

PHYSIOLOGY

INTRODUCTION

In 1617 Jacques Olivier wrote a popular misogynist tract which was republished seventeen times in the subsequent hundred years, and translated into English in 1662 by an anonymous author (T.M.). Several rather worn editions of the original French versions are available in British libraries, suggesting an eager English readership. Part of the preface reads:

[woman] you live here on earth as the world's most imperfect creature: the scum of nature, the cause of misfortune, the source of quarrels, the toy of the foolish, the plague of the wise, the stirrer of hell, the tinder of vice, the guardian of excrement, a monster in nature, an evil necessity, a multiple chimera, a sorry pleasure, Devil's bait, the enemy of angels.

(*An Alphabet of Women's Imperfections*, p. 1)¹

This extreme assertion of misogyny is striking to a modern reader because it combines and interweaves an essentialist account of woman's function ('the most imperfect creature ... an evil necessity') with assertions about woman's character, and consequently her theological, social and political inferiority.

The construction of womanhood in the early modern period was based upon two essentialist ideologies: the Hebraic-Christian tradition of equating Eve with the Fall (presented in chapter 1) and the Galenic-Aristotelian account of her 'nature' – that is, her physiology and biological function. The essential explanations about women's identity are continually used in most writings about women and form the base upon which her place and function in society was described. In this sense, little has changed in 400 years: women are still described and circumscribed by biology on the basis of all identity, whilst men are characterised as beyond or above biology in every area except ageing.²

Despite the increase in scientific and empirical knowledge in the sixteenth century about the skeleton and the body, discoveries about woman's physiology were remarkably slow. Thus, for example, the microscopic sperm was discovered in

the late seventeenth century, a few years after the first use of the microscope, but the ovum was not discovered until 1827. Beliefs about woman's physiology continued to be based upon Aristotle and Galen (pp. 43 ff. and pp. 47 ff.). Aristotle provided the philosophical underpinning of understanding about gender through his distinction between form (masculine) and matter (feminine) whilst Galen provided the physiological framework in which woman's health and identity were discussed. The issues upon which medical, scientific and advice books focused were: what do the sexual organs look like and how do they work (pp. 57, 64)? What are sperm, and do both sexes produce them (pp. 44–50)? What determines sex (pp. 64–5)? Why do women menstruate (p. 47)? How can women's illnesses be explained and cured (pp. 48–9, 60–4)? What function does woman have in the generative process (pp. 43–7)? With the exception of the last question, the answers to these remained fairly constantly based upon humoral theory throughout the early modern period.

Galenic humoral theory stated that all humans were constructed of a mixture of the four humours (hot, dry, moist and cold), and that men were hot and dry, whilst women were moist and cold. Good health was maintained by recognising a perfect balance between the humours, and letting blood where necessary to obtain that balance and in order to rid the body of excess and poisonous humours. Sperm and woman's 'seed' were concocted from the humours and reflected respectively the nature of the man (hot and dry) or the woman (cold and moist). Menstruation was explained as the need for women to expel poisonous humours which could not be absorbed and burned into her body because her humour was too cold.³ Women's illnesses were nearly all ascribed to disturbances in her menstrual and humoral cycle, and the balance of her humours also explained the structure of her internal sexual organs, which in turn determined women's diseases (pp. 48, 59).⁴

In addition to the humoral account of physiology, the role of the woman in reproduction was discussed in terms of anatomy. Until the late sixteenth century in scientific circles, and long after in popular accounts, men and women's sexual organs were described and explained using the same terms, wherein women's organs had simply been left inside the body because there was not sufficient heat to push them out. Thus both men and women had testes and gonads; they both produced 'seed', although woman's was not capable of generation. In anatomical drawings of this period the labia, vagina and womb are rendered as an inverted penis and testicles (see the drawing from Raynald's translation of *The birth of mankind*, figure 3).

After the development of anatomy studies inspired by Vesalius, Fallopius published his *Anatomical Observations* in 1562, which described the sexual organs of both men and women as distinct to each sex. This discovery subsequently informed both descriptive accounts of women's bodies and theoretical explanations of her function in generation (pp. 51–2). Thus, for example, Crooke's *Micro-cosmographia* (1631, p. 56) suggests that by this time popular medical writing had acknowledged the uniqueness of woman's place in this process, and saw the sexes

is different. Nevertheless, accounts of generation still gave priority, in the older Aristotelian way, to the man's seed: his was active and the woman's 'seed' was the passive receptacle or bed in which his seed might grow. Such accounts continued to uphold the Galenic theory of the humours which, despite the anatomical observations, effectively continued to assign woman an inferior physiological status to that of man. Thus even Harvey's publication in 1651 of his *De generatione animalium*, in which he posited the existence of a female egg, analogous to that in chickens, continued to describe the sperm as the formative generative force.⁵ In other words, even in the most advanced scientific texts of the day the old essentialist notions of woman as cold, moist and passive dominated the way in which scientists interpreted their evidence. These accounts privilege gender (that is, the characteristics associated culturally and socially with a biological sex), over where sexualised.⁶ In humoral theory sexual identity can thus exist on a continuum: there can be manly women and womanly men, because there can be dry cold women and moist hot men. Gender identity is thus more fluid in this period, before anatomical sex becomes the defining feature of sexual identity.

Finally, although sexual pleasure is not central to any of these accounts (sex was for procreation or, in extremes, humoral excretion), Galenic theory claimed that women needed to achieve an orgasm in order to conceive, because that was the only means by which her seed could be released (pp. 57–8). In addition, some writers either advise women suffering from womb hysteria to marry, or encourage midwives to manipulate their clitorises to expel the evil humours (p. 62). In theory, then, sexual pleasure for Renaissance women was thus intimately linked to the fundamental purpose of sexual intercourse: hence advice on how to achieve womanly orgasms is part and parcel of the physiological literature.

ARISTOTLE

Aristotle's works were still the dominant scientific textbooks for laymen as well as trainee physicians and surgeons during the seventeenth century. They were printed in Latin. Text from: *The history of animals*, transl. I. Taylor, 1812, vol. 6, p. 342 (bk 9, ch. 1); and *The generation of animals*, ed. and transl. A.L. Peck, Loeb Library, vol. 366, Cambridge, Mass., 1943, pp. 95–7.

The history of animals

In all those genera of animals, however, in which there is the male and the female nature has nearly similarly distinguished the manners of the females from those of the males; but this is particularly evident in the human species, in the larger animals and in the viviparous quadrupeds. For the manners of the females are more soft, they more rapidly become mild, and are more

testicles. Vestiges, indeed, of these manners are, as I may say, **but they are more apparent in those whose manners are more and most of all man.** For man has the most perfect nature of **so that all these habits are in him more apparent.** Hence woman **compassionate** than man, and has a greater propensity to tears. She **more envious, more querulous, more slanderous, and more confident.** Further still, the female is more dispirited, more despondent, more **dependent, and more given to falsehood, than the male.** She is, likewise, more **easily deceived, and more apt to remember; and again the female is more vigilant, less active, and, in short, less disposed to motion, and receptive of less nutrient than the male.** But the male, as we have observed, is more disposed to give assistance in danger, and is more courageous than the female.

