"HERMAPHRODITES" AND THE LAW[1]

The recent decision of the Court of Appeal in England in *Dolling* v. *Dolling*[2] raises, in an acute form, the problem of the legal implications of the occurrence of intersexual conditions in man.[3] This is a question which appears but rarely to have been considered in the literature, and our purpose here is simply to direct attention to some of the problems which arise.

It should perhaps be stated at the outset that these problems are of rather greater significance than is sometimes assumed. Although the true hermaphroditic condition appears to be relatively rare — only some fifty cases having been reported in the world literature[4] — the occurrence of intersexual conditions as a whole is very much more widespread. Young[5] estimated the frequency of intersexual conditions at one per 1,000 population, but Browne,[6] commenting upon this adds:

> It is probable that if such conditions as hyposadias in the male are included the incidence is much higher.

In *Dolling* v. *Dolling* a woman petitioned for divorce on the ground of cruelty alleging that her husband, to whom she had been married for eight years and by whom she had had a son, had resorted, under medical advice, to treatment for the purpose of "changing his sex." She claimed that, as a result of her husband's conduct, her own health had suffered. The petition was, however, dismissed both at first instance and on appeal on the ground that the husband's conduct did not amount to cruelty in law.

1. This article is an expansion of part of a lecture delivered to the Law Society of the University of Malaya in Singapore in July 1959.
2. (1958), unreported. The original petition is referred to in *The Times* for 23 May 1958, whilst the appeal proceedings are mentioned in the *Daily Telegraph* for 14 November 1958. The decision gave rise to a question in the House of Commons but the Attorney-General saw no legal difficulties and refused to take any action: see *The Times* for 26 November 1958. I am grateful to Miss Elizabeth Moys of the Institute of Advanced Legal Studies, University of London, for these references.
3. The phrase "intersexual conditions" is used in this paper to refer to any condition in which an individual possesses "an excessive proportion of the attributes of the other sex or one who lacks some endowment of his own" — Burrows, *Biological Action of Sex Hormones*, 2nd. ed. (1949), at p. 133. Burrows himself objects to the use of the term "intersex" on the ground that although the above quotation represents all that the term actually denotes it nevertheless implies "an individual who cannot properly be described as either a male, a female or a hermaphrodite." The term "intersex" is used by many writers as virtually synonymous with "hermaphrodite" although it is actually much wider in connotation, for the term hermaphrodite is limited to "true hermaphrodites" — those who possess the gonads of both sexes — and "pseudo-hermaphrodites" — those whose genitalia does correspond with their gonads.
4. See Greene *et al.* (1952) 161 *Brit.J.Surg.* 263.
5. *Genital Abnormalities, Hermaphroditism and related Adrenal Diseases* (1937).
6. *Postgraduate Obstetrics and Gynaecology* (1950), at p. 391.

The only other case known to us in which the problem of a "change of sex" has arisen before an English court is that of *Re Swan.*[7] In this case property had been left to a lady by the name of Wynifred Mary Swan. Miss Swan, however, had changed her sex in 1923 and died as Wynsley Michael Swan. In holding that the estate could be dealt with on the footing that Wynsley Michael Swan was the same person as Wynifred Mary Swan, the court remarked:

> There is nothing very terrible about this, it is a peculiar case, but not unknown.

These cases raise, however, many problems other than those actually in issue on those occasions. All these problems arise from the fact that all legal systems proceed on the assumption that the two sexes are well defined and distinct entities. As a working hypothesis this is not unreasonable, but, as will appear in what follows, it does not quite correspond with physiological reality and is therefore liable to break down from time to time.

The immediate problem raised by the existence of intersexual conditions is that of deciding by what criterion the sexes are to be defined for legal purposes. Since, in the vast majority of cases, this problem is one which, as it were, solves itself, it is hardly surprising to find that there does not appear to be any authoritative legal definition of the criterion by which the sex of a person is to be determined.[8] If, therefore, we are to discover a criterion of sexual differentiation we must turn to biology to see whether any definition, usable for legal purposes, can be found.

From the biological point of view there are at least four distinct levels at which sexual differentiation may be considered: [9] *(a)* genetic sex — which is determined by the chromosome constitution of the individual; *(b)* gonadic sex — which is determined by the type of gonads possessed by the individual; (c) genital sex — which is determined by the genital structure of the individual, and *(d)* apparent sex — which is determined by the secondary sex characteristics exhibited by the individual. We must first consider these various criteria from the point of view of their use for legal purposes.

7. (1949), unreported. This case is referred to by Miss Cowell in her autobiography, *Roberta Cowell's Story* (1954), at p. 127.

8. Fleta, however, (Bk. I, c.5) does state that: "An hermaphrodite to be sure is classed with male or female according to the predominance of the sexual organs.

9. There seems to be little point in providing a full documentation upon which the following account is based. The greater part of the material will be found, however, in the following works, most of which contain full bibliographies: Marshall, *Physiology of Reproduction* (1952); Allen, *Sex and Internal Secretions* (1939); Burrows, *op. cit.;* Maranon, *The Evolution of Sex* (1932); Wiesner, *Sex* (1936); Crew, *Sex Determination* (1946); Swyer, *Reproduction and Sex* (1954); Walker, *The Physiology of Sex* (1954).

It has for many years now been generally accepted that sex is an inherited quality and therefore genetically determined. Views, however, as to the nature of genetic sex have varied considerably over the last half century. The earliest and simplest view was to regard the sex determining mechanism in man as being of the Lygaeus type [10] with the male as the heterozygous sex.[11] Thus using the conventional notation for the sex chromosomes the female was considered to have a genetic constitution XX and the male XY. On this view it was possible to define sex in terms of a genetic criterion; a male being defined as an individual with a genetic constitution XY and a female as an individual with a genetic constitution XX.

This simple view was soon replaced by one which was slightly more complex. On this view it was the X chromosome which was the actual sex chromosome, the Y chromosome being thought of as exercising no influence on sex determination. The difference between the sexes was thus thought of as being quantitative rather than qualitative; one X yielding a male and two X's a female. This view was further extended by the concept of the genic balance. According to this concept sex depended upon a large number of genes which were distributed on all the chromosomes, those on the autosomal chromosomes [12] favouring maleness, those on the X chromosome favouring femaleness. In the male, with a genetic constitution XY, the genes on the single X chromosome were unable to dominate those on the autosomal chromosomes, and therefore, since the latter predominated, a male was produced. In the female, however, with two X's, the female favouring genes were able to dominate the autosomal genes and thus produce a female. The essence of this concept was that both male and female contained the same kind of genes, but their relative amounts differed so that sex was the product of the interaction of the two kinds occurring in different proportions.

This view has now itself had to be modified in the light of more recent work which has shown that, in man, it is the Y chromosome that is the real factor in sex differentiation. It has thus been shown that certain abnormal sexual conditions are associated with genetic abnormalities. Thus the condition known as Klinefelter's syndrome *(i.e.* testicular hypoplasia) has been shown [13] to be associated with the presence

10. So-called after *Lygaeus turcius.* It is characterised by the existence of two sex chromosomes, X and Y, as opposed to the *Protenor* type, so-called after *Protenor belfragi*, in which there is only one sex chromosome, X. See Wilson: *The Cell in Development and Heredity* (1925). For later developments see White: *Animal Cytology and Evolution* (1945) 2nd ed. (1954).

11. An individual is said to be heterozygous for any given condition if the pair of genes determining that condition are different, if both genes are the same the individual is said to be homozygous.

12. Autosomal chromosomes are chromosomes other than the sex chromosomes.

13. Jacobs and Strong (1959) 183 *Nature* 302.

of 47 chromosomes instead of the normal 46. [14] The additional chromosome appears to be an X chromosome so that individuals suffering from this condition have a genetic constitution XXY. Despite this these individuals present an essentially male phenotype which could only result from the presence of the Y chromosome overriding the influence of the two X chromosomes.

On the other hand the condition known as Turner's syndrome *(i.e.* ovarian agenesis) has been shown to be associated with the loss of one chromosome. [15] The genetic constitution of such individuals appears to be XO, the Y chromosome having been lost. Individuals suffering from this condition nevertheless present an essentially female phenotype, which can only be related to the loss of the Y chromosome.

It is the Y chromosome, therefore, which appears to be the vital sex differentiating factor, and this leads to an agonising reappraisal of the concept of genetic sex — indeed to a complete reversal of the previous concept. It seems reasonable, however, to assume that the general idea of the genie balance may be retained, but the balance must now be thought of as one between the genes on the Y chromosome and the others. The genes on the X chromosome and the other autosomal chromosomes become those disposing to femaleness, while those on the Y chromosome are those disposing to maleness. In the absence of the Y chromosome, therefore, development will be female, but the presence of the Y chromosome will override this tendency and produce a male.

