

No 19 George Ellett Coghill (I)

Gerald Foley

CTC

2 June 2015

1. Today, I want to turn to the work of the American scientist George Ellett Coghill. The reason his name is familiar is that he wrote the Appreciation that appears in the beginning of *The universal constant in living*.
2. He was also the subject of a paper by Walter Carrington entitled *The Foundations of Human Well-being*¹ in the little book that was published by STAT in 1994, together with another paper by Walter Carrington on Rudolph Magnus.
3. In *Personally Speaking* Carrington says:

*I began a study of Coghill's and Alexander's work, which kept me very busy indeed for most of the following year. The project involved reading all of Coghill's publications and re-reading FM's books very carefully on a comparative basis. It was hard work but very rewarding and I finished the paper in 1940 just before I went into the Air Force.*²
4. Unfortunately Coghill only learned about the Technique when he was a very ill man with not long left to live. But he was fascinated by it because he said it was a confirmation of what he had spent his scientific life working upon.
5. Coghill has long gone out of scientific fashion but in its time his work was quite interesting. He was described as a pioneer neuro-embryologist – and his writing especially his later work is very difficult to understand.
6. The most accessible of his publications is a book entitled *Anatomy and the Problem of Behaviour* which was first published in 1929. It has the text of three lectures he gave in University College London in May 1928. This went down well in the scientific world and was reprinted in 1964.
7. There is also a biography called *George Ellett Coghill: naturalist and philosopher: science from inside the workshop, as revealed in the life and work of a great man of science* by a neurologist called C. Judson Herrick (1866-1960) which was published in 1949.

¹ Carrington, Coghill and Magnus(1994)

² Carrington (2001)p17

8. Herrick and Coghill knew each other as friends and scientific collaborators for over forty years. This book has basically all the facts about Coghill's life and work. It also reprints various surviving fragments and drafts of his writings and tries to produce an overview of Coghill as a scientist and a philosopher.
9. I also managed to download a very obscure later paper called *Space-time as a pattern of psycho-organismal mentation* from the University of Illinois Press for \$20. I think you will be able to find it in the archives or I can provide you with a photocopy but to be honest I don't think it should be among your immediate life-priorities.
10. As for Coghill's life, he was born in Illinois in 1872 and grew up as a sensitive and intelligent boy in a poor farming family. Religion was an important part of community life and he thought he wanted to become a Baptist preacher. So he did an arts degree with funding provided by his mother in preparation for his theological training.
11. He then entered a theological college but had a crisis of conscience when he asked one of the teachers what he thought was a reasonable question. The teacher became extremely angry with him and told him that to question the Bible was to insult the Lord.
12. So he left the theological college and had a fundamental think about what he wanted to do with his life. At the age of twenty-five, he rather modestly decided that what he wanted to do was to

*...carry out a systematic investigation of the natural history of the human mind by application of scientific method to psychological problems, with the hope of ultimately reaching a satisfying naturalistic philosophy.*³
13. Coghill was nothing if not thorough – not say obsessive. In order to carry out this study, he felt he needed to know an awful lot more about the human brain and the human nervous system. So he started at the beginning again by doing a primary degree and then an MSc in biology at the University of New Mexico. He then went on to do a Masters degree at the same university and was appointed assistant professor of biology.

³ Herrick (1949)18

14. For those who like the little bit of human interest, when he was at university, he played the cornet and fell in love with his accompanist, a young lady called Muriel Anderson. They were married in the year 1900.
15. He then won a scholarship to study for a PhD at Brown University in Rhode Island on the east coast of America. His research and dissertation were on the cranial nerves of a little creature called *Amblystoma*. This is an American species of newt, a sort of froglike amphibian, which is also sometimes referred to as a salamander.
16. The study of the embryology and early development of this little creature were to occupy most of his professional life.
17. You might ask why he chose *Amblystoma*. Basically it is a readily available and extremely simple form of vertebrate life. It can be collected from the wild in various parts of the United States. As he said

...there is probably no other animal that offers better advantages than Amblystoma presents for the search after general principles of behaviour and nervous function in the vertebrates.⁴
18. We may also wonder why Coghill chose such a rudimentary creature as *Amblystoma* rather than something more complex and interesting. The reason is that if you are looking for underlying principles of vertebrate behaviour, it is useful not to have to wade through too much superficial detail to get there. *Amblystoma* is a lot simpler than say a rabbit or a duck.
19. While he was working on his PhD and throughout his whole working life, Coghill maintained his interest in philosophy and psychology.⁵ His biographer said he read widely and thoughtfully.⁶ John Dewey was one of the authors who influenced his thinking.⁷
20. After he got his doctorate, he worked his way through a series of poorly-paid teaching jobs until he got a position as Professor of Zoology in Denison University in Ohio in 1907.
21. When the Coghill family, which by now included three little boys, got to Denison there was no suitable accommodation available. Coghill bought a plot of land that sloped away from

⁴ Coghill (1929)5

⁵ Herrick (1949)20

⁶ Ibid.168

⁷ Ibid.168

the road, and to the consternation of the neighbours, he built an upside down house, with the living rooms under the roof at the street entrance and stairs down to the bedrooms. He also developed a vacuum cleaner system with a centralised suction motor and pipes to all the rooms.

22. Life was hard for everyone and he had a hugely heavy teaching load. But this was where he began to develop the detailed research on which his scientific reputation rests. As he published his results, word began to circulate about him in the scientific community. In 1913 he was able to get a position as Professor of Anatomy in the University of Kansas.

