Forgotten Explorers

discovery of geological advances in WA in the first 100 years of settlement

A talk by Jenny Bevan, based on the book by John Glover and Jenny Bevan.
Who are the Forgotten Explorers?

Living and working during the period 1826-1926 was a group of unsung heroes whose work laid the foundations for much of our present prosperity – the field geologists. Proponents of an evolving science, and dedicated to the advancement of the State or the companies for which they worked, they were both competent and well-equipped to evaluate the areas that they explored and mapped.

Unlike most of the well-known “great” Australian explorers we learn about in school, the geologists set off each time without pomp and ceremony and returned safely (in most cases) without fuss or acclaim, to write reports and get ready for their next assignments.

Perhaps, in a historical sense, they were victims of their own efficiency.
WA Geology

WA is a patchwork of pieces of the Earth’s crust put together at various times, with additions of sedimentary and igneous rocks laid on top of the older ‘basement’ rocks or incorporated into the crust by other processes. Belts of metamorphic rocks mark where there have been Earth movements which have compressed rocks or transferred them into high-temperature regions.

WA contains not only the oldest mineral grains ever found (so far: 4.4 billion years old) but also the oldest known evidence of life on Earth (over 3.5 billion years old).
Developed later, largely because of improvements in mineral exploration and processing methods, new applications and better transport:

- Iron ore
- Uranium
- Diamonds
- Mineral Sands
- Oil and Gas
- Bauxite

Tapping WA’s Resources in the first 100 years

Some early mineral discoveries across our enormous and difficult-of-access State were prospector-driven, because of the lack of official manpower due to minimal government support.

Important in the early days were:

- Building stone
- Artesian water
- Base metals (lead, zinc, copper)
- Gold
- Coal
- Gypsum for plaster
- Lime for cement
- Pearls

Many others such as mica, antimony, tungsten, magnesite, bauxite and feldspar were known, but not always exploited.
Before Europeans

The Aborigines in WA used their knowledge of local geology in their everyday life:

- flint-like rocks capable of being worked into useful **implements** were exploited
- the **ochres**, deposits of various iron oxides, were sought after and even traded between groups.

Wilgie Mia
Between 1801 and 1803, Baudin and his ships Geographe and Naturaliste with their 23 scientists surveyed large areas of WA’s coast, from King George’s Sound, to Geographe Bay and along the coast to the Swan River, and along the north-west coast via Shark Bay to Cambridge Gulf.
Early days: Baudin

According to records, Charles Bailly, a mineralogist, reported on the mineralogy and geology of the river deposits – probably the first ever record of this kind for WA.

Baudin’s expedition covered two-thirds of Australia’s coast, and collected over 200 000 specimens as well as thirty live animals.

Highly successful, it returned with all its ships, and Baudin’s name should have been celebrated, but unfortunately he died of TB in Mauritius on the way home - and the people whom he had offended on the trip who wrote the account of the voyage did not give him his due.

Ships Geographe and Naturaliste gave their names to WA locations. Commanding the Naturaliste was second-in-command Hamelin.
Early days: Darwin

Darwin was the first geologist since WA settlement to comment on the geology of WA, visiting the south coast in the Beagle in 1826.

He was not impressed by the country but examined the coastal limestone and its structures (and got it wrong!).

HMS Beagle

Painting by Ron Scobie A.S.M.A.

King Georges Sound

Painting by Robert Havel
Early days: Darwin

These are **rhizoliths**, which are limy concretions formed around roots of various plants which have grown on shelly sand dunes. Some shell sand dissolves, and calcium carbonate re-deposits around roots where the acidity encourages it. Darwin thought ones on Bald Head might be **corals**.
The Gregory Brothers

Home-grown talent! They arrived in WA as children in 1829 (the eldest, not shown, was Joshua William) and grew to be great contributors to the State’s well-being, finding new pastoral land and observing and understanding the State’s geology. Though they were brought up on a farm and became surveyors, Augustus and Francis especially “did such good work that no professional Geologist would be ashamed to own it” as the Government Geologist put it.

As well as helping expand the pastoral industry and build the Albany Highway, their work enabled export of lead and of pearl shell. The brothers all worked hard for WA, achieved awards, and Augustus was knighted.

