself when Jews are forbidden to be members of a non-commercial body. The board remains active, however, to keep organising activities.

1940 | 1941 | 1942 | 1943

November 1940
Jewish professors are dismissed. Protest actions lead to the temporary closure of the Institute of Technology (November 1940 –April 1941).

November 1942
Celebration of the 50th anniversary of the Mijnbouwkundige Vereeniging is cancelled at the last moment because of rumours about threatened deportation of students to Germany.

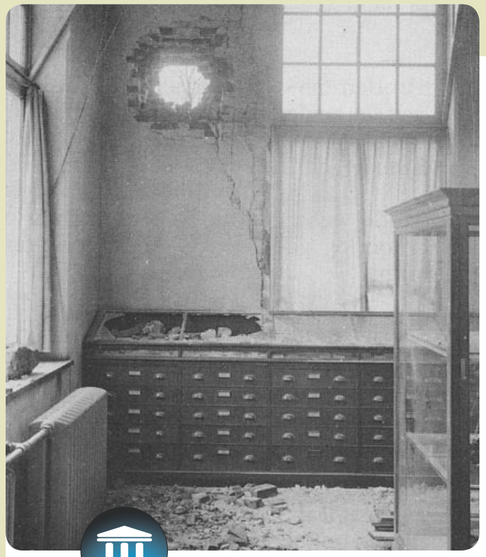
1943
Round-up of students.

1945
End of Second World War.

1943 | 1944 | 1945 | 1946

1943
The occupier makes signing a loyalty declaration mandatory for students.

1940-1945 > *The war years*



After the bombardment of Rotterdam in May 1940 many refugees arrived in Delft. A number of them were housed in the mining engineering building. The building survived the war well, apart from a grenade strike in the southeastern corner.

The gardens surrounding the building were distributed among the staff to serve as allotments. The large inner garden was set up as a tobacco plantation. After being dried in the household attic the tobacco leaves were taken to The Hague in a pram, to return as packets of cigarettes and loose handrolling tobacco.

Dr J.A.A. Mekel

- Professor (1929-1942) of historical geology and palaeontology with a teaching commitment in geophysics.
- Arrested for resistance activities in 1941, and executed by firing squad in 1943 following a show trial.

Mining engineering students engaged in considerable resistance work. Unfortunately this took its toll of victims, the greatest proportion being in the Mining Engineering department. Mining engineer Loet Hesselberg was secretary of the student resistance and, together with the regional resistance leaders, was arrested at the beginning of 1945 and executed by firing squad. Mining engineering student Ruud von Nordheim also played a major role in student resistance both in Delft and nationally.

In 1943 students were required to sign a declaration of loyalty, undertaking not to go against the German occupier. The reason for this was the attack on a German general, in which students were believed to have taken part. In comparison to other departments, the percentage of those signing was the lowest among mining engineering students.

Number of graduates 1940 - 1945

1940 —— 8
1941 —— 5
1942 —— 7
1943 —— 7
1944 —— programme closed
1945 —— programme closed

3 May 1947
Memorial window dedicated in the Mining Engineering building.

1948
Professor Faber partially satisfies the students' proposed reorganisation of the programme.

1953
The Maartenschoot-in-de-Gracht medallion is introduced by the Mijnbouwkundige Vereeniging. This medallion is intended for members who perform exceptional services for the association.

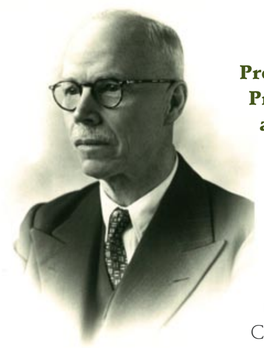
1946 1947 1948 1949 1950 1951 1952 1953 1953 1954 1955 1956 1957 1958 1959 1960

1946-1959 > Reconstruction

Laterite Ore

Drying
↓
Calcine & Reduction
↓
Ammonical leaching
↓
Purification and Recovery
↓
Ni and Co