It may perhaps be added that this new concept appears, to a layman at least, to be more consistent than the earlier view with the concept of sex considered from the point of view of endocrinology for, as we shall show, from the endocrinological point of view it is the female rather than the male that represents the more basic type of the human species; the male being the more specialised. The latest view regarding the function of the sex chromosomes appears to be more consistent with this concept.

It seems clear, however, despite the more recent work, that we are still justified in holding that the normal genetic distinction between the male and the female is the distinction between the XY and XX types of genetic constitution, and we may therefore turn to consider the utility of this distinction from the point of view of the legal differentiation of the sexes.

14. It is now known that the chromosome number in the human species is 46 and not 48 as previously thought; see Ford and Hammerton (1956) 178 *Nature* 1020 and Tjio and Levan (1956) 42 *Hereditas 1.*

15. Ford *et al.* (1959) 183 *Nature* 1030. It has also been shown that mongolism is a genetic abnormality, one chromosome appearing in triplicate: see Jacobs *et al.* (1959) 1 *Lancet* 710 and Ford *et al.* (1959) 1 *Lancet* 709.

Until recently one quite obvious disadvantage of using a genetic criterion for the purpose of distinguishing the sexes was the great practical difficulty of determining the chromosome constitution of any given individual. More recent work, however, has indicated methods by which the genetic constitution may be determined with relative ease. One such method is based on the recently discovered difference in the morphology of the nucleolus of nerve cells in the two sexes.[16] Similar findings have also been reported in respect of skin cells.[17] Histological examination of nerve, or more probably skin, cells of an individual will therefore reveal his genetic sex. This method has already been used for the purpose of sex identification with apparent success.[18]

More recently a sex difference has been reported in the morphology of what are known as the polymorphonuclear neutrophil leucocytes, and this distinction has also been successfully used experimentally for the purpose of sex identification.[19]

Even if all the practical difficulties associated with the determination of genetic sex disappear there are still good reasons for suggesting, however, that a genetic criterion is not a suitable criterion of sexual differentiation for legal purposes. In the first place it cannot be assumed that the definition exhausts the field, that is to say, it cannot be assumed that every individual can be classified as the possessor of a genetic constitution XX or XY. During the meiotic[20] division which occurs during gametogenesis[21] there is always the possibility that non-disjunction may occur giving rise to polyploidal conditions[22] or other genetic abnormalities such as have been shown to be associated with conditions such as Turner's syndrome and Klinefelter's syndrome.[23]

16. Barr and Bartram (1949) 163 *Nature* 676; Barr, Bartram and Lindsay (1950) 107 *Anat.Rec.* 283.

17. Hunter, Lennox and Pearson (1954) 1 *Lancet* 372; Barr (1956) 1 *Lancet* 47; Amniotic fluid cells have also been employed; Sachs, (1956) 2 *B.M.J.* 795.

18. Moore, Graham and Barr (1953) 96 *Surg.Obstet.Gynec.* 641.

19. Davidson and Smith (1954) 2 *B.M.J.* 6. Yet a third method of determining genetic sex is based on the use of smears from the buccal mucosa; see Paschkis, Rakoff and Cantarow, *Clinical Endocrinology*, 2nd. ed. (1958), at p. 441. I am grateful to Dr. Callum Muir, of the Department of Pathology in the University of Malaya in Singapore for the latter reference.

20. A meiotic division, or meiosis, is a form of cell division in which the nucleus divides twice but the chromosomes only once.

21. Gametogenesis is the process from which the gametes, ova or spermatozoa, are formed.

22. A polyploidal condition is one in which an organism possesses more than two sets of homologous chromosomes; on the problems of polyploidy see Beatty, *Parthenogenesis and Polyploidy in Mammalian Development* (1957).

23. See also Severinghaus (1942) 70 *Am.J.Anat.* 73.

The occurrence of such abnormal genetic constitutions renders a genetic criterion unacceptable for legal purposes on the ground that persons possessing such constitutions would be unclassifiable from the point of view of sex. We are, of course, assuming that the traditional dichotomy of mankind into but two sexes is to be maintained, and we are therefore searching for a criterion which will enable this dichotomy to be preserved. The possibility and implications of an abandonment of this dichotomy raises further problems into which we do not propose to enter here.

A further objection to the use of a genetic criterion for the purpose of sexual differentiation from the legal point of view is that, as will appear in what follows, the genetic sex of an individual does not necessarily correspond with his gonadic or genital sex and it is the latter rather than genetic sex that are responsible for the social manifestations of sexuality. For the law, which is primarily concerned with social relations, to accept such an abstract basis as genetic sex for its criterion of sexual differentiation — a concept which bears no necessary relationship to the problems of social reality — would appear to be quite unthinkable, at least if it were adopted as a general criterion for all purposes for which sexual differentiation is legally relevant.

We turn therefore to consider the possibility of using a gonadic criterion as the basis of a legal classification of the sexes. It is an elementary fact that the gonads of the male are in the form of testes and those of the female in the form of ovaries, and definitions of sex have therefore been formulated using this difference as the criterion of distinction. Here again, however, the criterion is demonstrably inadequate from the legal point of view since it does not exhaust the field. It thus fails to comprehend both the true hermaphrodite, who possesses the gonads of both sexes and those suffering from gonadic agenesis, who possess the gonads of neither sex. Assuming, therefore, that the traditional dichotomy of the sexes is to be maintained a gonadic criterion is useless for legal purposes.

It is also true, however, as was the case with genetic sex, that, considered from the point of view of social behaviour, gonadic sex is by no means the most significant feature of sexual differentiation, and from this point of view gonadic sex suffers from the same limitations as genetic sex in relation to its use as a legal criterion.

Little time need be spent discussing the use of a genital criterion. From many points of view this is the obvious criterion to use, and it is in fact extensively used for many purposes. It is nevertheless inadequate, for genital abnormalities are far more common than gonadic abnormalities and the criterion would break down in all cases in which no normal genitalia were present. The same is true of the secondary sex characteristics, which, although they are the criteria normally relied upon for

social purposes, at least after puberty, provide no very certain guide at all.

It seems clear, therefore, that a more detailed consideration of the nature of sex is required before we can consider the problem of defining a criterion of sexual differentiation usable for legal purposes.

In the foregoing paragraphs it has been assumed that there existed a single criterion which would enable us to divide all mankind into male or female. Our failure to find such a criterion suggests, of course, that there may not be one; that the difference between the two sexes is not a simple matter of deciding of which side of a given line a person falls. That this is in fact so receives considerable support from more recent work on the physiology of sex. Moore puts the position thus: [24]

> It will be appreciated, therefore, that sex is not a definite well defined entity but instead that gradations from a typical female to a typical male exist; irrespective of the original sex determination in the fertilised egg, all gradations are possible.

On this view sexual differentiation must be thought of in terms of a continuum, there being no point on the line joining the two extremes which can be taken as the sexual Rubicon.

This view of sexual differentiation is well illustrated if the embryological development of sex is considered. The genetic sex of an individual is fixed as from the moment of fertilisation — assuming, that is, that no genetic abnormality is present — but it is some time before the embryo shows actual signs of sexual differentiation. The first sexual organ to develop is the gonad, but in the early stages the gonad is undifferentiated; it is bipotential and will develop into an ovary or a testis according to circumstances. To quote from Gilman : [25]

> The indifferent gonad has certainly the potentiality of both testis and ovary. The outer cellular layer, the sex cords, the rete are structures common to the two sexes. The cells of the sex cords in the female give rise ultimately to the granulosa cells, in the male to the Sertoli cells; the sex cells become either spermatogonia or oogonia; the mesenchyme in the testis gives rise to the interstitial cells, in the female it forms the stroma which provides the theca cells; the rete ovarii and the rete testis have the same origin from the deepest extremities of the sex cords.

Views as to the extent of the homology between the testis and the ovary have recently been strengthened by the work of Gruenwald.[26] The earlier view had been that whereas the ovarian primary cords were vestigial homologues of the testicular cords, there were no testicular homologues of the secondary cords found in the ovary. Gruenwald has, however, claimed that even in testes secondary cord formation can be

24. *Embryonic Sex Hormones and Sexual Differentiation* (1947), at p. 7. See also Broster and Vines, *The Adrenal Cortex and Intersexuality* (1938) — "the veil between the sexes is inordinately thin" (at p. 60).

25. (1948) 32 *Carnegie Contrib. to Embryol.* 83.

26. (1942) 70 *Am.J.Anat.* 359.

observed. This observation is significant from the point of view of the development of hermaphrodites, for it means, as he points out, that a testis may develop into an ovotestis. The earlier view had been that intersexes were modified females *(i.e.* genetic females). Gruenwald's work indicates the possibility that intersexes may equally well be modified genetic males and more recent work has suggested that whilst modified genetic females are probably more common, nevertheless modified genetic males do occur.

