

Note**POSTSCRIPT TO
“THE GOLDEN JUBILEE OF THE COULSON–RUSHBROOKE PAIRING THEOREM”**

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In our recent review article [1] paying tribute to the authors of the Coulson–Rushbrooke Pairing Theorem on the fiftieth anniversary of its publication [2], we quoted from material among the Coulson Papers in the Contemporary Scientific Archives Collection at the Bodleian Library, University of Oxford, and from personal correspondence, in an attempt to establish the way in which Professor Rushbrooke and the late Professor Coulson evolved their celebrated Theorem. As a result of that article, we have had some further elaboration on these matters from Professor Rushbrooke [3] which, for the historical record, we feel ought to be made available to the wider public. This new documentation makes clear that our previous account [1] did not give as much emphasis as we now realize it should properly have done to C.A. Coulson's contribution to the Theorem's development. With Professor Rushbrooke's kind permission, we therefore quote below the comments which he was generous enough to confide to one of us [3] after reading our published review.

Professor Rushbrooke wrote [3], concerning ref. [2]:

“I believe that what Charles Coulson and I wrote then [2] did indeed establish the pairing theorem and the self-consistency property. But you must not give me so much credit. I did indeed derive eq. (6) of our paper: but this holds whether the underlying graph is "alternant" – "crossable" – or not. It was Charles who produced the argument, which starts below eq. (6) on p. 195 and continues through p. 197, proving the pairing property of the energy levels for alternant (crossable) molecules – and I believe he had done this before I joined him in Dundee. He knew he could complete the story and establish self-consistency (statement (3) at the foot of p. 3 of [1]) if he could derive eq. (6). This is what I did, and I believe my derivation of eq. (6) was valid. And this completed the story – for the time being. But one shouldn't take the credit for solving a jigsaw puzzle just because one puts the last piece into place.”

Acknowledgement

We are very grateful to Professor G.S. Rushbrooke, F.R.S. for his kind permission to quote his remarks [3], which graciously gave more credit to the rôle played by Professor Coulson in devising the Pairing Theorem [2] than we, in all good faith, had given in our review [1].

References

- [1] R.B. Mallion and D.H. Rouvray, *J. Math. Chem.* 5(1990)1.
- [2] C.A. Coulson and G.S. Rushbrooke, *Proc. Cambridge Phil. Soc.* 36(1940)193.
- [3] G.S. Rushbrooke, private correspondence with R.B.M. (July 9th, 1990).