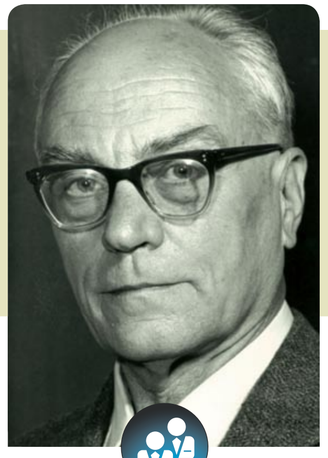
Caron Proces



Prof. M.H. Caron, Professor of Docimacy and Metallurgy from 1928 to 1951, developed an economic method to process low-quality nickel and cobalt-containing ores. This resulted in the world-famous Caron process.

Prof. H.J. de Wijs
- Professor of Minerals and Geology, later Economic Geology (1949-1979)
- Concentrated on the analytical statistics involved in the evaluation of complex ore occurrences and developed the 'Lognormal-de Wijsian scheme', an internationally recognised model for geostatistics.
- Golden member of honour of the Mijnbouwkundige Vereeniging.
- Became Rector Magnificus of the Institute of Technology in the 1960s.

On 3 May 1947, within the context of the national commemoration of victims of the Second World War, the memorial window was dedicated in the Mining Engineering building. The President of the Mijnbouwkundige Vereeniging, P.J. Muyskens, delivered an address. The stained-glass window contained the names of the department's fallen. The meeting was concluded with a solemn rendition of the Dutch national anthem, the 'Wilhelmus'.



The Mijnbouwkundige Vereeniging offers the department a proposal for reorganising the studies. The students want to move away from a purely universal mining engineering programme. In its place, they want more scope for five specialisations. In 1948 Professor Faber accedes to these plans to a certain extent.

Number of graduates 1946 - 1959

1946 — 18	1951 — 23	1956 — 28
1947 — 10	1952 — 15	1957 — 23
1948 — 10	1953 — 23	1958 — 25
1949 — 12	1954 — 14	1959 — 17
1950 — 3	1955 — 13	

The 1960s

1962
Professor Velzeboer introduces the Velzeboer Trophy.

1963
First excursion for new students led by Professor Velzeboer.

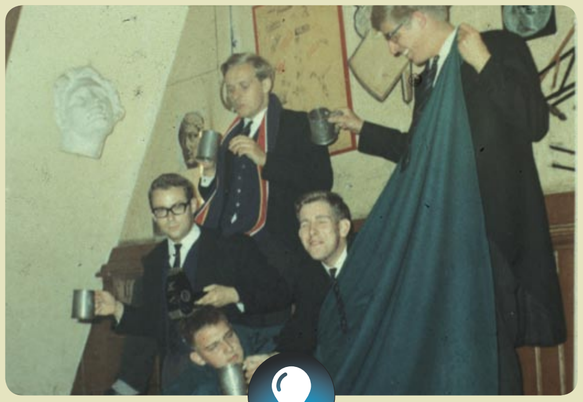
1965
Survey among mining engineers who graduated between 1945 and 1965.

1967
The Mijnbouwkundige Vereeniging takes over the licence to run Café Het Noorden from the Garos family.

June 1968
Rosa Kovacs graduates as the first female mining engineer in Delft.

10 January 1969
First 'Barabaraborrel' gathering held.

1969
Because of the renovation of Café Het Noorden, the association's refreshment sessions move temporarily to the attic of the St. Jansburg student association, and later to the bicycle cellar of the Mining Engineering building, both renamed as 'Het Zuiden'.



A 1965 survey among mining engineers who graduated between 1945 and 1965 shows that more attention needs to be devoted to societal and managerial subjects. The computer must also be allocated a greater role in the educational programme.

