Historical Insights:

John William Ballantyne 1861–1923

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Exactly 100 years ago, Ballantyne wrote in an article on Antenatal Therapeutics (Ballantyne, 1899) that whilst much was done for mothers and babies in labour and the puerperium, morbid states, such as sterility and miscarriage, the birth of monstrosities and stillbirths, twinning and fetal diseases received little attention. He noted alcohol, nicotine and lead, as well as syphilis and tuberculosis as major fetal hazards and advocated specific treatments for these in pregnancy in addition to rest and general hygiene and he advocated the induction of premature labour in women with previous stillbirth due to large fetal size. He predicted that ultimately antenatal therapy would depend on the development of accurate diagnostic techniques.

Two years later, in 1901, he published a ‘Plea for a Pro-maternity Hospital’, (pro from Greek, later changed to pre-maternity), a concept of vital importance in the development of antenatal care (Ballantyne, 1901). Previously, pregnant women needing hospitalization were admitted under the care of general physicians with no particular expertise in obstetrics. Ballantyne taught that for an understanding of eclampsia, hyperemesis, pregnancy jaundice, hydramnios, mole, abortion and congenital malformations we had to study the physiology of pregnancy, changes in the blood and circulation, origins of the amniotic fluid and the nature of the placental exchanges. He made a passionate plea for a pro-maternity hospital where obstetricians could study both normal and abnormal pregnancy. With great vision, he stated that such a unit would need skilled X-ray services and an experienced physiological chemist. As result of this plea, Dr Freeland Barbour, Gynaecological Physician to the Edinburgh Royal Infirmary and President (1894/5) of the Edinburgh Obstetric Society, donated £1000 in 1901 to endow the first antenatal bed at the Royal Maternity Hospital in Edinburgh. Ballantyne was put in charge. The first patient admitted had hydramnios.

Before this, obstetricians met their patients for the first time if called in by the attending midwife in case of difficult labour or obstructed delivery. Only in Paris was there a special ward at the Salpetrière for pregnant women. Pinard in 1878 had written on malpresentations and external cephalic version (Browne, 1946). The first refuge for abandoned pregnant women was opened in Paris by Mme Becquet in 1892 (Browne, 1946). Asylum and rest in late pregnancy reduced the incidence of eclampsia and afforded an opportunity for versions. The incidence of prematurity fell and babies born were ‘larger and finer’ than those of women who worked until delivery.

In 1899, Dr Haig Ferguson opened a similar refuge, associated with the Edinburgh Royal Maternity Hospital, for unmarried pregnant women. The benefits of medical care and supervision were so great that the respectably married matrons from the Maternity Hospital soon demanded similar attention. This led to visits by midwives to expectant mothers in their homes in the later months of pregnancy. When the demand for this became too great, out-patient antenatal clinics were established. Haig Ferguson was too busy to provide such service and asked Ballantyne, by now lecturer in antenatal pathology and teratology in the University of Edinburgh, to take it over. Similar developments in Boston and Paris lead to the establishment of antenatal clinics there.

Who was this remarkable man and what were his antecedents? He was born in Dalkeith in 1861. His paternal grandfather was a botanist and his father a seedsman and nursery gardener, concerned with propagation of fruit trees and hybridisation of azaleas and rhododendrons. His mother, of Dutch origin, died when he was one year old. As far as I am aware, he was an only child. He attended the George Watson school in Edinburgh where Latin and Greek were part of the general curriculum; he travelled in Holland (perhaps to visit his mother’s family) and Germany from an early age and learned to speak both languages.

Ballantyne studied Medicine at Edinburgh from 1877 to 1883. He got a Distinction in Medicine and was first of his year in Physiology, Pathology, Obstetrics and Gynaecology. His first appointment was as house-surgeon to Professor A.R.Simpson who had succeeded (in what might be alleged a genuine manifestation of nepotism) his uncle, the great James Young Simpson. He then became Resident Medical Officer at the Royal Maternity Hospital. In 1885, he visited the medical
schools of Göttingen, Berlin, and Munich and, on his return home, became Assistant to Professor Simpson for the next 5 years. He passed the MRCP examination in 1887 and became FRCP in 1888; he was awarded the MD with gold medal in 1889 for his thesis ‘Some anatomical and pathological conditions of the newborn infant in relation to obstetrics’. In 1890 he was appointed assistant physician and in 1904 chief physician to the Edinburgh Royal Infirmary.