Francis Thomas  Charles Frederick  Henry Churchman  Augustus Charles
The Gregory Brothers

Several expeditions were made to seek out pastoral land. In 1846, A.C., F.T. and H.C. Gregory explored the Irwin River and Henry came across **coal** in the river bed (their campfire was the first to burn WA coal!).
The 1848 “Settlers Expedition” was to the Champion Bay region. One of the party, Walcott, found lead ore in the bed of the Murchison River, and many fine tracts of pastoral land were noted.

They took great care to be friendly and respectful to local Aborigines.

Augustus Gregory’s later expeditions included the North Australian Expedition and the search for Leichhardt.
The Gregory Brothers

The Gregory brothers used ships for convenience. On this expedition in 1848, to investigate what became the first mine (for lead) in WA, Governor FitzGerald accompanied A.C. and F.T. Gregory, and was speared by Aborigines (he recovered!).
The Gregory Brothers

Because most overseas ships called in at Albany rather than Fremantle, it was essential to have a proper **road between Albany and Perth**.

Augustus and the other Gregory brothers began on the route in 1853, using convict labour. However, Francis was in charge by completion because Augustus had been appointed to lead one of the great expeditions in Australian history, **crossing Northern Australia from west to east** in 1855-56.

The **boab tree** inscribed by Augustus Gregory in 1856 on his great North Australian Expedition can still be seen in the Kimberley.
The Gregory Brothers  These cross-sections were published in 1861.

Fig. 1.—Diagram-section across a part of Western Australia, in lat. 32° S. Length 40 miles.

- a. Sand.
- b. Ferruginous sandstone (Devonian?).
- c. Felspathic clay.
- d. White and pale yellow siliceous and calcareous sand, occasionally containing coral-limestone and beds of ferruginous conglomerate, from 100 to 150 feet in thickness.
- e. Bog-iron-ore.
- f. Limestone with corals and shells; from 200 to 300 feet thick.
- g. Compact red sandstone.
- h. Variegated clay alternating with ferruginous sandstones. Cones and leaves of Banksia occur rarely in the upper portion.
- i. Limestone.
- j. Yellow clay.
- k. Yellow, blue, and white clays, containing beds of limestone and bog-iron-ore, through which rise many chalybeate springs.
- l. Blue and variegated yellow clay.
- m. Clay-slate.
- n. Quartz.
- o. Mica-schist.
- p. Syenitic granite, with numerous dykes of serpentine, porphyry, and quartz.

Fig. 2.—Diagram-section across a part of Western Australia, in lat. 25° 15' S. Length about 200 miles.

- a. Sand.
- b & c. Red drift-sand, 50 feet thick.
- d. Sandstone.
- e. Cretaceous (?). In this group, which comprises both a white chalk-like (but non-calcareous) rock and ferruginous sandstones, occur Ammonites, Trigonia, and Pecten.
- f. Permian (?).
- g. Carboniferous (?).
- h. Devonian (?).
- i. Metamorphic rock.
- j. Granite, gneiss, and slate, with superficial deposits of granitic breccia, ferruginous clays, thin beds of saliferous sandstones, gypsum, calcareous tufs, and beds of nodular magnesian limestone. (Similar deposits occur on the granite of fig. 1.)
- k. Granite, gneiss, and slate, with superficial deposits of granitic breccia, ferruginous clays, thin beds of saliferous sandstones, gypsum, calcareous tufs, and beds of nodular magnesian limestone. (Similar deposits occur on the granite of fig. 1.)
The Gregory Brothers

Some of their findings still hold good today. Here we can see the dipping Permian rocks of the **Kennedy Range**.
Von Sommer: man of mystery

Henry Gregory seems to have been a member of one of Ferdinand von Sommer’s expeditions. This mysterious figure arrived in WA in 1847, and became WA’s first Government geologist.

He had arrived in this country in 1845 and was employed in South Australia as a mining superintendent, although he also registered as a medical practitioner.

