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John Whitridge Williams, MD (1866-1931) of Baltimore: pioneer of academic obstetrics

F K Duke

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PMCID: PMC2671565 PMID: 17182643

Abstract

Williams was the founder of academic obstetrics in the United States and with his textbook was the recognised leader of this discipline in America during the first 30 years of the 20th century.

Keywords: history, obstetrics

John Whitridge Williams was born in Baltimore on 26 January 1866, the son of a physician, Philip Williams, and his beautiful and accomplished wife Mary Whitridge. She, like her husband, came from a distinguished medical family. After three years at Baltimore City College, JWW entered Johns Hopkins University in 1884 at the age of 18 and graduated BA in 1886. He completed his medical course at the University of Maryland also in the brief period of two years, becoming qualified as a doctor in 1888 at the age of just 22. Immediately he set out for Europe, studying bacteriology and pathology in Vienna and Berlin, returning to Baltimore in 1889. he joined the newly opened gynaecological-obstetric department at Johns Hopkins Hospital as a volunteer assistant, helping in both the clinical and pathology departments. Already his research was attracting attention, and, in 1892, aged only 26, he was admitted to the American Gynecological Society with a thesis on tuberculosis of the female genital organs. The following year, 1893, JWW was appointed associate professor of midwifery at Johns Hopkins Hospital. However, in 1894–1895 he again went abroad, studying obstetrics and pathology in Leipzig and Prague, and visiting Paris. Back at Johns Hopkins in 1899 he was promoted to professor in obstetrics to the university and obstetrician-in-chief to the hospital, when the chair of Dr Howard Kelly was split in two, Kelly himself remaining head of gynecology. Incidentally JWW remained strongly opposed to this division and fought throughout his life without success to reunite obstetrics and gynecology at Johns Hopkins.1 2 3 4

On becoming obstetrician-in-chief, Williams (Fig 1) immediately set about organising the department on thoroughly German scientific lines, treating obstetrics as a biological science in which anatomy, physiology, pathology and bacteriology as well as chemistry and nutrition all played a part. His staff were enthused by the search, both in the laboratory and at the bedside, for scientific information on pregnancy and childbirth. Just four years after his appointment as obstetrician-in-chief, Williams published in 1903 his textbook Obstetrics.5 This beautifully illustrated work included over 1100 references from the European literature, mainly from Germany, Austria, and France. The textbook, regarded as a classic, passed through six editions from his pen during his lifetime. In addition to this Williams, published 120 papers, many of them important, on subjects such as contracted pelvis, placental infarction, eclampsia placenta, toxaemia, and syphilis and tuberculosis during pregnancy. In 1911, he became dean of the medical school, a post he held for 13 years. In 1919 he became a full time professor of obstetrics. He was recognised as the founder and leader of academic obstetrics in the United States.1 2 3 4 The following extracts are taken from the 1903 1st edition of his textbook.

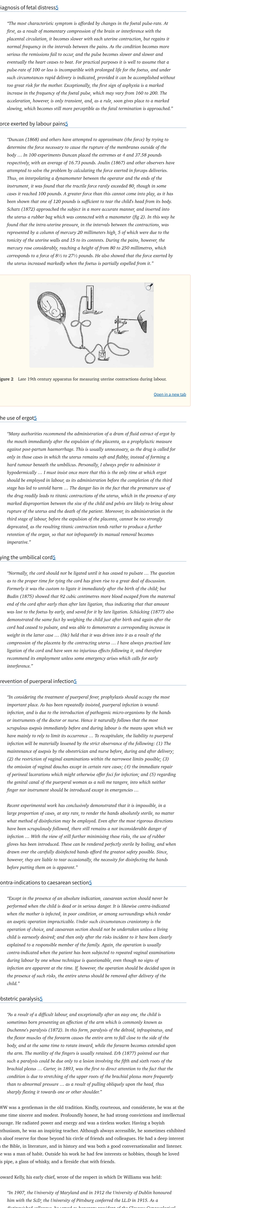

Figure 1 Dr John Whitridge Williams, 1866–1931.

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Maternal posture during labour5

"During early labour the patient is perfectly comfortable between the pains, and for a time can attend to her ordinary avocations, but as they become more severe, she assumes a sitting or leaning posture, and frequently gives utterance to short, sharp, querulous cries ... For a short time after rupture of the membranes there is a lull in the labour pains, after which they recur with increasing frequency and vigour, and compel the patient to take to her bed, where if left to herself she assumes a crouching or squatting posture."