The factors which cause sexual differentiation of the gonad appear to be but little understood. That the genetic constitution of the individual is a major factor seems almost certain. To quote Burrows: [27]

> When a gonad first can be distinguished in the embryo it appears morphologically as a bisexual organ, containing a medulla which represents the male component and a cortex which is the female element. In the process of development one or other of these sexual elements becomes suppressed, while the other continues to flourish so that the sex of the embryo becomes recognizable. Whether the primitive, bisexual organ will be biased to the male or to the female side will depend in vertebrates upon the genetic constitution of the individual.

Even assuming, however, that the individual has a normal genetic constitution, that constitution must have an opportunity to express itself, and anything which interferes with the expression of the genetic constitution may produce gonadic abnormalities.

The question that therefore arises is, how does the genetic constitution express itself? It seems likely that the primordial germ cells play a vital part in the process of gonadic differentiation. It is well established that these cells are not formed within the gonad but elsewhere in the embryo from whence they migrate into the developing gonad. It also appears that the gonad does not develop very far in the absence of the germ cells, and it has therefore been suggested that the germ cells, on their arrival in the gonad, act as organisers in the process of differentiation.

It should also not be forgotten that the gonads may subsequently be profoundly affected by hormones known as gonadotrophins which are secreted by the pituitary, [28] and there seems no reason, therefore, to overlook the possible effect of foetal hormones in the differentiation and development of the gonads.

It follows therefore that anything that interferes with the gonadic primordia, the development and migration of the primordial germ cells and possibly the secretion of foetal hormones, may produce gonadic abnormalities. Into the details of gonadic embryology we need not enter here. It is sufficient to emphasise that the gonad is capable of developing into either an ovary or a testis, or even a gonadic abnormality of one sort

27. *Op.cit.,* at p. 205.

28. See further on this pp. 91-93, *post*.

or another. In most cases in which normal gonads are present the differentiation of the gonads corresponds with the genetic sex of the individual, but this correspondence is by no means inevitable, and even assuming the presence of a normal genetic constitution it is conceivable that a genetic female could develop functional testes, or a genetic male functional ovaries. The former appears to have occurred in Roberta Cowell's case. Miss Cowell states that her genetic sex was established as female,[29] although before she "changed" her sex she married as a male and had two children, both of which were, of course, female.[30]

If we turn to consider the development of the genitalia we find a somewhat similar situation. The urino-genital primordia, like the gonadic primordia, is bipotential. Prior to sexual differentiation of the urino-genital system two sets of ducts are developed: the Wolffian (mesonephric) and the Mullerian (paramesonephric). In the male it is the Wolffian ducts which continue to develop to form the male genitalia; the Mullerian ducts remaining vestigial as the sessile hyatid of Morgagni and the uterus masculinus. In the female it is the Mullerian ducts which continue to develop to form the female genitalia, the Wolffian ducts remaining as the vestigial epoöphoron.

The factors which cause sexual differentiation of the genital system appear still to be controversial. Most writers seem to adhere to the view that differentiation is brought about by the action of foetal hormones secreted by the developing gonads, although others take the view that the initial differentiation is under independent genetic control.[31] Whatever view is taken on this point the fact remains that the subsequent development of the genitalia is profoundly influenced by hormone control.[32]

At this point a matter of some significance emerges, for whilst the genital development of a male will be profoundly modified by the removal, natural or experimental, of the necessary hormones, the genital development of the female appears to be but little affected by the removal of the gonadic hormones. The conclusion, in the words of Wiesner, is that: [33]

> The developmental tendencies inherent in the genital primordia of a female are sufficient to effect formation of a female system, whereas male development requires the presence of male hormone. Female development is anhormonic (without hormone) up to puberty, male development is hormonic.

29. *Op.cit.*, at p. 119.
30. Since Miss Cowell was a genetic female the only gametes she was capable of producing were those containing an X chromosome. All her wife's ova would naturally contain an X chromosome so that any zygote they produced would inevitably be of a genetic constitution XX and therefore be genetically female.
31. This is the view taken by Moore, *op.cit.*
32. Thus the effects of castration on boys before puberty have been known for centuries.
33. *Op.cit.*

This is a conclusion of some significance in this context for it means that the more basic type of the human species tends more towards the traditional female type than to the traditional male type. In consequence many intersexual abnormalities will produce individuals who are more female in type than male; a fact which has considerable social implications.

Full sexual differentiation, however, does not occur until puberty, and the achievement of this stage of development appears to be almost entirely under hormonal control. It may be noted that it is often only at puberty that errors in sexual diagnosis are first discovered. Before puberty the distinction between male and female is relatively slight, and it is extraordinarily difficult, at this stage, to distinguish between a girl with vulgo-vaginal atresia and hypertrophy of the clitoris and a boy with cryptorchidism and hypospadias.[34] In difficult cases a diagnosis as female is, of course, the more common, and it is not until the onset of puberty that such errors are revealed. Such cases involve the problem of reversing the entire upbringing of the child and some parents request surgical removal of the evidence of the error, particularly in those cases in which the child seems more contented in the sex in which he has been reared. It would appear to be an as yet unresolved problem whether such operations could be regarded as lawful.[35]

So far we have been concerned only with the various organs associated with sex, and in discussing their development we have had occasion to mention the influence which hormones exercise over this development. We must now briefly consider these hormones themselves.

The hormones associated with sexual differentiation are of two main types: (*a*) those secreted by the anterior lobe of the pituitary which influence the development of the gonads, and are therefore known as gonadotrophins;[36] *(b)* those secreted by the gonads which influence the development of the genitalia and secondary sex characteristics, which are referred to as gonadic hormones.

The view taken by most authorities is that there are two gonadotrophins which are today usually named after their respective functions in the female sexual cycle.[37] Thus one is referred to as the Follicle

34. *I.e.*, between a girl in which neither vulva nor vagina have developed but who possesses a enlarged clitoris and a boy with undescended testes and a urethra which opens at the base of the penis.

35. On this point see pp. 109-110, *post.*

36. Gonadotrophin hormone is also secreted by the trophoblast of the fertilised ovum in pregnant women; it is therefore known as chorionic gonadotrophin.

37. A single hormone theory was advanced by Robson (1937) 90 *J.Physiol.* 435; Westman (1934) 158 *Arch.f.Gyn.* 476; and Westman and Jacobsohn (1937) 17 *Actaobstet.gynec.Scand.1*, 13 and 476. It now seems probable that there is a third pituitary hormone — the leteotrophic hormone or prolactin which operates in the female sexual cycle by stimulating the secretion of progestins.

Ripening Hormone (F.R.H.)[38] and the other as the Luteinising Hormone (L.H.). This terminology, however, is most unfortunate for it is now clear that the male secretes precisely the same hormones as the female. To quote Burrows again: [39]

> Males and females elaborate the same gonadotrophin (F.R.H.), though its relative and absolute amounts vary with age, sex and circumstance.

The function of the gonadotrophins in the female are evident from their names. In the male, however, F.R.H. controls the vascularity and development of the gonads, whilst L.H. stimulates the interstitial cells. Indeed the latter function was once thought to be the result of a distinct hormone known as the Interstitial Cell Stimulating Hormone (I.C.S.H.) which is now known to be identical with the Luteinising Hormone. There is therefore no real difference between the two sexes based on the elaboration of different gonadotrophins.

In much the same way there are two main gonadic hormones, oestrogen and androgen. The view which led to their being thus named, implying that one was specifically male and the other specifically female, is now known to be misleading. In the words of Burrows: [40]

> Androgens and oestrogens are normally produced by each sex, and the difference between male and female in the elaboration of gonadal hormones seems to be, apart from the female sexual cycle, one of degree alone.

Here again, therefore, we find that there is no sharp dividing line, the difference between the sexes is merely one of degree.

A final point which must be borne in mind in considering the hormone system is the degree of mutual interaction which occurs. Zondek has stated[41] that:

> Hormones mutually promote or inhibit one another inasmuch as each individual hormone may stimulate or inhibit the activity of other hormonal glands.

Thus dysfunction in any part of the endocrine system will produce changes in other parts, and these latter changes may carry with them implications in terms of sexual differentiation. The fact that, in function, it is not always easy to distinguish between the different hormones is

38. This hormone was also known as the Follicle Stimulating Hormone (F.S.H.).

39. *Op.cit.*, at p. 32.

40. *Op.cit.*, at p. 122. There are, of course, other gonadic hormones such as the progestins which are secreted by the corpora lutea and which play a vital part in the female sexual cycle, and relaxin which plays a part in the process of parturition. In addition there is the, as yet, hypothetical hormone X which may be secreted by the Sertoli cells in the male. On the latter see Howard *et al.* (1950) 10 *J.Clin.Endocrinol.* 121.