23. He seems to have been a formidable presence. One of his students wrote later

...he impressed his students with his seriousness and absolute intolerance of laziness or foolishness. His quiet steps, his sober demeanour, his stern and penetrating look always caused a calm to fall over the laboratory full of students.⁸

24. In 1922, he took leave of absence from Kansas to carry out his most famous set of experiments.

25. The work involved an extremely detailed study of the development of the nervous system in *Amblystoma* from the time they hatched out of their eggs until they had developed to the stage where they were able to swim. The studies were done at the University of Chicago by Coghill himself and some assistants, among whom was his future biographer C. Judson Herrick.

26. In these experiments, thirty specimens of newly hatched *Amblystoma* were placed in dishes of nutrients and set in a circle on a round table. There was an overhead microscope which could be swung around from dish to dish.

27. Looking through the microscope, the researchers made notes on the state of each of the growing specimens, and how they responded to tactile stimuli, generally by stroking them gently with a human hair. They then swung the microscope on the next one and repeated the observations.

28. It took about 15 minutes to go round the whole thirty specimens on the table – half a minute per sample. This was then repeated day and night until the newly hatched specimens

⁸ Ibid.p33

had reached the stage of actually swimming, which occurred about 60 hours after hatching. They did four sets of these experiments.⁹ That was 240 hours of tramping round the table so that there was a noticeable track in the floorboards when they were finished.

29. This prolonged set of observations enabled Coghill to see the way in which the behaviour of these little creatures developed. At the same time, he could chop up some of them to see how these changes in behaviour were related to the development of their nervous system.
30. At a practical level, this was seriously difficult. The newly hatched *Amblystoma* is only about 3 mm (just over a tenth of an inch) long and it is 7 mm long when it begins to swim. So finding out exactly what stage of development its brain and nervous system had reached required some very delicate dissection work.
31. By any normal standards, the whole enterprise was obsessive in its thoroughness but Coghill knew what he was after and this was the way to get it. It gives a very good picture of the standards of scientific observation which a scientist like Coghill sets himself bearing in mind it had to be done with the scientific equipment available nearly a hundred years ago.
32. The end result of all the work was that Coghill had an extraordinarily detailed knowledge of how the neuromuscular system of the amblystoma developed in these early stages.
33. During this time, he was continuing to publish scientific papers and his scientific reputation was growing and he had received a variety of honorary degrees and awards.
34. In 1925 he was appointed Professor at the Wistar Institute – a long-established medical research centre in Philadelphia. By then he was aged 54. It was the first time he was financially secure and he was also free of teaching duties.
35. He gave the University College London lectures in 1928 which did his international reputation a great deal of good.
36. For a while everything seemed wonderful and there were plans to set up a new research facility at the Wistar Institute in which a laboratory for Coghill would be the centrepiece. Then things started to go badly wrong. Coghill began to suffer from serious heart problems.

⁹ Ibid.34

37. Then he and the Director of the Institute had a major falling out in 1931. Coghill had very high moral principles and was completely inflexible in his application of them. The big problem was that the Director of the Wistar Institute was exactly the same.
38. After his row with the Director, he was more or less ostracised in the Institute and refused any further research funding and assistance. But although he had to do everything himself he kept up his research. Then he had a major heart attack.
39. In 1935, when he was making a recovery from that and was beginning to get back into his research work, he went on holiday. While on holiday, he was told he had been sacked from the Wistar Institute and his salary was stopped. He was 63 at the time.
40. His wife asked that a member of the family should be allowed to go to his laboratory and sort out his papers but they were dumped at his home.
41. Because of his poor health, he was medically advised to move to a better climate and he retired to Gainesville in Florida where he used a small inheritance to buy about 20 acres, 8 ha, of farmland near the University. Because of his scientific reputation, he managed to get a small research grant and he built himself a house and a laboratory. His daughter Muriel went to live with him but Mrs Coghill decided she wanted to stay in Pennsylvania.
42. He eventually patched things up to a certain extent with the Wistar Institute and they agreed to lend him papers and research material prepared under his direction. I looked up the Wistar Institute website on the internet and though it still operates as a major cancer-research centre, I could find no mention of Coghill in any of its on-line archives or history. He has apparently been written out of its history.
43. After all the troubles he had been through, Coghill actually had a peaceful and productive time in Gainesville. He got the farm he had bought into productive working and trebled it in size so that he could earn an income from it. He also managed a substantial amount of research work, moving on from *Amblystoma* to the study of opossums, and produced a series of papers on them.

44. It was when he was in Gainesville that he learned about the Alexander Technique in 1939 – just two years before he died.
45. Next time I will tell you how this led to Alexander's meeting with Coghill. I will also try to explain to you why Coghill thought that what he had learned from all this chopping up of *Amblystoma* provided a scientific underpinning for the AT. It seems a long way from the chair and table work we do with people.

REFERENCES

- W. CARRINGTON (1994) *The foundations of human well-being. The work of Professor Magnus and the Alexander Technique* - STAT Books, London
- W. CARRINGTON, CAREY, S. (2001) *Personally speaking* - Mouritz, London
- G. E. COGHILL (1929) *Anatomy and the problem of behaviour* - Cambridge University Press, Cambridge (1963 edition)
- C. J. HERRICK (1949) *George Ellett Coghill: naturalist and philosopher* - University of Chicago Press, Chicago