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### EDITORIAL

#### THE VIRGIN BIRTHS NEWSPAPER FEATURE

As the *Lancet*<sup>1</sup> remarks, no 'reasonable man' would even entertain the possibility that a woman might become pregnant without a single spermatozoon entering her uterus. For centuries scientists would have agreed with this view, but biologists today are not quite so certain.

Dr. Helen Spurway, lecturer in Biometry and Eugenics in London, set the cat among the pigeons by some remarks about possibilities in mammals, and even man, in a lecture she recently gave entitled 'Virgin Births' concerning her observations on the guppy (*Lebistes reticulatus*), a small live-bearing fish. Apparently the female fish may be kept separate from all males from birth and yet give rise to broods, which consist almost entirely of females (1 male and 1 intersex were reported among 92 such offspring). There are 3 possible explanations for this unusual finding in a vertebrate animal. First, the possibility that the mother-fish might have been fertilized by paternal sperm while she was still an embryo *in utero* can be excluded on genetic grounds. Secondly, hermaphroditism, in which ova and sperm arise from the same organism and self-fertilization occurs, is known to be possible in fishes. The third possibility is parthenogenesis, a phenomenon which occurs normally in certain insects, for example. In parthenogenesis the ovum starts to divide without being fertilized, so producing offspring with half the usual number of nuclear chromosomes, unless some sort of doubling-up occurs. In any event, the progeny of such procreation can never show genetic features which are not found in the mother. On the other hand, since the offspring will inherit only half of the maternal chromosomes, there will always be features in the mother which the children will not possess.

From Dr. Spurway's work there seems little doubt that parthenogenesis can occur in the guppy, despite the fact that in warm-blooded vertebrate animals it is certainly very uncommon. Parthenogenetic division of the ovum has been found in the cat and the ferret, but the embryos were not viable. Healthy offspring have,

### VAN DIE REDAKSIE

#### KOERANT-OPHEF OOR MAAGDELIKE GEBOORTES

Soos die *Lancet*<sup>1</sup> dit stel, sal geen 'verstandige man' ooit eers die moontlikheid oorweeg nie dat 'n vrou swanger kan raak sonder dat 'n enkele saadseel haar baarmoeder binnegaan. Vir eeue sou wetenskaplikes met hierdie mening saamgestem het, maar bioloë is vandag nie meer heeltemal so seker van die saak nie.

In haar lesing getiteld 'Virgin Births' oor haar waarnemings i.v.m. die guppy (*Lebistes reticulatus*), 'n klein eierlewendbarende vis, het dr. Helen Spurway, Lektrise in Biometrie en Eugenetik in Londen, onlangs, figuurlik gesproke, die kat tussen die duiwe gelos deur 'n paar van haar opmerkings oor die moontlikheid van maagdelike geboortes by soogdiere en selfs by die mens. Blykbaar kan die wyfievise van geboorte heeltemal van alle man-tjievisse afgesonderd word en tog 'n groot broeisels wat feitlik net uit wyfievisse bestaan, voortbring—(een manlike en een interseksuele geval onder 92 van sulke afstammelingen is aangemeld). Daar is drie moontlike verklarings vir hierdie ongewone bevinding by werwel-diere. Eerstens kan die moontlikheid dat die moedervis deur 'n vaderlike saad bevrug is terwyl sy nog *in utero* 'n embrio was, op genetiese gronde, uitgeskakel word. Tweedens is dit bekend dat dubbelslagtigheid (waar eiers en saad van dieselfde organisme ontstaan en self-bevrugting plaasvind), by visse aangetref word. Die derde moontlikheid is partenogenese, 'n verskynsel wat gewoonweg, by sekere insekte byvoorbeeld, voorkom. In so 'n geval begin die eiersel verdeel sonder dat dit bevrug is, en produseer vervolgens 'n afstammeling met slegs die helfte van die gewone aantal kernchromosome, tensy daar een of ander mate van verdubbeling plaasgevind het. Die nakomeling van so 'n voortteling kan in elk geval nooit enige genetiese faktore wys wat nie in die moeder aangetref word nie. Aan die ander kant, aangesien die nakomeling slegs die helfte van die moeder se chromosome sal erf, sal daar altyd sekere kenmerke in die moeder wees wat nie in die kinders aangetref sal word nie.

Volgens dr. Spurway se werk is daar min twyfel dat partenogenese wel in die guppy voorkom, ten spyte van



however, been induced in rabbits without mating by cooling the fallopian tubes.<sup>2</sup>

In view of this Dr. Spurway went on to consider the likelihood of spontaneous parthenogenesis in mammals, including man. Even if it did occur it would be very difficult to recognize, and the animals concerned would have to be observed under the most stringent conditions of isolation. It may be assumed that, if fatherless offspring were produced at all in mammals, it would be through the mechanism of parthenogenesis rather than hermaphroditism.

In man parthenogenesis would also be difficult to recognize and to prove. It could never be even suspected in women in whom intercourse had recently taken place. That it is very rare (to say the least) can be deduced from the absence of any known report of fatherless pregnancy emanating from women's prisons or other places of total female segregation.