The generation of animals

Thus much then is evident: the menstrual fluid is a residue, and it is the analogous thing in females to the semen in males. Its behaviour shows that this statement is correct. At the same time of life that semen begins to appear in males and is emitted, the menstrual discharge begins to flow in females, their voice changes and their breasts begin to become conspicuous; and similarly in the decline of life the power to generate ceases in males, and the menstrual discharge ceases in females. Here are still further indications that this secretion which females produce is a residue. Speaking generally, unless the menstrual discharge is suspended, women are not troubled by hæmorrhoids or bleeding from the nose or any other such discharge, and if it happens that they are, then the evacuations fall off in quantity, which suggests that the substance secreted is being drawn off to the other discharges. Again, their blood vessels are not so prominent as those of males; and females are more neatly made and smoother than males, because the residue which goes to produce those characteristics in males is in females discharged together with the menstrual fluid. We are bound to hold, in addition, that for the same cause the bulk of the body in female Vivipara is smaller than that of the males, as of course it is only in Vivipara that the menstrual discharge flows externally and most conspicuously of all in women who discharge a greater amount than any other female animals. On this account it is always very noticeable that the female is pale and the blood vessels are not prominent and there is an obvious deficiency in physique as compared with the males.

Now it is impossible that any creature should produce two seminal secretions at once, and as the secretion in females **which answers to semen in males is the menstrual fluid, it obviously follows that the female does not**

contribute any semen in generation; for if there were semen there would be no menstrual fluid; but as the menstrual fluid is in fact formed, therefore there is no semen.

We have said why it is that the menstrual fluid as well as semen is a residue. In support of this, there are a number of facts concerning animals which may be adduced. (1) fat animals produce less semen than lean ones, as we said before, and the reason is that fat is a residue just as semen is, i.e., it is blood that has been concocted, only not in the same way as semen. Hence it is not surprising that when the residue has been consumed to make fat, the semen is deficient. . . . (2) Here is an indication that the female does not discharge semen of the same kind as the male, and that the offspring is not formed from a mixture of two semens, as some allege. Very often the female conceives although she has derived no pleasure from the act of coitus; and on the contrary side, when the female derives as much pleasure as the male, and they both keep the same pace, the female does not bear, unless there is a proper amount of menstrual liquid (as it is called) present.

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By now it is plain that the contribution which the female makes to generation is the *matter* used therein, that this is to be found in the substance constituting the menstrual fluid, and finally that the menstrual fluid is a residue.

There are some who think that the female contributes semen during coition because women sometimes derive pleasure from it comparable to that of the male and also produce a fluid secretion. This fluid, however, is not seminal; it is peculiar to the part from which it comes in each several individual; there is a discharge from the uterus, which though it happens in some women does not in others. Speaking generally, this happens in fair-skinned women who are typically feminine, and not in dark women of a masculine appearance. Where it occurs, this discharge is sometimes on quite a different scale from the semen discharged by the male, and greatly exceeds it in bulk. Furthermore, differences of food cause a great difference in the amount of discharge produced: e.g. some pungent foods cause a noticeable increase in the amount.

The pleasure which accompanies copulation is due to the fact that not only semen but also *pneuma* is emitted: it is from this *pneuma* as it collects together that the emission of semen really results. This is plain in the case of boys who cannot yet emit semen, though they are not far from the age for it, and in infertile men, because all of them derive pleasure from attrition. Indeed, men whose generative organs have been destroyed sometimes suffer from looseness of the bowels caused by residue which cannot be concocted and converted into semen being secreted into the intestine.

Further a boy actually resembles a woman in physique, and a woman is as it were an infertile male; the female, in fact, is female on account of inability of a sort, viz. it lacks the power to concoct semen out of the final state of the nourishment (this is either blood, or its counterpart in bloodless animals) because of the coldness of its nature. Thus, just as lack of concoction produces in the bowels diarrhoea, so in the blood vessels it produces discharges of blood of various sorts, and especially the menstrual discharge (which has to be classed as a discharge of blood, though it is a natural discharge, and the rest are morbid ones).

Hence, plainly, it is reasonable to hold that generation takes place from this process; for, as we see, the menstrual fluid is semen, not indeed semen in a pure condition, but needing still to be acted upon. It is the same with fruit when it is forming. The nourishment is present right enough even before it has been strained off, but it stands in need of being acted upon in order to purify it. That is why when the former is mixed with the semen, and when the latter is mixed with pure nourishment, the one effects generation, and the other effects nutrition.

An indication that the female emits no semen is actually afforded by the fact that in intercourse the pleasure is produced in the same place as in the male by contact, yet this is not the place from which the liquid is emitted. . . . Here is an indication that semen resides in the menstrual discharge. As I said before, this residue is formed in males at the same time of life as the menstrual discharge becomes noticeable in females; which suggests that the places which are the receptacles of these residues also become differentiated at the same time in each sex; and as the neighbouring places in each sex become less firm in their consistency, the pubic hair grows up too. Just before these places receive their differentiation, they are swelled up by *pneuma*: in males this is clearer in regard to the testes, but it is also to be noticed in the breasts; whereas in females it is clearer in the breasts; it is when the breasts have risen a couple of fingers' breadth that the menstrual discharge begins in most women.

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The male provides the 'form' and the 'principle of the movement', the female provides the body, in other words, the material. Compare the coagulation of milk. Here the milk is the body, and the fig-juice or the rennet contains the principle which causes it to set. The semen of the male acts in the same way as it gets divided up into portions within the female.

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Consider now the physical part of the semen. (That is which, when it is emitted by the male, is accompanied by a part of the soul principle and acts

as its vehicle. Partly this soul principle is separable from physical matter – this applies to those animals where some sort of divine element is included, and what we call reason is of this character – partly it is inseparable.) This physical part of the semen, being fluid and watery, dissolves and evaporates; and on that account we should not always be trying to detect it leaving the female externally, or to find it as an ingredient of the foetus when that has set and taken shape, any more than we should expect to trace the fig-juice which sets and curdles milk. The fig-juice undergoes a change; it does not remain as a part of the bulk which is set and curdled; and the same applies to the semen.

We have now determined in what sense fetations and semen have soul and in what sense they have not, they have soul *in potentiality*, but not in *actuality*.

As semen is a residue, and as it is endowed with the same movement as that in virtue of which the body grows through the distribution of the ultimate nourishment, when the semen enters the uterus it sets the residue produced by the female and imparts to it the same movement with which it is itself endowed. The female's contribution, of course, is a residue too, just as the male's is, and contains all the parts of the body *potentially*, though none in *actuality*; and all includes those parts which distinguish the two sexes. Just as it sometimes happens that deformed offspring are produced by deformed parents, and sometimes not, so the offspring produced by a female are sometimes female, sometimes not, but male. The reason is that the female is not it were a deformed male; and the menstrual discharge is semen, though in an impure condition: i.e. it lacks one constituent, and one only, the principle of soul.

