

## **Ronald F Woolmer**

### **VRD BA BM BCh FFARCS**

Professor Woolmer qualified from St Thomas's Hospital in 1932 (BM BCh). He was awarded the Diploma in Anaesthetics in 1936. He became an anaesthetic registrar at the Westminster Hospital three months before joining the Royal Naval Volunteer Reserve in 1939. In 1941 he published a textbook 'Anaesthetics Afloat' [1].



At the end of the war, after a short time at the Woolwich memorial Hospital, he became Senior Lecturer in Anaesthetics in Bristol; later becoming Reader.

In 1957 he moved to the Research Department of the Faculty of Anaesthetists in the Royal College of Surgeons becoming the British Oxygen Company Professor in 1959. He studied research methods in the USA and returned to Britain with ideas and an interest in electronics. He died in December of 1962 year aged 54<sup>ii</sup>.

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Ronald Woolmer was the first President of the Biological Engineering Society, a Vice-President of the International Federation for Medical Electronics and he was founder of the Anaesthetic Research Group (Society).

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<sup>i</sup> Photograph courtesy of Royal College of Surgeons of England..... The VRD (Voluntary Reserve Decoration) was awarded to commissioned officers in the United Kingdom's Royal Naval Volunteer Reserve (RNVR) for long service and good conduct.

<sup>ii</sup> Obituary - Annals of Royal College of Surgeons of England by GSWO. 1963;332(2):129-131

His first journal publication was in 1947, "Death from renal anoxia after Myanesin anaesthesia" [2] . Myanesin was a muscle relaxant <sup>iii</sup> that did not cause respiratory arrest...it had what was called a lissive effect – useful for conditions with increased muscle tone (it was also effective orally). The patient was given three doses. She died on the sixth postoperative day – she had had haematuria and at post-mortem the appearance of the kidneys was consistent with anoxia. Haemoglobinuria had recently been described by Pugh and Enderby (Lancet Sept 13,p387) following Myanesin and so this had stimulated Hewer and Woolmer to report this death.

In 1951 he wrote about "Anaesthesia in Uruguay" [3], this was in the *British Journal of Anaesthesia*. He spent two or three months there following negotiations between Uruguay and The British Council; Uruguay wanted someone to teach modern methods of anaesthesia which would lead to a supply of trained anaesthetists for the future. He found the Uruguayans "the gayest and most hospitable people" - "The Uruguayans do not believe in revolution".... and Uruguay "shines like a good deed in a naughty world."

The larger hospitals were "old and decrepit in the extreme" but a new hospital was being built with fifteen operating theatres and "well placed spectators' gallery". Not all anaesthetists were medically qualified and many were medical students. Children's tonsils were still removed without anaesthesia and obstetric anaesthesia was unknown. Because of the expense of anaesthetic agents closed circuit anaesthesia was common. In Uruguay there was no such thing as income tax and he suggested ... "We in Britain would be the happier if we could adopt some of the many pleasant ideas which form part of the Uruguayan way of life."

He was involved in several symposia ... one in 1958 in Leeds on Pulmonary ventilation with a resulting publication edited by "Dr.R.P. Harbord

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<sup>iii</sup> Berger FM. Brit. J. Pharmacol. (1947),2,241-50

and Professor R. Woolmer” in 1959<sup>iv</sup>. Another set of proceedings on “pH and Blood Gas Measurement – Methods and Interpretation” was edited by Woolmer alone. It had 48 illustrations and cost 30 shillings.

**pH AND BLOOD GAS MEASUREMENT**  
**Methods and Interpretation**  
A symposium edited by R. F. WOOLMER, V.R.D., B.A., B.M.,  
B.Ch., F.F.A.R.C.S.  
48 illustrations. **30s.**

Churchill, London 1959

The next publication was in 'Der *Anesthetist*' and was on the subject of carbon dioxide homeostasis during anaesthesia [4]. Did he speak German?

In 1960 he gave the Kelvin Lecture to the Institute of Electrical Engineers [Ref], the first physician to do so; it was on Medical Electronics.

