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Joan Crockford-Beattie D.Sc.

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Dr Joan Marion Crockford (later Mrs George Beattie) maintained a career as a geologist and invertebrate palaeontologist in the mid 20th century; she became a specialist on bryozoans and gained a high professional reputation, which has been maintained. Joan undertook basic and pioneering taxonomic research on Permian bryozoan faunas at Sydney University from 1939 until mid-1946, supported primarily by scholarships and a fellowship, with one year as Demonstrator. Her subsequent marriage, move to the country and mothering of four children slowed her down but she kept up her research and consultancy work as long as possible. In later life she went on to new challenges in teaching at graduate level.

Joan Crockford was born in January 1919 at Hunter's Hill, a short distance from central Sydney. Developing an interest in rocks and fossils at an early age, she began formal geology training at high school. Following matriculation in 1937, she went to the University of Sydney in 1938 to read Geology in the department created by Edgeworth David.¹ Joan graduated B.Sc. 1939 and with Honours I gaining the University Medal in 1940. Under the tutelage of Dr Ida Brown, Joan began work on Palaeozoic brachiopods; she did her Honours thesis on Silurian brachiopods from Yass and from the Ordovician of Bowan Park and spent a long time etching the faunas with acid—engaging with “the really exciting Bryozoa in these collections” [which June Phillips Ross (1961) later amplified and used²]. For Year 1V Honours, a topic was allocated for the student to study; the student had no say in the selection. She was “totally cheesed off” when told she'd be studying Bryozoa! It was felt presumably by Ida and Prof. L.A. Cotton that, as little work had been done on bryozoans in New South Wales, they might be of stratigraphic interest.

Joan recounts (2004):

“Mr Gooch” Harry (technician) made the thin sections and took the photographs that were used in the Geology school. He took my photographs with great care, working very hard to get depth of focus and understanding the need to have conventional lighting. He also made some of my thin sections - I think he charged 2sh./6d a slide [USER PAYS!!]. The thin sections were a problem with the Bryozoa; for many of them three sections were needed - longitudinal, transverse and tangential - sometimes for each specimen. The tangential sections especially had to be closely monitored, or the definitive structures were lost. As well, even a small amount of recrystallisation meant that material, which looked reasonable in weathered specimens, just



Figure 1. Joan Crockford, in Sydney c. 1940s.

could not be identified. Later I solved some of the problems related to slides by having, with Harry Gooch's help, slide-making apparatus made up in the Physics School. In wartime, it was hard to get a motor. I made good use of the machine, made over 2000 slides and had to have the grinding plate resurfaced!

After graduating I had first a Science Research Scholarship in 1940, and did full time 'demonstrating' in 1941. I graduated M.Sc. in 1942. I then had a Linnean Society of NSW Macleay Fellowship for three years, and a Commonwealth Research Grant in early 1946. Linnean Macleay Fellowships were supposed to preclude teaching (and I think if the holder went bankrupt the scholarship was cancelled). However, as there were staff shortages during the war, I did assist in a good many practical classes - palaeontology to years I to III and crystallography, numerology and blowpipe analysis especially.

Joan collected herself most of the New South Wales material that she described but wartime restrictions on travel meant that Government permission had to be sought to travel interstate, and it was not possible to get that permission. Instead she was sent material by colleagues first from Queensland and Tasmania, and then from Western Australia by Dr Curt Teichert (1905–1996). Teichert visited her once or twice when at the university to discuss the WA fauna.

Having married in 1945, I left Sydney to live in Cobar in mid-1946. The Navy was slow to discharge engineer officers (husband-to-be George Beattie was to become a mining engineer), because there was a shortage. I was working on my D.Sc. thesis, and had some papers not quite completed, so had some specimens and thin sections, microscopes - two, one for thin sections - and reference material. With a few trips back to SU, I completed this work whilst at Cobar, and it was all published (see Crockford refs below). I had a lot of encouragement, notably from Harold Fletcher at the Australian Museum as well as from S.U.