2 Galen, *On the usefulness of the parts of the body*

Galen's writings were the physiological base for all medical knowledge and practice until the eighteenth century. Text from: Galen. *On the usefulness of the parts of the body*, transl. Margaret Tallmadge May, Cornell University Press, 1968, vol. II, pp. 630–2.

Now just as mankind is the most perfect of all animals, so within mankind the man is more perfect than the woman, and the primary instrument. Hence in those animals that have less of it, her workmanship is necessarily more imperfect, and so it is no wonder that the female is less perfect than the male by as much as she is colder than he. In fact, just as the male has imperfect eyes, though certainly not as imperfect as they are in those animals that do not have any trace of them at all, so too the woman is less perfect than the man in respect to the generative parts. For the parts were formed within her when she was still a foetus, but could not because of the

defect in the heat emerge and project on the outside, and this, though making the animal itself that was being formed less perfect than one that is complete in all respects, provided no small advantage for the race: for there needs must be a female. Indeed you ought not to think that our creator would purposely make half the whole race imperfect and, as it were, mutilated, unless there was to be some great advantage in such a mutilation.

2. Let me tell what this is. The foetus needs abundant material both when it is first constituted, and for the entire period of growth that follows.... Accordingly it was better for the female to be made enough colder so that she cannot disperse all the nutriment which she concocts and elaborates.... This is the reason the female was made cold, and the immediate consequence of this is the imperfection of the parts, which cannot emerge on the outside on account of the defect in the heat, another very great advantage for the continuance of the race. For, remaining within, that which would have become the scrotum if it had emerged on the outside, was made into the substance of the uteri, an instrument fitted to receive and retain the semen and to nourish and perfect the foetus.

3. Forthwith, of course, the female must have smaller, less perfect testes, and the semen generated in them must be scantier, colder and wetter (for these things too follow of necessity from the deficient heat). Certainly such semen would be incapable of generating an animal.... The testes of the male are as much larger as he is the warmer animal. The semen generated in them, having received the peak of concoction, becomes the efficient principle of the animal. Thus from one principle, devised by the creator in his wisdom, that principle in accordance with which the female has been made less perfect than the male, have stemmed all these things useful for the generation of the animal: that the parts of the female cannot escape to the outside; that she accumulates an excess of useful nutriment and has imperfect semen and a hollow instrument to receive the perfect semen; that since everything in the male is the opposite (of what it is in the female), the male member has been elongated to be most suitable for coitus and the excretion of semen; and that his semen itself has been made thick, abundant, and warm.

GYNAECEA

Gynaecae collected up-to-date medical texts and published them for physicians and surgeons during the sixteenth and early seventeenth centuries. This particular edition by Spachius combined all the earlier works. Text from: Johann Spachius, ed. *Gynaecae* 1597, transi. Stephen O'Connor, 1994, pp. 774-7, 803-6.

Martin Akakia, *On women's illnesses*

On the procreation of humankind and the nature of woman

Since of the two originators of generation, one corresponds to form, the other to matter, the female seeks the male in the same way as matter seeks form, and the more perfect the species to which the female belongs, as in the human race, the more the female desires the male, because the more efficient is sought by the woman, since she has greater knowledge than the female in other animals. And as the female seeks males, so the male seeks females. But also in the human race, nature, because of the nobility of the species, does not distort this attraction: the males seek so that they may be emptied, the females so that they may be filled. This goes back, as we understand, to the Peripatetics: that the female only gives place and matter to future generations, but does not provide seed for generation. So ch. 20, book 1 of *De generatione animalium* says that a woman is like a man without seed, and has a certain impotence, which is established partly by probable reasons and partly by necessity. The probable are, that a woman in copulation excretes a certain fluid (of the kind which lubricates the genitals) yet it does not carry seed, but belongs to the womb since its large quantity exceeds the amount of semen. Secondly, that in conception the same thing happens as in the curdling of milk: for the body or matter is the milk, the sap is the curdling agent or cause of the reaction. So in conception the female supplies matter only, namely the blood, the male provides the form, that is to say the semen... but there is one form of one thing, not many: therefore if male and female were to make semen for generation, since semen contains the principle of form, it should follow that there is a double form of the one that is generated, seeing that there are two seeds. Therefore as there can only be one form for one thing, so there can only be one originator containing that form, therefore one semen.

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When I say man and woman I am putting them in the prime of life, neither growing up nor growing old, but that perfect age in which both can be said to be perfect: although the prime of life does not always produce semen that generates, because as Aristotle says, ch. 18, book 1, *De gen. animal.*: some have too little semen, others do not ejaculate anything, not through inability but because they carry less in the body and they become fleshier and fatter: for fattening goats have less semen, or none. Besides it is established in book 1, *De semine* ch. 9 and *De gen. animal.* ch. 4, book II, in certain species even at the perfect age semen which is ejected at the first copulation is less generative, but is more so at the second and the third,

although reason would seem to hold the opposite. But it happens accordingly because at the first copulation certain discharges, moist and full of phlegm are mixed with it, and it is shown from ch. 1, book vii, *De historia animalium*. . . . And Aristotle has written this in ch. 18, book 11, *De generatione animalium*, that menstrual fluid in virgins and semen in the effeminate, and in those not yet in puberty and in the infertile is lacking altogether or at least there is very little. Although, it is true, vigorous old age and puberty carry semen, it is either infertile or at least of the kind that from it only women are born. Aristotle defines vigorous old age (ch. 6, book vii, *De historia animalium*) in males at 60 or at most 70, which is the latest point at which young can be generated: in women up to their fiftieth year is very rare. Generally speaking 56 is the end of procreation for males and 45 for females. Puberty he defines at 14, since the voice in the males begins to deepen and the testes to swell and the genitals to be covered with hair. So in woman at 12, for by that time, the menstrual cycle has begun and the breasts swell. In both, the semen is not fruitful, according to Aristotle ch. 1, book vii, *De hist. anim.*. . . . For the first emission of semen in the young is either infertile or if it is fertile, procreates imbeciles only or smaller offspring. This being the case, Plato in the *Republic* recommends that men should not marry before they are 30 and women not before 20, and he requests that a man refrain from this activity at 55 and a woman at 40, because between these ages animal vigour is whole, but either side of them it is not. Aristotle is not very different from his master: in ch. 6, book vii of the *Politics* he says that the end of fertility for men is 70, for women 50, and that they should so marry that they reach this limit in age at the same time. For he says that the union of adolescents lacks the skill for procreating children, because births are imperfect and a woman is born more frequently than males, and they are of short stature, from which arises the conjecture that in those states in which it is the custom for adolescent males to marry young girls, there are maimed and weak bodied men. For self-control it is also useful to marry later: for those who grow accustomed too soon to making love become wanton. They also stunt the growth of their bodies if they have sex before they are fully-grown. For this reason girls ought to marry at 18, men at 36: for at this time their bodies are large and at the same time by their advancing age they mark themselves out to procreate suitably. And children should not be too distant in age from their father, so that they may show gratitude to their fathers and for their part their parents have the ability to help their sons. But equally they should not approach too closely their father's age, for when this happens children do not show sufficient respect towards their parents, seeing as they are almost equals. Be that as it may, however, it is not wise to wait to this limit in time when it is possible to achieve procreation before turning one's attention to having children: for as of too young men, so of too old: the offspring are imperfect