Prof. P.T. Velzeboer

- Professor of Mining Engineering (1961-1981)
- Major influence on mechanistion of coal mining engineering in the Netherlands and Britain (DSM and National Coal Board).
- Developed research into the extraction of minerals using dredging technology.
- Took new students to the coal mines in South Limburg. The excursions are still held, only with far more students going to different kinds of companies.
- His striking bearing and strong personality meant that his influence on the developments within the department and the Mijnbouwkundige Vereeniging was considerable.

Prof. J. Roorda

- Professor of Mineral Separation (1961-1984)
- Continued the work of Prof. Caron in the extraction of nickel from laterites.
- Began development of the use of (mineral) separation techniques for recycling metals and synthetics. Delft University of Technology was one of the first universities to begin with this application.

The 1960s in the Netherlands saw the democratisation of higher education. In conservative Delft (and the even more conservative mining engineering sphere) this occurred without any notable incidents, such as sit ins. However, the culture did change slowly. Up until the mid-1960s students wore suits on the faculty and on excursions. By the end of the decade this custom had gradually disappeared.

Jan Garos, owner of Café Het Noorden, died on 12 September 1964. Running the café became too demanding for his wife Fiep. Given that a special bond had been forged with the bar since the founding of the Mining Engineering programme, and that association evenings were organised there every Wednesday evening, the Mijnbouwkundige Vereeniging considered buying the premises.

The Noordeinde and Kolk premises, which housed Café Het Noorden, are bought by the Delftse Studenten Gemeenschap. A condition is that the Mijnbouwkundige Vereeniging obtains exclusive rights to run Café Het Noorden. In 1966 the Mijnbouwkundige Vereeniging therefore becomes the first and only student association in the Netherlands with its own café. On 30 August 1967 the Café Het Noorden licence is transferred to the Mijnbouwkundige Vereeniging.

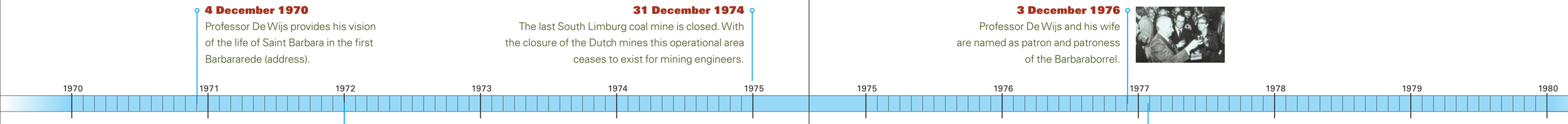
On an initiative of student Hans de Ruiter, the monthly get-together for former East Indies mining engineers and former Mijnbouwkundige Vereeniging board members are combined into the 'Barbaraborrel' gathering. The purpose of this get-together is to promote contacts between students and engineers. The first Barbaraborrel is held on 10 January 1969.

The Velzeboer Trophy was first presented for a bowling competition between students and staff on 21 November 1962. Professor Velzeboer, at that time administrator of the Faculty of Mining Engineering, had decided to institute the trophy as a symbol of the good harmony between the technical service and students. Staff and students do battle for the trophy annually in a sporting event.

Up to the 1970s it was impossible for women to study mining engineering. Women were not allowed to carry out work underground, and could therefore not complete part of the studies – the mandatory practical internship. An exception was the Hungarian refugee Rosa Kovacs. Given that she had already completed her internship in Hungary, in 1968 she graduated as the first woman in mining engineering.

Number of graduates 1960 - 1969

1960 — 18	1965 — 28
1961 — 14	1966 — 35
1962 — 26	1967 — 22
1963 — 20	1968 — 19
1964 — 22	1969 — 10



4 December 1970
Professor De Wijs provides his vision of the life of Saint Barbara in the first Barbararede (address).

1972
The Mijnbouwkundige Vereeniging takes possession of Association Café Het Noorden. On 23 October the renovated Noorden is ceremonially opened by Mrs Garos.

31 December 1974
The last South Limburg coal mine is closed. With the closure of the Dutch mines this operational area ceases to exist for mining engineers.