After finishing the papers on Bryozoa, I graduated D.Sc. in 1951, in a borrowed gown and cap, as I had very little use for one in Cobar. Our son Andrew, then not quite three, was minded by Ida Brown in the gallery in the Great Hall for the occasion.

After I left SU in mid-1946, I had no research grants at all, until I obtained some work with the B.M.R. at Canberra through the auspices of the late Dr Norman Fisher (1907–2007), then Assistant Director [Ref Johns Dirs GS] wrote to ask me if I would look at Permian Bryozoa from Western Australia. He wanted me to do contract work with the aim of describing the bryozoans in collections being made by their field parties then working in the Kimberley area. I went down to look at the Bureau collection and estimated it as 6 months work. It was agreed I should do this as a contract; they would do photos and slides - for which I had to mark the specimens - and I would be paid when this was published. I spent one day each month in Canberra at the Bureau. A member of the Bureau staff worked one day each month at Captain's Flat with me. I could book the children into 'Occasional Care' in Canberra for a day each month. As far as the work itself was concerned, and the interest of doing the work, this was fantastic but it wasn't really satisfactory in many ways - my work took up one full room of the house; I had obviously to have someone to do housework and mind the children - and I had to pay her weekly. So far as I remember the delay getting slides done was not too bad, and could be worked around. More material, all absorbingly interesting, tended to trickle in. And then, there were those photos. Number 1 priority! (All the photos at the BMR were No 1 priority, G.T. Reid, the photographer said!). Number 1 priority for me was pretty slow coming up. The photos were good when they, eventually, were done, maybe a year, maybe eighteen months later, after the text was finished. The cost of household help edged up our household expenses, and since it was contract work, I was not to be paid until I'd completed the contract. Eventually I was paid - sometime in 1956! We had moved to Radium Hill for some time before I was paid. In the end, for the 1957 Bulletin, I received the sum of £500. It was agreed by all that if ever I returned to "civilization" something else might be worked out.

Her monographic work in that Bulletin covered material from the West Kimberley: the Nura Nura Member of the Poole Sandstone; the Noonkanabah Formation; and the lower part of the Liveringa Group. She recorded 79 species, 42 of which were new. Three new genera were named and a new family erected in the Cyclostomata.

Sadly, Joan was never in a position to take on students. This was virtually an impossible task without an academic base. However, she did advise the next major worker on Bryozoa in Australia, Dr Robin Wass.³ A later student at Sydney University, June Phillips-Ross also had benefit of Joan's pioneer work.

Young Joan Crockford was one of a band of women to come out of the University of Sydney geology department in the 1930s to 1940s who succeeded in having a scientific career in the post World War II era at a time of optimism in Australia when the nation was in an industrial revolution.⁴ In a different culture (one that encouraged and supported women to maintain and develop their intellectual skills even after marriage and children), Joan Crockford Beattie might have been able to continue her research and gain a viable job. Nevertheless, Joan did continue to be a part of the geological community in Australia long into retirement and her record of pioneering work speaks for itself.

Taxa named

In her active palaeontological years (1940–1957), Joan erected at least 2 families, 7 genera: *Pesnastylus* (1942), *Minilya* (1944), *Streblocladia* (1944), *Stenodiscus* (1945), *Etherella* (1957), *Evactinostella* (1957), and *Liguloclema* (1957), and named around 100 species of bryozoan, many of which remain valid. *Fenestella crockfordae* Campbell was named for her. She contributed significantly to Australian alpha taxonomy improving understanding of stratigraphic and geographic ranges of as well as facies constraints on the Bryozoa, providing global correlation assessments.

Original specimens are the key to any taxonomic work and its significance. Pioneer studies on Australian fossil faunas and floras such as those by Joan Crockford and her colleagues at Sydney University are the cornerstone of other geological studies even if that work is no longer appreciated [In the current political climate, alpha taxonomy is virtually unsupported in Australia].