He was employed to examine Cole’s Shaft, drilled in the Darling Range near Armadale for lead and copper. This is the first recorded mining shaft in WA.
Von Sommer: man of mystery

The government, on the strength of the qualifications in geology he claimed, appointed “Dr. von Sommer” as WA’s first Government Geologist. He travelled widely for the Government, searching for coal and other minerals, from Hutt River in the north to Cape Naturaliste and Bremer Bay in the south, writing reports and publishing papers on his findings.

However, no high-quality coal deposits or other minerals were to be found, and the local press were scathing about his accomplishments. Other geologists, such as Jukes, were not impressed by the accuracy of von Sommer’s observations, although his maps show he must have had reasonable geological knowledge.

He left WA in 1848 for Batavia (Djakarta). The next year he went to Timor, apparently on behalf of the Batavia government, to search for copper.

On 23rd May 1849, at the age of 49, he is believed to have died in Timor “under the influence of the climate” - without having found exploitable copper.
Von Sommer: man of mystery

Here is part of one of the three geology maps he made in 1848. They are the earliest-known large-scale geological maps of WA.

Note the familiar flat-topped hills near Geraldton.
Von Sommer: man of mystery

However, despite his obvious talents, this “geologist” was not what he seemed.

- His name included the aristocratic title “von” (though he had no right to it).
- He passed himself off as a Dr. Phil., Dr. Phil.et Math. and/or Dr. Med.et Phil.
- He was allowed to register as a medical practitioner in SA
- He lectured (on astronomy) at the University of Berlin and wrote books
- He was employed as a mining superintendent in two States
- He was employed as Chief Geologist for the State
  - all due to his skill as a plausible “con-man”

It is believed that he left Australia abruptly because enquiries were being made about him by the Prussian government for deserting his wife Caroline, (although he told the WA Governor in a letter that he had believed she was receiving his pension - and was in any case being looked after by his brother).
Brown, one of the great explorers

Twenty years passed before Henry Yorke Lyell Brown was made the second Government Geologist, although geological work continued to be done by the Gregory brothers.

This time the government got it right! Originally from Nova Scotia, he had real geological qualifications from London’s Royal School of Mines and had worked at the Victorian Geological Survey.

After only two years he had prepared three geological maps and issued ten reports. He discovered the first artesian water near Perth (found while boring for coal near the Canning River). His explorations included the discovery of the Weld Range, named for the Governor of the day.
Brown, one of the great explorers

However, despite impressing Governor Weld, he was essentially driven out by local politicians and journalists who not only (and wrongly) criticised him and his results, but suggested that this “young man” had got a “snug billet” by corrupt means.

To the delight of the *Perth Gazette* and *W.A. Times* the government of the day replaced the despised scientist by a party of “practical mining men” from Victoria.

The 16 imported miners from Ballarat found nothing.

Brown went on to be **Government Geologist for South Australia**, going on long and arduous expeditions in SA and the Northern Territory, often travelling alone except for a cameleer or Aboriginal guide. He stimulated **gold and copper mining** in the State and promoted the pastoral industry in Central Australia by charting **artesian water** sources.
Hardman and Kimberley gold

Ten years later, Edward Townley Hardman was appointed the **next Government Geologist**, in the teeth of contempt by the press and local politicians for geologists like “Mr Geology Brown”.

Hardman had a good academic and practical background, having studied worked in Ireland. His distinctive pith helmet and monocle made this geologist a striking figure in the exploration of the **Kimberleys**, where he was sent by the government to find **gold**.
Hardman and Kimberley gold

Phillip Saunders, on a previous expedition, had found gold in the Ord River. Hardman, on his 1884 expedition, found a little alluvial gold and reported favourably, and gold was also found in Halls Creek in 1885 by prospector Charles Hall. None of these showings was eligible for the government's offered reward of £5000 for the discovery of the colony's first workable goldfield, but the gold rush took off anyway.

Hardman returned to continue geological work for the State. However, the government, due to the cost, would not agree to his post being made permanent so Hardman returned to Ireland, where he died of typhoid fever in 1887.