Diagnosis of fetal distress5

"The most characteristic symptom is afforded by changes in the foetal pulse-rate. At first, as a result of momentary compression of the brain or interference with the placental circulation, it becomes slower with each uterine contraction, but regains it normal frequency in the intervals between the pains. As the condition becomes more serious the remissions fail to occur, and the pulse becomes slower and slower and eventually the heart ceases to beat. For practical purposes it is well to assume that a pulse-rate of 100 or less is incompatible with prolonged life for the foetus, and under such circumstances rapid delivery is indicated, provided it can be accomplished without too great risk for the mother. Exceptionally, the first sign of asphyxia is a marked increase in the frequency of the foetal pulse, which may vary from 160 to 200. The acceleration, however, is only transient, and, as a rule, soon gives place to a marked slowing, which becomes still more perceptible as the foetal termination is approached."

Force exerted by labour pains5

"Duncan (1866) and others have attempted to approximate (the force) by trying to determine the force necessary to cause the rupture of the membranes outside of the body ... In 100 experiments Duncan placed the zetrenes at 4 and 27.50 pounds respectively, with an average of 16.75 pounds. Jenks (1867) and other observers have attempted to solve the problem by calculating the force exerted in forceps deliveries. Thus, on interpolating a dynamometer between the operator and the ends of the instrument, it was found that the forceps pull rarely exceeded 80, though in some cases it reached 100 pounds. A greater force than this cannot come into play, as it has been shown that one of 120 pounds is sufficient to tear the child's head from its body. Schatz (1872) approached the subject in a more accurate manner, and inserted into the uterus a rubber bag which was connected with a manometer (Fig 2). In this way he found that the intra-uterine pressure, in the intervals between the contractions, was represented by a column of mercury 20 millimeters high, 5 of which were due to the tonicity of the uterine walls and 15 to its contents. During the pains, however, the mercury rose considerably, reaching a height of from 80 to 250 millimeters, which corresponds to a force of 81 to 271 pounds. He also showed that the force exerted by the uterus increased markedly when the foetus is partially expelled from it."

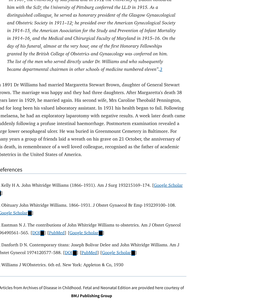

Figure 2 Late 19th century apparatus for measuring uterine contractions during labour.

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The use of ergot5

"Many authorities recommend the administration of a dram of fluid extract of ergot to the mouth immediately after the expulsion of the placenta, as a prophylactic measure against post partum haemorrhage. This is usually unnecessary, as the drug is called for only in those cases in which the uterus remains soft and flabby, instead of forming a hard tumour beneath the umbilicus. Personally, I always prefer to administer it hypodermically ... I must insist once more that this is the only time at which ergot should be employed in labour, as its administration before the completion of the third stage has led to untold harm ... The danger lies in the fact that the premature use of the drug readily leads to tetanic contractions of the uterus, which in the presence of any marked disproportion between the size of the child and pelvis are likely to bring about ruptures of the uterus and the death of the patient. Moreover, its administration in the third stage of labour, before the expulsion of the placenta, cannot be too strongly deprecated, as the resulting tetanic contraction tends rather to produce a further retention of the organ, so that not infrequently in manual removal becomes imperative."

Tying the umbilical cord5

"Normally, the cord should not be ligated until it has ceased to pulsate ... The question as to the proper time for tying the cord has given rise to a great deal of discussion. Formerly it was the custom to ligate it immediately after the birth of the child, but Budin (1873) showed that 92 cubic centimeters more blood escaped from the maternal and of the cord after early than after late ligation, thus indicating that that amount was lost to the foetus by early, and saved for it by late ligation. Schulking (1877) also demonstrated the same fact by weighing the child just after birth and again after the cord had ceased to pulsate, and was able to demonstrate a corresponding increase in weight in the latter case ... (Me) held that it was driven into it as a result of the compression of the placenta by the contracting uterus ... I have always practiced late ligation of the cord and have seen no injurious effects following it, and therefore recommend its employment unless some emergency arises which calls for early interference."

Prevention of puerperal infection5

"In considering the treatment of puerperal fever, prophylaxis should occupy the most important place. As has been repeatedly insisted, puerperal infection is wound infection, and is due to the introduction of pathogenic micro-organisms by the hands or instruments of the doctor or nurse. Hence it naturally follows that the more scrupulous aseptic immediately before and during labour is the means upon which we have mainly to rely to limit its occurrence ... To recapitulate, the liability to puerperal infection will be materially lessened by the strict observance of the following: (1) The maintenance of aseptic by the obstetrician and nurse before, during and after labour; (2) the restriction of vaginal examinations within the narrowest limits possible; (3) the omission of vaginal douches except in certain rare cases; (4) the immediate repair of perineal lacerations which might otherwise offer foci for infection; and (5) regarding the genital canal of the puerperal woman as a sulk not tangent, into which neither finger nor instrument should be introduced except in emergencies ...