Appendix

Publications on bryozoans by Joan Crockford

- Crockford, J.M. 1941a. Permian Bryozoa from Eastern Australia, Part I: A revision of some previously-named species of Fenestrellinidae (Fenestellidae). *Journal and Proceedings of the Royal Society of New South Wales* 74 (for 1940), 397–418.
- Crockford, J.M. 1941b. Permian Bryozoa from Eastern Australia, Part II: new species from the Upper Marine Series of New South Wales. *Journal and Proceedings of the Royal Society of New South Wales* 74 (for 1940), 502–519.
- Crockford, J.M. 1942. Bryozoa from Silurian and Devonian of New South Wales. *Journal and Proceedings of the Royal Society of New South Wales* 75, 104–114.
- Crockford, J.M. 1943a. Permian Bryozoa from Eastern Australia, Part III: Batostomellidae

- and Fenestrellinidae from Queensland, New South Wales, and Tasmania. *Journal and Proceedings of the Royal Society of New South Wales* 76 (for 1942), 258–267.
- Crockford, J.M. 1943b. Bryozoa from the Port Keats Bore, Northern Territory. *Proceedings of the Linnean Society of New South Wales* 68 (3-4), 145–148.
- Crockford, J.M. 1943c. An Ordovician bryozoan from central Australia. *Proceedings of the Linnean Society of New South Wales* 68 (3-4), 148–149.
- Crockford, J.M. 1944a. Bryozoa from the Permian of Western Australia, Part I: Cyclostomata and Cryptostomata from the North-West basin and Kimberley District. *Proceedings of the Linnean Society of New South Wales* 69, 139–175.
- Crockford, J.M. 1944b. Bryozoa from the Wandagee and Noonkanbah Series (Permian) of Western Australia, Part I. *Journal and Proceedings of the Royal Society of Western Australia* 28 (for 1941–2), 165–185.
- Crockford, J.M. 1944c. A revision of some previously described species of Bryozoa from the Upper Palaeozoic of Western Australia. *Journal and Proceedings of the Royal Society of Western Australia* 28 (for 1941–2), 187–199.
- Crockford, J.M. 1945. Stenoporids from the Permian of New South Wales and Tasmania. *Proceedings of the Linnean Society of New South Wales* 70, 9–24.
- Crockford, J.M. 1946. A bryozoan fauna from the Lake's Creek Quarry, Rockhampton, Queensland. *Proceedings of the Linnean Society of New South Wales* 70, 125–134.
- Crockford, J.M. 1947. Bryozoa from the Lower Carboniferous of New South Wales and Queensland. *Proceedings of the Linnean Society of New South Wales* 72 (1–2), 1–48.
- Crockford, J.M. 1949. Bryozoa from the Upper Carboniferous of Queensland and New South Wales. *Proceedings of the Linnean Society of New South Wales* 73 (for 1948), 419–429.
- Crockford, J.M. 1951. The development of bryozoan faunas in the Upper Palaeozoic of Australia. *Proceedings of the Linnean Society of New South Wales* 76, 105–122.
- Crockford, J.M. 1957. Permian Bryozoa from the Fitzroy Basin, Western Australia. *Bureau of Mineral Resources, Geology and Geophysics, Bulletin* 34, 134 pp; separate typed erratum sheet.
- Crockford, J.M. 1962. Correction of a bryozoan name. *Journal of Paleontology* 36, 840.

Notes

- 1 Branagan, D.F. 2005. *T.W. Edgeworth David. A life. Geologist, adventurer, soldier and 'Knight in the old brown hat'*. NLA, Canberra, 648 pp.
- 2 Ross, J.R.P., 1961. Ordovician, Silurian, and Devonian Bryozoa of Australia. *Bureau of Mineral Resources Bulletin* 50, 172 p., 28 pls.
- 3 In the 1960s Robin Wass published at least ten papers on Permian bryozoans, as well as the monograph: Wass, R.E. 1968. Permian Polyzoa from the Bowen Basin. *Bureau of Mineral Resources, Geology and Geophysics Bulletin*, 90, 1–134.
- 4 Turner, S. 2007. Invincible but mostly invisible: Australian women's contribution to palaeontology. In Burek, C. and Higgs, B. (eds) *The role and contributions of women geologists*. Geological Society, London Special Publication 281, 165–202.