While on government assignment in the south west he is credited with advising his then assistant, DW Stinton, about the potential worth of the Greenbushes tinfield which Stinton then developed.
Hargraves: wrong about gold in WA

Edward Hammond Hargreaves was “celebrated as the first discoverer of gold in Australia” but was actually an uneducated man who was not particularly successful at prospecting. He showed another prospector how to pan for gold in NSW and they found some traces, but Hargraves lost interest – until the prospector, Lister, and his mates the Tom brothers eventually found payable amounts and foolishly supplied 120g of gold to Hargraves. Hargraves promptly showed this to the Colonial Secretary and, completely against the prospectors’ wishes, disclosed the location – starting the gold rush of 1851 and netting Hargraves £10 000, another £2381 and annuity of £250 for life!

In 1890 Lister and the Tom brothers were at last given the credit for the discovery.

In 1862, Hargraves was paid by the WA Government to prospect in WA for 6 months for £250 and expenses. After examining the country from Albany to the Murchison, he stated decisively that no gold was to be found anywhere, which probably set back gold exploration in WA for decades.
Andrew Brophy, Prospector

Prospectors were often great explorers. Andrew Brophy’s camel was famous!

Courtesy Tom McHenry
The Reverend Nicolay

In the 1870s, Charles Grenfell Nicolay, originally from London but who had just spent nine years in Brazil, came to be chaplain at Geraldton.

Despite the Bible-based Christianity of the time, many well-educated clergy had an interest in natural history and several became famous geologists in Britain – and in Australia, including Nicolay. In 1876, Governor Robinson commissioned him to prepare a *Handbook of Western Australia* for use by intending migrants, including geographical information on the colony.

Nicolay’s scientific achievements and humanitarian views (he advocated higher learning for women and was prominent in the founding of Queens College, London) seem to have been marred by a shortness of temper which interfered with his career.
The Reverend Nicolay

In 1881, whilst the chaplain for Fremantle Gaol, he was given space there to house his well-curated rock and mineral collection, which later became the basis of Perth’s new Geological Museum (now WA Museum) opened in 1891. He acted as the government’s geological advisor for many years and in 1886 published his wide-ranging survey Some Notes on the Geology of Western Australia.

State Library of WA
Woodward and Woodward

The three previous Government Geologists were not permanent positions: the first permanent one was Harry Page Woodward, appointed in 1887. One of his two assistants was his cousin, Bernard Henry Woodward.

Harry Woodward had enormous academic and practical geological experience in both the UK and Australia, and was energetic in his exploration efforts. His 1894 *Mining Handbook to the Colony of Western Australia* was essential reading for miners and prospectors, and he produced many other reports and maps. His contribution to the State’s geological knowledge continued to his death in 1917.

Harry Page Woodward made the prophetic observation in one of his reports that WA had enough iron ore to supply the world (but gave no details).
Bernard Henry Woodward, also originally from the UK, began as assistant to his cousin the Government Geologist, but from 1889 to 1895 he had the important job of Government Analyst.

In 1899 he also became the Curator of the Geology Museum, which eventually became the WA Museum and Art Gallery, of which he was appointed Director.

Importantly, he founded the West Australian Natural History Society in 1890 which developed in 1914 into the Royal Society of Western Australia.
Major Patrick Pelly

Is this man:

a) A mild-mannered and efficient assistant in the **Geological Survey** of Western Australia? or

b) A violent and bloodthirsty bushranger and jailbird, guilty of identity theft and jailed for other crimes including **murder**?
Major Pelly *alias* Captain Starlight *alias* Frank Gordon, *alias* Dr Pearson, *alias* Sir Lucius Pelly, *alias* Patrick F. Marie Pelly, V.C., Major

**Answer:** BOTH OF THESE!! His real name was Pearson, and he arrived in Australia in 1864. In 1868 he killed a policeman, and was arrested and sentenced to death, later commuted to life imprisonment. His life of crime continued, but he ended up in WA (with a fellow-prisoner’s stolen identity) as “Major Patrick Pelly”. Sir John Forrest then helped him to obtain a clerical position in the GSWA.

“Major Pelly” from a staff photo taken at the Geological Survey in 1895.