41. *Diseases of the Endocrine Glands* (trans. by C. P. Giles) 2nd. English edition (1944).

underlined by the discovery of ethisterone which has been shown to possess androgenic, oestrogenic and progestational capacities.[42]

The development of sexual differentiation is obviously a matter which depends upon a most delicate balance between a large number of factors. The appropriate primordia must develop with appropriate thresholds to react to the appropriate hormones which must be elaborated in appropriate quantities at the appropriate times. Any slight deficiency or excess will produce an individual departing slightly from the ideal, and the greater the deficiency or excess the greater the departure from the ideal until the point is reached at which the degree of departure becomes characterised as an abnormality.

The above considerations lead to a concept of sex which differs radically from that which is commonly assumed. Maranon sums up the position as follows : [43]

> Every human being carries within himself the two sexes — one developed and the other latent — it is therefore logical to suppose an asynchronous and relatively independent evolution of the two sexes of every individual; in other words it is logical to regard the sexual evolution of every individual as being in fact the asynchronous evolution of his two sexes.

The view that the ideals of masculinity and femininity are but *rara aves* has frequently been expressed. Thus Weil: [44]

> The integral man [Vollmann] and the integral woman [Vollweib] are, in fact, very rarely to be found.

Biedl takes much the same view: [45]

> The pure man and the pure woman are extreme cases which are in fact scarcely to be met.

Mathes puts the position as follows: [46]

> Every human being, even in the most favourable case, is a rudimentary intermediate.

whilst Maranon refers [47] to

42. For the action of this compound (also known as ethinyltestosterone or pregneninolone) see Emmens and Parkes (1939) 143 *Nature* 1064.

43. *Op.cit.*, at p. 266.

44. *Die innere Sekretion*, 3rd. ed. (1923).

45. *Die Bedeutung des endokrinen Systems für die Sexualität in Sexualreform und Sexualwissenschaft* (ed. Weil) (1922).

46. *Die Konstitutionstypen des Weibes insbesondere der intersexuelle Typus* in *Biologie and Pathologic* III, ed. Halban und Seitz (1924).

47. *Op.cit.*, at p. 17. It is perhaps significant to realise that the "Western" ideal of femininity is usually a type with retention of foetal and infantile characteristics: for the theory of foetalisation see Bolk, (1925) 29 *Proc.Kon.Akad.Wetensch. Amsterdam* (1922) 25 *ibid.* 371; (1927) 30 *ibid.* 320 and (1929) 13 *Clin.J.Physical Anthrop.* 1.

> Conditions of sexual confusion — in a scale of infinite gradations which extends from a flagrant hermaphroditism to forms so attenuated that they merge into normality itself — are so widely diffused that there is scarcely any human being whose sex is not tainted by a doubt, or at least a shadow of a doubt.

Such views, however, strike at some of man's most cherished illusions and it will probably be a long time before they are generally accepted, although there are signs that these concepts are beginning to penetrate. Thus in the current edition of Taylor's *Principles and Practice of Medical Jurisprudence* the following passage has been added: [48]

> What used to be regarded as *"Highly Probable"* and *"Certain"* evidence of sex is now better understood to range from well defined sex on the one hand to *bi-sexuality* (or *true hermaphroditism)* on the other — with a considerable range of *intersexuality* between the two.

So far we have been concerned solely with the development of sexual differentiation. It must now be noted that, in some respects, even after full differentiation, sexual characteristics are not immutable. The delicate balance of forces which produces the sexual characterisation of an individual must be maintained for his sexual characterisation to be maintained. In general it may be said that the further differentiation has proceeded the less radical will be any subsequent changes. As Greene has pointed out: [49]

> Once differentiation of a sexual structure has taken place its developmental trend can no longer be reversed.

Nevertheless, the total sexual characterisation of an individual remains, in some respects, permanently mutable. One particular disturbance of the hormonic balance has crystallised into a well-defined clinical syndrome — the adrenogenital syndrome. This distressing condition, associated with hyperplasia of the adrenal cortex, produces what is sometimes referred to as virilism in women, which includes hair distribution of a male type, and particularly the growth of a beard; cessation of menstruation (amenorrhoea); male distribution of fat leading to changes in bodily contour; changes in the external genitalia and even changes in the direction of libido. When it is further associated with diabetes it is known as the Achard-Tiers syndrome. Somewhat similar to the adrenogenital syndrome is Cushing's syndrome (pituitary basophilism).

In men there are also a number of conditions which produce feminisation. Thus Frolich's syndrome, particularly when it occurs in the adult, produces a degree of feminisation. It is associated with a deficiency of the anterior lobe of the pituitary (or possibly of the hypothalamus). There is also the condition of gynaecomastia, producing enlargement of the male breasts which is associated with gonadic dysfunction.

48. 11th ed. (1956), vol. I, at p. 110.

49. (1944) 4 *J.Clin.Endocrinol.* 335.

Another less well understood condition is that which is known as transvestism or eonism. In this condition an intense desire develops in a person to live and dress as a member of the opposite sex. There are no apparent pathological manifestations of this condition which appears to result from a combination of endocrine dysfunction and psychogenetic factors. One of the few methods of relief which appear to be available for this condition is plastic surgery to change the external genitalia in such a way as to make life as a member of the opposite sex possible. Whether such an operation can be regarded as legal would appear to be an, as yet, unresolved problem. The celebrated case of Christine Jorgensen, which created such a sensation in 1952, would appear to be one which comes within this category. George Jorgensen was an American male transvestite who, in Denmark, received treatment and "became a woman." According to Miss Cowell the Danish authorities have now forbidden foreigners to undergo this treatment in Denmark, although permission may apparently be granted to Danes. She expresses the view, for which she quotes no authority, that such operations would be illegal in England.[50]

Consideration of the conditions mentioned above raises the question of the possibility of a "change of sex" for all of them are popularly referred to as such, as also are those cases in which errors of sexual diagnosis are discovered at puberty.[51] Clearly whether it is possible for there to be a genuine "change of sex" depends upon the criterion of sexual differentiation which is considered. In so far as one is considering genetic sex it is clear that there can be no such thing as a "change of sex," for genetic sex, whether normal or abnormal, is determined at fertilisation and remains immutable.[52] It is equally unlikely that any change in gonadic sex could occur in the human species after birth. At birth the gonads, assuming that they have developed, are fully differentiated and any subsequent disturbance of the hormone balance will only produce atrophy or hypertrophy of those structures which are already present. These changes may, of course, cause further changes in the genitalia or in the secondary sex characteristics, but there would be no actual change in the gonadic sex — at most the functional characteristics of the gonads would be affected. It may be added that the day seems yet far distant when it will be possible, by surgical intervention, to substitute functional gonads of one sex for those of the other. When this becomes possible will be time enough to consider the problems thereby raised.

50. *Op.cit.*, at p. 144. On this see pp. 109-110, *post.*

51. It should be noted that whereas popular use of the term "change of sex" is limited to changes occurring after birth, the scientific use of the term includes changes occurring before birth.

52. We leave aside the possibility of changes induced by radiation. Even if such changes were induced they would only really affect sex in the offspring of the person affected.

Genital sex is, in a sense, rather more mutable than either genetic or gonadic sex. While it seems unlikely that one set of functional genitalia can be changed, spontaneously or artificially, into functional genitalia of the opposite sex it is possible for there to be atrophy of such genital organs as have already developed and such a degree of hypertrophy of the homologues of the genitalia appropriate to the opposite sex that one is perhaps justified in speaking of a "change of sex," whilst, of course, by surgical intervention coupled with hormone treatment it is possible artificially to substitute the external genitalia of the opposite sex for that with which a person is endowed by nature.

From the point of view of the secondary sex characteristics the possibility of a "change of sex" is undoubted and often very distressing. It may be added that the really tragic cases, from the social point of view, are those in which the direction of libido does not correspond with the physical endowment of the individual. Where, however sex may be defined, the physical endowment renders life as a member of the sex corresponding with the direction of libido socially permissible no great difficulties arise, but where these do not correspond then a very stressful situation develops. Since the law is, or should be, concerned with social reality, a strong case could be made in support of a psychological criterion for sexual differentiation.

It is clear, however, from the foregoing account of the biological nature of sex that sexual differentiation is a relative rather than an absolute matter and as any classification of mankind, for legal purposes, into but two sexual categories must, therefore, be a purely arbitrary classification it seems to follow that any attempt to define sex for legal purposes must take into account the specific purpose for which the classification is required, for it does not follow that what is a suitable criterion for one purpose will necessarily be suitable for another purpose.