in body and mind [*Politics*, ch. 17, book vii], so that time should be most approved when firstly the intelligence is flourishing and the body is strong: that is mostly around the age of 50. Therefore those who have gone 4 or 5 years beyond this age should abandon all thought of procreation and henceforth practise sex for reasons of health or some other cause: such as for instance to relieve themselves of a build-up of seminal fluid. For men if they are wise will only copulate to have children or to release redundant semen, since its retention might be harmful, but not for pure pleasure, as ignorant men do.

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Males are born more in northern winds than southern and there are some shepherds who say that it is of great importance to the breeding of male or female sheep not only if copulation occurs in northern or southern winds, but also whether, when the sheep copulates, it is facing north or south. Winter time, as approved by Aristotle ch. 6, book vii, *Politics*, is the proper time for love-making, in which Aristotle agrees with Hesiod who said that males were more suited to sexual activity in the winter, and women in the summer. Hippocrates, *De superf.* said that spring was the most suitable season for both sexes, on account of the inequality of all qualities, although it is ridiculous to want to define a time of copulation for women, because, as Hippocrates said, *De genit. mulier*, the more a woman indulges in sex the healthier she is: the less she does so, the less healthy she is.

Ludovic Mercatus, On the common conditions of women

The difference between the sexes

For the principle of the generation of an animal is that there is male and female (the male to provide the motion and origin of the generation, the female to provide the matter) and it is proved by Aristotle by many more reasons: for to give effect to what is generated it was necessary for the man's seed to be received in some part where it might fall to the task, for which, as it were most suitable place, nature has created the womb. There was without doubt among all philosophers, astronomers, and other most scholarly men such evident and proven reason for the distinction of sex that no one is in any doubt that the most powerful cause of the fecundity of all things lies in the distinction of sex. . . . For I think it is clear to them that if male adheres to the male sex, or female to the female sex, or happens to contemplate the same, production will cease and congress be made sterile. But if opposites pursue each other, male combines with female or female with male, everything springs up out of the influx and is fertile and full in that time. And for not

disimilar reasons philosophers think that the first principles and elements of all things in the making of combinations display the strongest alternation of male and female, believing that fire is the father and author of every combination, whereas earth is the mother. Thus Plato in the *Timaeus* affirmed that the world is evidently established of these two elements, as though of parents. Fire is without doubt the author and 'man' of all actions: earth, as it were, the nurturer and refuge like a mother, by the best of rights and rejoicing in that name, by the judgement of all philosophers.

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So I think that it has been proved that the female sex stands side-by-side with men in association, not in union. Now it remains to prove that there should be mutual mingling. This the blessed Thomas assuredly proves in an elegant argument when he says: it was necessary for woman to be created to help man, for woman assists in generation. This is seen as a proof against those who assert that a woman was necessary to perform other functions together with man. But woman was given to man for the sole function of generation, by which he proves that man alone was not sufficient to perform the task of generation and consequently, although he is fit for generation, he requires assistance. Such was woman, and, therefore, necessary. From this it proves that woman is necessary for the function of generation. For it is necessary that animals which exist in nature exist as a result of genital semen and menstrual blood. These must be provided by male and female, and these origins were necessary both in animals and humans, in whom it was impossible that all the suitable power of generation should emanate from one sex alone. And so it was necessary not only to be different in power but also in parts of the body, in which male and female certainly differ. The male receives parts marked by shape and position for the purpose of generation, the female receives others.... Therefore some parts suitable for procreation are required and they are in themselves various and different for male and female. For although (as Aristotle rightly observes) the whole animal may be called male or female, no part or function of it is male or female except in a certain fixed virtue and part. So those parts which are separate and distinct, since they are unable alone to fulfil the function of generating, should be brought together. A necessary joining of male and female is therefore required for procreation. From which it is clear (as Aristotle reports) that Empedocles spoke truly when he said that it was a symbol of male and female that the whole is performed by neither, and that the same things do not come out from both: therefore the one desires the copulation and bonding of the other, in which the female provides matter, the male the principle of motion.... And since generation proceeds from joining and copulation (which cannot in any way be performed without the joining of male and

In male) it is evidently necessary that certain matter is emitted from both, in which the power and capacity in them generates a third. We have set down all the causes why male and female are necessary for copulation and cannot fulfil the function of generation without the other; that although the male has power to beget, he does not have the place in which what has been conceived might be shaped and formed: while the female has places suitable for containing and shaping the conception, but lacks the principle: so it is that neither can produce a perfect foetus without the other. By which it can be demonstrated that in all things, and especially in animals and with even stronger cause in humans, it was necessary to have distinction of sex for the reasons I have adduced...

On the irritation and hysteria of the womb

Womb hysteria, whose nature belongs partly to the natural appetite of the womb which has been damaged by upsetting its equilibrium, and in part to the brain, which the womb draws also into partnership. Womb hysteria (as I shall call it from the beginning: for in calling it thus the other conditions which are similar to it will easily be noted) is therefore an immoderate and unbridled desire to copulate, so strong and unquenchable that the woman appears mad and delirious as a result of this excessive and insatiable appetite. Concerning such a condition one should consider first the kind of disease that has taken hold, what its symptoms are and by what causes they are produced.

Actius⁷ supposes quite rightly that the disease is a hot distemper of the womb, which I do not think is the case with any form of distemper, but only that which is excessive and virtually habitual, and is therefore malignant, which you can readily infer from the words of the same author. We are to conclude that this distemper lies in that part of the womb where the appetite is strongest, rather like priapism in men. For although the whole substance of the womb has the natural appetite of taking in semen... the whole neck of the uterus and most strongly its mouth, have the power to copulate and to derive pleasure from this: and these parts require intense heat to become active, which occurs in this condition. From such an imbalance taking place in the aforesaid parts an immoderate appetite is produced, just as thirst is said to proceed from heat and hunger from cold, in the mouth of the belly. For since natural appetite arises when there is moderate heat, so also the same appetite grows as the heat increases, but not of every one, but only of that which extends beyond the natural mean and has also become congenital and produces an appetite in the manner of a natural one. Just as surely as bulimia or unquenchable thirst occur in the mouth of the belly, an implacable desire to copulate occurs and arises in parts of the womb as a result of the aforesaid

cause, which is not satisfied by any copulation, and does not rest, a certain kind of moisture assisting this action as well as the aforesaid heat. . . . Add to this (so that the whole nature of the condition might be set out) the error of the guiding powers of the brain emanating from the vapours issuing forth from the heated semen and menstrual blood, which when they reach the head arouse a frenzy in the mind and this irrational appetite: it is for this reason that doctors call such a condition womb hysteria.