3 December 1976
Professor De Wijs and his wife are named as patron and patroness of the Barbaraborrel.

28 January 1977
Mrs Schepers opens the 'Dr. Ir. L. Schepers Laboratorium' (laboratory).

1970-1979 > The 1970s

University funding begins to change by the late 1970s. More emphasis is put on third-party income from research, the so-called 'Third Money Stream'. The 'Plaatsen – Geld' (literally, put up cash) model is adopted. This means staff have to be paid partly from research money.

Prof. W.H. van Eek
- Professor of Petroleum Engineering (1970-1978)
- Van Eek's interest in research was broader than just Petroleum Engineering. He encouraged research into extracting coal using drilling techniques, developing mineral deposits on the ocean beds and for coal gasification in underground coal beds.

Prof. J.J. Dozy

- Professor of Geology (1968-1979)
- Worked for Shell for 30 years before becoming a professor, including in the Dutch East Indies and New Guinea.
- In 1936 discovered the world's second-largest copper and goldmine, when climbing the 5040 metre(!) Ngga Poeloe mountain.

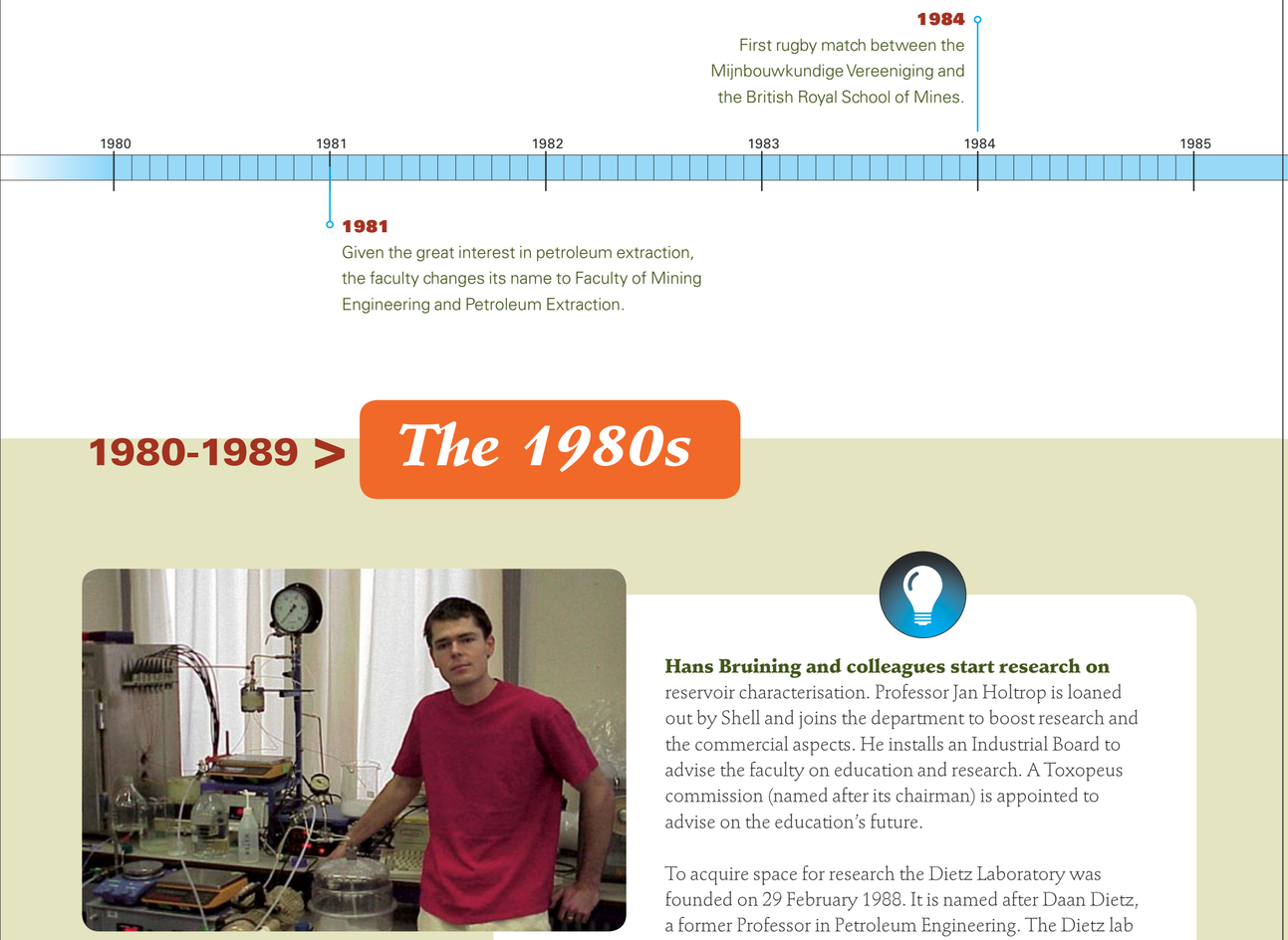
Professor Velzeboer introduced a new graduation subject: ocean mining engineering. Given that there was insufficient space to put down a barge tank, the faculty was allocated extra space at Mijnbouwplein 11. On 28 January 1977 the new ocean mining laboratory, named the 'Dr. Ir. L. Schepers Laboratorium' was opened by Dr Schepers' wife.