Turning therefore to consider the legal implications of the foregoing we find that the problem of sexual characterisation becomes legally important virtually from the moment of birth, for sex is one of the particulars which are required to be noted on the birth certificate. Thus the (English) Registration (Births, Still-Births, Deaths and Marriages) Consolidated Regulations, 1945, regulation 23, provides:

> In column 3 [of the birth certificate] the registrar shall enter the word "boy" or "girl" as the case may be, according to the information given by the informant.

The question that immediately arises is, of course, by what criterion is sex determined for this purpose. Taylor has stated: [53]

> For the purpose of public statistics intersexes are classed as males, and if it is desirable later that they should be regarded as females, a statutory declaration must be made to that effect.

53. *Op.cit.*, vol. II, at p. 131.

This proposition, for which Taylor quotes no authority,[54] implies: (1) that any degree of intersexuality is justification for registration as a male; (2) that the criterion for making any subsequent change is simply that of desirability.

As to the first proposition, this cannot be regarded as very helpful for the purposes of registering the birth of a child, for a diagnosis of intersexuality at such an early age would be most unlikely, and, as we have seen, most children exhibiting a degree of intersexuality would be more likely to be diagnosed as female than male. The only criterion normally available for the purpose of sexual diagnosis at birth is a genital criterion, and it may be assumed that this is the criterion normally followed for the purposes of birth registration.

The second proposition is, with respect, most doubtful. Taylor sets out the procedure for "re-registration" as follows: [55]

> Application for the re-registration of the birth should be made to the Registrar-General accompanied by the particulars of the case by the medical practitioner who has examined the child. If this is satisfactory the registrar would be instructed to re-register the birth on the information of one of the parents or other informant under the Births and Deaths Registration Acts. Should there be no qualified informant available then the original entry would be corrected on the authority of a statutory declaration made by two persons cognisant with the facts one of whom would be the medical practitioner.

With respect, this is rather misleading. The (English) Births and Deaths Registration Act, 1953, section 29(1), provides that:

> No alteration shall be made in any register of live-births, still-births or deaths except as authorised by this or any other Act.

The only provisions of the Act authorising any alteration of the register are section 13, which makes limited provision for an alteration in name, section 29(2), which provides for the correction of clerical errors, and section 29 (3), which provides as follows:

> Any error of fact or substance in any such register may be corrected by entry in the margin (without any alteration of the original entry) by the officer having the custody of the register . . . upon production to him by [the person requiring the entry to be corrected] of a statutory declaration setting forth the nature of the error and the true facts of the case made by two qualified informants of the birth ... or in default of two qualified informants then by two credible persons having knowledge of the truth of the case.

It should first be noted that this section only authorises a marginal correction: it does not authorise re-registration. The only provision in the Act for re-registration is that of section 14 which provides for re-registration in the case of a child legitimated under the (English)

54. The Registrar-General's office inform me that they know of no authority for such a proposition.

55. *Op.cit.*, vol. I, at p. J17.

Legitimation Act, 1926. Consequently there seems to be no authority for the view that the sex entered on the birth certificate can be changed by re-registration; the most that can be done is a marginal correction and it may be added that this was the procedure which was followed in Roberta Cowell's case as appears from the photographic reproduction of the certified copy of her birth certificate which appears in her book.[56]

It should further be noted that there does not seem to be any justification for the distinction, implied in Taylor's statement of the procedure, between those cases in which a qualified informant under the Births and Deaths Registration Acts is available and those in which there is no such informant available. Under the terms of section 29(3) a statutory declaration is necessary in both cases — whereas Taylor implies that in the former case an application is made to the Registrar-General in lieu of a statutory declaration. Again, in so far as Miss Cowell's case may be taken as a precedent, it appears that Taylor's proposition is not in accordance with the practice of the Registrar-General, for in her case the marginal correction was made on the authority of a statutory declaration made by two persons one of whom was her mother and the other presumably her doctor, despite the fact that both her parents were alive at the time, and were, of course, qualified informants under the Births and Deaths Registration Act.

Finally it should be noted that section 29(3) only allows a marginal correction in the case of the discovery of "an error of fact or substance" — it does not sanction a correction, as Taylor implies, merely on the ground of desirability. If as Taylor states, any degree of intersexuality justifies registration as a male, then the only error that would justify a marginal correction would be the discovery that the child was not in fact intersexual but female.

This raises, however, the whole problem of what constitutes an error under section 29(3) justifying a marginal correction of the sex as stated on the birth certificate. If we assume, for the moment, that a genital criterion is adopted for the purposes of registration — on the ground that this is the criterion normally followed in practice for this purpose — then the only error that could be made would be an error as to the state of the child's genitalia. Thus if a genital criterion were adopted for this purpose it would follow that the mere subsequent discovery that gonadic or genetic sex was different from the genital sex would imply

56. Between pp. 124-5. [Editor's note:—] Malayan primary legislation on registration of births is to be found in cap. 190 (F.M.S.), 34/1937 (S.S.), No. 8 (Johore), No. 95 (Kedah), 6/1930 (Kelantan), 4/1352 (Perlis), 4/1344 (Trengganu) and cap. 47 (Singapore). Provision for correcting errors is made in s. 23 of the F.M.S. Enactment, s. 22 of the S.S. Ordinance and s. 22 of the Singapore Ordinance. Rules have been made under all these enactments, of which examples are G.N. No. 4383/22 (F.M.S.), of which rule 1 and sch. form A require the sex to be noted, and G.N. No. 1943/38 (S.S., including Singapore), of which reg. 4 and sch. A so require.

no error which could be rectified under section 29(3). On the other hand if the subsequent discovery that the genetic or gonadic sex of an individual is different from the sex which appears on his birth certificate is held to justify a marginal correction then it can only be concluded that one of the former is the true criterion of sexual characterisation for the purpose of registration; the genital criterion being merely *prima facie* evidence of sex. Which sex is it then which is required to be stated on the birth certificate?

It seems clear from Roberta Cowell's description of her case that the only justification for the marginal correction which was made on her birth certificate was the discovery of her genetic sex. At the time the correction was made, although she had been undergoing hormone treatment, she had not yet had the operation to change her genitalia, which must necessarily have been male, for previously, whilst living as a married man, she had procreated two children. The hormone treatment may have caused a degree of atresia, but it seems clear that at the time of the correction she still possessed male genitalia. Equally, at that time, she must have possessed male gonads. That she originally possessed functional testes is shown by the experience of her former marriage (the gonads were functional testes even though, because of her genetic constitution, she was only able to produce X carrying sperm). Again the hormone treatment had probably caused the testes to cease to function as gonads, but so far as a gonadic criterion is concerned she must have, at that time, possessed testes rather than ovaries. The only conclusion is that the justification for the marginal correction of her birth certificate was the discovery of her genetic sex.

There are obviously few authorities on this point, but if her case is taken as a precedent the conclusion must be that it is genetic sex which should be registered on the birth certificate. Consequently whatever other criteria are usually followed in practice in sexual diagnosis for the purpose of birth registration they can only be regarded as *prima facie* evidence of sex, and any subsequent discovery that the genetic sex is different from that registered on the certificate constitutes the discovery of an error of fact or substance under section 29(3) which may be corrected by a marginal correction under that section.

This solution creates one difficulty and solves one problem. The difficulty that is created arises in relation to those persons who do not possess a normal genetic constitution such as those suffering from Turner's syndrome or Klinefelter's syndrome. How is the sex of these persons to be registered? The more recent work on the genetics of sex perhaps suggests an answer, namely, that the presence of a Y chromosome be taken as the criterion of genetic maleness; the absence thereof as the criterion of genetic femaleness. This would at least ensure that the sex, as it appeared on the certificate would correspond with the essential phenotype of the person concerned.

The problem which the adoption of a genetic criterion solves is the problem of the possibility of a change of sex. Since the genetic constitution of an individual may be regarded as immutable there can be no such thing as a change of sex in so far as sex is genetically defined. The only possibility is that of the discovery of errors of sexual diagnosis arising because some criterion of sex other than direct genetic examination has been relied upon as evidence of sex in a case in which the normal correspondence between the criterion used and the genetic sex did not hold good. There is therefore no need to consider the problem of whether a "change of sex" could be noted on a birth of certificate.

It should be noted that if the marginal correction made on Roberta Cowell's birth certificate is to be justified on the ground that it was the correction of an error as to her genetic sex, then it follows that there would be no justification for such a procedure in a case similar to that of Christine Jorgensen. His genetic sex necessarily remained unchanged and therefore there was no error to be discovered which would justify any marginal correction. Miss Cowell reports that in Christine Jorgensen's case the American ambassador to Denmark gave "her" a certificate that she was legally female.[57] It seems unlikely that even the American courts would accept the declaration of a diplomat on a matter such as this.