Recent experimental work has conclusively demonstrated that it is impossible, in a large proportion of cases, at any rate, to render the hands absolutely sterile, no matter what method of disinfection may be employed. Even after the most rigorous directions have been scrupulously followed, there still remains a not inconsiderable danger of infection ... With the view of still further minimising these risks, the use of rubber gloves has been introduced. These can be rendered perfectly sterile by boiling, and when drawn over the carefully disinfected hands afford the greatest safety possible. Since, however, they are liable to rear occasionally, the necessity for disinfecting the hands before putting them on is apparent."

Contra-indications to caesarean section5

"Except in the presence of an absolute indication, caesarean section should never be performed when the child is dead or in serious danger. It is likewise contra-indicated when the mother is infected, in poor condition, or among surroundings which render an aseptic operation impracticable. Under such circumstances craniotomy is the operation of choice, and caesarean section should not be undertaken unless a living child is earnestly desired, and then only after the risks incident to it have been clearly explained to a responsible member of the family. Again, the operation is usually contra-indicated when the patient has been subjected to repeated vaginal examinations during labour by one whose technique is questionably, even though no signs of infection are apparent at the time. If, however, the operation should be decided upon in the presence of such risks, the entire uterus should be removed after delivery of the child."

Obstetric paralysis5

"As a result of a difficult labour, and exceptionally after an easy one, the child is sometimes born presenting an affection of the arm which is commonly known as Duchenne's paralysis (1872). In this form, paralysis of the deltoid, infraspatenus, and the flexor muscles of the forearm causes the entire arm to fall close to the side of the body, and at the same time to rotate inward, while the forearm becomes extended upon the arm. The mortility of the fingers is usually retained. Erb (1877) pointed out that such a paralysis could be due only to a lesion involving the fifth and sixth roots of the brachial plexus ... Cartez, in 1891, was the first to direct attention to the fact that the condition is due to stretching of the upper roots of the brachial plexus more frequently than to abnormal pressure ... as a result of pulling obliquely upon the head, thus sharply flexing it towards one or other shoulder."

JWW was a gentleman in the old tradition. Kindly, courteous, and considerate, he was at the same time sincere and modest. Profoundly honest, he had strong convictions and intellectual courage. He radiated power and energy and was a tireless worker. Having a boyish enthusiasm, he was an inspiring teacher. Although always accessible, he sometimes exhibited an aloof reserve for those beyond his circle of friends and colleagues. He had a deep interest in the Bible, in literature, and in history and was both a good conversationalist and listener. He was a man of habit. Outside his work he had few interests or hobbies, though he loved his pipe, a glass of whisky, and a Havana cigar with friends.

Howard Kelly, his early chief, wrote of the respect in which Dr Williams was held:

*"In 1907, the University of Maryland and in 1912 the University of Dublin honoured him with the ScD; the University of Pittsburg conferred the LL.D in 1915. As a distinguished colleague, he served as honorary president of the Glasgow Gynaecological and Obstetric Society in 1911–12; he presided over the American Gynecological Society in 1914–15; the American Association for the Study and Prevention of Infant Mortality in 1914–16, and the Medical and Chirurgical Faculty of Maryland in 1915–16. On the day of his funeral, almost at the very hour, one of the First Honorary Fellowships granted by the British College of Obstetrics and Gynaecology was conferred on him. The list of the men who served directly under Dr Williams and who subsequently became departmental chairmen in other schools of medicine numbered eleven".*3

In 1891 Dr Williams had married Margaretta Stewart Brown, daughter of General Stewart Brown. The marriage was happy and they had three daughters. After Margaretta's death 28 years later in 1929, he married again. His second wife, Mrs Caroline Theobald Pennington, had for long been his valued laboratory assistant. In 1931 his health began to fail. following a melaena, he had an exploratory laparotomy with negative results. A week later death came suddenly following a profuse intestinal haemorrhage. Postmortem examination revealed a large leiomyosarcoma of stomach. He was buried in Greenmount Cemetery in Baltimore. For many years a group of friends laid a wreath on his grave on 21 October, the anniversary of his death, in remembrance of a well-loved colleague, recognised as the father of academic obstetrics in the United States of America.

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