In 1972 the Mijnbouwkundige Vereeniging took over Association Café Het Noorden. A variety of refreshments are served in Het Noorden, poured by the 'Noordencommissarissen' (Nocos). The premises host the traditional Noorden evenings, the Barbaraborrels and the graduation get togethers.

On 4 December 1970 Professor De Wijs delivers the first annual Barbara address during the 'Barbaraborrel' organised since 1969. Saint Barbara is regarded as the patron saint of mineworkers and gunners. There are many legends about her life and in the Barbara address speakers add their own versions. Saint Barbara's anniversary is on 4 December.

Number of graduates 1970 - 1979

1970 — 23	1975 — 20
1971 — 13	1976 — 17
1972 — 16	1977 — 15
1973 — 19	1978 — 15
1974 — 15	1979 — 16

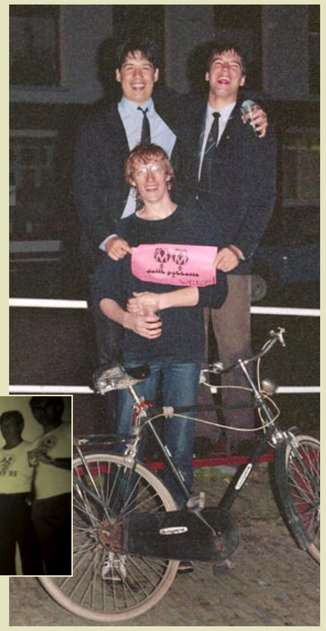


1980-1989 > The 1980s

Hans Bruining and colleagues start research on reservoir characterisation. Professor Jan Holtrop is loaned out by Shell and joins the department to boost research and the commercial aspects. He installs an Industrial Board to advise the faculty on education and research. A Toxopeus commission (named after its chairman) is appointed to advise on the education's future.

To acquire space for research the Dietz Laboratory was founded on 29 February 1988. It is named after Daan Dietz, a former Professor in Petroleum Engineering. The Dietz lab is housed in the former Dr. Ir. L. Schepers Laboratorium.

The collections of Palaeontology, Geology of the Netherlands and Historical Geology on the second floor of the museum are moved to the Natuurhistorisch Museum Naturalis in Leiden, to clear space for the growing number of students. The Mineralogy practical hall is rebuilt into a modern computer room (ERM Zaal).



In 1984 the Mijnbouwkundige Vereeniging and the British Royal School of Mines hold their first rugby match in London. The winner receives a challenge trophy called the 'Barbarabeker'.