We turn, therefore, to consider the problem of the significance of the sex as registered on the birth certificate. Some writers would appear to be of the opinion that the particulars of sex as they appear on the birth certificate constitute some sort of legal registration of the sex of the person concerned. Thus Miss Cowell states that she legally became a woman in 1951 when her birth certificate was corrected.[58] This, it is submitted, is not so. In the first place it should be observed that there is no duty to have a birth certificate corrected upon the discovery of an error of fact or substance. Section 29(3) merely provides that such errors "may" be corrected. It is doubtless convenient that they should be corrected, but the fact that they need not be implies that the birth certificate cannot be taken as conclusive evidence of the facts therein, and indeed the Births and Deaths Registration Acts contain no provision to this effect.[59] Further, as we have suggested, the adoption of one criterion for one purpose does not imply that the same criterion is necessarily applicable for another purpose. Thus assuming that a genetic criterion is adopted for the purpose of birth registration, it does not follow that the same criterion is necessarily adopted for all purposes for which sexual differentiation has legal significance. Indeed we would go so far as to claim that there is no such thing as "legal sex:" for legal purposes sex can only be defined in relation to each of the problems in which sexual

57. *Op.cit.*, at p. 124.

58. *Ibid.*, at p. 97.

59. It may be noted, by way of comparison, that there is *e.g.* a duty to re-register the legitimation of a child under the (English) Legitimation Act, 1926; see s.36.

differentiation becomes relevant — it cannot be defined *in vacuo.* In the vast majority of cases, of course, it is natural and normal to find that the sex of an individual is suitably orientated in the same direction in respect of all matters of legal interest. In the case of intersexes, however, this assumption does not necessarily hold good and there is no logical necessity for holding, merely because in the vast majority of cases sexual differentiation may be taken in the same sense for all purposes, that this must hold good in all cases. Whatever the "registered" sex of an intersex may be, the question of his or her sex must be considered independently in relation to each matter in respect of which the question arises. Whilst it is obviously convenient to be able to regard an individual as being of one sex, and whilst conditions of "sexual schizophrenia" are not to be encouraged by the law yet, as we hope to show, the law does in fact adopt different criteria for different purposes.

There is, however, one further matter which arises in connection with the birth certificate which it is convenient to consider here, namely, that of change of name. Whenever an individual undergoes a change of sex it is usual for him to change his name to one which is more appropriate to the sex he has now assumed. The question which arises is whether the name can be corrected on the birth certificate at the same time as the sex is corrected. This was the procedure followed in Roberta Cowell's case. The names which appeared on her birth certificate had been Robert Marshall. In the marginal correction made at the time of her "change of sex" these were changed to Roberta Elizabeth. There are, however, strong grounds for supposing that this procedure was without authority.

The only provisions in the (English) Births and Deaths Registration Act sanctioning any alteration of name are those of section 13 which allow entry on the certificate of a change of name if made, whether at baptism or otherwise, within twelve months of the date of the registration of the birth. The name so changed, however, is added in column 10 of the birth certificate without erasure of the original entry.[60] Obviously this provision did not apply in Miss Cowell's case. Equally the change in her name could not be considered as the discovery of an error of fact or substance to bring it within section 29(3). Her names at birth were Robert Marshall, and regarding this there was no error. It would seem to follow therefore that the marginal correction of her name was contrary to the provisions of section 29(1).

It may be added that there seems to be the same sort of assumption made regarding the names on a birth certificate as is made regarding the particulars of sex appearing thereon, namely, that it constitutes some sort of legally registered name. This is, of course, not so. So far as surnames are concerned they may be assumed at will and changed in the

60. See 1945 Regulations, reg. 37 (England).

same way.[61] A person's name is that by which he is commonly known, and not necessarily that which appears on his birth certificate. A Christian name is, technically, that given at baptism and from the point of view of ecclesiastical law cannot, it appears, be changed, except perhaps at confirmation. [62] From the point of view of the civil courts, however, a Christian name is just as mutable as a surname, and the name by which a person is generally known is his name for the purpose of legal identification.[63] If Miss Cowell's names are now Roberta Elizabeth it is not because they appear in the marginal correction on her birth certificate, but because they are the names by which she is now generally known.

There is, therefore, no need, and indeed no justification for altering the name on the birth certificate in cases of "change of sex." If the name which appears on the birth certificate is the name which the person bore for at least the first twelve months of his life then it is quite incorrect to make a marginal correction on the birth certificate. If there were justification for making such a correction then there would seem to be no reason why such corrections should not be made in all cases in which a person changes his name, whether by deed poll or otherwise, but it has certainly never been suggested that this could be done.

We turn now to consider the question of the validity of marriage. It may be regarded as an axiomatic proposition of law that for a valid marriage the parties must be of different sex, [64] and some criterion of sexual differentiation must, therefore, be found in order to distinguish marriages between persons of opposite sex and purported unions between persons of the same sex — such a criterion is necessary for what we may refer to as the validity of the marriage. The problem of finding such a criterion is complicated by the fact, however, that it is only the consummated marriage that can be regarded as fully valid, in the sense that the non-consummated marriage is (at least in certain circumstances)[65] voidable. There is therefore the additional problem of

61. As to change of surname see *Barlow* v. *Bateman* (1730) 3 P.Wms. 65; *Doe d. Luscombe* v. *Y*ates (1822) 5 B. & Ald. 544, *per* Abbott C.J. at p. 556; *Davies* v. *Lowndes* (1835) 1 Bing.N.C. 597, *per* Tindal C.J. at p. 618.

62. This view was enunciated by Coke — Co.Litt. 3a — and although doubted by Burn, *Ecclesiastical Law*, vol. I, at p. 111, was supported by Phillimore, *Ecclesiastical Law*, vol. I, at p. 517.

63. As to change of Christian names see *Walden* v. *Holman* (1704) 6 Mod. 115, *per* Holt C.J. at p. 116; *Clarke* v. *Istead* 1 Lut. 894; *Evans* v. *King* (1745) Willes 554; *Gould* v. *Barnes* (1811) 3 Taunt. 504; *Williams* v. *Bryant* (1839) 5 M. & W. 447.

64. Marriage is thus traditionally defined as "the union of one *man* and one *woman.*"

65. The court will, however, refuse to act if there is "lack of sincerity" on the part of the petitioner. For an account of the doctrine of sincerity see Bartholomew (1958) 21 *M.L.R.* 247-250.

finding a criterion which will distinguish the consummated from the non-consummated marriage. This criterion we will refer to as the criterion necessary for the purpose of consummation of the marriage, as opposed to the validity of the marriage.

We will consider first the question of consummation and we may start from the proposition, which is firmly established, that consummation does not imply ability to conceive. In *G.* v. *G.*[66] Lord Dunedin, in the House of Lords, quoted from his own earlier decision in *A.B.* v. *C.D.*[67] the following words: [68]

> It is now well settled that a person is in law impotent who is *incapax copulandi*, apart from the question of whether he or she is *incapax procreandi.*

It follows from this that the sexual organs need not be functional. This was made clear, so far as women are concerned, in the classic case of *D.* v. *A.*[69] In this case the woman had no uterus and only a small vagina which ended in cul-de-sac, but which was capable, after dilation, of some degree of penetration by a male organ. Lord Stowell, although he held that the marriage had not been consummated by that degree of penetration of which the woman was capable, nevertheless emphasised [70] that the only criterion for consummation was that of capacity for ordinary and complete intercourse:

> The only question is whether the lady is or is not capable of sexual intercourse, or if at present incapable, whether that incapacity can be removed.

In the recent case of *R.* v. *R.*[71] the husband was able to achieve erectio and intromissio but was unable to attain emissio. The court nevertheless held that he was capable of consummating his marriage on the ground that emissio was unnecessary for *vera copula.*

Not only need neither organ be functional but, as we have suggested elsewhere, the only legal requirement for the consummation of marriage is that of a single penetration of the female by the male.[72] If, however, consummation merely requires penetration then presumably possession of an organ capable of being penetrated or of one capable of penetrating will be a sufficient sexual differentiation for this purpose. This is, of course, to adopt a purely genital criterion. As we saw earlier, however, this criterion does not quite cover the field in that there are persons in whom no normal genitalia are present and who would, therefore, be unable

66. [1924] A.C. 349.

67. (1906) 8 F. 603.

68. At p. 352.

69. (1845) 1 Rob.Ecc. 279.

70. At p. 296.

71. [1952] 1 All E.R. 1194.