His grave marker in Karrakatta Cemetery. He died at the age of 46, from accidental poisoning.
Arthur Gibb Maitland

Gibb Maitland was the second permanent Government Geologist, from 1896 to 1926. Originally qualified in the U.K. as a civil engineer, he worked as a geologist in Queensland and in Papua (then British) New Guinea, one of the first to do so.

He built up the WA Geological Survey by his organisation and inspiration, and by the time he left roughly half the State had been geologically mapped or investigated.
Arthur Gibb Maitland

“Geological Science is not only the Interpreter of Nature, but the Servant of Humanity.”

Thanks to his efforts, scores of successful bores of artesian water were drilled, opening up large tracts of country to agriculture.

Geological Survey of WA
Arthur Gibb Maitland

He accompanied Brockman on his famous survey of the Kimberley in 1901.

By his organizing ability and from his acknowledgment of the contribution of all members of his staff regardless of rank, Gibb Maitland built up the Geological Survey of WA into a great organization. He also promoted the cultural and educational significance of geology to the State. He retired in 1926.
Campbell, first Environmentalist

William Dugald Campbell was one of the first members of the Geological Survey of WA, retiring in 1909, and notable for the breadth of his interests. He migrated from the UK to New Zealand in 1876 and had worked on a wide variety of geological problems, from the coal mines in South Island to town drainage and beach protection, the bones of the extinct Moa bird – even the origin of the boomerang!

He moved to NSW in 1885 where he recorded and published about Aboriginal paintings and carvings as well as doing other surveying work. In WA from 1896, he later acted as surveyor in the Menzies area for the WA Geological Survey. He subsequently became Surveyor in the Kalgoorlie area, and then Senior Assistant Geologist, gaining wide geological experience over large areas of the State.

His interests were wide and he recommended the establishment of public parks to preserve natural woodland, and the formation of public reserves for the preservation of rare geological sites. He made recommendations about environmental issues such as water contamination caused by a brewery and urged the documentation of Aboriginal knowledge about local natural history and ethnological matters – our first real environmentalist!
World War I and the WA Geological Survey

The great government organization that Gibb Maitland built up began a steep decline toward the end of World War I, and continued through the Depression. The Survey was not to approach its former size and significance until the mineral booms after World War II.

Maitland made specific mention in the Annual Reports of all members who joined the armed forces, of which there were several. Some are commemorated in the Survey’s Christmas card for 1915-1916.

Lieutenant Robertson had been Assistant Mineralogist and Chemist. He was shot at the Dardanelles in 1915, “within a quarter of an hour of taking up his position in the trenches”.

Trooper Butler, of the 10th Light Horse “met his death in the celebrated charge of the 7th of August”, 1915.
E S Simpson, Mineralogist

Edward Sydney Simpson pioneered the use of laboratory techniques in the study of rocks and minerals, and was the first mineralogist from WA to gain an international reputation. He was a native Australian, born in Sydney and with a degree in mining and metallurgy. His career was brilliant from the first, and in 1897, at the age of only 22 years, he was appointed Mineralogist and Assayer and Chief Chemist to the WA Mines Department at a salary of £350 per annum.
E S Simpson, Mineralogist

He developed tests for, and described, the newly-recognised gold tellurides, vital for the gold industry in Kalgoorlie, and made many contributions to different branches of geological science, such as meteoritics. In 1910 he became the first geologist to attempt to date a WA mineral using radioactive decay.

Many minerals new to science were discovered and described by him, and he published on the minerals of WA. When UWA was founded in 1911, he enrolled for the BSc degree and, with credit for some of his Sydney courses, became the first to complete an undergraduate degree (in geology) at UWA. His DSc at UWA, on the minerals of WA, was awarded in 1919.

The mineral simpsonite was named after E S Simpson. Its formula is $\text{Al}_4\text{Ta}_3\text{O}_{13}(\text{OH})$ and it occurs in pegmatites, including the one at Tabba Tabba in the Pilbara.
Arthur G. Holroyd was an assayer and mining engineer in Kalgoorlie during the nineties gold rush. He is credited with being the discoverer of telluride minerals on the Golden Mile in June 1896.
Holroyd and the Kalgoorlie Gold

In fact, other people were involved, notably an Erle Huntley.