He published “The Conquest of Pain” in 1961<sup>v</sup>; this was a compilation of articles that had been published in a Sunday newspaper. In the same year, what has been described as his thesis, was in print in the Proceedings of the Royal Society of Medicine [5], it was titled “Information Please”. ‘Information Please’ was a presentation given on 2 December 1960, the “President’s Address”. “The desirability of anaesthetists being learned, in the academic sense, needs no arguing” by which he meant “of being well informed”. He was of the firm belief that the pre-operative assessment of the patient should not “be skimped”; preoperative assessment clinics have only become the norm in the last ten years. Intra-operative knowledge was also of importance...and “the response to it which make up the science of anaesthesia, a science as yet in its

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<sup>iv</sup> RP Harbord and RF Woolmer, Contributor British Journal of Anaesthesia, Publisher Sherratt 1959

<sup>v</sup> The Conquest of Pain RF Woolmer London Cassel 1961 171p (Nat Lib Australia)

infancy". However he was aware of the argument of others that "the more apparatus there is in use the more there is to go wrong." He dismissed this approach. Apparatus had to run on the principle of 'failure to safety'. A comment made a little later is of great interest to the author: "A properly designed instrument should present the appropriate information to the operator in a form in which it can be used immediately and without further computation....". This is describing the use of artificial intelligence to produce diagnostic information years before the concept existed<sup>vi</sup>.

He goes on to describe transducers for pulse detection and the determination of heart rate ... this can be "caused to flash a light *and* emit a bleep on a loudspeaker." The sound signal was described as omnidirectional (cf. visual displays) and of use when the anaesthetist was otherwise engaged in "brow-mopping, light-adjusting or record-keeping." He went on to describe a variety of ways to automate other measurement devices. He also included measures of blood loss in this armamentarium of devices (a haemoporrhometer), something we still lack.

EEG analysis, anaesthetic blood gas concentrations, servo controlled devices for controlling the cooling of patients – he was certainly a futurist. He even puts forward the idea of simulation for teaching. "Clinical judgement and experience are indispensable, but by themselves are not enough"... "Information and control must go together, and we cannot fully exercise the control required for mastery of the situation unless we are supplied with the information which is a prerequisite for it."

In 1962 he seemed to be gaining momentum with an article on "Principles of measurement in anaesthesia" in *Acta Anaesthesiologica*

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<sup>vi</sup> Lowe A, Harrison MJ. Computer enhanced diagnosis of malignant hyperpyrexia. *Anaesthesia and Intensive Care*, 1999;27:41-44

Scandinavica [6]; one on anaesthesia by remote control [7] and a book review<sup>vii</sup>.

The article in *Acta Anaesthesia Scandinavica* was a transcript of a talk he gave at a Postgraduate Course in Aarhus (Denmark). He covered measurement concepts such as - the measurement should not affect the measured variable, the random and systematic errors should be assessed, biological variation, and that the values are relative to some other measurement device – therefore requiring calibration. Response time also came under scrutiny as did analogue visual displays; he could see that digital displays were coming. He also saw the value in the recording of measurements, either on paper or magnetic tape, so that the data could be replayed. Even then, he voiced the “danger of being swamped by an inflow of information which is too great for us to handle.”

Remote control of anaesthesia [7] – this paper with Fowler, Hill, Morgan, Nunn and Weaver was a description of an anaesthetic technique used to anaesthetise pigs whilst they were irradiated with neutrons or X-rays. The anaesthesia was conducted at a distance of 40ft (12.1m) and in a concrete ‘bunker’. After a gaseous induction with Halothane the anaesthetic gas was passed through a 0.5cm bore pvc. tube to a Magill attachment. The door to the chamber weighed 32 tons and took five minutes to close/open. The only monitoring was a ‘stethograph’ as ECG and EEG monitoring was disrupted by the 50 KW of high frequency radio activity. These problems are so similar to those of the present age where radiotherapy treatment and CT and MRI scanning are done with using remote anaesthesia.

An interesting facet of this work is the death of several pigs in 1961 due to heat stroke. This was put down to the ambient temperature and humidity in the cyclotron chamber. Could it have been malignant

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<sup>vii</sup> BJA 1962 4th April vol 34 Book review

hyperpyrexia? Malignant hyperpyrexia was first described in 'recent' times by Denborough (1960)<sup>viii</sup>.

Professor Woolmer was obviously a farsighted academic anaesthetist.

### References:

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6. Woolmer, R.F., *Principles of measurement in anaesthesia*. *Acta Anaesthesiologica Scandinavica. Supplementum*, 1962. **11**: p. 17-21.
7. Fowler, J., et al., *Anaesthesia for the irradiated pig: A study in remote control* *Br. J. Anaesth.*, 1962. **34**(5): p. 327-331.

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<sup>viii</sup> Denborough M.A. Lovell R.R.H. *Lancet* 1960;2:45