72. See Bartholomew (1958) 21 *M.L.R.* 236.

to contract a completely valid marriage. The law appears to make provision for these cases by providing that for a marriage to be annulled on the ground of non-consummation the condition must be "incurable by art or skill" [73] and one would have been justified in thinking that this would have enabled many persons to contract valid marriages who are not by nature endowed with the organs that the common law regards as necessary. But what the law gives with one hand it takes away with the other, for in the recent case of *D.* v. *D.*[74] the court held that intercourse with a person who possessed an "artificial vagina" could not be regarded as consummation, "having regard to the artificiality of her organ." This, with respect, is rather difficult to follow. The only requirement of the law, for this purpose, is possession of an organ capable of being penetrated. If such an organ is not present naturally the law allows that the marriage may still be consummated if the condition can be "cured" which can only mean if such an organ can be made available. By definition the organ does not exist naturally and must therefore be brought into existence artificially. It is a little difficult to see, therefore, how the artificiality of the organ can prevent consummation, the only requirement for which is "ordinary and complete intercourse."

Since, for the purpose of consummation, the law looks only to the beginning of the marriage there is little scope for any subsequent "change of sex" to have any effect. For nullity impotence must exist at the date of the marriage, and a single act of penetration after that date will amount to consummation of the marriage.[75] No subsequent change, therefore, in the sex of either party could have any effect for this particular purpose.

It is not our function here to attempt to justify the concept of consummation which the English courts have achieved. That it corresponds with neither physiological, psychological nor social reality will be apparent to anyone with even normal human experience. The only conclusion we wish to draw here is that, as the law stands, it requires a purely genital criterion of sexual differentiation for the purpose of consummation and it seems therefore to be clear that provided the parties possess the requisite genitalia their marriage may be consummated even though they are both of the same genetic and gonadic sex.

73. The actual allegation "incurable by art or skill and will so appear on inspection" was held by Sir Francis Jeune in *F.* v. *P.* (1896) 75 L.T. 192 to be mere surplusage. The requirement of incurability has now received so restricted an interpretation as to be virtually meaningless. Thus in *M.* v. *M.* [1956] 3 All E.R. 769 it was suggested that the court would not even require dilation. In that case, however, there was some slight evidence of vaginismus and it appears that at least one reason why dilation was not required was that the continued presence of the vaginismus would still have rendered consummation impossible.

74. [1954] 2 All E.R. 598; *sub nom. B.* v. *B.* [1955] P. 42.

75. See *e.g. Napier* v. *Napier* [1915] P. 184.

It seems clear, since the law uses a genital criterion for the purpose of determining the consummation of marriage, that we cannot use the same criterion for the purpose of determining the validity of marriage. The genital criterion defines the conditions for consummation and unless some other criterion is used for the purpose of determining the validity of marriage we would be forced into the position of holding that all marriages not consummated on the ground of some structural defect would be void on the ground of lack of sexual differentiation.[76] Some criterion, other than the genital criterion as used for the purposes of consummation must, therefore, be found for the purpose of differentiating between the non-consummated marriage between persons of opposite sex and the purported marriage between persons of the same sex. There is virtually no authority to guide us in the search for this criterion and we must, therefore, consider the question in some detail from the point of view of principle, and for this purpose we must review, in turn, the various criteria available.

We may consider first the possibility of using a genetic criterion. This criterion suffers from at least two major disadvantages. First, as we have seen, it does not cover the field, in the sense that there are persons whose genetic classification sexually is difficult if not impossible to determine. Admittedly the use of the mere presence of the Y chromosome as the criterion of genetic maleness, and its absence as the criterion of genetic femaleness, would remove some of the difficulties, but it would not totally solve the problem. An even graver disadvantage, however, is that genetic sex is so far removed from the social manifestations of sexuality that its use could lead to grotesque results. Thus, if we consider Roberta Cowell's case, it can be seen that the use of a genetic criterion for the purpose of determining the validity of marriage would lead to the conclusion that the marriage she contracted before her "change of sex" was void on the ground of lack of sexual differentiation of the parties, for although it had been consummated it was, on this view, a marriage between two females, for Miss Cowell was a genetic female and it may reasonably be assumed that her wife was also. As a further consequence it would be necessary to hold that the children of this marriage were illegitimate as the offspring of a void marriage — they being in the unfortunate position of having a female for their natural father. It is submitted that any criterion which results in invalidating consummated marriages must be regarded as unacceptable, for the ability to consummate is too closely related to the question of the sexual differentiation of the parties for it to be possible to hold that a marriage which has been consummated, and even resulted in the birth of children,

76. Alternatively, if it were argued that ability to consummate was itself the only criterion of sexual differentiation in marriage one would be forced into the position of saying that marriages between persons who in all other respects were of the same sex were merely voidable on the ground of non-consummation, *e.g.* a purported marriage between two lesbians.

can be held void on the ground of lack of sexual differentiation of the parties: the consequences would be too bizarre.

We turn, therefore, to consider the possibility of using a gonadic criterion. This criterion suffers, as we have already pointed out, from the same defect as the genetic criterion, namely, that it does not exhaust the field, since there are persons, such as true hermaphrodites or persons with gonadic agenesis, who would be sexually unclassifiable from this point of view: the validity of their marriages would therefore be indeterminate. Like the genetic criterion its use would also involve the possibility of upsetting consummated marriages. In this connection the point, made earlier, that the female is the more basic and unspecialised type in the human species should not be forgotten, for it carries with it the consequence that many intersexual conditions present an essentially female phenotype. There are thus numerous persons who, although presenting an essentially female phenotype, are, nevertheless, found — often at an operation for alleged hernia — to possess undescended testes and to be, therefore, gonadically speaking, male.[77] Such persons, being more female than male, would marry — if they married at all — as females, and could even possess genitalia such as to enable them to consummate their marriages as females. The use of a gonadic criterion for the purpose of determining the validity of marriage would upset all such marriages even though they had been consummated.

We turn, therefore, to consider the use of a genital criterion for the purpose of determining the validity of marriage. As we have already seen a genital criterion is used for the purpose of determining the consummation of marriage and we cannot use exactly the same criterion for the purpose of determining the validity of marriage. It is nevertheless possible to construct a criterion based on the state of the genitalia which is nevertheless distinct from the criterion as used for the purpose of consummation, which, as we saw, necessitated genitalia capable of penetrating and being penetrated respectively. It could thus be argued that the genitalia of the woman in *D.* v. *A.*, for example, although not capable of sufficient penetration for the purpose of the law relating to consummation was nevertheless recognisably female in structure. The same would be true of many cases, but it would nevertheless leave the validity of many marriages indeterminate, namely, those of persons possessing such a degree of genital abnormality that their genitalia could not be sexed.

The use of a genital criterion would also involve further difficulties associated with the possibility of a change of genital sex. Thus in Roberta Cowell's case it appears that she underwent the operation to change her genitalia before her marriage was dissolved on the ground of desertion. If a genital criterion were used to determine the validity of the marriage it would presumably follow that her marriage had already

77. See the case referred to by Walker, *op.cit.*, at pp. 33-4,

come to an end on the ground of lack of sexual differentiation of the parties. The only alternative would be to argue that for the purpose of the validity of marriage sexual differentiation need only exist at the time of the celebration of the marriage and that any changes occurring thereafter would not affect its validity. This is a matter to which we shall return later.

We turn finally to consider the use of the criterion of apparent sex for determining the validity of marriage. The difficulties associated with the use of this criterion are first that it is, in its nature, rather vague and subjective, and second that it involves all the additional problems associated with a change of sex, and in a much more acute form than in the case of the use of a genital criterion. In the case of apparent sex the change may well be a purely spontaneous physiological occurrence, and yet if a change of sex were held to invalidate a marriage which was valid when celebrated such marriages could be terminated quite independently of the wishes of the parties who may well not wish their marriage to be terminated. It should further be pointed out that such changes, whether spontaneous or artificially induced, do not occur suddenly but over a substantial period of time — in Roberta Cowell's case it appears that the hormone treatment lasted for a period of nearly two years — making it almost impossible to determine the point of time at which the change of sex occurs, thus giving rise to a transitional period during which the validity of the marriage would be indeterminate. Finally, of course, if change of apparent sex is considered to affect the validity of marriage the use of such a criterion would involve the upsetting of marriages which have been consummated and even produced offspring.