Present-day biological knowledge would make it possible to disprove almost all false claimants to fatherless offspring, but even today it is doubtful whether a true candidate could be vindicated with certainty. The parthenogenetic offspring would be a female (just possibly an abnormal male), closely resembling her mother in physical characteristics. Blood grouping, including use of the rare types, together with a few other known hereditary features, such as eye colour (if definite) and ability to taste phenyl thio-urea, would eliminate the great majority. The final test would be the ability of a skin graft derived from the child to take in the mother and persist indefinitely without breakdown. (A skin graft the other way round would not persist because the mother would probably possess antigens which the child did not.) The interpretation of skin-grafting results, however, does not yet seem to be entirely agreed upon by cytogeneticists, although Dr. Spurway apparently considers that they would be conclusive one way or the other.

The British *Sunday Pictorial*<sup>3</sup> took over at this point and initiated an enquiry, asking any mother who believed she had produced a parthenogenetic infant to come forward. Nineteen pairs of mothers and daughters did so. Eleven were immediately eliminated because they thought that an intact hymen must indicate a virgin birth. Of the remaining 8, 6 were eliminated by blood grouping and one by eye colour. The one pair who passed these tests were also alike in ability to taste phenyl thio-urea, in A-substance secretor tests, and in serum-protein electrophoretic pattern. Despite these similarities, however, a skin graft from daughter to mother was shed in approximately 4 weeks. Thus

die feit dat dit in warmbloedige werweldiere sekerlik baie seldsaam is. Partenogenetiese verdeling van die eiersel is in die kat en die muishond aangetref, maar die embrios was nie lewensvatbaar nie. Deur die eileiers<sup>2</sup> te verkoel, is gesonde afstammeling van hase, sonder paring, voortgebring.

Met die oog hierop het dr. Spurway verder die moontlikheid van spontane partenogenese in soogdiere, insluitende die mens, oorweeg. Selfs al sou dit gebeur, sou dit baie moeilik wees om dit te herken en die betrokke diere sou onder die strengste omstandighede van afsondering waargeneem moet word. Dit mag aangeneem word dat as vaderlose afstammeling enigins in soogdiere voortgebring sou word, dit deur die meganisme van partenogenese, eerder as deur dubbelslagtigheid, sou geskied.

Dit sou ook moeilik wees om partenogenese in die mens te herken en te bewys. Die gedagte daaraan kan nooit eers gekoester word nie in vroue waar gemeenskap kort vantevore plaasgevind het nie. Dat dit uiters seldsaam is (om die minste te sê), kan afgelei word van die feit dat geen kennis gedra word nie van enige verslag van vaderlose swangerskap wat in tronke vir vrouens of ander plekke van algehele vroulike segegrasie voorgekom het.

Hedendaagse biologiese kennis maak dit moontlik om feitlik alle valse aanspraakmakers op vaderlose nakomelinge, te weerlê; maar dit is selfs vandag nog twyfelagtig of die aanspraak van 'n ware kandidaat met sekerheid gestaaf kan word. Die partenogenetiese afstammeling sal vroulik wees (dit mag net moontlik 'n abnormale manlike afstammeling wees) wat, sover dit fisiese karaktertrekke betref, baie na haar moeder sal aard. Die grootste meerderheid sal deur bloedgroepering, insluitende die gebruik van die seldsame tipes, tesame met 'n paar ander bekende oorerflike kenmerke, soos die kleur van die oë (as dit duidelik is) en die vermoë om feniel tio-urea te proe, uitgeskakel word. Die finale toets is as 'n veloorplanting wat van die kind verkry is op die moeder vat en vir 'n bepaalde tyd sonder instorting volhou. ('n Velloorplanting van die moeder op die kind sal nie hou nie, aangesien die moeder moontlik antigene sal besit wat die kind nie sal hê nie). Dit lyk egter of sitogenetici nog nie heeltemal ooreenstem met die interpretasie van die resultate van velloorplanting nie, alhoewel dr. Spurway oënskynlik reken dat dit afdoende bewys daarvoor of daarteen lewer.

Op hierdie stadium het die *Sunday Pictorial*<sup>3</sup> oorgeneem en 'n ondersoek op tou gesit, waarin hulle gevra het dat enige moeder wat glo dat sy 'n partenogenetiese baba in die wêreld gebring het, haarself moet aanbied. Neëntien pare moeders en dogters het hierop gereageer. Elf is onmiddellik uitgeskakel, aangesien hulle gedink het dat 'n ongeskonde maagdevlies 'n maagdelike geboorte moet aandui. Van die oorblywende ag, is ses deur bloedgroepering en een deur die kleur van die oë uitgeskakel. Die een paar wat in hierdie toetse geslaag het, was eenders in hulle vermoë om feniel tio-urea te proe, en in afskeiertoetse vir A-stof en in serum-proteïen-elektroforesiese patroon. Afsiesien van hierdie ooreenkoms egter, is 'n velloorplanting van die dogter op die moeder in ongeveer 4 weke afgewerp.



it seems that this mother's claim cannot be upheld, and we must still look for further evidence of human parthenogenesis.

Dit lyk dus of hierdie moeder se eis nie gestaaf kan word nie en ons moet nog steeds soek na verdere bewyse van menslike partenogenese.

1. Editorial (1955): *Lancet*, **2**, 967.
2. Pincus, G. and Shapiro, H. (1939): *Proc. Nat. Acad. Sci.*, **26**, 163.
3. Balfour-Lynn, S. (1956): *Lancet*, **1**, 1072.

1. Van die Redaksie (1955): *Lancet*, **2**, 967.
2. Pincus, G. en Shapiro, H. (1939): *Proc. Nat. Acad. Sci.*, **26**, 163.
3. Balfour-Lynn, S. (1956): *Lancet*, **1**, 1072.