His early publications, around the time of qualification, dealt with antiseptics in surgery and sphygmographic tracings in eclampsia. Altogether between 1883 and 1901 he published five books, edited two volumes of the quarterly *Teratologia*, wrote 12 articles for medical dictionaries and 215 papers for medical journals (Ballantyne, 1894, 1902, 1904a,b). His interests were widespread and in 1893 he published (with J.D.Williams) a paper on the anatomy of the structures in the mesosalpinx (Ballantyne and Williams, 1893). He described hydrosalpinx, pyosalpinx, haematosalpinx, accessory ostia, mesosalpinx (Ballantyne and Williams, 1893). He described hydroscopic, pyosalronic, haematosalpingic, accessory ostia, inflammatory changes associated with gonorrhoea and tuberculosis and peritubal adhesions.

The publication of ‘Diseases of Infancy’ (1891) led to his election as a Fellow of the Royal Society (FRS) at the early age of 30 years. This was followed in 1892 and 1894 by ‘Diseases and Deformities of the Foetus.’ (Vol. 1) and ‘Diseases and Deformities of the Embryo.’ (Vol. 2). Volume 1 starts with a discussion of antenatal in relation to post-natal and neonatal pathology. He discusses the novelty of the topic and its role and place in the biological sciences and emphasizes that a falling birth rate increases the value set upon fetal life. He also stresses the enormous economic burden of ‘congenitally unfit’ children. He proceeds to descriptions of the anatomy, physiology and pathology of the fetus and the causes of fetal disease which he subdivides according to intra-uterine environmental, placental or embryonic causes. He distinguishes between transmitted fetal disease (maternal infections and poisoning with mercury, alcohol, tobacco) and idiopathic fetal diseases which are classified according to organs and systems. The second volume deals with embryology and teratology. There are detailed descriptions of implantation of the blastocyst (which Ballantyne called embayment) and of the developing embryo from the second week onwards. There follow theories of the causation of monstrosities with their classification and description.

In 1894, Ballantyne had founded a Quarterly Journal, *Teratologia* (published by Williams & Norgate, London), to serve, in his own words, as a ‘sort of Zentralblatt for Teratologia and Antenatal Pathology’. Volume 1 contains, among others, articles by Ballantyne on the Foetus Amorphus and on the Teratological Records of Calahdeia, by Dr William Fordyce on intra-uterine ascites with a review of 63 published cases, by Drs Baxter Tyrie and JW Haigh on a case of Phocomelia as well as abstracts from and reviews of the current literature. In Volume 2 there are articles by Ballantyne on pre-aortic appendages, encephaly and the Biddenden Maidens, as well as a case report of cerebral haemorrhage in a fetus by one Dr William Osler from Baltimore. Although enthusiastically received initially, the journal ceased publication because the required number of 50 subscribers was not reached.

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Throughout his life, Ballantyne contributed regularly to the Transactions of the Edinburgh Obstetric Society. Of particular interest are his articles on antenatal pathology and heredity in the Hippocratic writings, with quotations in Greek with which he was obviously familiar, and on amniotic bands and congenital dislocations of the fetus (Ballantyne, 1894/5) and a mammoth series of articles ‘Teratogenesis: an Enquiry into the Causes of Monstrosities’ with 381 references (Ballantyne, 1895/6). The causes were divided into historical theories (supernatural, physical and mental) and modern theories (mechanical, fetal diseases, embryological and germinal defects).

Ballantyne lectured to under- and post-graduates from the late 1880s; he became lecturer at Surgeon’s Hall about 1900 and admitted women to his lectures. (They were not generally admitted to University lectures until 1916.) He wrote Essentials of Obstetrics (1904a) and Essentials of Gynaecology (1905) as short, concise student texts. He divided dystocia into faults of the passages, the passenger or the forces, and for vaginal hysterectomy advocated abandoning the clamp method in favour of suturing which, whilst taking longer, is more secure and less painful.

Ballantyne edited the Transactions of the Edinburgh Obstetric Society, from 1896 to 1899. He became Secretary in 1889 and President in 1905. His Presidential Address on ‘The Future of Obstetrics’ consists of an imaginary discussion with the 1940 President (a woman!), on the falling birth rate, compensated for by decreasing stillbirth and infant mortality rates. His emphasis was on prevention of abnormalities such as eclampsia. Placental transfer was to be studied to reduce the incidence of fetal disease and defects. Destructive operations were to be replaced by planned operative delivery; pelvic contraction and tumours were to be diagnosed before they caused emergencies.