During the management changeover in 1984 both the old and the new administrator of 'Het Noorden' keep watch over the chest containing Kasper the mining ghost. According to an old legend, Kasper, who embodies the souls of deceased miners, takes revenge by allowing mine gas to explode at unexpected moments. During the 70th anniversary of the Mijnbouwkundige Vereeniging, Kasper was caught by students and locked in a chest.

Number of graduates 1980 - 1989

1980 — 15	1985 — 31
1981 — 18	1986 — 47
1982 — 19	1987 — 58
1983 — 26	1988 — 60
1984 — 27	1989 — 71

1992
Celebration of the 100th anniversary.

1990 1991 1992 1993 1994 1995

1997
The faculties of Applied Earth Sciences and Civil Engineering are combined into one faculty: Civil Engineering and Geosciences.

1995 1996 1997 1998 1999 2000

29 September 1996
Founding of the European Mining Course (AMC).

19 December 1999
Founding of the Federation of European Mineral Programmes (FEMP).

1990-1999 > *De jaren negentig*

Following the departure of the Professor of Mining Engineering in 1989, it was decided to cooperate with the Royal School of Mines in London. Delft students followed eight months of teaching in London and completed their studies in Delft. At the beginning of 1996 the dean, Prof. Wijnand Dalmijn, and Hans de Ruiter investigated whether it would be possible to expand the cooperation to other universities in Europe. Interest was shown in London, Aachen and Helsinki. The first trial project, the European Mining Course (EMC), was successful and in 1998 the raw materials processing programme was set up: the European Mineral Engineering Course (EMEC). In 1999 the Federation of European Mineral Programmes (FEMP) was founded, and included not only universities but also 35 companies. The contributions enabled the students' accommodation to be subsidised.

Prof. W. Dalmijn

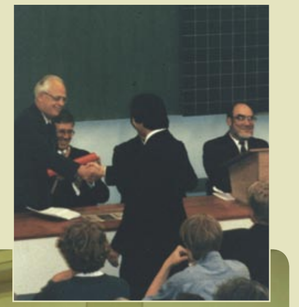
- Professor of Resource Engineering (1991-2003)
- Continued the work of Prof. Roorda in recycling. He developed separation techniques, for example, to sort glass, electronics and waste automatically.
- Conducted research into applications to be able to separate ore from country rock at an early stage. With the current computer capacity it is now possible to apply the method on an industrial scale.
- Developed techniques used to purify contaminated ground.

Dr J.F. Holtrop

- Professor of Applied Earth Sciences (1990-1996)
- Played a major role in restructuring the faculty into two departments. This enabled a number of research projects to be acquired.

As far back as the 1970s there were occasional discussions on leaving the Mining Engineering building to seek new accommodation which would be more central within the University of Technology area. Partly as a result of the large influx of students, around 1990 a concrete alternative was presented: relocation to the Kluyverweg, south of the Kruithuisweg. The faculty would then possibly be housed together with the faculty of Aerospace Engineering.

At the same time an alumnus drew up a design for a complete renovation of the existing building, including glass roofing over the inner garden. The estimated costs were 60 million guilders (equivalent to about 27 million euros). Ultimately, it was decided to remain in the existing building for the time being. Because little or no maintenance had been carried out over the years, in the mid-1990s a couple of million guilders was invested in renovation work. Particular attention was devoted to laboratories and practical halls. The top floor of the museum was also cleared, to provide space for PhD and MSc students.



Number of graduates 1990 - 1999

1990 — 77	1995 — 59
1991 — 40	1996 — 60
1992 — 52	1997 — 65
1993 — 59	1998 — 59
1994 — 59	1999 — 65

2000 en verder

4 November 2004
Founding of the ISAPP knowledge centre by Delft University of Technology, Netherlands Organisation for Applied Scientific Research (TNO) and Shell.