None of the criteria discussed above seem to be entirely satisfactory. It is nevertheless submitted, rather tentatively, that the criterion of apparent sex is the only one which could possibly be used for the purpose of determining the validity of marriage, and even then only on the assumption that a change in apparent sex during marriage does not have any effect on the validity of the marriage; this assumption being made on the ground that sexual differentiation of the parties need only be displayed at the beginning of the marriage, There is, of course, some support for this view, albeit rather negative support, to be derived from both *Dolling* v. *Dolling* and Miss Cowell's case, for in both of them the "husbands" had changed their apparent sex but in both of them the court assumed that the marriages were still valid even though, in *Dolling* v. *Dolling* at least, the situation was clearly known to the court.[78] Assuming that we are justified in holding that a subsequent change in apparent sex

78. It could, of course, equally well be argued that the decisions in *Dolling* v. *Dolling* and Roberta Cowell's case imply that a criterion of apparent sex is not in fact adopted by the court. The point, however, does not seem to have been raised, but it seems more reasonable to suppose that the court assumed that such changes as had occurred did not affect the validity of the marriage rather than that they assumed that the mere change in apparent sex had no effect,

does not invalidate a marriage valid when celebrated then the use of the criterion of apparent sex seems to be the only criterion that does not lead to anomalous results. Its very subjectivity may even be considered advantageous for its use ensures that the field is fully covered: there need be no persons who are sexually unclassifiable, from this point of view, for an admittedly arbitrary decision would simply be made, after considering all the facts of the case,[79] as to the sex of the person concerned for the purpose of determining the validity of their marriage or their ability to enter into marriage with a person of a given sex, and it is submitted that where two persons have married, or wish to marry, very strong grounds would be necessary for holding that they did not exhibit sufficient sexual differentiation.

We turn, therefore, to consider the problem of adultery and we may commence with Rayden's definition: [80]

> Adultery may be defined as consensual sexual intercourse between a married person and a person of the opposite sex, not the other spouse, during the subsistence of the marriage.

Thus to constitute adultery there must be sexual differentiation between the parties to the act, and the question therefore arises as to what is the criterion of distinction for this purpose. We have elsewhere considered what constitutes adultery and it is unnecessary to cover that ground again here.[81] It will be sufficient for our purpose to cite the opinion of Singleton L.J. in *Dennis* v. Dennis: [82]

> I do not think that it can be said that adultery is proved unless there be some penetration. It is not necessary that the complete act of sexual intercourse should take place. If there is penetration by the man of the woman, adultery may be found, but if there is no more than an attempt, I do not think that a finding of adultery would be right.

If therefore, as we would submit, penetration is the test of adultery it seems to follow that the criterion of sexual differentiation for this purpose is a genital criterion. One must show possession by one party of an organ capable of effecting penetration and by the other of an organ capable of being penetrated to an extent sufficient for the purpose of the law relating to adultery. Unless these are present then, by definition, there can be no adultery; if they are present then adultery is possible irrespective of any further enquiry into the sex of the parties.

79. In assessing the "apparent sex" of a person for this purpose there is, of course, no necessity to restrict the enquiry to the "secondary sex characteristics" strictly so called: in particular the state of the genitalia could be considered — not for the purpose of determining genital sex but as an element in the constitution of apparent sexes.

80. *Divorce*, 7th. ed. (1958) at p. 131.

81. See Bartholomew (1958) 21 *M.L.R.* 236.

82. [1955] P. 153, 160.

It seems to follow from the above that the same test must also apply in connection with the crime of rape. Our authority for this contention is again that of Singleton L.J. in *Dennis* v. *Dennis* in which his Lordship stated:[83]

> In my view there is no distinction to be drawn between the words "sexual intercourse" in the definition of "adultery" which I have read [from Rayden on Divorce], and "carnal knowledge" in the criminal law.

The test for the commission of a rape is the slightest penetration, and therefore a purely genital criterion is envisaged. Given possession of the necessary genitalia the crime of rape is possible without further enquiry as to the sex of the parties.

Consideration of the above problems suggests that in many cases it is positively misleading to place too much emphasis upon the question of defining the criterion of sexual differentiation. It is true that some degree of sexual differentiation is implied for the purposes of consummation, adultery, rape and the like, but in each case the conditions for the carrying out of the act in question are specified, and provided that these conditions are satisfied it follows that the requisite act has been carried out and the mere fact that the act has been carried out implies a sufficient degree of sexual differentiation between the parties. Thus if penetration is the necessary and sufficient condition for carrying out the act, whether for the purpose of consummation, adultery or rape, the act may be accomplished provided only that the necessary organs are possessed by both parties, and if the parties do possess such organs then it may be taken that there is a sufficient degree of sexual differentiation for that particular purpose. It is only in those cases such as registration of birth and determination of the validity of marriage, where the ability to perform a given act is not involved that difficulties arise.

We turn finally briefly to consider the legality of operations and treatment designed to enable a person to undergo a "change of sex." It is hardly necessary to stress, at this stage, the fact that the concept of a change of sex is so vague as to be essentially meaningless — everything depends upon the criterion of sex which is used. Genetic sex is immutable; gonadic sex, once differentiation of the gonads has taken place, is likewise virtually immutable — for neither atrophy of the gonads nor the implantation of ovarian or testicular tissue can be regarded as a change of gonadic sex; genital sex may be regarded as mutable — particularly as regards a change from male to female — but in most cases requires deliberate surgical intervention, whilst the secondary sex characteristics are easily mutable depending only upon natural or artificial change in the endocrine environment.

It seems preferable to regard the various medical and surgical techniques which may be used quite independently of any concept of a

83. *Loc. cit.*

"change of sex" which has such strong emotive overtones and which, being essentially meaningless, cannot contribute anything of value to the discussion of this problem.

Any discussion of the legality of forms of surgical and medical treatment at common law must inevitably commence with Lord Denning's opinion in *Bravery* v. *Bravery*[84] to the effect that to be lawful a surgical operation must be performed with the consent of the patient and for a just cause.[85] We have elsewhere examined the justification for this opinion and have submitted that it cannot be sustained[86] on the ground that (a) if a surgical operation is unlawful it can only be so, in the absence of specific statutory provision, on the ground that it constitutes an assault, and (b) that on a charge of assault the consent of the patient will always be a defence to a surgeon irrespective of any question of the existence of just cause or excuse.

If this is correct then it follows that any operation or treatment designed to bring about what is popularly referred to as a change of sex will be lawful provided only that the patient consents. Even on Lord Denning's view, however, it does not follow that all treatment designed to bring about a change of sex would necessarily be unlawful. The question would turn upon whether there was considered to be just cause or excuse for the "change." It could therefore be argued that a change of the type undergone by Roberta Cowell is one for which there is just cause and excuse, on the ground that it is merely bringing genital endowment and secondary sex characteristics into conformity with genetic sex and may therefore be considered as merely involving the removal of certain abnormalities. On the other hand it could be argued that a change

84. [1954] 3 All E.R. 59.

85. See footnote 86, post.

86. See Bartholomew (1959) 2 *Melbourne Univ. L.R.* 77. The interpretation of Lord Denning's opinion which is given here differs slightly from that which was given in the above article. There it was suggested that Lord Denning's opinion implied that a surgical operation had to be "for the sake of a man's health." The better interpretation, however, would seem to be that which regards operations performed for the sake of a man's health as merely an example of an operation for which there is "just cause and excuse." This gives a wider scope to the operation of Lord Denning's opinion. It raises the possibility that even some sterilisation operations might be lawful; those, for example, carried out on *grande multiparae*, for Sheares has shown that the mortality rate for a woman having her eighth child is three times that of a woman having her first [(1958) 65 *J.Obst.Gyn.B.E.* 419] and it could therefore reasonably be argued that "just cause and excuse" existed for the sterilisation of such women. This point, however, does not affect the validity or otherwise of the arguments by which we ventured to criticise Lord Denning's opinion. See Bartholomew (1960) *Melbourne Univ. L.R.*, in the press.

of the nature undergone by Christine Jorgensen is one for which there is no just cause or excuse, although even in this case a strong argument could be mounted for the view that the psychological factors involved were such as to justify the change. Clearly on this view every case would have to be judged on its own merits, for it is impossible to say in abstract whether just cause or excuse exists for any given form of treatment. We would submit, however, that the better view is that which holds that the consent of the patient is the necessary and sufficient condition for the legality of medical treatment or surgical operations.

In the foregoing we have considered but a few of the more obvious problems: there are almost literally hundreds of others. Whatever the nature of the problems, however, they will not be satisfactorily solved unless courts and lawyers begin to take some account of the facts known to every medical student. We conclude with a quotation from Burrows who puts the position as follows: [87]

> Many years, it seems, must pass before the general public and its lawgivers will base their actions on the fact that men are animals and that sexual misdemeanours may be caused by the excessive production of a hormone or by a deficient education whereby the natural sexual stimuli may be controlled. Both these factors may be responsible for a single sexual aberration, and neither is under the individual's control. We do not apply our biological knowledge to the treatment of nymphomania in girls, nor to the homosexual or homicidal tendencies which sometimes occur in men. In this field of humanism we have advanced only a very small way from the time when a woman with a beard, the consequence of adrenal hyperplasia, was regarded and treated as a witch; or a patient with a disease of the brain was put in chains and punished.

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87. *Op.cit.*, p. 169.

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