MASTER, Colleagues, Ladies and Gentlemen, I am grateful for the honour you have done me in inviting me to give the Ninian Falkiner Memorial Lecture for 1982.

Earlier this year, an elderly lady whose history I was taking, recalled that her sister had died of diabetes whilst they were at school. She remembered the circumstances quite clearly—her sister aged 15, had become ill on a Friday afternoon and was dead by Monday. The year was 1920 at which time Ninian Falkiner was a medical student. To him, Diabetes Melitus in young people would have been an incurable disease, and the description of Aretaeus the Cappadocian written in 150 A.D. would still be valid—

“Diabetes is a melting down of the flesh and limbs into urine. The patients never stop making water—thirst is unquenchable and in no distant time, they expire”.

The first reference to the urine of the diabetic being sweet occurs in the 6th century writings of Hindu physicians—

“Honey Urine is a disease from which the rich principally suffer—it is brought on by their glutonous over-indulgence in oil, flour, and sugar. Carbuncles and Tuberculosis are frequent complications. Ants flock around their urine”.

Thomas Willis, of The Circle, in 1660, with more force than elegance described it as “The Pissing Evile” and noted that the urine was sweet but he incorrectly ascribed this to a mixture of salts and acids. By fermentation, Matthew Dobson in 1775 proved that this sweetness was due to sugar. In 1869 Paul Langerhans, a student in Virchow’s laboratory, discovered special cells scattered throughout the upancreas but freely admitted that he did not know their nature or function.

In 1889 Von Mering and Minkowski were studying the digestive function of the pancreas by doing pancreatectomies in dogs. They upbraided their laboratory attendant for carelessness when they noticed puddles of urine in the kennels. Accepting his assurance that the animals had polyuria because of the operation, they did urinalysis and found sugar. This was the first time that a connection was established between the pancreas and diabetes.

All these years Diabetes Mellitus was known to clinicians even though they lacked any understanding of its nature. Pregnancy in the diabetic was exceptionally rare and the scanty references in the literature were pessimistic in the extreme. Thus, in 1856, Bloh wrote—

“True diabetes is inconsistent with conception”. I ask you to note the use of the word, ‘true’.

Bouchardat who had a special interest in diabetes wrote in 1876—

“It is rare to find a pregnant woman suffering from true diabetes. Among the considerable number of diabetics consulting me, I do not remember having seen a single pregnant woman”.

I have underlined the word true in each statement to show that Bloh and Bouchardat were familiar with a form of glycosuria of pregnancy which was not true diabetes.
The first significant contribution was by Matthews Duncan in 1882—exactly 100 years ago—published in the Transactions of the Obstetrical Society of London. He too emphasised the rarity of the problem by describing three cases of his own to which he added all he could find in the literature, a further nineteen. He summarised the state of the art at that time in the following words—

"Of diabetes in pregnancy and parturition our knowledge is scanty in the extreme and Senator notes it as a matter for wonder that 'even pregnancy has been seen to take place in diabetic women, according to Badge, Seegen and others but’ he add, it seems to be frequently ended prematurely by abortion. In his great work on pregnancy, Montgomery has nothing but a reference to a case of Bennwitz. Obstetrical works generally make no reference to the subject”.

In 1899, F. W. Taylor wrote in the Boston Medical and Surgical Journal —

"The Boston Lying-In Hospital has cared for 10,000 cases during the past 25 years without finding any cases of DM”.

Here at home, Jellett, your predecessor, had the same story. In his Manual of Midwifery of 1905, he wrote —

"The occurrence of diabetes in pregnancy is rare. It is remarkable how little attention has been drawn to it in text books, journals or hospital reports and it is quite possible that cases escape detection because they are not looked for. . . Although the presence of a small amount of sugar in the urine in pregnancy is far from uncommon, the association of true diabetes with pregnancy is very fatal to the foetus. The manner in which diabetes brings about the death of the foetus is not very clear but it is probably the poisoning of the foetus by some toxin circulating in the maternal blood”. (note again the emphasis as true diabetes).

"Diabetes is undoubtedly a very grave complication of pregnancy, maternal death having occurred at the time of labour or within a few weeks in 10 out of 19 cases. Abortion occurred in 6 of the 27 pregnancies and in 8 the foetus was born dead or died shortly after birth. The child is often of very large size, this sometimes being due to anasarca and in one case it was born with diabetes. Hydramnios is common and sugar has been found in the amniotic fluid. Death may occur soon after the onset of labour or more commonly very soon after delivery”. Eshner summed up the position in 1907 when he wrote —

"A diabetic woman should not marry, or if married, she should not become pregnant”.

However, the dawn was nigh.

In 1901 Opie clearly identified the islets of Langerhans as the pathological site in DM and sparked off efforts to produce an effective extract. The race was on and many came tantalisingly close to success. In 1908, Zuelzer actually succeeded but misinterpreted his success when he regarded the manifestations of hypoglycaemia as signs of toxicity. In Bucharest, Paulesco also succeeded but his work, published in French, was misunderstood.

Then fate took a hand using an unlikely tool and justifying the phrase — "Beginner’s Luck”.

Frederick Grant Banting who had trained as a surgeon set up in practice in London, Ontario. Like many of us he found that business was slow at the beginning and in his first month he earned four dollars. To support himself he became a demonstrator in Anatomy and Physiology at the local medical school. On October 30th, 1920 whilst preparing a lecture on the relationship between DM and the pancreas, he read in the current issue of Surgery, Gynaecology and Obstetrics an article by Moses Baron in which the writer described the