Helkiah Crooke, *Microcosmographia*

Crooke's work combines and comments on both popular and medical learning about the human body. Text from the first edition, 1618, pp. 270–2, 276.

Where the history of the infant is accurately described, as also the principles of generation, the conception, the conformation, the nourishment, the life, the motion and the birth of the infant, as near as may be according to the opinion of Hippocrates

Question 1: Of the difference of the sexes Aristotle in his books of the history and generation of creatures doth often inculcate that the difference of sexes is most necessary unto perfect generation, which is also sufficiently proved by the final cause the most noble of all the rest, moving the other causes itself remaining immovable. For as in the seed of a plant, the power of the whole tree is potentially included and contained, which notwithstanding never breaketh into act unless that act is stirred up by the heat of the earth, right so the seeds of the parents containing in them the idea or form of the singular parts of the body are never actuated, never exhibit their power and efficacy unless they be sown and, as it were, buried in the fruitful field or garden of nature, the womb of the woman.

It was therefore necessary that there should be a double creature, one which should beget another, and another that should generate in itself: the first we call a male, the second a female. The male is originally the hotter and therefore the first principle of the work, and besides affordeth the greater part of the formative power or faculty. The female is the colder, and affordeth the place wherein the seed is conceived and the matter whereby the conception is nourished and sustained, which matter is made of the crude and raw remainders of her own aliment.⁸ The place is the womb, which by a natural disposition looseth the bonds wherein the spirit of the seed is fettered, and withal helpeth to add vigour and efficacy thereunto. For if the seed should be poured into any other part of the body it would not be as we use to say, conceived, but putrefied, not preserved but corrupted. The matter

whereby the seed is nourished is the mother's blood. The excrement or surplusage rather the last aliment of the fleshy parts.

This difference of the sexes does not make the essential distinction of the creature, the reasons are: first because (as Aristotle saith in his second book *De generatione animalium* and the 4. chapter and in his 4. book *De historia animalium* and the 17. chapter) in all creatures there is not this distinction or diversity of sexes. Secondly, because essential differences do make a distinction of kinds, now we know that the male and female are both one kind, and only differ in certain accidents. But what these accidental differences are is not agreed upon as yet.

The peripatetics think that nature ever intendeth the generation of a male, and that the female is procreated by accident out of a weaker seed which is not able to attain the perfection of the male. Wherefore Aristotle thinketh that the woman or female is nothing else but an error or aberration of nature, which he calleth by a metaphor taken from travellers which miss of their way, and yet at length attain their journey's end; yea he proceedeth further and saith that the female is a *by-work* or prevarication, yea the first monster in nature.

Galen in the 6. and 7. chapters of his 14. book *De usu partium* following Aristotle something too near, writeth that the formative power which is the seed of man being but one, doth not always intend the generation of one, that is male; but if she err from her scope and cannot generate a male, then bringeth she forth the female which is the first and most simple imperfection of a male, which therefore he calleth a creature lame, occasional and accessory, as if she were not of the main, but made by the by.

Now herein he putteth the difference betwixt her and the male, that in males the parts of generation are without the body, in females they lie within because of the weakness of the heat which is not able to thrust them forth. And therefore he saith that the neck of the womb is nothing else but the virile member turned inward and the bottom of the womb nothing but the scrotum or cod inverted.

But this opinion of Galen and Aristotle we cannot approve. For we think that nature as well intended the generation of a female as of a male: and therefore it is unworthily said that she is an error or a monster in nature. For the perfection of all natural things is to be esteemed and measured by the end: now it was necessary that woman would be so formed or else nature must have missed of her scope because she intended a perfect generation, which without a woman cannot be accomplished.

Those things which Galen urgeth concerning the similitude of the parts of generation or their differing only in site and position, many men do esteem very absurd. Sure we are that they savour very little of the truth of anatomy, as we have already proved in the book going before, wherein we have showed

how little likeness there is betwixt the neck of the womb and the yard, the bottom of it and the cod. Neither is the structure, figure, or magnitude of the testicles one and the same, nor the distribution and insertion of the spermatic vessels alike; wherefore we must not think that the female is an imperfect male differing only in the position of the genitals.

Neither yet must we think that the sexes do differ in essential form and perfection, but in the structure and temperature of the parts of generation.

The woman hath a womb ordained by nature as a field or seed-plot to receive and cherish the seed, the temper of her whole body is colder than that of a man because she was to suggest and minister matter for the nourishment of the infant. And this way Aristotle in the second chapter of his first book *De generatione animalium* seemeth to incline where he saith that *the male and female do differ as well in respect as in sense*: in respect because the manner of their generation is diverse: for the female generateth in herself, the male not in himself, but in the female: in sense, because the parts appear other and otherwise in the sexes. The parts of the female are the womb, and the rest which by a general name are called *matrices*, the parts of a man are the virile member and the testicles. And so much shall be sufficient to have been concerning the difference of the sexes. But because there is more difference of the tempers in men and women, we will insist somewhat more upon the point.

* * *

That females are more wanton and perulant than males, we think happeneth because of the impotency of their minds: for the imaginations of lustful women are like the imaginations of brute beasts which have no repugnancy or contradiction of reason to restrain them. So brutish and beastly men are more lascivious, not because they are hotter than other men, but because they are brutish. Beasts do couple not to engender but to satisfy the sting of lust: wise men couple that they might not couple.

That women's testicles are hidden within their bodies is also an argument of the coldness of their temper, because they want heat to thrust them forth. Yet for all this we do not say that women do generate more than men, for they want the matter and the spirit. Indeed they have more blood, as we said even now, and that is by reason of their cold temperament which cannot discuss the reliques of aliment: add hereto that the blood of women is colder and rawer than the blood of men. We conclude therefore that universally men are hotter than women, males than females, as well in regard of their natural temper as that which is acquired by diet and the course of life.

But now I had need here to apologise for myself in speaking so much of women's weakness: but they must attribute something to the heat of disputation, most to the current stream of our authors, least of all to me who

will be as ready in another place to flourish forth their commendations as I am here to huddle over their natural imperfections.

Nicolas Culpeper, *A directory for midwives; or a guide for women in their conception, bearing and suckling their children*

Culpeper's work aimed at a popular audience, rather than just midwives. It was reprinted many times. It aimed to cover all areas of women's health and illness, although the focus is inevitably on sexual health and the experience of maternity. Text from: the first edition, 1651, pp. 21–8, 29–31, 40–3.