3 June 2006
Students, alumni and (former) members of staff bid the building at Mijnbouwstraat 120 farewell.

September 2006
Founding of the Joint Master's in Applied Geophysics by Delft University of Technology, RWTH Aachen and ETH Zurich.

5 September 2007
Minister Plasterk of Education opens the new building on the Stevinweg.

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

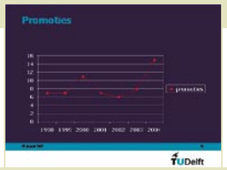
Modern research into reservoir characterisation and oil extraction has made huge strides in the last 15 years. Within the programme, research is conducted into, among other things, *Underground coal gasification, Efficient simulation of steam drive recovery of oil, Carbon dioxide Enhanced Coal Bed Methane, Arsenic remediation of drinking water from tube wells, Upscaling in fractured reservoirs, Monitoring microbial activity during oil recovery, Storage of CO2, NOx and SOx in coal layers.*

The educational programme received an extra boost through the founding of the strategic knowledge centre ISAPP (**Integrated System Approach Petroleum Production**) in 2004: a cooperative arrangement between Delft University of Technology, TNO and Shell. The aim is to develop technologies which will substantially increase the yield from oil and gas fields. The application of so called smart technology in existing reservoirs can be cheaper in many cases than developing new fields.

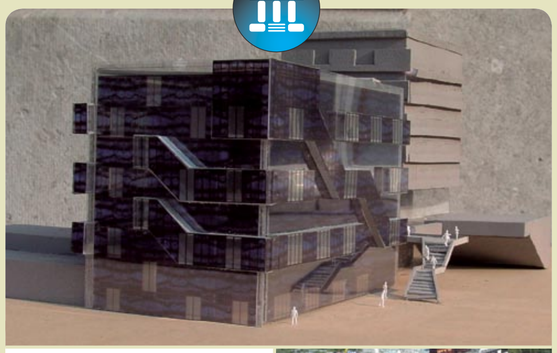
Prof. J. Fokkema

- Professor of Geophysics since 1993
- Provided a strong new impulse to research into Electromagnetic Seismology, which had been developed in the 1970s and 80s by Prof. Koefoed.
- Involved in development of the so-called ground radar, an application to track objects not deep underground. This method also has successful civil applications, such as finding human remains in criminal investigations.

After almost 95 years of teaching at Mijnbouwstraat 120, Technical Earth Sciences relocated to Stevinweg. 3 June 2006 saw the official farewell to the premises with a party for (former) members of staff, alumni and students. In the afternoon the 400 guests walked to the Grote Markt in Delft, to the musical accompaniment of a brass band from the German coal mines. The bells of the Nieuwe Kerk then rang out the famous miners' song 'Glück Auf'.



Rapid developments in the research field led to a substantial increase in the number of PhD students.



On 5 September 2007 Ronald Plasterk, Minister of Education, opened the new wing of the Faculty of Civil Engineering and Geosciences at Stevinweg 1.

The miners' song

Dutch mining language and customs are closely related to their German counterparts. This is because traditional coal mining in Limburg was based on the (far older) German mining engineering. Thus it was that miners in Limburg would greet each other underground with 'Glück Auf': 'A safe return to the surface'. Prof. Velzeboer encouraged the use of this greeting among students and introduced the singing of the German mining song of the same name. This is a ballad which describes the work of a miner until he arrives home. After singing the verses, each speciality has its own verse, such as the Bergleute (miners), Aufbereiter (mineral separators), Hausfrauen, etc.

Glück auf! Glück auf! Der Steiger kommt!
Und er hat sein helles Licht bei der Nacht
schon angezündt.

Hat's angezünd't, es gibt ein'n Schein,
Und damit fahren wir bei der Nacht
ins Bergwerk ein

Die Bergleut sein So hübsch und fein,
Und sie graben das Silber und das Gold
Bei der Nacht aus Felsenstein

Number of graduates 2000 - 2007

2002 — 33
2003 — 33
2004 — 58
2005 — 52
2006 — 38