Huntley had been asked about samples of an unknown mineral similar in appearance to pyrite (iron sulphide) which seemed to contain gold, and suggested to the people involved, including company man Peter MacIntyre, that it might be a gold telluride mineral. He then confirmed this by analysis.

Holroyd had some similar material, which he showed to MacIntyre - who told him about Huntley’s earlier results. Holroyd then tried analysing for tellurium, found it, and proclaimed ‘his’ new discovery in the Kalgoorlie Miner.
Holroyd and the Kalgoorlie Gold

**Calaverite** (much of the golden mineral in the picture) and **Krennerite** are different crystal forms of $\text{AuTe}_2$, about 54% gold.

**Sylvanite** has both gold and silver: $(\text{Au,Ag})\text{Te}_2$.

*In association we often find:* **Coloradoite**, mercury telluride, blackish **Altaite**, lead telluride, *and* metallic (free) **Gold**.

Because the ore looked like the worthless pyrite, it had been strewn on **cart tracks and walkways** and even used to build miners huts!.

*So the streets in Kalgoorlie were literally “paved with gold”!*
Herbert Hoover in WA

Not many people know that, in 1897-98, geologist Herbert Hoover, (President of the USA from 1929 to 1933), worked as a partner and **mine manager** at the **Sons of Gwalia Gold Mine** in Leonora, where the house he lived in can still be seen. He was 23. He worked in other WA gold mines and made several further visits to Australia as an investor.

Hoover at the age of 25

His promotion to geologist without formal training would be impossible today, but he eventually became one of WA’s finest, due largely to four years of tutoring in the field by Gibb Maitland himself and by careful study within a reading plan, devised by Maitland for training young graduates.

By 1914 he had reached the position of Field Geologist. He lost a son on the Western Front, and became an army captain himself, and was based in Australia as Assistant Censor until 1916.
Talbot, Field Geologist

He was involved in some ground-breaking expeditions, including the Canning Expedition in 1908, which opened the Canning Stock Route from Wiluna to the East Kimberley. Talbot was obliged to carry out other assignments connected with this, and finally returned to the Perth office 426 days after setting out, to begin writing his report.

In 1916 he led a party on a reconnaissance from Laverton to the Warburton Range. Near Mt Gosse, Talbot and his assistant Johnson were attacked by Aborigines and wounded, and Johnson later died as a result.
Talbot, Field Geologist

After the Great War Talbot was forced to retire through ill health, but he recovered and had a second, vigorous, field-orientated career with other institutions, including Western Mining. He died in 1957.
Honman and the jaspilites

Charles Sidney Honman became a field geologist for the Geological Survey of WA in 1911. In 1914, he began mapping an area of the Yilgarn goldfield with another, more senior field geologist. However, they did not agree about the origin of the ancient rocks they found there. Honman’s ideas, although accepted today, did not match the theories of the time.

In 1916 Honman joined up and embarked with the AIF to Europe where he fought on the Western Front as an officer. The reports were published without full input from Honman. On his return he resigned from the Geological Survey and continued his career elsewhere.
Honman and the jaspilites

Why is it important? The rocks that they were mapping included ‘greenstone belts’, ancient, dark, igneous rocks which were associated with jaspilites, striking red and white silica-rich banded rocks, sometimes gold-bearing, the most famous being the so-called “marbles” at Marble Bar.

In the early days, and even as late as the 1940s, these greenstones were thought to be metamorphosed intrusive igneous rocks, similar in composition to basalt. Supposedly, siliceous and iron-rich fluids from elsewhere had been alternately squeezed along shear zones in the greenstone to form the layers. This does not well explain what we see!

Now we agree with Honman that the greenstone belts largely represent folded complex piles of submarine lavas, and that the iron-rich layered rocks are sedimentary layers laid down in the seas into which the lavas erupted. Iron and silica dissolved in seawater precipitated on the shallow seafloor, (and incidentally are the source of WA’s iron-ore). If Honman’s ideas had been accepted in 1916, we would have found out about this important resource much earlier.
In 1913 the newly-formed University of Western Australia started to become another centre for geological knowledge.