The anatomy of the vessels of generation

Of the genitals in women Having served my own sex, I shall see now if I can please the women who have no more cause than men (that I know of) to be ashamed of what they have, and would be grieved (as they had cause, for they could not live), if they were without: but have cause, if they rightly consider of it, to thank me for telling them something they knew not before. I shall divide it into these chapters: 1. Of the privy passage. 2. Of the womb. 3. Of the stones. 4. Of the spermatic vessels. (All these are far more exactly described in Vesalingius, *Anatomy in English*.⁹ And also in Riolan's *Anatomy* they are most clearly described with the diseases incident to those parts. And for the cure of diseases, see Riverius *Practice of Physic*.¹⁰ in English.)

Of the privy passage In this I shall consider but these seven following parts.

1. The lips which are visible to the eye at the first sight, they are framed out the common coverings of the body, and have pretty store of spongy fat: this use is to keep the internal parts from cold and dust.

2. The *nyphae*¹¹ or wings which appear when the lips are severed, they are framed of soft and spongy flesh and the doubling of the skin placed at the sides of the neck: they compass the *clitoris*, and in form and colour resemble the comb of a cock.

3. The *clitoris* is a sinewy and hard body, full of spongy and black matter within, as the side ligaments of the yard¹² are, in form it resembles the yard of a man and suffers erection and falling as that doth: this is that which causeth lust in women, and gives delight in copulation, for without this a

woman neither desires copulation or hath pleasure in it, or conceives by it. Some are of opinion, and I could almost afford to side with them, that such kind of creatures they call *hermaphrodites*, which they say bear the genitals both of men and women, are nothing else but such women in whom the *clitoris* hangs out externally, and so resembles the form of the yard, leave the truth or falsehood of it to be judged by such who have seen them anatomised: however, this is agreeable both to reason and authority, that the bigger the *clitoris* is in women, the more lustful they are.

4. Under the *clitoris* and above the neck is the passage of the women's urine, so that the urine of the woman comes not through the neck of the womb, neither is the passage of the urine common as in men, but particular and by itself: therefore in injections for suppressing of urine in women or the like, you may, if you have not a care, easily err by putting the syringe into the neck of the womb instead of the passage of urine.

5. Near this are four caruncles, or fleshy knobs, which because they resemble the form of myrtle berries the Latins call them *myrtiformis*: these are round in virgins, but hang flagging when virginity is lost; the uppermost of them is largest and forked, that so it may receive the neck of the passage of urine, the other are below this on the sides, they all keep back both air and other things from entering the neck of the womb.

6. In virgins these caruncles or knobs are joined together with a thin and sinewy skin or membrane, interlaced with many small veins which hath a hole in the midst, through which the menstrual blood passeth, about the bigness of one's little finger in such as are grown up, this is that noted skin which is called *hymen* and is a certain note of virginity wherever it is found, for the first act of copulation breaks it. I confess much controversy hath been amongst anatomists concerning this: some holding there is no such thing at all; others that it is, but it is very rare; the truth is most virgins have it, some hold all; I must suspend my judgement till more years bring me more experience; yet this is certain, it may be broken without copulation, as it may be gnawn asunder by defluxion of strong humours, especially in young virgins because it is thinnest in them; as also by unkind applying of pessaries to provoke the terms; and how many ways else, God knows . . .

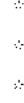
Of the womb Hippocrates in his first book of the diseases of women affirms, that the often use of the act of copulation makes the womb slippery and hinders conception. As also that though authors say it is the inversion, or hardness, or ulcers, or scars of the womb hinders conception by such means as I recited, it is not probable to me: for nature, being set in the world by the eternal God for the increase and multiplication of things in the elementary world, hath placed a magnetic virtue in the womb that it draws the seed to it, as the loadstone draws the iron, or the fire the light of a candle.

I rather think therefore that the reason these hinder conception is this: because the womb is so bruised in succouring itself that it cannot perfect any conception: you know that a man that is sick and wounded cannot work, though his work lie beside him . . .

*(Of the stones)*¹³ The stones of women (for they have such kinds of toys as well as men) differ from the stones of men:

1. In place: for they are within the belly in women, but without in men.
2. In magnitude: for they are less in women than in men.
3. In form: for they are uneven in women, but smooth in men.
4. They are not stayed in women by muscles, but by ligaments.
5. They have no prostates.
6. They differ in figure, for they are depressed in, or flattish, in women, but oval in men.
7. They have but one skin whereas men have four; and the reason is because men are exposed to the cold as being without the belly: so are not women's.
8. Their substance is more soft than in men.
9. In temperature they are colder than men's are.

13. Use of stones in women are the same that they are in men viz. to concoct food, and of this judgement was Hippocrates in ancient days, and yet Aristotle had the face to deny that women had any seed at all, though against such reason and experience. Also Jovian Pontanus in his *Celestial Observations* goes about to prove the very same thing in the moon, which Aristotle states in women: he affirms that the moon only provides matter for the sun to work upon in the generation of things here below, even as the female doth in the male in the generation of man; and that he learneth of Aristotle, and he confesses; but those that have studied Hermetical philosophy know well enough that the moisture which the moon bestows upon the earth hath an active principle in it, yea such an active principle that the world cannot do without it, nor philosophers operate without it.



The formation of the child in the womb Having spoken of the proper parts of the child, we come next to speak of its formation. But before I begin this, let me leave to premise that this is the difficultest piece of work in the whole book, nay in the whole study of anatomy because such anatomies are hard to be gotten, most women that lie on their death-beds, when they are with child, miscarry before they die, if not all; besides Galen never saw a woman anatomised in his lifetime, as I shall prove by and by (and yet our anatomies

follow him as a little god a-mighty and his *ipse dixit* [*he himself has said it*] serves the turn; and so the blind leading the blind, you know what will come of them both). *Columbus*¹⁴ is the most rational in this point that I know; the rest, some follow Galen, some Vesalius, some their fancies, and some quibble about it. Myself saw one woman opened that died in child-bed not delivered, and that is more by one than most of our dons have seen, yet they are as confident as Aescop's crow was that he was an eagle, but he was made a mocking stock to the boys for his labour; and so will they be shortly for their foolish model of physic, that I may give it no worse name.

And then secondly, I hope you will give me leave to be a little critical: for there is need enough if you knew but so much as I, if I commit any failings they are unknown to me, let the honesty of my intentions deface them with a *defectur* [*let it be deleted*]. Now to the business.

1. The testicles or stones of a woman are for generation of seed, where many times (if the doctors and surgeons were not high base and denied your admittance) you might see it in an anatomy, white, thick, and well concocted.
2. In the act of copulation, the woman spends her seed as well as the man, and both are united to make the conception.
3. The reason why sometimes a male is conceived, sometimes a female, is the strength of the seed: for if the man's seed be strongest, a male is conceived; if the woman's a female. The greater light obscures the lesser by the same rule, and that's the reason weakly men get mostly girls, if they get any children at all.

Nicholas Fontanus, *The woman's doctor*

This textbook was aimed at English physicians and lay readers. Text from: the first edition, 1652, pp. 11ff, 51–60.