Ballantyne married Rosa Matthew in 1889: she died childless in 1914. As there were no descendants, we know little of his private life. He used to write from 6 to 10 am; then see patients and teach. In addition to his involvement with the Edinburgh Obstetric Society, he was convenor of the Library Committee of the Edinburgh Royal College of Physicians. He was a devout Christian, an elder of St George’s Free United Church and, as President of the Edinburgh Medical Missionary Society from 1907–1912, was in touch with Mission doctors all over the world.

Ballantyne’s hobby was literature; he could read Latin, Greek, Dutch, German and Italian. His library contained many editions of Dante, which he read in the original, eight editions of Boswell’s Life of Johnson, a rare collection of early bibles and the monograph he had written on ‘The Byrthe of Mankynde: The Woman’s Book, its author, editions and contents’ (Ballantyne, 1908). This early treatise on midwifery, written originally in Latin under the title ‘De Partu Hominis’ by Eucharius Röslein (alias Rhodian) in 1538, was first translated into English in 1540 by Richard Jonas and dedicated to Queen Catherine Howard, the fifth wife of Henry VIII. Between 1540 and 1676, 14 editions were published and Ballantyne produced a detailed description of them and their contents. In the library of the Royal College of Obstetricians and Gynaecologists there is a copy of this book, inscribed with the Author’s compliments to William Blair Bell.

Ballantyne gave his last public address to the Nottingham Medico-Chirurgical Society in 1923, 3 weeks before his death, aged 62, from appendicitis and peritonitis. He re-iterated the main objectives of modern obstetric care as the removal of anxiety and fear from the minds of pregnant women, the treatment of pregnancy disorders, both minor and major, the promotion of normal labour, the reduction of stillbirth and maternal death rates. He writes that he honestly strove to avoid the four grounds of human ignorance set forth by Roger Bacon, ‘trust in inadequate authority, the force of custom, the opinion of the inexperienced (crowd) and the hiding of one’s own ignorance with a parade of superficial wisdom’. An unceasing and tireless researcher, throughout his life he worked for better understanding of the physiology and pathology of pregnancy and constantly aimed to prevent fetal deaths and abnormalities.

100 years on, how much has been achieved? Ultrasonography and oxytocin drips have realized Ballantyne’s hopes for a ‘cinematographic visualization of the embryo and fetus in utero’ and the discovery of a ‘tocographic serum’ to induce labour. Antenatal diagnosis of many fetal abnormalities has become routine. Neural tube defects are reduced. Inborn errors of metabolism can be diagnosed antenatally, leading in many cases to early and effective treatment. Antenatal therapecutes such as intra-uterine transfusion, placental drug therapy and fetal surgery are in use. Termination of pregnancy and fetal reduction in grand multiple pregnancies are widely performed, even though they raise ethical and psychological problems. Some of them are avoided by the introduction of pre-implantation diagnosis. Stem cell transplantation and gene therapy for cystic fibrosis, thalassaemia and familial cancers will hopefully become practical realities. Thus by the end of the century much of what Ballantyne hoped and worked for has been achieved and the future looks bright.

One of Ballantyne’s pupils was F.J. Browne. Born in County Donegal in 1879, he was intended for the Civil Service, but twice ran away from home, first to join the Guards in London and then to work as a railway porter in Glasgow. He qualified from Aberdeen in 1906 and entered general practice in Abertillery, a small Welsh mining town. After war time service in the RAMC, he became assistant to Ballantyne at the Edinburgh Royal Infirmary, and Assistant Physician in 1926. From there he went on to become Professor and the first Director of the new Obstetric Unit at University College Hospital, London, established with a grant from the Rockefeller Foundation; the Unit became the largest in a London teaching hospital and a centre for the study of antenatal pathology.
When F.J. Browne moved from Edinburgh to London, he brought with him Chassar Moir, Gladys Dodds and Miss Watson, the superintendent midwife of the Simpson Maternity Hospital. Gladys Dodds became Consultant at Hackney Hospital where I was first her registrar and later consultant colleague. It was here that Leslie Butler and I (Butler and Reiss, 1970) were the first to introduce into the UK amniocentesis for the antenatal diagnosis of chromosomal abnormalities, thus continuing the work on the prevention of fetal abnormalities sought by Ballantyne.

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**References**