This photo from the Earth Science Museum, UWA, archives shows an early geological field trip to Chidlow.
UWA’s Professor Woolnough

In 1913, Walter George Woolnough was appointed by the newly-formed university to be **UWA’s first Professor and Head of Department of Geology**. He was an energetic 37 years of age, and he was keen to set up a centre of excellence in geology, even during the difficult years of the war.

As well as teaching and administration, he supervised government projects like a Royal Commission into the Collie coal industry and researched and mapped areas of WA geology. The main *lecture theatre* for geology at UWA is named after him.

Surprisingly, Woolnough resigned from UWA in 1919, and continued to work in Australia for commercial companies and the government, investigating ore deposits and writing on many WA geological topics including the formation of oil, banded ironformations, clays and bauxite.
Aurousseau, World War I Hero

Marcel Aurousseau was an outstanding graduate from Sydney University who was appointed Assistant Lecturer in UWA’s new Geology Department, then housed in makeshift buildings in Irwin Street, in the city.

In 1915 he took leave to join the Australian Imperial Force, departing for France, via Egypt, as Second Lieutenant. By the end of the war he was a captain and company commander, who had been seriously wounded twice, mentioned in despatches, and awarded the Military Cross and the Croix du Guerre. He returned in 1919.

In 1920 he left UWA and worked, first in the USA, then in England, where he established an international reputation as a geographer.
New Zealander Edward de Courcy Clarke joined the WA Geological Survey in 1913. One of his exploits involves his investigation of supposed oil in a well in granite country at Pingelly. The sample given to him by the farmer smelled strongly of kerosene. The tall and robust Clarke promptly camped at the well-head day and night for a while before taking another sample - no oil in that one!

In 1920 he joined the staff of UWA as Lecturer-in-Charge of the Geology Department, and was later promoted to Professor. He was well-loved by staff and students and the E. de C. Clarke Earth Science Museum at UWA is named for him.
This is one of Professor Clarke’s field trips. Note there are plenty of women: his wife (white hat) came as chaperone. Lucy Hosking became Assistant Lecturer, in charge during the Professor’s absence, the first female permanent academic staff member.
Summing up

Most of the early professional geologists were trained in Britain, and because of the vastness of our State they had to combine geological mapping with exploration, surveying and sheer physical survival. They also had to maintain friendly relations with the indigenous people. These geologist-explorers were few in number, and isolated from other scientists by distance. Many adapted extremely well and became efficient bushmen and explorers.

Despite this, for most of the 19th century in WA, public perception of geoscientists was fairly low. The press and local politicians tended to paint geologists as impractical theorists, and preferred “practical mining men”.

Geological Survey of WA
Summing up

In the early part of the 20th century a new group appeared: home-grown scientists who had graduated from Australian colleges, and WA’s first university was set up to help train more.

The Geological Survey of WA had been built up by Gibb Maitland. However, it declined after the start of WWI as a result of loss of staff to the War and to gross overwork of the remainder, the Depression and the lack of government money to support geoscientists. This affected our ability to find resources, so, for example, in 1939 the Commonwealth Government, when it needed iron for the war effort, had no idea that it had one of the world’s largest iron ore deposits right here.

The early geologists were not only involved in mapping the rocks. They explored dangerous and desolate, often unknown, regions, and survived hostile attacks. They found water in the desert, and tracts of pastoral land. They surveyed, and made recommendations for roads and settlements, opening up our State.

Unlike other explorers, they were skilled bushmen who did not perish or have to be rescued, but returned home – to write up their reports and plan the next trip!
About the book

The 240-page book deals mainly with the history, personality and contributions of geological pioneers in Western Australia from 1826 to 1926, the first hundred years of settlement.

It contains around 150 photographs and maps, to help tell the story of ninety or so characters who were involved in geological discoveries in WA around this time. Comprehensive indexes and a full reference list for each chapter assist any one interested in further research.

It was published in 2010 by Hesperian Press and is available from the publisher and outlets such as the WA Historical Society.

The authors both still work as Honorary Research Fellows in the School of Earth and Environment at UWA, each after a lifetime employed as geologists. They have previously collaborated on the book Geological Journeys: from Artifacts to Zircon published in 2003 by the Geological Society of Australia (WA Divn).
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