Women's diseases

Of the consent between the diseases of the matrix, and those of the other parts
Women were made to stay at home and to look after household employments, and because such business is accompanied with much ease, without any vehement stirrings of the body, therefore hath provident nature assigned them their monthly courses, that by the benefit of those evacuations, the feculent and corrupt blood might be purified which otherwise as being the purest party of the blood, would liable to take poison should it remain in the body and putrefy, like the seed ejaculated out of its proper vessels. Hippocrates had a perfect understanding of these things, as may appear by

those words, in his book, *De locis in homine*, where he saith that the matrix is the cause of all those diseases that happen to women; and it is no strange thing, which he speaketh, for the matrix hath a sympathy with all parts of the body; as with the brain by nerves and membranes of the parts about the spine, from whence sometimes ariseth the pains in the fore part, and then hinder part of the head; with heart also, both by the spermatie and the epigastric arteries, or those that lie about the abdomen at the bottom of the belly; from hence cometh the pain of the heart, fainting and swoounding fits, the passion of the heart, anxiety of mind, dissolution of the spirit, insomuch as you cannot discern whether a woman breathes or not, or that she hath any pulse; it hath likewise a consent with the breasts, and from hence proceed those swellings, that hardness, and those terrible cancers that afflict those tender parts, that a humour doth flow upwards from the matrix to the breasts, and downwards again, from the breasts to the matrix, is the unanimous assertion of Galen, Hippocrates . . . and others; moreover it hath a sympathetic with the liver, and thus the sanguification is perverted, and the body inclines to a dropsy; and with the stomach and kidneys also, as those pains which great-bellied women do feel, and the torments which some virgins undergo, when they have their courses, sufficiently witness. And lastly, Hippocrates hath taught us, that this consent holdeth with the bladder and the straight gut, for, saith he, when that part is enflamed, then the urine cometh away by drops; and the patient hath frequent desires and solicitations to go to stool, but without any performance.

Women's diseases are divided into four classes, whereof the first containeth the diseases that are common to all women: the second comprehendeth such as are peculiar to widows and virgins; the third part specifieth those effects that concern barren women, and such as are fruitful; and the fourth treateth of such diseases as befall women with child, and nurses; of all which we shall now speak, one after another in their order.

Those diseases that are common both to widows and wives, both to barren women and women that are fruitful, as also to young maids and virgins, proceed from the retention or stoppage of their courses, as the most universal and most usual cause; when these come upon them in a due and regular manner, their bodies are preserved from most terrible diseases; but otherwise they are immediately subject to the falling sickness, the palsy, the consumption, the whites,¹⁵ the mother, the melancholy, burning fevers, the dropsy, inward inflammations of all principal parts, the suppression of the urine, nauseating, vomiting, loathing of meat, yexing,¹⁶ and a continual pain in the head, arising from ill vapours communicated from the matrix to the brain.

Wives are more healthful than widows or virgins, because they are refreshed with the man's seed, and ejaculate their own, which being excluded, the cause of the evil is taken away. This is evident from the words of

Hippocrates, who adviseth young maids to marry, when they are thus troubled. That women have stones and seed, no true anatomist will deny. The woman's seed, I confess, in regard of the small quantity of heat, is more imperfect than the seed of the man, yet it is most absolute in itself, and fit for generation. Another cause also may be added, besides that which is alleged from Hippocrates, namely that married women by lying with their husbands, do loosen the passages of the seed, and so the courses come down more easily thorough them. Now in virgins it falls out otherwise, because the blood is stopped by the constipation and obstruction of the veins and, being stopped, putrefies, from which putrefaction gross vapours do arise, and from thence the heaviness of mind and dullness of spirit; a benumbedness of the parts; timorousness, and an aptness to be frightened, with a sudden propensity to fall into fits of the mother, by reason of much blood oppressing and burthening the heart; also continual anxiety, sadness, and want of sleep, with idle talking, and an alienation of the mind. But that which most commonly afflicts them is a difficulty and pain to fetch their breath, for the chest by a continual dilatation and compression, draweth the blood from the matrix to itself in a large proportion, and sometimes produceth asthmatical effects. But what shall we say concerning widows, who lie fallow and live sequestered from these venerous conjunctions? We must conclude that if they be young, of a black complexion and hairy, and are likewise somewhat discoloured in their cheeks, that they have a spirit of salacity, and feel within themselves a frequent titillation, their seed being hot and prurient, doth irritate and inflame them to venery, neither is this concupiscence allayed and qualified but by provoking the ejaculation of the seed: as Galen propounds the advice in the example of a widow who was afflicted with intolerable symptoms, till the abundance of the spermatric humour was diminished by the hand of a skilful midwife, and a convenient ointment. Which passage also furnishes us with this argument that the use of venery is exceeding wholesome if the woman will confine herself to the laws of moderation, so that she feel no wearisomeness, nor weakness in her body, after those pleasing conflicts.

Most certain it is, that barren women are more tormented with sickness, than those who are fruitful, because they who have children live in a more healthful condition, by reason of opening of the veins, and the coming away of the superfluous blood, which being of an earthy and feculent substance, must needs introduce prodigious symptoms in the bodies of other women, who have no seasonable means to vent and purge it out, and daily experience doth witness it to the private consideration of such women, that very many obstructions breed in their livers, mesenteries¹⁷ and matrices. That women in childbed also, and such as nurse their own children, are subject to most bitter and vehement affects, Galen doth daily teach us, by an undeniable reason; for whereas the child in the womb is nourished by the sweetest, fattest, and most

elaborate part of the menstruous blood, in its own nature filthy and dreggish, when the woman is delivered that blood is forcibly evacuated by a critical kind of motion and violent ebullition, whereupon the spirits are exhausted and the feeble creature is precipitated into mortal infirmities, as fainting fits, incredible torments and frequent soundings . . .

Of the mother That disease which we commonly call the mother, the physicians term the strangulation or suffocation of the matrix, and sometimes the ascent of the matrix. Galen took it to be a drawing back of the matrix to the upper parts. Hereupon some of the ancients conceived the matrix to be some straggling creature, wandering to and fro thorough several parts, to which fantastical conceit, Fernelius¹⁸ . . . contributed a credulous assent; for though a woman be dead, yet can you not with an ordinary strength remove the matrix from the natural place; neither is that reason, which Fernelius allegeth, of any moment, who saith that in these diseases he hath touched it upwards, seeing that this is not the true matrix, but a gross windy swelling of a roundish figure, and somewhat resembling the matrix; you will say the matrix doth remove, and slip from its proper place; I grant it, for by reason of the moisture, wherewith these parts abound, the matrix is loosened and exceedingly stretched: and this is the truth of the whole matter.

The cause of this disease is twofold: the retention of the seed and the menstruum, which are the material cause; and a cold and moist distemper of the matrix, breeding phlegmatic and thick juices, which is the efficient cause. For when the seed is retained and the menstruum hath not the customary and usual vent, they burthen the matrix and choke and extinguish the heat thereof. Then upon the diminishment of the natural heat, windy humours are bred, especially in the matrix, which by nature is a cold, nervous and bloodless part; after the same manner, if the seed be kept too long, it disturbeth the function of the spiritous parts and the midriff, it oppresseseth the heart, causeth fainting and sounding fits, bindeth as it were and girdeth about the parts, and seems in such a manner to stop the breath that the sick woman is in danger to be strangled. Her pulse is sometimes weak, various and obscure. She hath inward discontents and anxieties, and is most commonly invaded by, at least very subject unto, convulsion fits. She lies as if she were astonished and void of sense and from her belly you may hear rumbling and murmuring noises. She breatheth so weakly that it is scarce discernible, and indeed she is so sad an object that the bystanders may easily mistake her to be dead. The drowsy and sleepy disease called carus differs from this, because those who are affected with it, have the use of their breath free, without any molestation: and it differs from catalepsy, another drowsy disease casting the sick into a profound and dead sleep, because they who are

taken with that lie without any motion, but they who have the mother are tormented with convulsion fits, their legs and their hands are stretched and writhed into unusual figures, and strange postures; and by this it is indistinguishable from an apoplexy, unto which it is exceedingly like.

Galen wondereth how these women can live, who are troubled with these cruel fits of the mother, without any pulse, or breathing, inasmuch as it is impossible for one that liveth not to breathe, or for one that breatheth not, to live; for as long as we live, so long we breathe. To this I answer that, although these women live without respiration, yet do they not live without transpiration: for this being performed thorough the pores of the skin, by the motion of the arteries conserves the symmetry of the vital heat; for then that small heat retiring to the heart, as to a castle, may be preserved by this benefit of transpiration alone.

Now to procure an assurance whether the woman be living or dead, hold a feather or a looking glass to her mouth, if the former stir, or the latter be spotted, it is an undoubted sign that she liveth.

This is a most acute disease and soon dispatcheth the sick woman, especially if it took beginning from some very contagious and poisonous vapours; lecherous women and lusty widows that are prone and apt to venery are most subject to it: but married women that enjoy the company of their husbands, and such as with are child, are seldom invaded by it.

The complete midwife's practice enlarged

Although published anonymously, four doctors initialise the title page of this work, one of whom was probably Thomas Chamberlain. The preface claims that this is the first such book since *The birth of mankind* (see chapter 4 of this volume), and attacks Culpeper's book (see pp. 57 ff.) as false, probably because the College of Physicians objected to Culpeper's mission to provide textbooks in the vernacular. This text claims authority from Louise Bourgeois (1563–1636), the midwife of Marie de Medici, who published *Observations diverse sur la sterilité* in 1609. Text from: the first edition, 1656, pp. 10–11, 35–6, 41–2, 46–7.

Concerning the utility of the testicles and their parts

The structure of the testicles being thus known, it remains that we show you their use. This is first discovered from their situation. For of those creatures that have stones, some have them in their bodies, as fowl, others have them without, though not pendent; others have them hanging downwards, as men. Men therefore have their testicles without their bodies for two causes; first, because it is required that the testicles of the male should be bigger and hotter than those of the female, so that it were impossible for them to be contained

with the body, because of their quantity. Besides, the seed of the male being the effective original of the creature, and therefore hottest, it is also required that the seed should be more abundant than could be contained in the testicles, were they placed within the body; for the seminal passages must have been less, and the veins themselves would not have afforded such plenty of matter as they now do.... The clitoris is a certain substance in the upper part of the great cleft, where the two wings concur, this in women is the seat of venereal pleasure: it is like the yard in situation, composition and erection, and hath something correspondent both to the prepuce¹⁹ and glans in man. Sometimes it grows out to the bigness of the yard, so that it hath been observed to grow out of the body the breadth of four fingers.

This clitoris consists of two spongy and sinewy bodies, having a distinct original, from the bones of the pubes. The head of this is covered with a most tender skin, and hath a hole like the glans, though not quite through, in which, and in the bigness, it differs from the yard...

(Of the stones in women) The stones of women although they do perform the same actions and are for the same use as men's, yet they differ from them in situation, substance, temperament, figure, magnitude and covering.

They are seated in the hollowness of the abdomen; neither do they hang out as in men, but they rest upon the muscles of the loins, and this for that cause that they might be more hot and fruitful; being to elaborate that matter which with the seed of men engenders men.

In this place arises a question not trivial; whether the seed of woman be the efficient or the material cause of generation? To which it is answered that though it have a power of acting, yet that it receives the perfection of that power from the seed of man.

The stones of women differ from men's also as to their figure, because they are not so round and oval as those of men, being in their fore and hinder part more depressed and broad; the external superficialities being more unequal, and a great many knots and kernels were mixed together. There is also another difference as to the subject, because they are softer and moister than those of men, being loose and ill compacted.

Their magnitude and temperament do also make a difference, for the stones of women are much colder and lesser than men's; which is the reason that they beget a more thin and watery seed.

Their coverings also do make a difference, for men's are wrapped up in divers tunics, because being pendent outward, they were otherwise more subject to external injuries; but the stones of women have but one tunic, which though it stick very close to them, yet are they also half clothed over with peritoneum...

Of the actions of the womb The first use of the womb is to attract the seed by a familiar sympathy, just as the load stone draws iron.

The second use is to retain it, which is properly called conception.

The third is to cherish the seed thus attracted, to alter it, and change it into the birth, by raising up that power which before lay sleeping in the seed, and to reduce it from power into act. The fourth action of the womb is to send forth the birth at the time prefixed; the apt time of expulsion is when the expulsive faculty begins to be affected with some sense of trouble, that is when the birth afflicts and oppresses the womb with its own weight.

Besides these uses, it hath these moreover: to nourish the birth and to dilate itself, which it doth by the help of veins and arteries, which do fill more and more with matter, as nature requires.

The chiefest action of the womb and most proper to it, is the retention of the seed; without which nothing of other action could be performed for the generation of man . . .

Whether she have conceived a male If she have conceived a male child, the right eye will move swifter, and look clearer than the left. The right pap will also rise and swell beyond the left, and grow harder, and the colour of the teats will change more suddenly. The milk will increase more suddenly, and if it be milked out and be set in the sun it will harden into a clear mass, not unlike pearl. If you cast the milk of the woman upon her urine, it will presently sink to the bottom. Her right cheek is more muddy, and the whole colour of her face is more cheerful; she feels less numbness, the first motion of the child is felt more lively in the right side for the most part of the sixtieth day. If her flowers flow the fortieth day after conception. The belly is more acute towards the navel. As the woman goes she always puts her right leg forward, and in rising she eases all she can her right side sooner than her left.

Whether she have conceived a female If she have conceived a female the signs are for the most part contrary to those aforesaid.

The first motion is made most commonly the ninetieth day after conception, which motion is made in the left side; females are carried with greater pain, her thighs and genital members swell; her colour is paler, she hath a more vehement longing. Her flowers flow the thirtieth day after conception. Girls are begot of parents who are by nature more cold and moist, their seed being more moist, cold and liquid.